



# Xanadu IT Asset Management

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Company Headquarters  
2225 Lawson Lane  
Santa Clara, CA 95054  
United States  
(408) 501-8550

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# IT Asset Management

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Manage software licenses, hardware assets, and cloud assets with intuitive work flows and life cycle visibility.

## IT Asset Management

### Take command of your software, hardware, and cloud assets


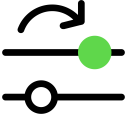
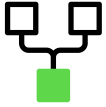




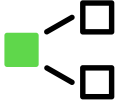

Gartner, Inc. states that organizations often face three or more software audits a year. The number of audits and lack of a consolidated asset management platform can create challenges for an organization to control and optimize software spend. Use the ServiceNow® Software Asset Management application to take command of your software assets.

Businesses need to know what assets they own, where those assets are located, who is using those assets, how often those assets are used, when those assets are being configured, how much those assets cost, and what value those assets deliver. Use the ServiceNow® Hardware Asset Management application to provide increased visibility into your asset estate and to automate the IT life cycle from procurement to disposal.

As businesses move to the cloud, they can encounter challenges when associating costs with delivered business value due to the lack of visibility into their cloud spend and usage. Use the ServiceNow® Cloud Cost Management application to gain complete visibility into the usage and costs that are associated with your cloud assets so that you can optimize operations and reduce your cloud spend.

View and download the full [Software Asset Management](#) or [Hardware Asset Management](#) infocard for a highlight of features.

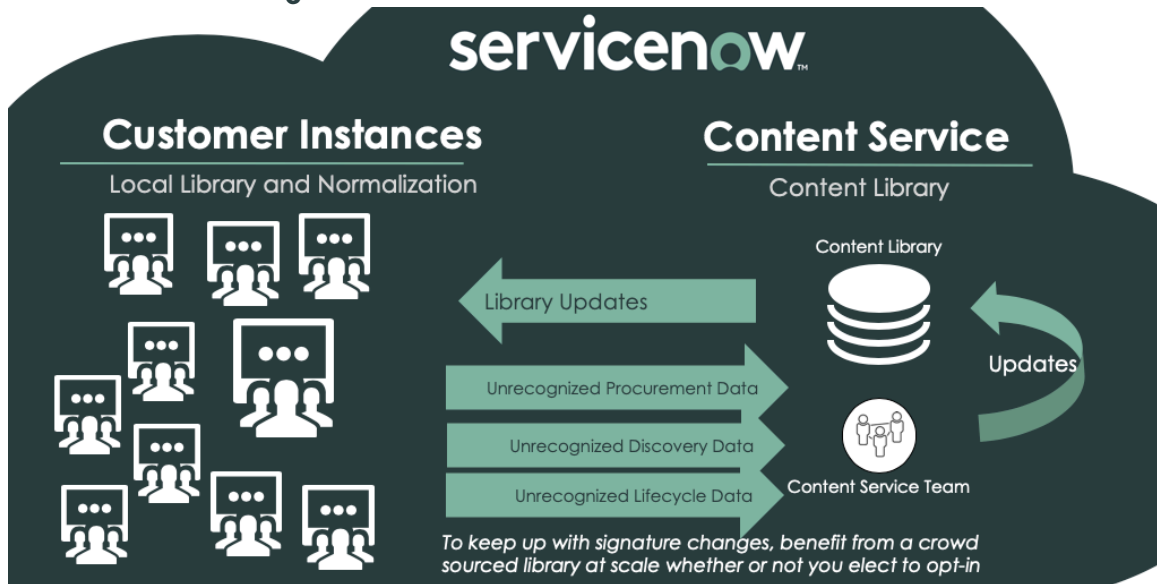
	<p>Normalize software assets</p> <p>Automatically normalize your software assets with updates from the Software Asset Management content service.</p>
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	<p>Manage software rights</p> <p>Track and manage rights for your software products by creating or importing software entitlements.</p>
	<p>Leverage publisher packs</p> <p>Use license metric data for specific software publishers to accurately track your software usage.</p>
	<p>Track SaaS subscription usage</p> <p>Integrate with SaaS applications and SSO providers to track your SaaS subscription usage. Use this data to manage compliance and optimize licensing for your subscriptions.</p>
	<p>View and take action on your license position</p> <p>Use the License usage view (Software Asset Workspace) or License Workbench (Software Asset Management classic application) to view your license compliance position and easily remediate any license compliance issues.</p>
	<p>Track software spend</p> <p>Track and manage financial transaction data for your software products so that you can optimize your software spend.</p>
	<p>Analyze and improve your business processes using software asset analytics dashboards</p> <p>Analyze business processes and identify areas of improvement using consolidated dashboards with actionable data visualizations.</p>
	<p>Normalize hardware assets</p> <p>Leverage the extensive hardware Content Library to normalize manufacturer and model data for your assets and to populate important life cycle dates for improved visibility into your asset estate.</p>
	<p>Automate your asset life cycle</p> <p>Reduce manual effort and improve service delivery using low-code prescriptive workflows based on the industry best practices that are available at each stage of the asset life cycle. Use asset tasks to automate workflows for bulk stock orders; disposal orders; and the deployment, swapping, and retirement of assets. With asset tasks, you can eliminate the risk of data inaccuracy caused by manual entry.</p>
	<p>Refresh aging hardware assets</p> <p>Proactively track and plan for aging assets that are nearing the end of their life cycles so that you can reduce replacement costs and the risk of hardware vulnerabilities.</p>

	<p><b>Audit your asset inventory</b></p> <p>Conduct scheduled or ad-hoc audits of your asset stockrooms and other asset locations, such as offices and data centers.</p>
	<p><b>Manage expiring maintenance and lease contracts</b></p> <p>Take action on your expiring maintenance and lease contracts using task-based workflows within the simplified contract renewal process.</p>
	<p><b>Drive asset manager productivity using a purpose-built workspace</b></p> <p>Use the Hardware Asset Workspace for a centralized, single pane view of your hardware asset estate. Gain visibility into the critical action items that drive Hardware Asset Management outcomes at every stage of the asset life cycle. In addition, dive into your Important Actions to take the guess work out of your asset life cycle processes.</p>
	<p><b>Accelerate your cloud strategy and reduce costs</b></p> <p>Accelerate cloud implementation with a streamlined, responsive, and intuitive self-service cloud resource portal and non-intrusive policy guardrails. Reduce costs by rightsizing your cloud resources to match your organization's usage and by automatically turning off cloud resources during non-working hours.</p>

## Normalize software assets

### Software Asset Management normalization



After you enable a discovery source, the Software Asset Management application normalizes software installation data from your organization. Weekly content updates for publisher names, product names, software life cycle dates, and more are made available to normalize your discovered data so that you can keep it accurate and up to date. You can also improve your normalization rates by predicting the normalized values of your discovered data through machine learning. In addition, you can opt in to the Software Asset Management Content Service to securely and anonymously send your unnormalized content to ServiceNow for research, validation, and updates.

## Manage software rights

Track and manage rights for your purchased software using software entitlements. Determine how many rights your organization has purchased, how much those rights cost, who those rights are allocated to, and more. You can create and update software entitlements individually or you can import bulk software entitlements in one go.

## Leverage Publisher Packs

Software publishers use different licensing models to define how software licenses must be consumed, which can make license compliance difficult to track across all software publishers. In addition to the thousands of software publishers that are available through the Content Library, the Software Asset Management application offers publisher packs that extend functionality between the ServiceNow AI Platform and top third-party software publishers. With publisher packs, you can access additional capabilities to help you track and optimize licensing for the specified software publishers.

## Track SaaS subscription usage

The Software Asset Management SaaS License Management application enables you to integrate your ServiceNow instance with third-party SaaS applications and SSO providers. With these integrations, you can pull subscription usage data from your SaaS and connected SSO applications to track usage, manage compliance, and optimize licensing for your subscriptions.

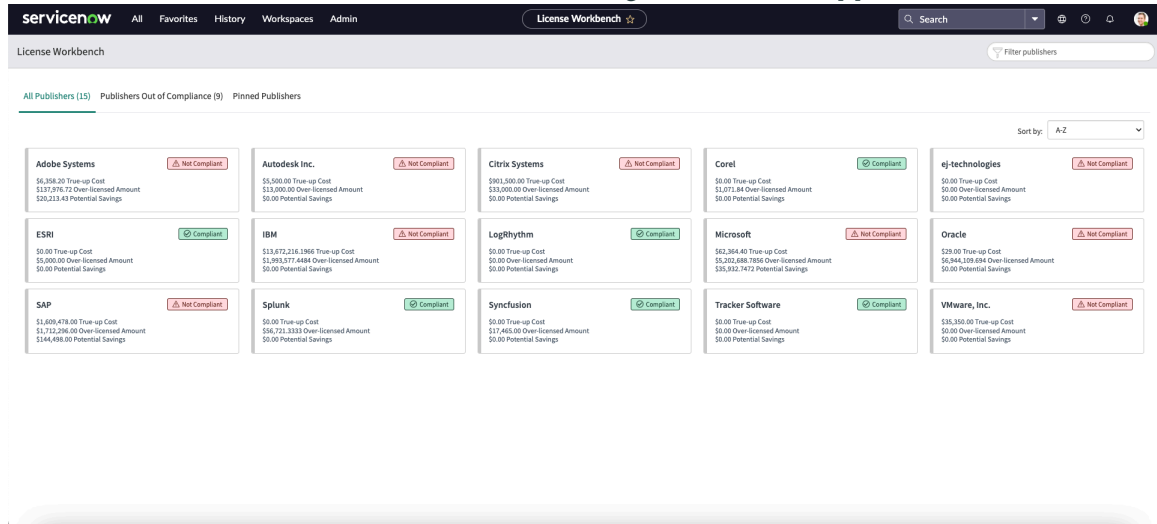
## View and take action on your license position

### License usage view in the Software Asset Workspace

The screenshot displays the 'License usage' view in the ServiceNow Software Asset Workspace. The interface includes a navigation bar with 'servicenow', 'All', 'Favorites', 'History', 'Workspaces', and 'Admin'. The current workspace is 'Software Asset Workspace'. Below the navigation, there are tabs for 'Publishers', 'Reconciliation', 'Removal candidates', and 'Reports'. The main content area shows a list of publishers, categorized into 'Pinned publishers' and 'Unpinned publishers'. Each publisher card displays compliance status, compliant products, true-up cost, over-licensed amount, and potential savings.

Category	Publisher	Compliance	Compliant Products	True-up Cost	Over-licensed Amount	Potential Savings
Pinned publishers	Microsoft	31% compliant	4/13	\$62.36K	\$5.2M	\$35.93K
	IBM	64% compliant	9/14	\$13.67M	\$1.99M	\$0.00
	Oracle	67% compliant	2/3	\$29.00	\$6.94M	\$0.00
	SAP	38% compliant	5/13	\$1.61M	\$1.71M	\$144.5K
Unpinned publishers	Adobe Systems	63% compliant	5/8	\$6.36K	\$137.98K	\$20.21K
	Autodesk Inc.	67% compliant	2/3	\$5.5K	\$13K	\$0.00
	Citrix Systems	0% compliant	0/2	\$901.5K	\$33K	\$0.00
	ej-technologies	0% compliant	0/1	\$0.00	\$0.00	\$0.00
	VMware, Inc.	50% compliant	1/2	\$35.35K	\$0.00	\$0.00

## License Workbench in the Software Asset Management classic application



The License usage view (Software Asset Workspace) and License Workbench (Software Asset Management classic application) offer you the ability to view the license compliance positions of all your software products from a centralized location. If any of your licenses are out of compliance, you can drill down into the specified product to review suggested remediation options. Select an option to efficiently bring your license back into compliance.

### Track software spend

Use the Software Spend Detection application to track and optimize software spending based on imported financial transaction data. You can use this data to identify and take action on redundant software, reinforce or update company software purchasing policies, and begin managing unmanaged software products.

### Analyze and improve your business processes using software asset analytics dashboards

The Software Asset Management application provides preconfigured dashboards with actionable data visualizations to help you track performance and improve your business processes. Use these dashboards to gain visibility into your license compliance, SaaS and SSO subscriptions, engineering applications, recommended licensing optimizations, potential cost savings, normalization trends, and more.

### Normalize hardware assets

The Hardware Asset Management application normalizes the asset data in your hardware and consumable models. Weekly content updates for manufacturers, device types, and more are made available to normalize your data so that you can keep it accurate and up to date. You can also opt in to the Hardware Asset Management Content Service to securely and anonymously send your unnormalized content to ServiceNow for research, validation, and updates.

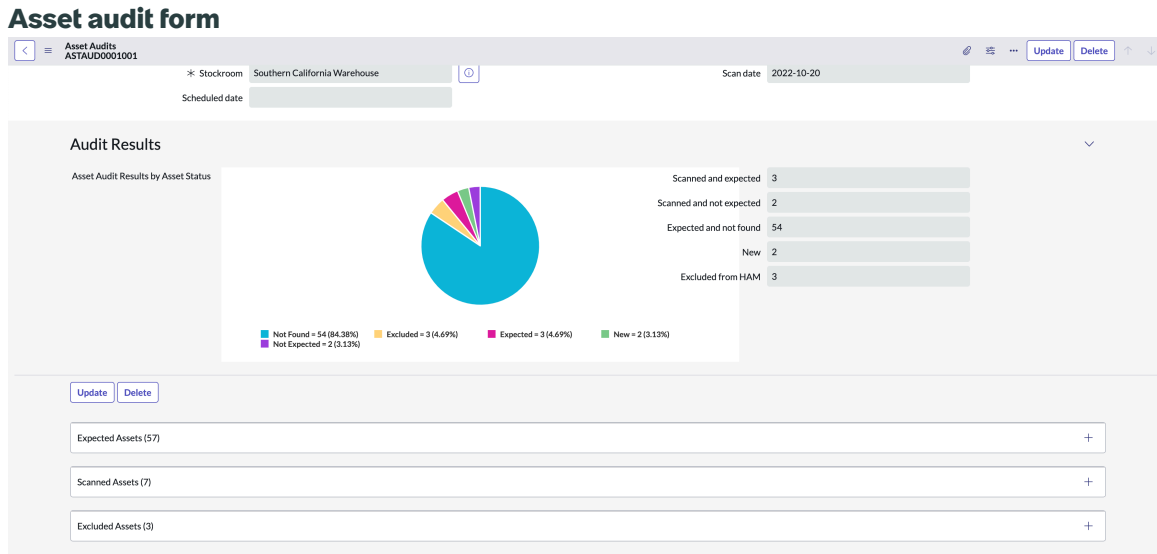
### Automate your asset life cycle

Use the Hardware Asset Management application to control the entire life cycle of your hardware assets from procurement to disposal. The Hardware Asset Management application automates each stage of the asset life cycle by tracking the financial, contractual, and inventory details of your hardware assets. Asset tasks are provided to deploy, replace or swap, or retire your assets. Asset managers can assign asset tasks to Incident, Change, and Work orders, thereby reducing efforts on ticket resolution and delivering faster services. Asset tasks automatically update CIs and asset records to help eliminate the risk of data inaccuracy caused by manual entry.

## Refresh aging hardware assets

As hardware assets near the end of their life cycles, associated maintenance costs and failure risks increase, while performance decreases. You can keep your hardware assets up to date by replacing aged hardware assets with new hardware assets of either the same or different hardware models.

## Audit your asset inventory



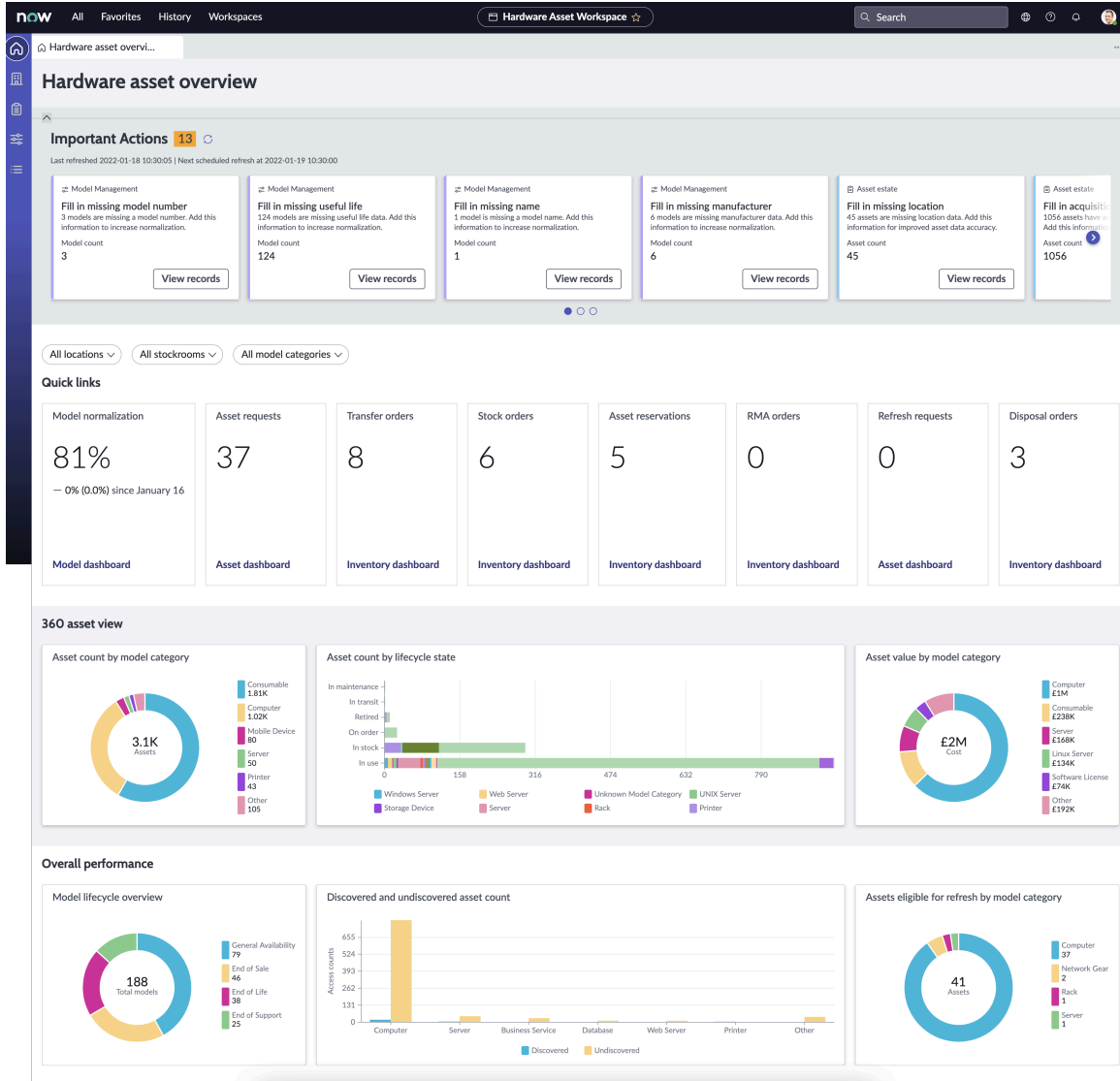
The Hardware Asset Management application enables you to capture asset inventory in specific stockrooms or locations using the ServiceNow Mobile Agent and mobile scanning capabilities. You can compare your scanned results with data that is stored on the ServiceNow AI Platform so that you can drive improved data quality and inventory process compliance.

## Manage expiring maintenance and lease contracts

Avoid penalty charges on expiring maintenance and lease contracts by getting notified and taking action on those contracts before they expire. Use the Hardware Asset Dashboard to view the consolidated list of expiring contracts from a centralized location.

## Drive asset manager productivity using a purpose-built workspace

### Hardware asset overview in the Hardware Asset Workspace



Use the Hardware Asset Workspace for an intuitive and centralized view of your hardware asset estate. Gain visibility into the models and assets that are reaching the end of their life cycles, the health and status of your assets, the normalization status of your hardware and consumable models, purchase orders, stock orders, and more. The Hardware Asset Workspace also includes Important Actions to help you take the guess work out of your asset life cycle processes.

## Accelerate your cloud strategy and reduce costs

The [Cloud Cost Management](#) application enables you to analyze the full range of costs that are associated with your cloud assets. You can identify and correct cost optimization targets, such as underused, over-provisioned, and stranded cloud assets, with the choice of automated or semi-automated operations.

## Learn

- [What is IT asset management \(ITAM\)?](#)
- [What is software asset management \(SAM\)?](#)
- [What is provisioning?](#)

- [What is enterprise SaaS?](#)
- [What is SaaS license management?](#)
- [What is a barcode inventory system?](#)
- [What is inventory management?](#)
- [What is IT asset tracking?](#)
- [What is enterprise asset management \(EAM\)?](#)

## Get started

- Work with an implementation specialist to streamline your Software Asset Management setup process. To learn more or view a demo, see the [Customer Success Center](#).
- Sign up for the [ServiceNow Software Asset Management fundamentals training program and certification](#) to learn about core Software Asset Management functionality and release-specific features.
- Sign up for the [Software Asset Management \(SAM\) Getting Started](#) course to learn the basic concepts and terminology of the Software Asset Management application.
- For information on how to request Software Asset Management and to begin setup, see [Setting up Software Asset Management](#).
- Install Cloud Cost Management by requesting it on the [ServiceNow Store](#) website.
- Install Device as a Service by requesting it on the [ServiceNow Store](#) website.

## Applications and features

- [Asset Management](#)
- [Software Asset Management](#)
- [Hardware Asset Management](#)
- [Now Assist for Hardware Asset Management \(HAM\)](#)
- [Enterprise Asset Management](#)
- [Cloud Cost Management](#)
- [Contract Management](#)
- [Procurement](#)
- [Product Catalog](#)
- [IT Asset Management content request](#)
- [Licensing for IT Asset Management](#)

## Software Asset Management


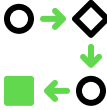


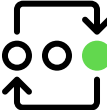

The ServiceNow<sup>®</sup> Software Asset Management (SAM) application systematically tracks, evaluates, and manages software licenses, compliance, and optimization. You can reclaim unused software rights, purchase new software rights, and manage allocations for entitlements.

Watch this short video for an introduction to the Software Asset Management application.

[https://player.vimeo.com/video/995307472?badge=0&autoplay=0&player\\_id=0&app\\_id=58479](https://player.vimeo.com/video/995307472?badge=0&autoplay=0&player_id=0&app_id=58479)

**Note:** Beginning with the ServiceNow AI Platform Xanadu release, limited support is provided for the Software Asset Management classic user interface. While it remains active in your instance, including when you upgrade to a new ServiceNow AI Platform release, you're encouraged to move to the new workspace experience.

For the ITSM Software Asset Management feature of Asset Management, see [ITSM Software Asset Management](#).

<p>Explore</p>  <p>Learn the key features and business value that the Software Asset Management application offers.</p>	<p>Set-up</p>  <p>Plan and set-up the application.</p>	<p>Configure</p>  <p>Configure the features and components.</p>
<p>Use</p>  <p>Use the intuitive and new user interface to manage software licenses, compliance, and optimization.</p>	<p>Integrate</p>  <p>Extend the Software Asset Management capabilities by integrating with SaaS applications.</p>	<p>Reference</p>  <p>Get details about components such as fields, roles, and license agreement types.</p>

## Learn

[What is software asset management \(SAM\)?](#)

## Exploring Software Asset Management

The Software Asset Management application's user interface is enhanced to make it more user friendly and intuitive, allowing you to better manage your software installations.

Beginning with the ServiceNow AI Platform Xanadu release, we will provide limited support for the Software Asset Management classic user interface. While it will remain active in your instance, including when you upgrade to a new ServiceNow AI Platform release, we encourage you to move to the new workspace experience.

The Software Asset Management application's core functionality remains the same in both the user interfaces.

## Using the Software Asset Workspace

The Software Asset Management application is available with activation of the new Activate all Software Asset Management Professional plugins including Software Asset Workspace (com.sn\_samp\_master\_ws). Activating this plugin automatically activates the Activate all Software Asset Management Professional plugin (com.sn\_samp\_master) and the Software Asset Workspace plugin (com.sn\_sam\_workspace). After the new plugin is activated, you can't access the classic user interface.

For releases prior to Xanadu, if you activated the older Software Asset Management Professional plugin (com.sn\_samp\_master), the Software Asset Workspace is available with activation of the Software Asset Workspace plugin (com.sn\_sam\_workspace). After the Workspace plugin is activated, you can't revert to the classic Software Asset Management application.

**i Note:** After the Software Asset Workspace is activated, the menus in the classic Software Asset Management application are hidden for the features that have been moved to the Software Asset Workspace.

For detailed information on configuring and using the Software Asset workspace, refer to [Configuring Software Asset Workspace](#) and [Using Software Asset Workspace](#).

## Using the classic Software Asset Management application

To continue using the classic Software Asset Management application, you need to activate the Software Asset Management Professional (com.sn\_samp\_master) plugin.

If you later decide to use the Software Asset Workspace, you need to activate the Software Asset Workspace (com.sn\_sam\_workspace) plugin.

For detailed information on using the classic Software Asset Management application, refer to [Using Software Asset Management classic](#).

## Menus that continue to reside in Software Asset Management classic

Even after you activate the Software Asset Workspace (com.sn\_sam\_workspace) plugin, the following menus continue to remain in the classic framework:

Software asset		
Software Asset Demand		
• Create New		
• Demands		
• Demand Requirement		
Administration		
• Custom Products		
• Custom part Numbers		
• Custom License Metrics		
• Software Asset Demand Actions		
• Pattern Normalization Rules		
• Reclamation Rules		

Software asset		
<ul style="list-style-type: none"> <li>• Job Results</li> <li>• Content Service Setup</li> <li>• Refresh Processor Definitions</li> <li>• Migrate Software Results</li> <li>• Properties</li> <li>• Revert Customizations</li> <li>• Software Model with De-activated Discovery Maps</li> </ul> <p>SaaS License</p> <ul style="list-style-type: none"> <li>• Unrecognized Subscription Identifier</li> <li>• SSO Integration Profiles</li> <li>• Direct Integration Profiles</li> </ul> <p>SAP Compliance and Optimization</p> <ul style="list-style-type: none"> <li>• SAP Connections</li> <li>• Connection Setup</li> <li>• Scheduled Import</li> <li>• Transform History</li> </ul>		


## Software Asset Management overview

An overview of the functionality of the Software Asset Management application.

Software Asset Management functionality consists of these main features.

Feature area	Description
Dashboards	<p>These dashboards show software installation results for your environment in the form of statistics and charts.</p> <ul style="list-style-type: none"> <li>• Software Asset Analytics: Overview, License Summary, Compliance Summary, and Removal Summary</li> <li>• Normalization and Content Service: Normalization trend charts</li> <li>• Software Publisher Analytics: Citrix, IBM, Microsoft, Oracle, SAP, and VMware.</li> </ul> <p><b>Note:</b> The publisher pack add-on must be activated to see the Software Publisher Analytics dashboard.</p> <ul style="list-style-type: none"> <li>• Office 365 and Adobe Cloud</li> </ul>

Feature area	Description
	<p><b>i Note:</b> The publisher pack add-on must be activated to see the Office 365 and Adobe Cloud dashboard.</p> <ul style="list-style-type: none"> <li>• Software Asset Management: Overview, Optimization, Compliance Analysis</li> </ul>
Licensing	<p>Software models created for all installed software products are used to tie software installations (software being used) with entitlements (software owned). Entitlements define license details and are assigned to software models.</p> <p>Features include publisher part number lookup, common per core and per processor license metrics, entitlement discovery maps, exclusion listing, client access, license change projection, entitlement import, and entitlement import error results list.</p>
Discovery and normalization	<p>A discovery process, such as ServiceNow Discovery or Microsoft SCCM (2012 v2 or 2016), can be used to discover the software installed in your environment.</p> <p>The normalization process compares the discovered publisher, discovered product, and discovered version values against the ServiceNow repository of normalized equivalents</p> <p>An OOB Normalization library contains all content except publisher and product. Custom products can be created if a software product does not exist in the Software Library. Discovered software can also be manually normalized for reconciliation. A software discovery model is then matched to discovered software installations.</p> <p>Features include partial, full, and publisher normalization, License Workbench, License Position report, custom pattern normalization rules, normalization suggestions, on-premise customer support, and an optional Software Asset Management content service to update the Normalization Library with pattern normalization rules.</p> <p>The Integration – Microsoft SCCM 2016 plugin is compatible with SCCM version 1606, 1906, 1910, and 2002.</p> <p><b>i Note:</b> Legacy SCCM plugins, SCCM 2012 and SCCM 2016, will be deprecated in the upcoming releases. If you are creating the integration for the very first time, then begin with Microsoft SCCM Service Graph Connector SG Connector. If you are already using one of these plugins then use the application titled Migration Readiness Tool for Service Graph Connector for SCCM in the ServiceNow Store to prepare for migration to the Service Graph Connector.</p>
Reconciliation	<p>The reconciliation process calculates the compliance status of software products regarding discovery and entitlements.</p>

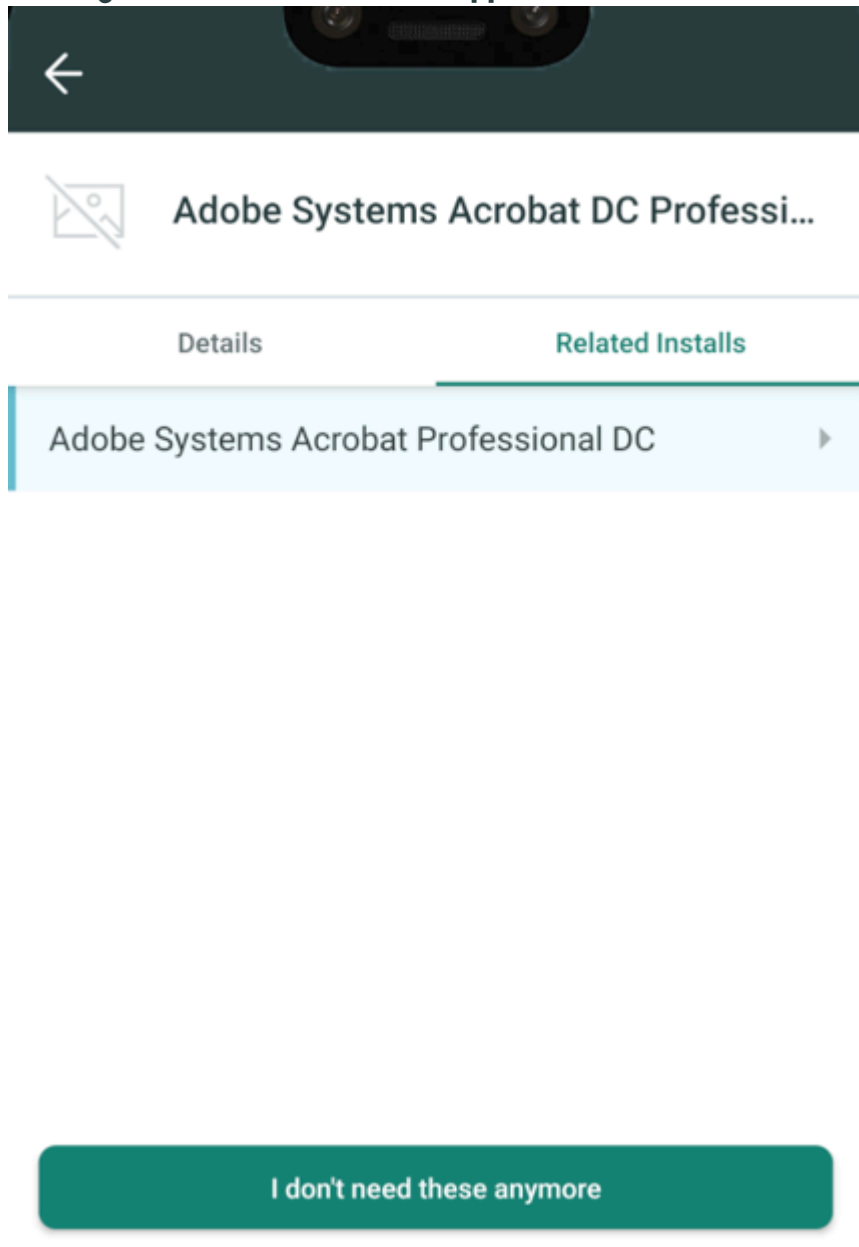
Feature area	Description
	<p>Removal candidates are generated for unused software that can be used to reclaim software rights.</p> <p>Features include reconciliation grouping, and remediation actions for resolving compliance issues.</p>
Optimization	<p>The reclamation process remediates non-compliance by uninstalling software from devices and reclaiming those software rights. The reclamation process can be automated using Client Software Distribution (CSD).</p> <p>Features include removal candidate and workflows, reclamation rule creation, software usage listing, and support for creating a purchase order directly using Procurement integration. For more information, see the <a href="#">Procurement overview</a> .</p>
Downgrade Rights	<p>The concept of downgrading licenses is built into the Software Asset Management plugin feature. Downgrade rights is the process of having acquired the rights to the latest version of software but using the rights to license earlier versions of the same software. For more information, see <a href="#">Downgrade Rights</a>.</p>

## Now Mobile app for Software Asset Management

Use the Now Mobile app to view the hardware and software assets that are assigned to you.

In the Now Mobile app, you can view a list of both installed software and subscription software by navigating to **My Items > My Assets > Software**. You can find information on when you last used a piece of software. If some software is installed on more than one device, you can also view all the devices. The Now Mobile app gets the list of assets from the Software Subscription, Rights used by, and Rights needed by tables.

### Viewing assets on the Now Mobile app



Tap any of your assets to view its details such as its business cost, its last activity, and other information. If you want to surrender the asset, tap **I don't need this anymore**. A removal candidate is generated so that the software asset manager can review and approve the removal request.

### Virtual Agent for software requests

You can implement ServiceNow<sup>®</sup> Virtual Agent to enable your employees to request software through a predefined conversational interface that is powered by artificial intelligence. Virtual Agent helps address software requests automatically so that your IT fulfillment professionals can focus on more complex requests and incidents.

For information on how to implement and use Virtual Agent, see [Virtual Agent](#) .

### Prerequisites

Before you can begin using Virtual Agent for your software requests, complete the following prerequisites:

- Activate the Software Asset Management Professional (com.snc.samp) plugin on your ServiceNow instance.  
See [Request Software Asset Management](#) for more information on how to activate this plugin.
- Activate the Glide Virtual Agent (com.glide.cs.chatbot) plugin on your ServiceNow instance.  
See [Activate Virtual Agent](#) for more information on how to activate this plugin.
- Request and install the ITSM Virtual Agent Conversations application from the [ServiceNow Store](#).
- Request and install the ITSM NLU Model for Virtual Agent Conversations application from the [ServiceNow Store](#).
- Enable automatic allocation of your software by setting the workflow of the corresponding software catalog items to **Procurement Process Flow - Auto allocation enabled**. See [Create or edit a catalog item](#) for more information on how to set the workflow for a software catalog item.

## Software request flow on Virtual Agent

When a user requests software, Virtual Agent automatically recommends appropriate options based on the software that is available in your software catalog. Upon selecting an option, the user is prompted to specify the user or device that the software is being requested for. Virtual Agent then generates a request item and initiates one of the following workflows to allocate rights to the specified user or device:

- **User allocation workflow:** Allocates rights to the specified user. Virtual Agent initiates this workflow when the corresponding software entitlements support either user allocations only or both user and device allocations.
- **Device allocation workflow:** Allocates rights to the specified device. Virtual Agent initiates this workflow when the corresponding software entitlements support either device allocations only or both user and device allocations.

**Note:** Rights are allocated to the specified user or device in ascending chronological order of software entitlements, starting with the oldest software entitlement.

**Note:** If a software entitlement supports both user and device allocations or your software contains both user allocation- and device allocation-based software entitlements, Virtual Agent initiates the user allocation workflow first. Virtual Agent initiates the device allocation workflow only after all user allocations are consumed.

If the corresponding software entitlements contain enough active rights and allocations to fulfill the request, Virtual Agent automatically approves the request and allocates rights to the specified user or device. The user is then provided with instructions to download and install the software.

If the corresponding software entitlements do not contain enough active rights and allocations to fulfill the request, you must source the required rights manually. After you source those rights, Virtual Agent automatically allocates them to the specified user or device. The user is then provided with instructions to download and install the software.

**Important:** Software can be requested and allocated using this same flow in the ServiceNow® Service Catalog and Employee Center. See [Service Catalog](#) for more information on the Service Catalog. See [Employee Center](#) for more information on the Employee Center.

## Software Asset Management Content Service

Opt in to the Software Asset Management Content Service to share unnormalized software installation data from your organization with ServiceNow to improve the normalization process.

The Software Asset Management Content Service is an IT Asset Management (ITAM) shared service that provides users with continual software recognition improvements. By sharing unnormalized software installation data with ServiceNow, you receive automatic content updates based on your unique software installation footprint. For more information on content updates, see [Content updates for Software Asset Management](#).

The Software Asset Management Content Service transfers data between your organization and ServiceNow through a Content Data Service (CDS) instance. In commercial deployments, data is transferred through a CDS instance that is deployed in a commercial data center. In National Security Cloud (NSC) Department of Defense (DOD) Impact Level 5 (IL5) deployments, data is transferred through a CDS instance that is deployed in an NSC DOD IL5 data center.

**Note:** Data for your NSC DOD IL5 deployments can be transferred only from ServiceNow to your organization. It cannot be transferred from your organization to ServiceNow. Since you cannot share any unnormalized software installation data with ServiceNow, you must manually create a software content request for any software product that you want to add to the Software Asset Management Content Library. After the software product is added to the Content Library, the Software Asset Management application can begin normalizing the corresponding software installations that are discovered in your NSC DOD IL5 deployments. See [Create IT Asset Management content request](#) for instructions on how to create a software content request.

No personally identifiable information is shared with ServiceNow. However, please note the exception for custom software products, as described in the Software Asset Management Content Service asset data types table below.

Data that is shared using the Software Asset Management Content Service remains secure and is properly disposed of after review, following the same ServiceNow privacy policies, procedures, tools, and techniques that are used to secure ServiceNow instances. The selection of data types that are shared with ServiceNow is configurable by your organization. In addition, data is never packaged and shipped to other ServiceNow customers.

This new content improves your normalization hit ratios, which enable you to manage your software assets better. By default, you aren't opted in to the content service. For information on how to opt-in, see [Enable sharing information with Software Asset Management content service](#).

If you want to exclude any software discovery models, custom software products, or custom publisher part numbers from being shared with ServiceNow, select the **Exclude from content service** check box on the Software Discovery Model, Custom Software Product, or Custom Part Number form.

The normalization process acts only on active publishers, products, and rules. Obsolete rules aren't used. You can deactivate any Normalization Library content version at any time.

Data sharing for Software Discovery Models, Software Model Lifecycles, Part Numbers and Discovery Maps, Processor Names, and Product License Exception Rules is automatically enabled after opting in. If you don't want to share a type of asset data, select the toggle button next to the type of data on the Content Service Setup page and then select **Save**.

## Software Asset Management Content Service asset data types

Software asset data	Definition	Details transferred
Software Discovery Models	<p>Model created to classify and reduce duplication of software installs when new installs are identified.</p> <p>Only Software Discovery Models with the following statuses are transferred:</p> <ul style="list-style-type: none"> <li>• Match not found</li> <li>• Publisher normalized</li> <li>• Partially normalized</li> <li>• Manually normalized</li> <li>• Normalized</li> </ul> <p><b>i Note:</b> Only the Discovery models whose status is Normalized and Version is empty are transferred.</p> <p><b>i Note:</b> To improve the accuracy of machine learning predictions, software discovery models normalized by machine learning are transferred.</p>	<ul style="list-style-type: none"> <li>• Discovered publisher</li> <li>• Discovered product</li> <li>• Discovered version</li> <li>• Normalized publisher</li> <li>• Normalized product</li> <li>• Normalized version</li> <li>• Edition</li> <li>• Language</li> <li>• Platform</li> <li>• Rule table</li> <li>• Rule ID</li> <li>• ML model version</li> <li>• ML normalization status</li> <li>• ML prediction values</li> </ul> <p><b>i Note:</b> You can override the ML model used for prediction by specifying alternate values in the property <code>com.snc.samp.ml.override_ml_</code>. The admin and <code>sam_admin</code> have read access to this property but only the admin has both read and write access.</p>
Software Product Lifecycles	<p>The externally defined or publisher-defined life cycle of the software product.</p> <p>Only software product life cycles that aren't created by ServiceNow and have a life-cycle type that is not internal are transferred.</p>	<ul style="list-style-type: none"> <li>• Publisher</li> <li>• Product</li> <li>• Licensable version</li> <li>• Edition</li> <li>• Full version</li> <li>• Lifecycle phase</li> <li>• Phase start date</li> <li>• Lifecycle source</li> </ul>
Part Numbers and Discovery Maps	<p>Custom part numbers and custom discovery maps that are manually created to represent the</p>	<ul style="list-style-type: none"> <li>• Publisher part number</li> <li>• License type</li> <li>• Publisher</li> </ul>

**Software Asset Management Content Service asset data types (continued)**

Software asset data	Definition	Details transferred
	<p>publisher part number and the corresponding version and edition of the software product.</p>	<ul style="list-style-type: none"> <li>• Product</li> <li>• Discovery map</li> <li>• Version condition</li> <li>• Version</li> <li>• Edition condition</li> <li>• Edition</li> <li>• Platform</li> <li>• Platform condition</li> <li>• Language</li> <li>• Language condition</li> <li>• Database Option</li> </ul>
<p>Processor Names</p>	<p>Processor identified on a configuration item (CI).</p> <p>Only processors mapped to the default processor factor are transferred.</p>	<ul style="list-style-type: none"> <li>• CPU type</li> <li>• Core count</li> <li>• Speed</li> </ul>
<p>File signatures</p>	<p>Signature that identifies software packages discovered on CIs. Software packages are discovered based on the attributes of the file, such as file name or file size. Only file signatures that are manually normalized are transferred.</p>	<ul style="list-style-type: none"> <li>• File name</li> <li>• File size</li> <li>• Publisher</li> <li>• Product</li> <li>• Version</li> <li>• Edition</li> <li>• Platform</li> <li>• Language</li> </ul>
<p>Software Spend Transactions</p> <p><b>i Note:</b> Displays only if Software Spend Detection is installed.</p> <p>Data sharing for Software Spend Transactions is inactive by default.</p>	<p>Software Spend Transaction records that were imported for Software Spend Detection.</p> <p>Only the vendor name, transaction description, general ledger account, and prediction results are transferred.</p>	<ul style="list-style-type: none"> <li>• Vendor name</li> <li>• Description</li> <li>• GL account</li> <li>• Is software</li> <li>• Publisher ID</li> <li>• Product ID</li> </ul>

**Software Asset Management Content Service asset data types (continued)**

Software asset data	Definition	Details transferred
Unrecognized Subscription Identifier	Subscription identifiers that software models aren't associated with in the ServiceNow content.	<ul style="list-style-type: none"> <li>• Subscription identifier</li> <li>• Software model</li> <li>• Number of subscriptions</li> </ul>
Common Platform Enumeration (CPE) normalization rule	Publisher, product, version, and edition, as well as their corresponding values of the software product in the Software Asset Management (SAM) content library.	<ul style="list-style-type: none"> <li>• Publisher</li> <li>• Product</li> <li>• Version</li> <li>• Full Version</li> <li>• Edition</li> <li>• Language</li> </ul>
Product License Exception Rules	<p>Product, edition condition, edition, and product type, as well as their corresponding values of the software product in the Software Asset Management (SAM) content library.</p> <p>The exception rules table provides an option to tag certain product editions as non-licensable.</p> <p><b>i Note:</b> If a product is labeled as non-licensable, and you want to tag an edition of that product as licensable, then you should submit a request with the Content Service team.</p>	<ul style="list-style-type: none"> <li>• Product</li> <li>• Edition condition</li> <li>• Edition</li> <li>• Product type</li> <li>• Active</li> </ul> <p><b>i Note:</b> This record enables you to add your own exception rules using the Custom Product License Exception Rules [samp_custom_lic_exception_rules] table. This table is available to you and has reverse push capabilities. This functionality enables you to create an exception rule for a case where the product is licensable but certain editions of the product are non-licensable.</p>
Custom Software Products	<p>Custom software products that were manually added to your ServiceNow instance.</p> <p>You can add a custom software product for any publicly-available software product that does not already</p>	<ul style="list-style-type: none"> <li>• Publisher</li> <li>• Product</li> <li>• Product type</li> <li>• Product classification</li> <li>• Subscription software</li> </ul>

**Software Asset Management Content Service asset data types (continued)**

Software asset data	Definition	Details transferred
	exist in the Software Asset Management content library. See <a href="#">Add custom software products in workspace</a> for detailed instructions.	<b>Warning:</b> In addition to transferring these details, the Software Asset Management application transfers the instance name and customer name.
Extracted Entitlements from Software Contracts using Machine Learning	Software entitlement details are extracted from software contracts using machine learning. This helps in improving our machine learning model to predict product, publisher, and edition values. Additionally, it also enhances our mapping capabilities by adding more entries to the mapping table.	<ul style="list-style-type: none"> <li>• Publisher part number</li> <li>• Product description</li> <li>• Publisher</li> <li>• Product</li> <li>• Version</li> <li>• Edition</li> <li>• Named user type</li> <li>• Database option</li> <li>• License type</li> <li>• License metric</li> <li>• Subscription period</li> <li>• Agreement type</li> </ul>

**Opting out**

You can opt out at any time from the Content Service Setup page.

When you opt out, your company no longer contributes to the improvement of the normalization process. You still receive content updates, but the updates may be less applicable because they aren't informed by your company's unique software installation footprint that exists within your environment and CMDB.

Your company can rejoin the Software Asset Management Content Service at any time.

**Related topics**

[Normalization and Content Service dashboard](#)

**Content updates for Software Asset Management**

The Software Asset Management Content Service provides content updates to your instance weekly that you can use to normalize your data.

The following types of content can be updated as part of a content update:

- Categories
- Discovery maps
- Normalization suggestions
- Product classifications

- Product license exception rules
- Product names
- Product types
- Publishers
- Suite definitions
- Software model life cycles
- Software model suggestions
- Custom software product suggestions
- Common Platform Enumeration (CPE) normalization rule

**Note:** Software models aren't updated when a publisher's name is updated as part of the content updates. The software model isn't updated because its display name is removed from the core company's reference. However, if a product moves to a different publisher, then the software model gets updated during content updates when the product goes from one core company to the other core company. The publisher name is updated for new software models but not for existing software models.

Product types can be updated on a product's edition level using the Custom Product License Exception Rules [samp\_cust\_prod\_lic\_excep\_rules] table. For cases where certain editions are non-licensable, the product type gets updated automatically if the exception rule is defined in the Product License Exception Rules [samp\_prod\_lic\_excep\_rules] table or the Custom Product License Exception Rules [samp\_cust\_prod\_lic\_excep\_rules] table. However, if a product is non-licensable, an exception rule can't be created for a licensable edition. For this case, you must raise a case with the Content Service team with supporting documentation and the team reviews whether the edition must be tagged as licensable.

The **SAM - Apply latest content changes** scheduled job runs and processes the content updates. After the content download is complete, the updated content is pulled from the staging columns to the corresponding target columns. Related downstream records are also updated.

A query runs and identifies what transactional data in your instance must be updated with the new content. After the changes are identified, the changes are then propagated to your instance.

Another scheduled job, **SAM - Create lifecycles and suites for a software model**, runs and propagates suite component and life cycle changes to your software models. If you don't want content changes applied to a software model, then you can clear the **Allow automated content updates** flag on the Software Model form. By default, the flag is selected to enable automated content updates to all software models.

**Note:** If a content update adds life-cycle data, it can't be deleted from the software model, but you can deactivate it. Any life-cycle data that is added as part of a content update has the source set to **Servicenow**.

Use the Software Models with deactivated discovery maps report to show software models that are pointing to any deactivated discovery maps.

To see the changes that have been made to the software library, review the SAM Content Audit [sam\_content\_audit] table.

**Note:** Content updates don't have an impact on any custom products or custom discovery maps.

For more information on how to send your content to ServiceNow and include it in the content updates, see [Enable sharing information with Software Asset Management content service](#). For more information on content updates, see [KB0824127](#).

## Software models and Software entitlements

A software model is a profile of the software that you've purchased, including information about the publisher, version, and discovery map. Software entitlements are used to relate the software model to the rights that you've purchased.

### Software models

Software models are used to record publisher information and create a profile. You can link multiple entitlements to one software model.

If you delete a software model, all records related to the software model, in the Downgrade Rights [samp\_sw\_downgrade\_model and samp\_downgrade\_model] tables, are automatically deleted. For detailed information on downgrade rights, see [Downgrade Rights](#).

For details on manually creating software models, see [Create software models in workspace](#). For details on automatic creation of software models, see [Automatic creation of software models](#).

## Software Product Lifecycle report

You can also track a software lifecycle phase for use with the [Technology Portfolio Management](#).

The Software Product Lifecycle [sam\_sw\_product\_lifecycle] table holds the information of the software product, its lifecycle type (internal or external), full version, lifecycle phases, start date of the phase, and the risk.

The Content active column in the Software Product lifecycle [sam\_sw\_product\_lifecycle] table is set to the value true by the Software Asset Management content service if the lifecycle records are valid. If you do not want a lifecycle phase to be rendered on the Technology Portfolio Management (TPM) timeline, then set the **Active** column to false. For example, you can have **General Availability**, **End of Extended Support**, and **End of Support** lifecycle phases as three records for Oracle DB Server software model in the Software Product Lifecycles list. However, if you do not want **General Availability** phase to be shown on the timeline, you can clear the **Active** check box in the Software Product Lifecycle form for that lifecycle phase record. As a result, the timeline starts with the **End of Support** phase. Although the lifecycle phase record exists for the software product lifecycle, the lifecycle data will not be rendered on the timeline. Because only active lifecycle records are considered and plotted in the TPM timeline.

View the Software Product Lifecycle report to be informed about the products nearing end-of-life, end-of-support, and end-of-extended support. View the report by navigating to **Reports > View/Run**. The report is based on the scheduled job, *SAM - Generate Data For Software Lifecycle Report*.

## Software Lifecycle Report

The Software Lifecycle Report [sam\_sw\_product\_lifecycle\_report] table calculates the current and upcoming lifecycle phases from the lifecycle phases mentioned in the Software Product Lifecycle [sam\_sw\_product\_lifecycle] table.

For records with the same publisher, product, version, full version, and edition, there's a single record for different lifecycle phases. This helps in avoiding duplicate software installation count for each lifecycle phase. You can export lifecycles from the Software Installation [cmdb-sam-sw-install] table. The software installation records are linked to lifecycles via the *Installs*

*associated to lifecycle* column in the Software Installation [cmdb-sam-sw-install] table.

Five new columns have been added to Software Lifecycle Report [sam\_sw\_product\_lifecycle\_report] table:

### New columns in the Software Lifecycle Report table

New column label and name	Description
Current phase [current_lifecycle_phase]	The lifecycle phase that is currently underway.
Current lifecycle phase start date [current_lifecycle_phase_start_date]	The start date of the current lifecycle phase.
Upcoming lifecycle phase [upcoming_lifecycle_phase]	The lifecycle phase that is soon coming up.
Upcoming lifecycle phase start date [upcoming_lifecycle_phase_start_date]	The start date of the upcoming lifecycle phase.
Owners [owners]	The person responsible for the software model.

**Note:** The lifecycle phase column is removed from the Software Lifecycle Report [sam\_sw\_product\_lifecycle\_report] table.

## Software entitlements

To track the software rights for your software, create a software entitlement that can be linked back to the publisher information.

A software entitlement records the terms of your software license. By using software entitlements, you can:

- Rapidly address if license allotment has been exceeded and return to compliant status by removing unauthorized software or ordering more licenses.
- If the license allotment is not being used completely, lower the number of future licenses purchased.

For example, a company purchases a software entitlement for 100 rights. From the software entitlement, 100 employee or machine allocations are created that are rightfully assigned a license. If Discovery finds the software installed on 200 machines, the software asset manager must identify the employees or machines that have the software installed without a license, and remediate the situation.

For details on creating software entitlements, see [Create entitlements in workspace](#).

## Import software entitlements

You can import bulk software entitlements at one go.

If a Publisher Part Number (PPN) is specified for the entitlements that you import, the PPN is matched to PPN in the Content Service Library and the data is used to create a software model automatically.

**Note:** If a Publisher Part Number not found error occurs during import of the software entitlement (product, publisher, version, edition, platform, and language) but a discovery map is found, then a **custom publisher part number** is automatically created. If a discovery map is not found, you can create a discovery map to be associated with the publisher part number.

If the import spreadsheet contains a conflicting (or missing) PPN, the PPN value is set to the value in the existing product definition, when available.

**Note:** If you import a batch of Microsoft entitlements and the **License Duration** field is set to **Contractual**, you must specify both a start and end date.

The step-up license type is only available if the publisher is Microsoft. If you try to specify another publisher, an error message is displayed.

### Automatic creation of software models

Software models are automatically created for software installations if one doesn't already exist.

All software installations need to be associated to software models. Being associated to a software model, helps in remediation and ensures that the software installations are included during cost estimation in order to be compliant.

If a software installation doesn't correspond to any software model, the system automatically creates a software model.

- To create a software model automatically for licensable products, enable the property *Automatically create software models for all 'licensable' products*.
- To create a software model for not licensable products, enable the property *Automatically create software models for all 'not licensable' products*.

**Note:** You can update the above mentioned properties by navigating to **Software Asset > Administration > Properties**.

When reconciliation runs, the system searches if any software model exists for the software installation. The search for an existing software model is based on attributes such as version, edition, language, platform, and install condition. If all conditions for the attributes in an existing software model match, then a software model is not created hence avoiding the creation of duplicate software models.

A software model is only created if no match is found. The software model is created across versions and for the specific edition, if available. However a software model is never created against a specific version.

Discovery maps are associated to software models only if a discovery map exists for that software model. If a corresponding discovery map doesn't exist in the Content Service library, a software model still gets created without a discovery map.

You can identify if a software model is automatically created by the *Automatically create software models for all 'licensable' products* or *Automatically create software models for all 'not licensable' products* property. In the Software Model list view, select the gear icon to display the *Created source* column. If the value in this property says **System** property, then it indicates that the software model was automatically created by one of the properties.

### Related topics

[Software Asset Management properties](#)

## Custom publisher part numbers (PPN)

Propagate changes to entitlements and software models by replacing your custom PPNs and custom discovery maps (DMAPs) with the Software Asset Management Content Service PPNs and DMAPs.

**Note:** Custom PPNs that use a part number that is not a valid SKU from the publisher can't be replaced.

Once the Content Service updates are downloaded to your instance, the scheduled job, *SAM - Find Product Definition Suggestions*, runs. The scheduled job checks all custom PPN and DMAP records to find corresponding PPN and DMAP matches on the Content Service. If a match for the custom PPN and DMAP is found, then a suggestion record is created in the Part number suggestions [samp\_sw\_part\_number\_suggestion] table. You can view the suggestions record by navigating to the **Part number suggestions** option.

**Note:** If you have excluded custom PPNs from the Content Service by selecting the **Exclude from content service** option in the Custom Part Number form, then suggestions aren't shown for those custom PPNs.

**Note:** For details on viewing the suggestion records, see [View publisher part number \(PPN\) suggestions in workspace](#) or [View publisher part number \(PPN\) suggestions in Software Asset Management classic](#).

You can accept or reject the suggestions. If you accept the suggestion, the custom PPN and DMAP are replaced with the Content Service PPN and DMAP. All changes to entitlements and software models are propagated automatically.

The propagation of the content service PPN results in the following changes:

- All impacted entitlements are updated with the new PPN.
- Downgrade rights associated with the content service DMAP gets copied to the entitlement.
- Downgrade rights that are copied overwrite any existing entries made by you.
- Values for license type and license metric get modified based on the PPN (where needed).
- Entitlement remains in the **In use** state.

The propagation of the Content Service DMAP results in the following changes:

- Associated software model is updated with the new DMAP.
- Fields get impacted on the software model:
  - Short description, Asset tracking strategy/unit, next version.
  - Suite components/parents get overwritten with the Content Service DMAP values.
  - Any custom components that were added are deleted, as stated in a warning.
  - Life cycles get overwritten (with a warning message).

## Software model relationship to software installation

Associating each software installation with a software model lets you perform audit reporting of licensable and non-licensable software.

### Overview

Software models are automatically created for licensable and non-licensable products if the following system properties are enabled:

- *com.snc.samp.automaticsmrcreation*: for licensable products
- *com.snc.samp.automaticsmrcreation*: for non-licensable products

If the system properties are enabled and a discovery model match exists, even if the match is generic, a software model will not be created. If the system properties are not enabled, the software model is just matched to a discovery model; no software models are created.

A match is made to the most specific software model. If no specific software model exists for the discovery model, then the match is made to the most generic software model.

During the matching process, if a matching software model is found, but it has an install condition on it then it's not considered to be a match. In such a scenario, a software model is automatically created without an install condition.

For each normalized publisher and normalized product pair in the Software Discovery Model (cmdb\_sam\_sw\_discovery\_model) table, the scheduled job, *SAM - Discovery Model to Software Model matching*, gets all software models with matching publisher and product. If the software model has no install condition, subscription condition, or DB option, the system gets matching discovery models with normalized publisher, normalized product, normalized edition, and normalized version values. Once a match is found, the software model reference is put on the software model column in the Software Discovery Model [cmdb\_sam\_sw\_discovery\_model] table.

### Manually set software model

If you choose to match on a more generic software model than what the scheduled job *SAM - Discovery Model to Software Model matching* sets, you can manually set the desired software model in the form view on the Software Discovery Model (cmdb\_sam\_sw\_discovery\_model) table. The Automatically matched column becomes unchecked.

If a software model is set and the Automatically matched column's value is false, the scheduled job will not override the software model value on subsequent executions.

### Sample matches

The following are some sample scenarios of software model and discovery model matches.

Discovery model	Software models	Matches with
SQL Server 2019 Enterprise	<ul style="list-style-type: none"> <li>• SQL Server 2019 Enterprise</li> <li>• SQL Server 2019</li> </ul>	SQL Server 2019 Enterprise software model
SQL Server 2019 Enterprise	<ul style="list-style-type: none"> <li>• SQL Server 2019 Enterprise with install conditions</li> <li>• SQL Server 2019 (Edition is anything)</li> </ul>	SQL Server 2019 software model
SQL Server 2019	SQL Server 2019 with install conditions (Edition is anything)	<p>No match found.</p> <p>If the system property is enabled, a new software</p>

Discovery model	Software models	Matches with
		model will be created: SQL Server Enterprise (Version is anything).

## Software license metrics

License metrics are set in software entitlements and used for reconciliation in various metric groups and software model combinations.

Each metric group has a set of license metrics that are specific to the publisher.

You can view the Metric Attributes related list in software models to set the attribute value. For more information, see [Software model fields](#).

You can also add custom license metrics. For more information, see [Add a custom license metric](#). You can use the Resource Value [samp\_sw\_resource\_value] table to enhance the custom license metric capability by doing a 1:1 calculation between the Unit consumption column in the Resource Value [samp\_sw\_resource\_value] table and the Licenses required column in the License Metric Results [samp\_license\_metric\_result] table.

Adobe, Citrix, IBM (includes both IBM and Red Hat), Microsoft, Oracle, SAP, and VMware publisher packs are available as add-ons. They provide the capability to manage software licensed under the publisher licensing models.

Installing [SaaS License Management](#) adds the Subscription and Consumption metric groups.

You can view descriptions of your license metrics by selecting the reference ( ⓘ ) icon next to the **License metric** field in your software entitlements.

### License metrics

Metric group	License metric
<p>Adobe</p> <p><b>Note:</b> Adobe license metrics are visible only if the Adobe publisher pack is installed.</p>	<ul style="list-style-type: none"> <li>Per Device: Licenses a device for the number of installations of software.</li> <li>Per User: Licenses a user for the number of installations of software.</li> <li>User Subscription: Licenses a user for the number of activated software subscriptions.</li> </ul> <p>When you run a reconciliation for software models with one or more entitlements, a right is consumed for each active unique software subscription record assigned to a user.</p>

License metrics (continued)

Metric group	License metric
	<ul style="list-style-type: none"> <li>○ A right is considered <b>Allocated in use</b> when a user has both a user allocation and a subscription record.</li> <li>○ A right is considered <b>Not Allocated in use</b> when a user doesn't have a user allocation but has a subscription record.</li> <li>○ A right is considered <b>Allocated not in use</b> when a user has a user allocation but doesn't have a subscription record.</li> </ul> <p>If multiple rights are assigned to a user in a user allocation, then the user has the corresponding number of subscriptions for the software model. For example, a user has a user allocation with two rights but only one subscription record related to a software model. In this example, one right is considered <b>Allocated in use</b> and the second right is considered <b>Allocated not in use</b>.</p>
<p>Citrix</p> <p><b>i Note:</b> Citrix license metrics are visible only if the Citrix publisher pack is installed.</p> <p>A discovery process is required for Citrix data to be collected. Admin users must create a <a href="#">Discovery schedule</a> to run on the Citrix Delivery Controller for communication with the Citrix License Server.</p> <p>See for information on the Citrix discovery pattern and tables.</p>	<ul style="list-style-type: none"> <li>• Concurrent User: Licenses the number of simultaneous users accessing the program.</li> <li>• Per Device: Licenses a device for the number of installations of software.</li> <li>• Per Processor (CPU count): Licenses processors on either a physical server or virtual machine.</li> <li>• Per User: Licenses a user for the number of installations of software.</li> </ul> <p>If you're reconciling Citrix server software through a client access record, this license metric licenses the users that are accessing the server.</p> <ul style="list-style-type: none"> <li>• Per User/Device: License a unique user or a shared device. If the license is assigned to a user, they have unlimited connections to an unlimited number of devices. If the license is assigned to a device, an unlimited number of users can connect to a single device.</li> </ul> <p>If you create an entitlement with the Citrix metric group and the Per User/Device license metric is specified, the license calculator checks the compliance of all related software models based on the number of distinct users and devices.</p>

License metrics (continued)

Metric group	License metric
	<p>If you're reconciling Citrix server software through a client access record, this license metric licenses the users and devices that are accessing the server.</p>
Common	<ul style="list-style-type: none"> <li>• Per Core: Licenses cores on a physical server or virtual machine.               <div style="border: 1px solid gray; padding: 2px; margin: 5px 0;"> <math display="block">\text{CPU core count} * \text{CPU count}</math> </div> </li> <li>• Per Device: Licenses a device for the number of installations of software.</li> <li>• Per Named Device: Licenses a specific device for the number of installations of software.               <p><b>Note:</b> You must add allocations.</p> </li> <li>• Per Named User: Licenses a specific user for the number of installations of software.               <p><b>Note:</b> You must add allocations.</p> </li> <li>• Per Processor (CPU count): Licenses processors on either a physical server or virtual machine.</li> <li>• Per User: Licenses a user for the number of installations of software.</li> <li>• User CAL: Licenses each user that accesses your server, regardless of the number of devices that each user is using to access the server.</li> <li>• Device CAL: Licenses each device that accesses your server, regardless of the number of users that are using each device to access the server.</li> <li>• User/Device CAL: Licenses each user or device that accesses your server.</li> <li>• Resource Consumption. Consumption-based license metric that supports CAL reconciliation. A 1:1 ratio calculation between the Unit consumption column in the Resource Value [samp_sw_resource_value] table and the Licenses required column in the License Metric Results [samp_license_metric_result] table.</li> </ul>

License metrics (continued)

Metric group	License metric
<p>Concurrent Licenses</p> <p><b>i Note:</b> Concurrent Licenses license metrics are visible only if the Software Asset Management Professional for Engineering Applications (sn_samp_eng_app) plugin is activated along with OpenLM and Open iT integration.</p>	<p>These licenses are based on the number of simultaneous users or devices accessing the software.</p> <ul style="list-style-type: none"> <li>• <b>Floating:</b> Shares and manages a pool of software among users or devices on a network. Checks out a license when a user or device requests access to the software. If there's no license left at the peak of license consumption, the user or device is denied access to the software. The number of rights consumed is based on the peak number of licenses checked out during a specified time.</li> <li>• <b>Token:</b> Shares and manages a pool of tokens among users or devices. Checks out a token or a set of tokens when a user or device requests access to the software. If there are no tokens left at the peak of license consumption, the user or device is denied access to the software. The number of rights consumed is based on the peak number of tokens checked out during a specified time.</li> <li>• <b>Network:</b> Shares and manages a pool of licenses among users or devices within a specified TCP or IP network. Checks out a license when a user or device requests access to the software. If there's no license left at the peak of license consumption, the user or device is denied access to the software. The number of rights consumed is based on the peak number of licenses checked out during a specified time.</li> </ul>
<p>Consumption</p> <p><b>i Note:</b> Consumption license metrics are visible only if the SaaS License Management is installed.</p>	<p>SaaS Consumption: Licenses an organization based on the unit of measure for the software units that can be consumed.</p>
<p>CrowdStrike</p>	<ul style="list-style-type: none"> <li>• <b>Reserved Hourly Average Sensor:</b> Counts the number of unique active endpoints per clock-hour and averages them over a rolling 28-day period. The count of Reserved Hourly Average Sensor Licenses resets at the start of each clock-hour.</li> <li>• <b>Sensor Subscription:</b> Calculates license usage by averaging endpoint counts over</li> </ul>

License metrics (continued)

Metric group	License metric
	<p>four consecutive weeks. Weekly endpoint counts are based on the total number of endpoints consumed in the previous seven days.</p> <p><b>Note:</b> These license metrics are available with Xanadu Patch 6 and Software Asset Management - SaaS License Management (sn_sam_saas_int) 14.0.7 version onwards. If you are on any version for Xanadu below Patch 6, refer <a href="#">KB1801232</a>.</p> <p>aa</p>
<p>IBM</p> <p><b>Note:</b> IBM license metrics are visible only if the IBM publisher pack is installed.</p>	<ul style="list-style-type: none"> <li>• Authorized User: Licenses each user who is granted access to an IBM software product.</li> <li>• Authorized User Value Unit: Licenses the number of select users who are granted access to an IBM software product.</li> <li>• Employee User Value Unit: Licenses the total number of users within your organization who are granted access to an IBM software product.</li> <li>• External User Value Unit: Licenses the total number of users outside your organization who are granted access to an IBM software product.</li> <li>• Per Device: Licenses a device for the number of installations of software.</li> <li>• Per Named User: Licenses a specific user for the number of installations of software.</li> <li>• Per Processor (CPU count): Licenses processors on either a physical server or virtual machine.</li> <li>• Per User: Licenses a user for the number of installations of software.</li> <li>• Processor Value Unit (PVU): Licensing is based on the processor technology and the number of processors that are made available to the program. Full capacity PVU entitlements require licenses for all activated processor cores in the physical hardware environment. Subcapacity PVU entitlements require licenses for less than the full capacity of your server or group of servers.</li> <li>• Resource Value Unit (RVU): Licensing is based on the number of activated processor</li> </ul>

License metrics (continued)

Metric group	License metric
	<p>cores used or managed by a product. Full capacity RVU entitlements require licenses for all activated processor cores in the physical hardware environment. Subcapacity RVU entitlements require licenses for less than the full capacity of your server or group of servers.</p> <ul style="list-style-type: none"> <li>• Virtual Processor Core (VPC): Licenses the number of virtual CPUs (vCPUs) that are available to or managed by a product.</li> </ul> <p><b>Note:</b> This license metric is available only if you request and install the IBM License Compliance for Software Asset Management application from the ServiceNow Store.</p>
<p>Microsoft</p> <p><b>Note:</b> Microsoft license metrics are visible only if the Microsoft publisher pack is installed.</p>	<ul style="list-style-type: none"> <li>• Device CAL: Licenses the number of device client access licenses to server software.</li> <li>• Per Core: Licenses the cores on both the physical server and the virtual cores that support virtual machines and presents a cost-efficient model based on the number of rights used. For information on Per Core for Microsoft SQL Server Enterprise edition with Software Assurance, see <a href="#">Create entitlements for Microsoft Software Assurance in Software Asset Management classic</a>.</li> </ul> <p><b>Note:</b> Per Core (Physical Core) and Per Core (Virtual OSE) metrics is deprecated from the New York release. Any existing entitlements using Per Core (Physical Core) and Per Core (Virtual OSE) metrics are replaced with Per Core. You may see a change in your reconciliation results.</p> <ul style="list-style-type: none"> <li>• Per Core (with CAL): Licenses physical servers. The number of licenses depends on the number of installs and Operating System Environments (OSEs).</li> </ul> <p>Per Core (with CAL) licenses at the cluster level only when the physical server is an ESX Server and is a part of a cluster. This license metric uses all processors on every ESX Server within a cluster to determine the total number of cores or processors that must be licensed on the cluster.</p>

License metrics (continued)

Metric group	License metric
	<p><b>Note:</b> If vMotion or DRS is enabled on a cluster, any virtual machine can move to any ESX Server within that cluster. The peak capacity of the cores on all the ESX Servers is considered for the rights needed to license the cluster.</p> <ul style="list-style-type: none"> <li>• Per Device: Licenses a device for the number of installations of software.</li> <li>• Per Processor: Licenses a set number of processors on a physical server.</li> <li>• Per User: Licenses a user for the number of installations of software.</li> <li>• Server (Per Instance): Licenses a set number of software installations on either a physical server or virtual machine.</li> <li>• Server (Per Server): Licenses all software installations on a physical server and any virtual machines hosted by the physical server.</li> <li>• User CAL: Licenses the number of user client access licenses to server software.</li> <li>• User Subscription: Licenses a user for the number of activated software subscriptions.</li> </ul> <p>When reconciliation is run for a software model that has one or more entitlements with the User Subscription license metric, one right is consumed for each active unique software subscription record assigned to a user.</p>
<p>Oracle</p> <p><b>Note:</b> Oracle license metrics are visible only if the Oracle publisher pack is installed.</p>	<ul style="list-style-type: none"> <li>• Named User Plus: Licenses the physical host.</li> </ul> <p>If you are reconciling Oracle server software, such as Oracle Database Server or Oracle WebLogic Server, through a client access record, this license metric licenses the users that are accessing the server.</p> <ul style="list-style-type: none"> <li>• Per Processor: Licenses the number of cores on a processor.</li> </ul>

License metrics (continued)

Metric group	License metric
	<p><b>Note:</b> For the Oracle <b>Per Processor</b> license metric, enable Hyper-Threading if you're using a virtual machine (VM) running Amazon Web Services (AWS).</p> <ul style="list-style-type: none"> <li>Employee: Licenses the total number of full-time, part-time, and temporary employees, including those employed directly and indirectly through agents, contractors, and consultants according to Oracle's definition of internal business operations.</li> </ul> <p><b>Note:</b> The number of licenses required is determined by the total number of employees and not the number of employees using Oracle Java SE Universal.</p> <p><b>Note:</b> You can select the level of aggregation for the reconciliation calculation of VMware -based Oracle instances using the <code>com.snc.samp.oracle.reconlevel</code> property. See <a href="#">Software Asset Management properties</a>.</p>
<p>Red Hat</p> <p><b>Note:</b> Red Hat license metrics are visible only if the IBM publisher pack is installed.</p>	<ul style="list-style-type: none"> <li>Per Socket-pair: Licenses the number of socket pairs on the physical host or the number of virtual machine (VM) pairs running a Red Hat Enterprise Linux server on a physical host.</li> <li>Per Core: Licenses the cores on both the virtual cores that support virtual machines and the physical server. It also presents a cost-efficient model based on the number of rights used.</li> </ul>
<p>SAP</p> <p><b>Note:</b> SAP license metrics are visible only if the SAP publisher pack is installed.</p>	<ul style="list-style-type: none"> <li>Named User: Licenses the number of named users that can be assigned a Named User Type. The Named User Type is defined by the software model linked to the entitlement.</li> <li>Engine Measurement: Licenses the amount of engine usage.</li> <li>Digital Access: Licenses the indirect usage of SAP applications through a third-party</li> </ul>

License metrics (continued)

Metric group	License metric
	<p>application or a non-SAP intermediary software by the count of documents created by the third-party application.</p>
<p>Subscription</p> <p><b>i Note:</b> Subscription license metrics are visible only if the SaaS License Management is installed.</p>	<p>User Subscription: Licenses for the number of users.</p>
<p>VMware</p> <p><b>i Note:</b> This license metric isn't visible unless the VMware publisher pack is installed.</p>	<ul style="list-style-type: none"> <li>• Per Application Instance: Licenses per application instance.  Applies to VMware products: vCenter Server software.</li> <li>• Per Device: Licenses per specific device. A license can only be reused if it's removed from the device. The number of software users on the device isn't relevant as long as the license is used on the licensed device.  Applies to the VMware suite of products: Horizon FLEX, ThinApp, ThinApp Virtualization Packager, and Mirage Windows Migration.</li> <li>• Per Named User: Licenses per named user.  Applies to VMware named users: Horizon Advanced, Horizon Enterprise, Horizon Suite, Mirage, Horizon Socialcast on Premise, Workspace (Portal), Workspace Suite, Horizon Air, Horizon Air Desktop DR, ThinApp, ThinApp Virtualization Packager, vRealize Operations for Horizon, User Environment Manager, vRealize Business.</li> <li>• Per OSI: Licenses any server, virtual or physical, with an IP address that generates logs, including network devices and storage arrays.  Applies to the VMware suite of products: vRealize Operations, vRealize Log Insight, vRealize Automation, vRealize Business for Cloud, and vRealize Code Stream.</li> <li>• Per Processor: Licenses a physical processor (CPU) in a server. A CPU requires one license per 32 cores. A <b>Maximum cores per processor</b> metric attribute with a default value of 32 is automatically created on</li> </ul>

### License metrics (continued)

Metric group	License metric
	<p>software models for VMware per processor entitlements. This metric attribute is used during reconciliation to determine license compliance.</p> <p>Applies to VMware suite products: vSphere, vSphere with Operations Management.</p>

### Unlimited software licenses

Unlimited software licenses help you to create entitlements with unlimited allocations and unlimited rights, allowing you to license any number of software installations with no true-up cost.

A `sam_admin` or `sam_user` role can specify an entitlement as an unlimited license which allows for unlimited allocations (user or device allocations) and does not classify the license metric results as non-compliant.

While creating or importing an entitlement, you can select the **Unlimited license** check box on the Software Entitlement page or on the Import Entitlement page.

### Considerations for unlimited licenses

- Reconciliation process takes unlimited licenses into account where the software installations match and are licensed. Unlimited license is given priority over fixed amount license
- License metric results are generated separately for unlimited licenses.
- An unlimited license perpetual entitlement can be associated to only one unlimited license maintenance entitlement.
- Unit cost is equal to the total cost.
- Downgrade rights are supported for unlimited licenses.
- **Purchased rights**, **Active rights**, and **Allocations available** fields are not displayed for an unlimited license on the Software Entitlement page.

### Supported license metrics and license types

The following license metrics are supported across all metric groups for unlimited licenses:

- Per User
- Per Device
- Per Named User
- Per Named Device
- User Subscription
- Named User Plus
- Per Processor

The following license types are supported for unlimited licenses:

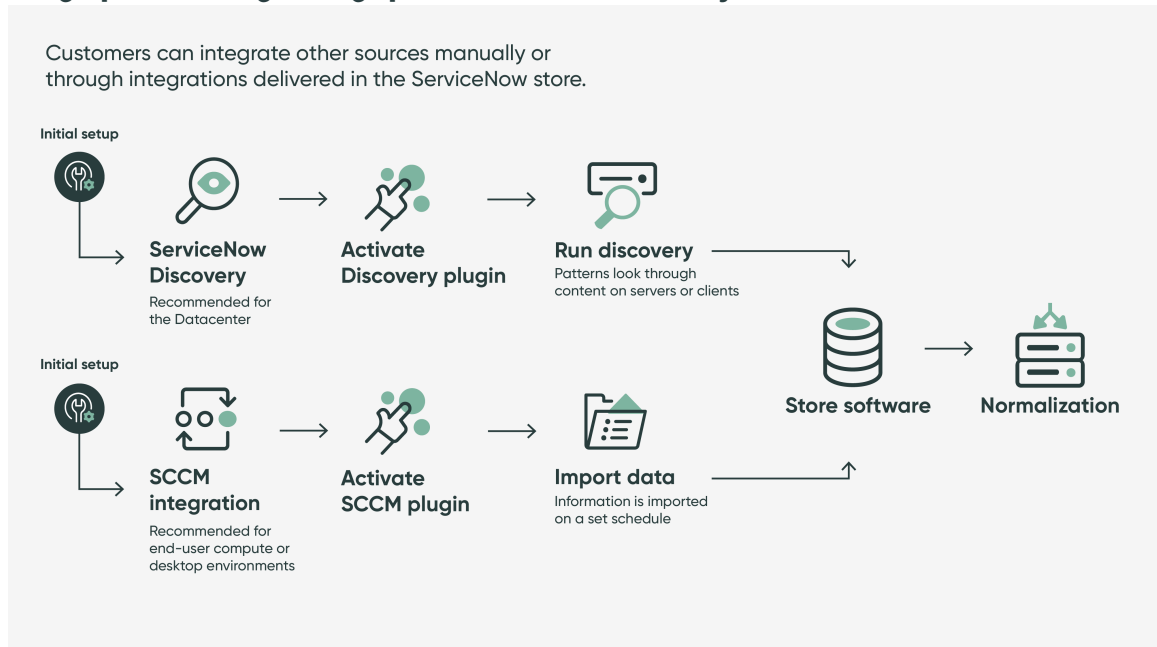
- Perpetual
- Maintenance/Software Assurance

- Perpetual + Maintenance/Perpetual + Software Assurance
- Subscription

## Software discovery and normalization

After you've imported your entitlements, use ServiceNow Discovery or Microsoft SCCM to discover software installations in your environment and transfer that data into the ServiceNow AI Platform.

### Infographic showing setting up of ServiceNow Discovery or Microsoft SCCM



While you may use Discovery Home for datacenters and Microsoft SCCM for desktop environments, you can integrate other third-party discovery solutions with CMDB to support Software Asset Management. To integrate a different discovery solution, add it manually, or you can download an application, from the [ServiceNow Store](#). For more information about integrating a discovery source manually, see the [Customer Success Center](#).

To learn more about collecting data after you've integrated with both Discovery and SCCM, see [Collect software data with either SCCM or Discovery](#).

## Discovery integration

ServiceNow Discovery is used to automatically populate the Software Installations table so the software can be normalized and reconciled.

**Note:** To use Discovery, the [Discovery plugin](#) must be activated.

Discovery uses patterns in the discovery process that can be created or customized. The base system contains a wide range of patterns that cover most industry standard network devices and applications. The following are some of the base system patterns used by Software Asset Management.

- Citrix XenApp
- Citrix XenDesktop,
- VMware vCenter
- Microsoft SQL Server

- Microsoft Exchange Server
- Oracle Database Server

You can also customize other patterns for Software Asset Management. For more information, see [Create or modify patterns](#).

Discovered software is stored in the Software Installations [cmdb\_sam\_sw\_install] table.

When software install records are written to the Software Installations table, a business rule verifies whether the unique combination of the discovered publisher, discovered product, and discovered version exist in the Discovery Model table.

- If so, the reference to the discovery model is set in the Software Installations table.
- If not, a new record is created in the Discovery Model table, and that discovery model reference is set in the Software Installations table.

After discovery, normalization is run.

For more information on Discovery, see [Discovery with Software Asset Management](#).

## SCCM integration

You can use SCCM by itself or with Discovery Home to identify software on your devices.

**Note:** While you may use Microsoft SCCM for discovering software installations in your desktop environments, you can integrate other third-party tools.

Both Microsoft SCCM 2012 v2 and 2016 plugins are certified with Software Asset Management. The corresponding Microsoft SCCM Integration plugin must be installed to integrate Microsoft SCCM with Software Asset Management.

Microsoft SCCM Integration plugins:

- Integration – Microsoft SCCM 2012 v2 (com.snc.integration.sccm2012v2) plugin
- Integration – Microsoft SCCM 2016 (com.snc.integration.sccm2016) plugin

Microsoft SCCM Software Usage plugins:

- Integration – Microsoft SCCM 2012 v2 Software Usage (com.snc.samp\_usage\_sccm) plugin
- Integration – Microsoft SCCM 2016 Software Usage (com.snc.samp.usage\_sccm\_2016) plugin

The Integration – Microsoft SCCM 2016 plugin is compatible with SCCM versions 1606, 1906, 1910, and 2002.

**Important:** These Microsoft SCCM plugins will be deprecated in the Tokyo release. If you are integrating with SCCM for the first time, request and install the Service Graph connector for Microsoft SCCM application from the [ServiceNow Store](#) instead. If you have already activated one of the Microsoft SCCM plugins on your ServiceNow instance, use the Migration Readiness Tool for Service Graph Connector for SCCM store application to prepare your instance for migration from the Microsoft SCCM plugin to the Service Graph connector. See [Service Graph connector for Microsoft SCCM](#) for more information on the Service Graph connector.

For more information on SCCM and how to import your data into your instance, see [Microsoft SCCM software usage](#).

## Normalization

The normalization process compares the discovered publisher, discovered product, and discovered version and edition values against the ServiceNow repository of normalized equivalents. Matches are added to the corresponding normalized fields (publisher, product, version, and edition) of the Discovery Model table. The normalized fields are then used to reconcile entitlements purchased and to compute license positions.

For example, the discovered publisher Microsoft Corp could be normalized to Microsoft for the normalized publisher field.

The normalization process also looks for pattern matches between discovered fields and normalized values, and updates the normalized fields accordingly.

If certain software discovery models share similar discovered field values, the Software Asset Management application normalizes them using wide-net normalization principles, which reduces the need for the Content Service team to create separate normalization rules for each product.

**Note:** Only certain software products are eligible for wide-net normalization. These software products are determined by the Content Service team.

A scheduled job runs to pull in normalized content and pattern updates daily, but you can change the frequency that the schedule job is run. When there are changes to a normalization rule, applicable normalized and partially normalized Discovery models are renormalized with the updated values.

Evaluate suggestions to normalize discovery models that were manually normalized using the [Normalization Suggestions](#) feature. Suggestions are automatically identified if there is a difference between the updated normalization content and your content. Because the content from the updates contains the most up-to-date information, using the content provided helps to keep your software installs accurate.

You can opt in to the [Software Asset Management Content Service](#) that enables you to provide missed and not fully normalized software discovery models to ServiceNow for research. New content and rules created are provided back to customers to continually improve software normalization.

## Benefits of normalization

- Normalization creates a definitive list of the discovered software in your organization. Organizations need a thorough inventory of its installed software whether for software audit readiness or IT operations. Without normalization, your organization will be challenged with multiple names for the same publisher, which requires a substantial effort to rationalize and dilutes the accuracy and value of the reports you run.
- Normalization improves the accuracy and efficiency of reconciliation for your software entitlements. By using the normalized values in the discovery models to map against the software entitlements it has acquired, resulting in more accurate reconciliation results. This makes it easier to plan for and complete software audits knowing that the counts are accurate and that they match the entitlement records.
- The normalization process allows standardizing installation data from multiple discovery tools.

## Normalization suggestions for discovery models

Normalization suggestions are created for discovery models with field values that differ from those in the package or pattern rules. You can accept or reject these suggestions.

During the weekly normalization process, if there are differences (or updates) identified between the manually normalized value for Publisher, Product, Version, Edition, Platform, and Language, and the corresponding values in the package or pattern, a Normalization Suggestion record is created.

**Note:** Normalized suggestions are generated only when the normalized values differ from what the content library displays. If its an exact match, a suggestion is not made.

You can evaluate suggestions to normalize discovery models that were manually normalized incorrectly. Suggestions can either be accepted, which updates the Discovery Model with the correct values, or rejected, which does not change the manually normalized values.

The records are contained in the Normalization Suggestion [samp\_normalization\_suggestion] table.

If you **Accept** the suggestion:

- Publisher, Product, Version, Edition, Platform, and Language of the discovery model is updated with the values from the normalization rule.
- Normalization status changes from Manually Normalized to Normalized.
- Normalization Suggestion status changes to Accepted
- Normalization date on the discovery model is updated to when the suggestion was accepted.

If you **Reject** the suggestion:

- Discovery Model retains the manually normalized values and remains in Manually Normalized status.
- Normalization Suggestion status changes to Rejected.

### Normalization Suggestions form

Field	Description
Discovery model	Software discovery model that represents the installed software.
Suggestion status	Suggested <b>status</b> of the normalization process.
Discovered publisher	Discovered publisher of the software.
Discovered product	Discovered name of the software.
Discovered version	Discovered version of the software.
Suggested Normalization	
Suggested publisher	Suggested publisher of the software.
Suggested product	Suggested name of the software.
Suggested version	Suggested version of the software.
Suggested edition	Suggested edition of the software.
Suggested platform	Suggested platform of the software.
Suggested language	Suggested language of the software.
Publisher	Normalized publisher of the software.
Product	Normalized product name of the software.

### Normalization Suggestions form (continued)

Field	Description
Version	Normalized version of the software product.
Edition	Normalized edition of the software product.
Platform	Normalized platform of the software product.
Language	Normalized language of the software product.

#### Add a software pattern normalization rule

You can add a pattern normalization rule to normalize specific software products in your environment based on a common pattern.

#### Before you begin

Role required: sam\_admin

#### About this task

**Note:** When creating a pattern normalization rule for custom products and publishers, create the custom product and company records first.

#### Procedure

1. Navigate to **All > Software Asset > Administration > Pattern Normalization Rules** and create a new record (see table for field descriptions).

#### Pattern Normalization Rule form

Field	Description
Name	Specify a unique name for pattern normalization rule.
Discovered publisher contains	Specify text to search for in the software publisher field.
Discovered product contains	Specify text to search for in the product field.
Active	Option that activates the rule.
Discovered publisher is empty	Option that includes products that have an empty publisher field (the rule applies to discovery models where the publisher is unknown).
Normalized Attributes	
Publisher	Specify the normalized name of the publisher of the software.
Product	Specify the normalized name of the product.
Edition	Specify the product edition.
Product type	Choose the product type.

Field	Description
	<ul style="list-style-type: none"> <li>○ Child: A subcomponent of main software (not licensable).</li> <li>○ Driver: Software product that controls a device.</li> <li>○ Licensable: Software product that is licensable.</li> <li>○ Not Licensable: Software product that is not licensable.</li> <li>○ Patch: Software product designed to update, fix, or improve an existing computer program.</li> </ul>
Version	Specify the version of the product.
Platform	Choose the platform. <ul style="list-style-type: none"> <li>○ Windows</li> <li>○ macOS</li> <li>○ UNIX</li> </ul>
Language	Choose the language. <ul style="list-style-type: none"> <li>○ Dutch</li> <li>○ English</li> <li>○ French</li> <li>○ German</li> <li>○ Italian</li> <li>○ Spanish</li> </ul>

2. Once the rule is created, to apply the rule so applicable discovery models are normalized without delay, click the **Apply Rule** related link.

### Create a custom file rule to manually define file sets

Create custom rules to manually define file sets and normalize data not recognized by the SAM API. After you have created custom rules, custom file sets can be discovered with File Signature Normalization and software records can be generated.

#### Before you begin

Role required: sam\_admin

#### About this task

File Signature Normalization identifies software installation packages based on file attributes in a configuration item. The input is then sent to the SAM API. If there are files properties discovered that are not associated with the File Signature Normalization rule, you can manually normalize the data and send the input to the API to create a software installation record.

**Note:** File signature rules discovered in the content service library take precedence over custom file signature rules.

## Procedure

1. Navigate to **All > Software Asset > Administration > Custom File Normalization Rules** and create a new record (see table for field descriptions).

### Unidentified File Set form

Field	Description
Publisher	<p>Publisher of the software. You can use the lookup list provided.</p> <p><b>Note:</b> Publisher is a reference to the company [core_company] table. Only companies you are using internally are shown.</p>
Product	<p>Software product name. The same lookup list provided on the Software Discovery Models form. You can create a custom product from the lookup list, if desired.</p> <p><b>Note:</b> If the relationship between the software publisher [samp_sw_publisher] table and the company [core_company] table is not correct, products for that publisher may not be shown.</p>
Version	<p>Version of the software product.</p> <p>Required if version condition value is <b>[starts with]</b> or <b>[is-]</b>.</p>
Edition	<p>Edition of the software product to use when searching for the normalized discovery model.</p> <p>Required if edition condition value is <b>[starts with]</b> or <b>[is]</b>.</p>
Platform	<p>Platform of the software product to use when searching for the normalized discovery model.</p> <p>The default is <b>Anything</b> for Windows, macOS, UNIX.</p>
Language	<p>Language of the software product to use when searching for the normalized discovery model, which is populated once it has been normalized or added manually.</p> <p>The default is <b>Anything</b>.</p>
Exclude from content service	<p>Option to exclude file set rule from being included in content service library.</p>
File name	<p>Name of file associated with software installation as it exists in the system.</p>
File size	<p>Size of file name file in bytes.</p>
File version	<p>Version of file name file.</p>

2. Click **Submit**.

## Result

The custom rule is added to the Unidentified File Sets list.

## Normalization of discovery models using machine learning

Use machine learning to improve your normalization rates in real time by normalizing your unrecognized discovered software.

The Software Asset Management application uses machine learning to improve normalization of discovery models. The prediction values currently supported by machine learning are version, full version, and edition.

Opt in for machine learning normalization by activating the Software Asset Management – Machine Learning Normalization (com.sn\_sam\_ml\_normalization) plugin.

Once the plugin is activated, ensure that the *Enable ML Normalization for discovered software* (com.snc.samp.enable.ml\_normalization) property is selected. For more details on this property, see [Software Asset Management properties](#). You can opt out of machine learning normalization by disabling this property. If you opt out, normalization of discovery models only takes place against the content service rules.

The scheduled job, *SAM-Normalize discovery models using content library rules*, triggers on a daily basis and normalizes the discovery models based on the content rules. This scheduled job runs irrespective of whether the Software Asset Management – Machine Learning Normalization plugin is activated or not. If this plugin is activated, then the partially normalized discovery models are picked up by another scheduled job, *SAM-Normalize discovery models using machine learning*. The scheduled job, *SAM-Normalize discovery models using content library rules* is enhanced to invoke the on-demand scheduled job, *SAM-Normalize discovery models using machine learning* and also validates machine learning predictions.

Once the scheduled job, *SAM-Normalize discovery models using machine learning* is complete, you can view the updated values in the following machine learning based columns in the Software Discovery Model [cmdb\_sam\_sw\_discovery\_model] table:

- ML prediction values: Indicates the predicted values for the attributes.
- ML model version: Indicates the model version that was used for predicting the attributes.
- ML normalization status: Indicates the status of machine learning normalization. Values for this column include:
  - ML normalized: Discovery model is normalized by machine learning
  - Reverted: Discovery model is normalized by machine learning but the user reverted the normalized values
  - Content overridden: Machine learning predictions over-written by new content rules

**Note:** The status of the scheduled job, *SAM-Normalize discovery models using machine learning* is tracked in the Software Asset Job Result [samp\_job\_log] table.

As the content rules are always getting updated, the weekly scheduled job *SAM-Normalize discovery models using content library rules* picks up the discovery models normalized by machine learning and tries to normalize these models with the latest content rules. If the predicted values of machine learning differ from the predictive values of the content service, the machine learning predictions are overwritten with the content service values. The content service prediction values always get precedence over the machine learning prediction values.

**Note:** For details on the normalization rules for the predictive values, refer to tables titled **Normalization rules for licensed products** and **Normalization rules for non licensed products**.

You can manually normalize a discovery model by reverting the normalization values. When you revert normalizations in the Software Discovery Model form, all the normalized values, got from content and machine learning, are removed. The discovery model reverts to a status of Match not Found.

**Note:** When you revert a discovery model normalized by machine learning, the content rules are not deactivated. However, if a discovery model is normalized only by content rules, then the content rules are deactivated.

### Normalization rules for licensed products

Fields	Normalization status
All fields are normalized  <b>Note:</b> All the fields include publisher, product, version, edition, and full version.	Normalized
Only the publisher is normalized	Publisher normalized
If none of the fields are normalized: publisher, product, version, edition, full version	Match not found
Only product and publisher are normalized.	Partially normalized

### Normalization rules for non licensed products

Fields	Normalization status
If only publisher and product are normalized	Normalized
Only the publisher is normalized	Publisher normalized
If none of the fields are normalized: publisher, product, version, edition, full version	Match not found

### Duplicate software installations in the Software Asset Management application

Duplicate software installation are created when you discover software installations with the same publisher, product, version, and edition through multiple discovery sources.

A software installation record is created for each software record in the Software Installation [cmdb\_sam\_sw\_install] table.

By default, the Software Asset Management application prioritizes IBM software installations that are discovered through ServiceNow discovery. Duplicate entries are initially marked as false in the Active column in the Software Installation [cmdb\_sam\_sw\_install] table. When the *SAM - Deduplicate Install Table* scheduled job runs, records for all IBM software installations that are discovered through ServiceNow discovery are marked as active, while records for the same software installations that are discovered through an authorized Software Asset Management discovery provider are marked as inactive.

The *SAM - Deduplicate Install Table* scheduled job ensures that only one software installation record is marked as active and included in reconciliation.

### Software Asset Management software suites

Software Suites is a way for a software publisher to group related applications as a set.

## Overview of software suites

Create a suite and add components to the suite so that your organizations' rights are correctly counted during reconciliation.

An example for client software suites is the Microsoft Office suite, which comprises Word, Excel, PowerPoint, Outlook, and Access. Microsoft Office is considered the suite parent and the suite components are the suite children.

A more complex example is the "suite of suites" which is common in server software. Microsoft Core Infrastructure Server (CIS) Suite has two suite components: Windows Server and System Center (which is also a suite).

Suite components are licensed together using a suite license rather than each software component needing an individual license. Therefore, an entitlement for the suite parent licenses all suite components including suite children that are also suites themselves.

For software subscriptions, only one user subscription suite license is required for each user. For example, the Microsoft 365 suite includes the following components: Office 365, EMS (Enterprise Mobility plus Security), and Windows 10. One Microsoft 365 license entitles a user to use one or more of the components.

Software Suites [cmdb\_m2m\_suite\_model] table captures the relationship between a suite parent and a suite child.

For any software model, you can specify whether the model is a suite (parent) or a component (child). A software model can be a component in multiple suites. For example, Microsoft Word is a component in two suites: Microsoft Office Standard and Microsoft Office Professional. Although you can set a single software model as both a suite and a component, software isn't typically sold as nested suites.

Suite information such as **Suite Components** and **Suite Parents** are found as tabs in the Software Model form. Whenever a software model is automatically created as part of a scheduled job, its child components are automatically created and appear in the [Suite Components](#) tab in the software model form.

## Predefined suites

The Software Asset Management content library contains predefined suites to simplify your user experience. If suite content exists for a product, the suite information automatically populates the **Suite Components** tab in the Software Model form. Updates to the suite content are downloaded and existing suite definitions are updated via scheduled jobs.

## Allocations

Allocations are used to apply a license to a device or user. In the context of suites, allocations enable the software asset manager to apply an individual component license to a user/device instead of the suite license.

## Use case for allocations

An organization has both Microsoft 365 E5 (suite) entitlements as well as Windows 10 entitlements. User A has Windows 10, Word, Excel, and other components of Office 365 installed on their device. User A is allocated the Windows 10 entitlement. User A's Windows 10 installation is licensed with the Windows 10 entitlement rather than the Microsoft 365 suite entitlement while the remaining components is licensed as part of the Microsoft 365 suite.

## Discovery maps

Discovery Maps (DMAPs) are variations of the software as predefined in the SAMP content library. Although a software model can be defined manually by setting the Publisher, Product, Version, Edition, the best approach is using DMAPs whenever possible. The DMAPs associate the relevant content with the Software Model automatically like the suite relationships, downgrade models, lifecycle, and next version.

## Hybrid and subscription software suites

Software Asset Management supports hybrid and subscription-based software suites. In a hybrid software suite, either the suite parent or child component is subscription-based. In a subscription-based software suite, both the suite parent and child component are subscription-based. The license that you use to determine compliance depends on whether the suite parent and child component are subscription-based:

- If only the suite parent is subscription-based, then all the child component installations are inferred as part of the suite parent. You can determine your license compliance using the suite parent license.
- If only the child component of a suite parent is subscription-based, then the instances of that child component aren't inferred as part of the suite parent. You can determine your license compliance using the child component license.
- If both the suite parent and child components are subscription-based, then the instances of the child components are inferred as part of the suite parent. You can determine your license compliance using the suite parent license. For example, Microsoft 365 E5 is a subscription-based software suite that includes the Office 365 E5, EMS E5, and Windows 10 subscription software. Since both the suite parent and child components are subscription-based, they're reconciled against the Microsoft 365 E5 parent license.

## Software suites inference

Suite inference is used to determine whether the software is part of a suite and to infer the best or efficient suite to use when licensing.

[https://player.vimeo.com/video/1076402507?h=831df261cd&badge=0&autoplay=0&player\\_id=0&app\\_id=58479](https://player.vimeo.com/video/1076402507?h=831df261cd&badge=0&autoplay=0&player_id=0&app_id=58479)

## Suite inference flow

The process of suite inference is divided into two stages:

- Building the suite structure.
- Inferring the best suite for the software installation or subscription records.

After the suite structure is built based on the entitlements, software models, and suite relationships, the installs and subscription records are processed.

After the suite engine runs, the Inferred suite column of all install and subscription records that are part of a suite is stamped with a reference to the software model of the most optimal suite parent. For more information about the rules ranking, see the **Suite inference rules**. Entitlements for this software model license are each stamped record.

The suite engine prioritizes subscription suite models and inferences on software subscription records. Next, on-premises suite models and software installation records are inferred.

When a suite parent licensing is used, the individual child components licensing isn't used.

- Note:** Users with the `model_manager` role can navigate to **Product Catalog > Product Model > Software Models**, but can't administer all aspects of software models.

The system property **Use component licenses to optimize compliance when suite licenses run out** is set by default to **false** for Microsoft license metrics, which enables you to use both suite component and suite parent licenses. This property only applies to Microsoft license metrics.

## Inference options

Use the **Mandatory** and the **Inference option** fields when the suite parent isn't defined in the install table.

The **Mandatory** field enforces whether a component must be installed to infer that the suite is installed. Choices are **Optional**, **Always Mandatory**, and **Mandatory Group**.

The **Inference option** field contains the following options:

- **Number:** Specifies the number of components installed for the suite. The number can be any non-negative number.

- **Note:** For any new software models being created with suite components, the **Number** option is selected by default.

- **Percent:** Specifies what percentage of the components must be installed for the suite.

- **Note:** For existing software models with suite components that were using the inference percent, the **Percent** option is selected by default. However, you can choose to use the **Number** option.

If the system property *Use component licenses to optimize compliance when suite licenses run out* is set to true, the inference number and inference percent specifies a threshold to determine whether the suite or component licensing is optimal.

To illustrate the usage of the inference number, consider the scenario where Microsoft Office has an inference number of 2. If you have two Microsoft Office components such as Microsoft Word and Microsoft Excel, the inference number suggests using the Microsoft Office license instead of individual components.

To illustrate the usage of the inference percent, consider a scenario where Core Infrastructure Suites(CIS) has two components such as Windows Server and System Center with an inference percent of 50%. This inference percent suggests using the CIS license when more than 50% of the individual components are installed. When less than 50% of the individual components are installed, using the component licenses is optimal.

## Suite inference rules

The rules of suite inference ranking are as follows:

1. If one of the software installations belongs to the suite software model, the suite is inferred directly without the need to meet the Inference percentage.
2. If the first rule isn't met, then any suite that meets the Inference percentage on that device can be considered an Inferred suite candidate.
3. The candidate with the highest number of installed components is chosen.

4. If there's still a tie, the suite with the lower downgrade is chosen. For example, Office 2016 and Office 2013 are both candidates and have the same number of installed components. However, since Office 2013 is the downgrade of Office 2016, Office 2013 is chosen.
5. If there's still a tie, the one with the highest percentage of installed components is chosen.

## Suite inference rules for Microsoft license metrics

Based on the system property **Use component licenses to optimize compliance when suite licenses run out**, the Software Asset Management application uses suite or component licenses. For example, if you have both Core Infrastructure Server (CIS) suites and Windows Server installations, both have their individual licenses. If Windows Server installations are discovered, then the Software Asset Management application will first license using the available Windows Server licenses. Following the utilization of all the Windows Server licenses, the CIS licenses will be used.

When the system property **Use component licenses to optimize compliance when suite licenses run out** is set to true, the rules ranking for Microsoft license metrics are as follows:

1. If there are multiple suites that can be inferred for the component, then the suite which meets the inference percent is preferred.
2. The suite candidate with the highest number of installed components is preferred.
3. If there's still a tie, the suite with the lower downgrade rights is chosen. For example, CIS 2019 and CIS 2016 are both candidates and have the same number of installed components. However, since CIS 2016 is the downgrade of CIS 2019 and it has fewer downgrade rights, CIS 2016 is chosen.
4. The parent suite that meets the inference percent is preferred over the child suite. If the parent suite doesn't meet the inference percent, the child suite is preferred.
5. If there's still a tie, the one with the highest percentage of installed components is preferred.

## Use case for suite inference

As an example, let's say you specify the **Inference percent** as 75% and set the **Mandatory** field to **Always Mandatory** on Microsoft Access. These settings specify that Microsoft Access must be installed, along with three out of four other products (Microsoft Word, Microsoft Excel, Microsoft PowerPoint, and Microsoft Outlook), to infer that Microsoft Office Professional is installed on a device.

## Subscription suite inference for Microsoft 365

This section provides details about the inference mechanism used for Microsoft 365, a subscription product.

Microsoft 365 is a subscription, comprising of several distinct products and services such as Office 365, Windows, and Enterprise Mobility and Security (or EMS). Office 365 and EMS include many other products and services within it.

There are several subscription plans, and the availability of certain products or services depends on the plan. For example, Power BI is only available with the Office 365 E5 subscription plan, not the E3 plan. Additionally, the Microsoft 365 admin center is where Microsoft 365 administrators can manage Microsoft 365, purchase additional subscriptions, and check usage.

ServiceNow Software Asset Management Professional integrates with Microsoft 365 admin center to help support Software Asset Management managers on many use cases such as license compliance determination and optimization recommendation.

Let's take an example to understand how subscription inference works. If you have a subscription for a component of Microsoft 365, such as EMS or Office 365, it will be inferred in the software model for Microsoft 365. This is because you purchased the Microsoft 365 entitlement and will be using the subscription for its associated components.

## Use cases for Microsoft 365

The following are some common use cases that help in understanding how license compliance helps in different scenarios.

- Use case 1: An organization has purchased both Microsoft 365 E3 and Office 365 E3 licenses and has corresponding entitlements in ServiceNow Software Asset Management Professional to license these subscriptions.

This is a valid use case, as there are specific and exact entitlements purchased for each subscription on the Microsoft 365 admin center. As a result, the subscriptions are licensed correctly in ServiceNow Software Asset Management Professional.

- Use case 2: An organization has purchased individual Microsoft 365 component subscriptions including Office 365 E3, EMS E3, and Windows 10 on Microsoft 365 admin center. The organization wants to license these subscriptions using the Microsoft 365 E3 entitlement in ServiceNow Software Asset Management Professional.

This is a valid use case, as the organization purchased individual component licenses for Office 365 E3, EMS E3 and the system automatically licenses or infers them to Microsoft 365 E3 license purchased. This is because the organization had previously purchased individual component subscriptions and has now transitioned to Microsoft 365 to gain more benefits.

- Use case 3: An organization has purchased a Microsoft 365 E3 subscription through the Microsoft 365 admin center and wants to license them using the Microsoft 365 E5 entitlement in ServiceNow Software Asset Management Professional.

This is an invalid use case, as the subscriptions should be listed at the same level as the entitlement. It appears there's a misconfiguration in the Microsoft 365 admin center, which must be corrected.

## Discovery models and software installations

Software discovery models are automatically created during discovery to identify and normalize the software installed in your environment.

Software discovery models are stored in the Software Discovery Model [cmdb\_sam\_sw\_discovery\_model] table. The normalization process is automatically run when a new discovery model is created. Discovery models are not created for software installations that have a name containing `Security Update`.

There is a difference between [software models](#) and software discovery models.

- A software model is a specific version or configuration of software that is purchased and/or available to users.
- A software discovery model is a model created when a version of software is discovered in a network environment.

Multiple software discovery models can be associated to one software model. For example, a software model can be defined as follows:

- Publisher = X
- Product = Y
- Version = Starts with 10

If there are two separate installs of this product (version 10.1 and version 10.2), two discovery models are created. One of the discovery models has the discovered version set to 10.1, and the other discovery model has the discovered version set to 10.2. The reconciliation process associates both of these discovery models to the same software model since they both meet the version criterion of `Starts with 10`.

## Discovery Models

Software discovery models cannot be created manually. The following field combination, called the primary key, is used to match new software installations to a new or existing software discovery model.

Primary key: **Publisher, Display Name, and Version**

- Note:** When analyzing version numbers, an exact match is always searched for first, but rounds down to a major version number when an exact match is not found.

For example, if no match is found for version number 8.0.4, but version 8.0 is found, then version 8.0 is used in the **Software model** field.

- Note:** If normalized field values differ from the values in the package or pattern, a caution icon is indicated next to the Normalization status field indicating that a normalization suggestion record has been created. Clicking the caution icon opens the [Normalization Suggestion](#) record for that discovery model.

The differing values can be set by the user, or by accepting the normalization suggestion changes. Once a new value is set, the normalization status changes from Normalized to Manually Normalized.

Under specific conditions, certain fields that are typically read-only can be edited. If edited, the status changes to Manually Normalized.

## Revert normalization

You can revert a normalization if needed.

When you revert a normalization, discovery models that have a status of **Normalized, Partially Normalized, or Publisher Normalized** revert to the status of **Match Not Found**. All normalized fields are also reset to their original unnormalized values. You can then normalize your discovery models manually or wait for the next normalization to run automatically. If you are normalizing your discovery models manually, the Software Asset Management application creates normalization suggestions based on the latest normalization rules from the Content Service team. You can choose to accept or reject these suggestions. If you wait for normalization to run automatically, discovery models are normalized using the latest normalization rules from the Content Service team. The discovery models are then set to a status of **Normalized, Partially Normalized, or Publisher Normalized**, and the normalized field values are set.

## Software Installations

The Software Installations list contains the software installed in your organization and is populated by discovery.

Installed software is placed in the Software Installation [cmdb\_sam\_sw\_install] table by Discovery, and a primary key is built (using **Publisher**, **Display Name**, and **Version** fields).

Discovery automatically matches the discovered software installation with a new or existing software discovery model using the primary key.

## End of Life (EOL) and End of Support (EOS) life cycles

In the absence of vendor-provided life cycles, use calculated life cycles to assess and manage your risks by creating EOL and EOS life cycles for your software products. You can also use approximated dates to improve life cycle coverage.

### Calculated life cycles

You can create EOL and EOS life cycles based on industry averages, measured in months, from the General Availability (GA) dates.

**Note:** The life cycles can be created by the sam\_user or the sam\_admin role.

You can override the global industry averages by specifying custom values pertaining to a product or a publisher. The life cycles are calculated based on the product or publisher values that you specified. For details on specifying custom values in the Software Asset Workspace, see [Create averages for product life cycles in workspace](#), and for specifying values in the Software Asset Management classic application, see [Create averages for product life cycles in Software Asset Management classic](#).

When creating EOL or EOS life cycles, keep the following pre-requisites in mind:

- The Software Asset Management Professional (com.sn\_samp\_master) plugin must be activated.
- GA dates available for the product.
- EOL and EOS life cycles not provided by the Content Service.
- Product is shipped by the Content Service.

### Software life cycle process

The scheduled job *SAM - Generate Software Lifecycle Report* collects data for life cycles for products whose GA dates are available and published by the Content Service. This scheduled job checks if all these GA records have an EOL or EOS life cycle record associated with them. If no EOL or EOS life cycle record is created by you or the Content Service, then calculated EOL or EOS life cycle records are created by another scheduled job, *SAM - Create Calculated Software Lifecycles*.

For the scheduled job *SAM - Create Calculated Software Lifecycles* to generate life cycles, keep the following in mind:

- If domain separation is disabled, enable the `com.snc.samp.generate.calculated.lifecycles` system property in the System Property [sys\_properties] table.
- If domain separation is enabled, use the Application Properties [sys\_application\_properties] table to enable the `com.snc.samp.generate.calculated.lifecycles` property. In the Application Properties [sys\_application\_properties] table, click the `com.snc.samp.generate.calculated.lifecycles` property to open the Application Properties page. Scroll down to **Application Property Values** and click **New** to create a record. The **Application Property** and **Domain** fields are pre-filled with values. In the **Value** field, enter **true** and click **Submit**. You also need to enable reconciliation by specifying

the value of the column *Run asset process [run\_asset\_process]* to be true in the Domain Asset Process Setting [alm\_domain\_asset\_process\_setting] table.

**Note:** Reconciliation can be enabled either for the parent domain or for the child domain; it cannot be enabled for both the parent and the child domains.

The calculated life cycles and the life cycles created by you are stored in the Custom Software Product Lifecycle [sam\_custom\_sw\_product\_lifecycle] table. Life cycles created by the Content Service are stored in the Software Product Lifecycle [sam\_sw\_product\_lifecycle] table.

The industry averages are stored in the Software Lifecycle Averages [samp\_sw\_lifecycle\_averages] table. The life cycles created using these averages have their source column defined as **calculated**.

**Note:** If you create an EOS or EOL record, then an EOL or EOS created by the scheduled job gets deleted in the next Content Service update, as priority is given to the custom records that you create. Similarly, if the scheduled job creates EOL and EOS records and then you create custom records, the records created by the scheduled job are deleted in the next Content Service update, as the custom records take precedence.

Once created, the EOL and EOS life cycles are visible in the software model page.

**Note:** If a sam\_user or sam\_admin deletes an EOL or EOS life cycle on a software model, the life cycles are not reinstated back to the software model.

## Approximate dates for life cycles and life cycle codes

To improve life cycle report coverage, approximate life cycles dates are assigned to life cycles without a date.

Select the system property (com.snc.samp.use\_lifecycle\_approximation), to include the approximate life cycle dates when generating the life cycle report. For details on this property, see [Software Asset Management properties](#).

The new table, Software Lifecycle Code [software\_lifecycle\_code], contains all the approximation codes along with a description of each code. For a detailed explanation of life cycle codes, see [https://support.servicenow.com/kb?id=kb\\_article\\_view&sysparm\\_article=KB1642485](https://support.servicenow.com/kb?id=kb_article_view&sysparm_article=KB1642485).

A new column, Lifecycle code, is added to the Software Product Lifecycle [sam\_sw\_product\_lifecycle] table. The Lifecycle code column refers to the Software Lifecycle Code [software\_lifecycle\_code] table if approximate dates are assigned to a life cycle. The lifecycle code column is empty if the lifecycle has confirmed dates.

For better visibility of all the life cycle phases, the following columns have been added to the Software Lifecycle Reports [sam\_sw\_product\_lifecycle\_report!] table


- General Availability start date
- General Availability
- End of Support start date
- End of Support lifecycle
- End of Extended Support start date
- End of Extended Support lifecycle
- End of Life start date
- End of Life lifecycle

- Software model
- Owners

EOL, EOS, and End of Extended Support dates for all build versions are not shipped by the Content Service. The life cycle report inherits such dates from the generic version.

## File Signature Normalization

File-based discovery finds files on UNIX or Windows servers and processes them with an established set of rules that enhance the identification of installed software. Use the results to monitor specific file types on network servers for security purposes or to manage your software licenses with the File Signature Normalization plugin for Software Asset Management - Professional (SAMP).

For more information on the file-based discovery, see the [File-based Discovery](#) .

**Note:** The information provided in this page only covers the features available with the File Signature Normalization (com.snc.file\_signature\_normalization) plugin.

## Required plugins

The File Signature Normalization plugin is required to allow file information to be mapped to installed software. To enable this plugin, [Request Software Asset Management](#).

You can also enable file-based discovery with the File-Based Discovery (com.snc.discovery.file\_based\_discovery) plugin to filter file signatures. This plugin is included with a Discovery subscription, but you must request plugin activation. Normalization of products and publishers is available for file-based discovery with or without Software Asset Management.

## How File Signature Normalization works

File Signature Normalization uses discovered files and their attributes, such as file name, file sizes, and version, to find a signature match in the Content Data Service (CDS). Then, File Signature Normalization creates a normalized software installation record.

During regularly scheduled Discovery jobs, the file information is discovered at all the specified end points in a user environment and sent to the MID Server. The information from the MID Server is then sent back to the ServiceNow instance. Information is matched against the content library and the software installation records are created.

If a discovered file name does not match a predefined file signature rule in the CDS, an unidentified file set record is created in the unidentified file set [cmdb\_unidentified\_file\_set] table. Users with the sam\_admin role can create a custom file signature rule for the unidentified file set to normalize data manually.

If you opt in to the content service, these custom file signatures are sent back to the CDS for further analysis and inclusion in the content service for future discovery. You can also restrict some custom file signatures from being sent to the CDS by changing the value in the Exclude From CDS column to True.

**Note:** Software discovery models are stored in the Software Discovery Model [cmdb\_sam\_sw\_discovery\_model] table. Unlike pattern discovery normalization, discovery models created by File Signature Normalization do not go through the normalization process automatically and are ignored during scheduled normalization jobs.

File Signature Normalization also identifies duplicates. Software installations that are discovered on the same configuration item, but from different discovery sources, are considered duplicates.

All installations that are identified are marked as inactive by default. Once the duplication has been deleted, the remaining installation is marked as active and the discovery model picks up all associated installs.

**Note:** By default, scheduled jobs are performed during specific times so they do not run heavy loads that could cause performance or stability issues. If these scheduled job times are changed, performance issues could occur.

Any software installs discovered during File-based discovery are updated to reflect any CDS changes in the software install attributes such as product or publisher name change. Stage product and Stage publisher are new columns in the File Set [samp\_file\_set] table.

### File Signature Normalization roles

File Signature Normalization adds the following role.

Roles	Description
file_normalization_admin	Users with this role can access file attribute and unidentified file information. Required to ensure that file signature normalization supports third-party software installation discovery sources.

### Tables

File Signature Normalization adds the following tables.

Table	Description
samp_file_set	File set that maps to a software product. Multiple samp_file_map records can point to one samp_file_set record.
samp_file_map	File map record for each file hash discovered by the end-user device. The file hash is created based on the discovered file and its attributes.
samp_file_name	File names that are used to search on end-user devices.
samp_custom_file_name	File names that entered by the user that can be discovered on end-user devices.
cmdb_unidentified_file_set	Custom rules that are created if a software match is not found for the discovered file in the CDS.

### Downgrade Rights

The concept of downgrading licenses is built into the Software Asset Management plugin feature. Downgrade rights is the process of having acquired the rights to the latest version of software but using the rights to license earlier versions of the same software.

Downgrade rights are added at the software model level.

The Software Asset Management content service generates downgrade rights. The downgrade rights correspond to a discovery map. A scheduled job, *Download software content: Downgrade Rights* triggered on a weekly basis, gets the downgrade rights from the Software Asset Management content service and pushes the data to the Downgrade Rights [samp\_dmap\_downgrade\_model] table.

Another scheduled job, *SAM- Create downgrades/upgrades for a software entitlement*, picks up the information from the [samp\_dmap\_downgrade\_model] table. The table propagates the next version and the downgrade rights on the existing software models and their corresponding entitlements.

If there is no software model corresponding to a discovery map, when populating the Downgrade Rights [samp\_sw\_downgrade\_model] table, a new software model is automatically created.

If the discovery map, corresponding to the software model, has downgrade rights, the Downgrade Rights related list is automatically populated with a hierarchical list of downgraded versions of the software.

Once downgrade rights are created and saved in the Downgrade Rights tables, [samp\_sw\_downgrade\_model] and [samp\_downgrade\_model], the downgrade rights can't be deleted. However, you can deactivate the downgrade rights.

If you delete a software model, all records corresponding to the software model in the Downgrade Rights [samp\_sw\_downgrade\_model] table are automatically deleted.

Downgrade rights are supported across products for the same publisher, which helps in effectively managing product name changes. When a product is renamed, it's treated as two products. For example, if the product Captivate is renamed to Illustrator, both Captivate and Illustrator are considered distinct products. You can manually add software model downgrade rights from Illustrator to Captivate either in the software model form or in the software entitlement form.

The system does not allow duplicate downgrade rights to be created; either through the scheduled job or manually in the Software Model and Entitlement form layout. If you try to create, duplicate downgrade rights on software models or on entitlements, an error message appears informing you that the downgrade model exists. If they have the same values in all the following fields, downgrade rights are considered to be duplicates.

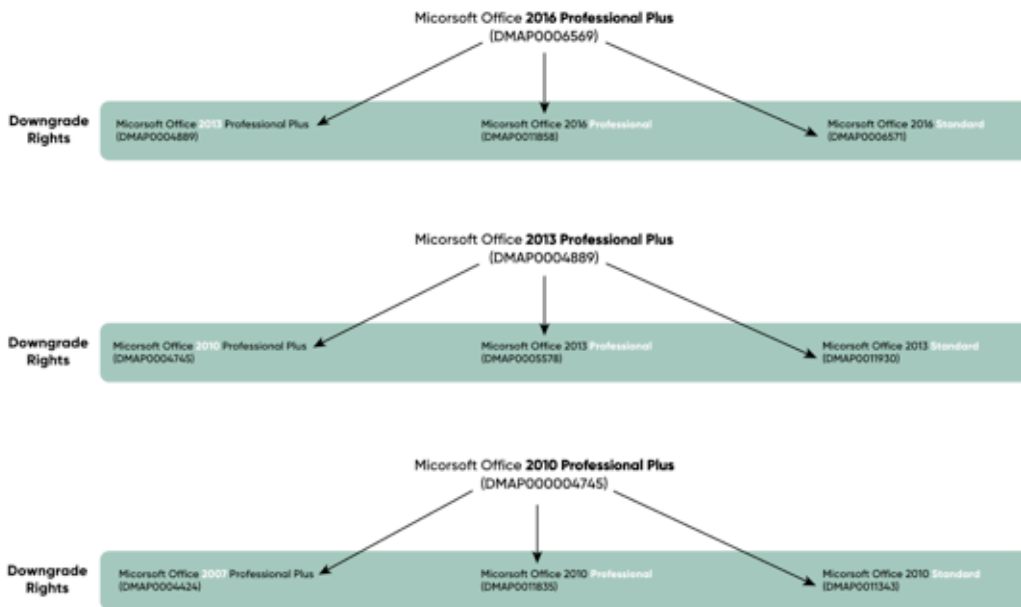
- **Publisher**
- **Product**
- **Version condition**
- **Version**
- **Edition condition**
- **Edition**
- **Platform**
- **Language**
- **Software install condition**
- **Named User Type**- is displayed only for SAP products.

If you already have duplicate downgrade rights from previous Software Asset Management Professional releases, then those duplicate downgrade rights aren't modified or deleted.

If you try to create a duplicate downgrade right for an inactive downgrade right, an error message appears. The error message informs you that an inactive downgrade right exists and you can reactivate it.

Downgrade support is available for all license metrics.

### Discovery Map (DMap) Downgrade Rights



## Software license maintenance

Get visibility into your software maintenance entitlements to effectively manage these licenses throughout their life cycle.

Manage and optimize your software maintenance spend by:

- Importing, updating, and creating maintenance entitlements that specify a start and end date.
- Getting accurate true-up costs.
- Maximizing your resources by getting to know your potential savings.
- Being aware of expiring, unused, and under-used maintenance entitlements.

## Determining expiring maintenance entitlements

ServiceNow Software Asset Management Professional helps you keep a track of all expiring maintenance entitlements using the Software Asset Workspace. You can track your entitlements by navigating to **All > Software Asset > Software Asset Workspace > Expiring maintenance and subscriptions**. This tracking ability enables SAM managers to get an overall view of all their expiring maintenance entitlements and take required action.

## Maintenance for Microsoft

Microsoft Software Assurance (SA) is the maintenance program that Microsoft uses to provide active maintenance to its users.

Microsoft provides several benefits such as access to the latest software version and releases, cloud special rights, license mobility and many more. For more information on these benefits, see Microsoft [documentation](#).

ServiceNow Software Asset Management Professional leverages these benefits while licensing Microsoft products in the following ways:

- **New version rights:** With access to the latest version of a Microsoft product, SA users can upgrade their product licenses at zero additional cost. Also, there's no need for tracking or reassigning covered licenses based only on the software version. Software Asset Management Professional adds version support using the following mechanisms:
  - **Automatic application of new version:** If a software entitlement with active SA is associated with a newer version software model, Software Asset Management Professional automatically upgrades the entitlement and associates it with the latest version software model. Also, these changes are saved on the Upgrade History related list. For more information on software models and versions, see [Software model fields](#).
  - **Management of software entitlement:** Microsoft supplies publisher part number (PPN) with SA coverage without any version assigned for the product. Thus, there's a risk of incorrect assignment of SA benefits to all versions of Microsoft products. ServiceNow Software Asset Management Professional determines the latest software version released by Microsoft on or before the expiry date of the SA coverage, selects the software model with the correct version, and associates the entitlement to the same. Also, these changes are saved on the Upgrade History Entitlement section.
- **License mobility benefits:** License Mobility provides the flexibility to manage licensing on premise (in high-density virtualized environments), or on cloud environments (AWS or Azure) using Azure Hybrid Benefits (AHB). For more information on license mobility, see [Microsoft documentation](#).

Software Asset Management Professional automatically applies the license mobility benefits while licensing deployments of your datacenter products such as Windows Server and SQL Server. The following are some of the benefits that are applied automatically:

- **Provides options to license by virtual machine (VM) layer:** With subscription licenses or licenses with SA, SQL Server 2022 can be licensed by the VM and licenses can move with the VM at any time to another server in the same server farm.
- **Supports unlimited virtualization:** Enables you to run any number of instances of SQL Server Enterprise Edition software in an unlimited number of VMs if the hosts are completely licensed. This feature is applicable only for the core licensing model.
- **Provides AHB and Bring Your Own License (BYOL) support:** AHB for SQL Server is a benefit for Azure that enables you to use SQL Server licenses with SA or subscription licenses to pay a reduced rate for only cloud-based computing. For more information on BYOL support, see [BYOL support](#).

If you're covered under Microsoft SA, you can also upgrade, or step-up, a standard version of your software to an enterprise edition. Use the **Upgraded Entitlements** tab of the Software Entitlement form to link related versions of your software under active maintenance and your upgrades.

You can upgrade a Step-up license type entitlement to a Subscription, Perpetual, Perpetual + Software Assurance, or a Step-up license type entitlement. You can upgrade a Subscription Step-up license type entitlement to only an entitlement with a Subscription license type.

**Note:** Step-up at any time if you have the Microsoft Open Value agreement with Software Assurance.

Step-up license types with no upgraded entitlements could result in inaccurate reconciliation results due to double counting of active rights.

If you have the Microsoft SQL Server Enterprise edition with SA for the Per Core license metric, you can run unlimited virtual machines on the host machine. It doesn't matter how many physical core licenses that you have. For example, let's say that you have a license for running only four

physical cores on a host machine. You can then run unlimited virtual machines on the host machine.

If you create a software entitlement at the time of receiving a purchase order and SA is activated on that entitlement, the new entitlement is created with one of the following license types:

- Perpetual + SA: If all previous entitlements have the license type specified as Perpetual + SA.
- Perpetual: If the previous entitlements have a combination of license types set to Perpetual + SA and Perpetual.

You can't use SA entitlements to license your software. SA entitlements aren't counted during reconciliation. Only perpetual license entitlements are considered.

SA entitlements need a base entitlement, or a perpetual entitlement, to determine license compliance. Thus, when you import entitlements from a Microsoft License Statement (MLS), without a base entitlement, you see an error. For importing entitlements from an MLS, see [Importing entitlements from an MLS](#).

- i Note:** For creating entitlements for Microsoft SA in the Software Asset Workspace, see [Create Microsoft Software Assurance entitlements in workspace](#). For creating entitlements in for Microsoft SA in Software Asset Management classic or for adding SA coverage to an existing entitlement, see [Create entitlements for Microsoft Software Assurance in Software Asset Management classic](#).

## Maintenance for publishers other than Microsoft

For all publishers other than Microsoft, you can create maintenance entitlements to support their software license maintenance needs.

You can associate maintenance entitlements with Perpetual, Perpetual + Maintenance, and Upgrade entitlements. Open the maintenance entitlement form layout, select the **Upgraded Entitlements** tab, and select the perpetual entitlement that you want to associate with.

- i Note:** If a maintenance entitlement is associated with a perpetual entitlement, the maintenance entitlement cost is part of the total cost when reconciliation runs.

If you create a software entitlement while you're receiving a purchase order and maintenance is activated on that entitlement, the new entitlement is created with one of the following license types:

- Perpetual + Maintenance: If all previous entitlements have the license type specified as Perpetual + Maintenance.
- Perpetual: If the previous entitlements have a combination of license types that are set to Perpetual + Maintenance and Perpetual.

- i Note:** For creating maintenance entitlements in the Software Asset Workspace, see [Create maintenance entitlements in workspace](#). For creating maintenance entitlements in Software Asset Management classic, see [Create maintenance entitlements in Software Asset Management classic](#).

## Related topics

[Impact of different license types on software reconciliation](#)

## License metrics for Microsoft products

A detailed description of the license metrics that can be utilized with Microsoft products.

## Microsoft products and Software Asset Management license metrics

Product	Edition	Licensing model provided by Microsoft	Software Asset Management license metrics to be used on ServiceNow Software Asset Management
Windows Server  <b>Note:</b> For legacy versions of Windows Server, refer to the Windows Server legacy versions table.	Data Center/ Standard	<ul style="list-style-type: none"> <li>Per Core</li> <li>CAL licensing</li> </ul>	<ul style="list-style-type: none"> <li>Per Core (with CAL)</li> <li>User/Device CAL for CAL licensing</li> </ul>
Microsoft System Center	Data Center/ Standard	<ul style="list-style-type: none"> <li>Server - use core based licensing (Server Management Licenses)</li> <li>Client - Use Client Management Licenses</li> </ul>	<ul style="list-style-type: none"> <li>Server MLs- Per Core (with CAL)</li> <li>Client MLs- User/Device</li> </ul>
Microsoft Exchange Server	Standard/ Enterprise	<ul style="list-style-type: none"> <li>Server licenses</li> <li>CAL licenses</li> </ul>	<ul style="list-style-type: none"> <li>Server (Per Instance) for Server licensing</li> <li>User/Device CAL for CAL licensing</li> </ul>
Microsoft Project Server	Standard/ Enterprise	<ul style="list-style-type: none"> <li>Server licenses</li> <li>CAL licenses</li> </ul>	<ul style="list-style-type: none"> <li>Server (Per Instance) for Server licensing</li> <li>User/Device CAL for CAL licensing</li> </ul>
Microsoft SharePoint Server	Standard/ Enterprise	<ul style="list-style-type: none"> <li>Server licenses</li> <li>CAL licenses</li> </ul>	<ul style="list-style-type: none"> <li>Server (Per Instance) for Server licensing</li> <li>User/Device CAL for CAL licensing</li> </ul>
Microsoft SQL Server	Standard/ Enterprise	<ul style="list-style-type: none"> <li>Per Core</li> <li>Server/CAL</li> </ul>	<ul style="list-style-type: none"> <li>For Core licensing: Per Core</li> <li>For Server/CAL:</li> </ul>

Product	Edition	Licensing model provided by Microsoft	Software Asset Management license metrics to be used on ServiceNow Software Asset Management
<p><b>i Note:</b> For legacy versions of SQL Server, refer to the SQL Server legacy versions table.</p>			<ul style="list-style-type: none"> <li>○ Server (Per Instance) for Server licensing                             <ul style="list-style-type: none"> <li>▪ Use Server (Per Instance) for server licensing for Standard, Web, Business Intelligence Editions</li> <li>▪ Use Server (Per Server) for Enterprise Edition legacy versions 1</li> </ul> </li> <li><b>i Note:</b> SQL Server Enterprise is licensed usually using the Per Core licensing model only. However if you have software assurance, you might follow Legacy Server/CAL licensing models. ServiceNow recommends using the Server (Per Server) license metric on ServiceNow Software Asset Management.</li> <li>○ User/Device CAL for CAL licensing</li> </ul>
Microsoft Office 365	Enterprise E3/E5/E1	User Subscription	User Subscription
Microsoft Office	Professional/Standard	Per Device	Per Device
Windows 10	Enterprise Professional	Per Device	Per Device
Microsoft Dynamics CRM 365 Server (On Premise)		Server/CAL	Only requires User/Device CALs to be created. No Server license required.

Product	Edition	Licensing model provided by Microsoft	Software Asset Management license metrics to be used on ServiceNow Software Asset Management
Microsoft Dynamics 365 Operations Server (On Premise) ERP		Server/CAL	<ul style="list-style-type: none"> <li>Requires User/Device CALs to be created.</li> <li>Server (Per Instance) for Server licenses</li> </ul>
Microsoft 365	Enterprise E3/E5/F3	User Subscription	User Subscription
Core Infrastructure Suite	Data Center/Standard	Per Core	Per Core (with CAL)

### Windows Server legacy versions

Version	Edition	Licensing model provided by Microsoft	Software Asset Management license metrics to be used on ServiceNow Software Asset Management	Licensing rules
2003-2008 R2	Standard	Server	Server (Per Instance) + add User/Device CALs	Min: NA Virtualization: 1 VM per license. A single Standard Edition license server permits you to run one instance of the software in a physical or virtual OSE on the server. You need to assign a Standard Edition license for each running instance.
	Datacenter	Processor	Per Processor + add User/Device CALs	Minimum: 2 processor Virtualization: Unlimited When DataCenter Edition is licensed for every physical processor in a server, the server may run both in the physical OSE and in an unlimited number of Windows Server instances in virtual OSEs.
2012-2012 R2	Standard	Processor	Per Processor + add User/Device CALs	Minimum: 2 processors.

Version	Edition	Licensing model provided by Microsoft	Software Asset Management license metrics to be used on ServiceNow Software Asset Management	Licensing rules
				Virtualization: 2 VMs for each fully licensed server.
	Datacenter	Processor	Per Processor + add User/Device CALs	Minimum: 2 processors. Virtualization: Unlimited.
2016-2019	Standard	Per Core/CAL	Per Core (with CAL) + add User/Device CALs	Minimum: 16 cores per server or 8 Per Processor. Virtualization: 2 VMs for each fully licensed server.
	Datacenter	Per Core/CAL	Per Core (with CAL) + add User/Device CALs	Minimum: 16 cores per server or 8 Per Processor. Virtualization: Unlimited.

### SQL Server legacy versions

Version	Edition	Licensing model provided by Microsoft	Software Asset Management license metrics to be used on ServiceNow Software Asset Management	Licensing rules
2005	Standard	<ul style="list-style-type: none"> <li>• Server/CAL</li> <li>• Processor</li> </ul>	<ul style="list-style-type: none"> <li>• For Server/CAL use: Server(Per Instance) for Server licensing and User/Device CAL for CAL licensing.</li> <li>• Per Processor</li> </ul>	<p>A server licensing rule (for Workgroup, Standard, or Enterprise editions) is required for every operating system environment on which that edition of SQL Server software or any of its components, such as Analysis Services, is running.</p> <p>A Processor license is required for each processor installed on each operating system environment running SQL Server or any of its components, such as Analysis Services.</p>

Version	Edition	Licensing model provided by Microsoft	Software Asset Management license metrics to be used on ServiceNow Software Asset Management	Licensing rules
	Enterprise	<ul style="list-style-type: none"> <li>• Server/CAL</li> <li>• Processor</li> </ul>	<ul style="list-style-type: none"> <li>• For Server/CAL use: Server(Per Instance) for Server licensing and User/Device CAL for CAL licensing.</li> <li>• Per Processor</li> </ul>	Only for Enterprise edition: If all processors in a machine are licensed, you may run unlimited instances of SQL Server 2002 on an unlimited number of virtual operating environments on the same machine.
2008-2008 R2	Standard	<ul style="list-style-type: none"> <li>• Server/CAL</li> <li>• Processor</li> </ul>	<ul style="list-style-type: none"> <li>• For Server/CAL use: Server(Per Instance) for Server licensing and User/Device CAL for CAL licensing.</li> <li>• Per Processor</li> </ul>	<ul style="list-style-type: none"> <li>• Server/CAL: Each server license for these editions permits you to run unlimited instances of the software in one OSE or virtual machine (VM). To run the software in additional OSEs or VMs, you require additional server licenses.</li> <li>• Processor license: Number of OSEs on which you can run SQL Server. Only Physical OSEs.</li> </ul>
	Enterprise	<ul style="list-style-type: none"> <li>• Server/CAL</li> <li>• Processor</li> </ul>	<ul style="list-style-type: none"> <li>• Use Server (per Server) for Server Licensing and User/Device CAL for CAL licensing.</li> <li>• Per Processor</li> </ul>	<ul style="list-style-type: none"> <li>• Server/CAL: Each server license for the Enterprise edition permits you to run unlimited instances of the software in up to four OSEs or VMs.</li> <li>• Processor license: Number of OSEs on which you can run SQL Server. Up to four OSEs per license.</li> </ul>
	Datacenter	Processor	Per Processor	Processor license: Number of OSEs on which you can run the SQL Server: Unlimited. The Datacenter edition requires that all the physical processors on the server are licensed and at least two processor licenses are assigned to the server.

Version	Edition	Licensing model provided by Microsoft	Software Asset Management license metrics to be used on ServiceNow Software Asset Management	Licensing rules
2012-2014	Standard	<ul style="list-style-type: none"> <li>• Server/CAL</li> <li>• Per Core</li> </ul>	<ul style="list-style-type: none"> <li>• For Server/CAL: Use Server (Per Instance) for server licensing and User/Device CAL for CAL licensing</li> <li>• Per Core</li> </ul>	<p>Core based licensing:</p> <ol style="list-style-type: none"> <li>1. Count the total number of physical cores in the server. Multiple the number of cores by the appropriate core factor to determine the total number of licenses required for the server.</li> </ol> <p><b>i Note:</b> The core factor used depends on the processor type deployed and a minimum of four core licenses is required for each physical processor on a physical server.</p> <ol style="list-style-type: none"> <li>2. To license individual VMs using the Per Core model, you must purchase a core license for each v-core (or virtual processor, virtual CPU, virtual thread) allocated to the VM, subject to a four core license minimum per VM.</li> </ol> <p>For licensing purposes, a v-core maps to a hardware thread. When licensing individual VMs, core factors do not apply.</p>
	Enterprise	Per Core <sup>1</sup>	Per Core	Same as above.
2016-2019	Standard	<ul style="list-style-type: none"> <li>• Server/CAL</li> <li>• Per Core</li> </ul>	<ul style="list-style-type: none"> <li>• For Server/CAL: Server (Per Instance) for server licensing and User/Device CAL for CAL licensing</li> <li>• For Core licensing: Per Core</li> </ul>	<ul style="list-style-type: none"> <li>• Server/CAL: Each server running SQL Server software requires a server license.</li> <li>• Per Core: A minimum of four core licenses are required for each physical processor on the server.</li> </ul>

Version	Edition	Licensing model provided by Microsoft	Software Asset Management license metrics to be used on ServiceNow Software Asset Management	Licensing rules
	Enterprise	Per Core <sup>1</sup>	Per Core	<p>Same as above.</p> <p><b>Note:</b> If you are already using SQL Server Enterprise edition with (Server/CAL) server licenses with software assurance, continue to use the Server+CAL licensing model. Use license metric as Server (per Server) for Server Licensing and User/Device CAL for CAL licensing. The new purchases for SQL Server Enterprise will be based only on the Per Core licensing model.</p>

### Microsoft Per Core licensing rules

The Per Core licensing model is used by many Microsoft server products, such as SQL Server and BizTalk Server. It's useful when counting users or devices connecting to the software is difficult, often for internet-facing software.

Therefore, the Per Core licensing model is commonly used for enterprise software like Microsoft SQL Server.

The licensing rules for on-premise installations of these products and the cloud installations are separate. The cloud licensing rules follow Bring Your Own License (BYOL). For more information, see [Licensing rules for BYOL and BYOS](#).

To license the on-premise installation of these products using the Per Core licensing model, consider the following two options.

- Licensing by physical cores, also known as licensing by physical hosts
- Licensing by individual virtual machines

**Note:** You can either allocate to individual hosts or individual virtual machines, not to cluster.

You can either allocate manually, or the Software Asset Management application can automatically select the most cost-effective licensing option based on optimization criteria. The number of core licenses required depends on whether you're licensing the physical server based on its physical cores or licensing individual virtual machines.

For more information about how to perform allocation, see [Allocation management](#) and how the Software Asset Management application performs automated optimization, see [View realized and potential cost-based licensing optimizations for Microsoft](#).

**Note:** Both options, whether licensing by physical cores or licensing by individual virtual machines, come with their own set of Microsoft rules that must be followed. For more information, see [SQL Server](#).

Other licensing models, such as the Server CAL licensing model, are also available for these products.

### Licensing by physical cores

The Software Asset Management application supports licensing by physical core rules, introduced by Microsoft in 2016.

#### Licensing by physical core rules

Rule	SQL Server Standard	SQL Server Enterprise
Applicability	<p>Not allowed</p> <p><b>Note:</b> Only allowed to be licensed through individual virtual machines.</p>	<p>The number of licenses required equals the number of physical cores on the licensed server.</p> <p>The physical cores on servers are equal to <math>\text{CPU count} * \text{Core count}</math>.</p>
Min licenses required	<p>Not allowed</p> <p><b>Note:</b> Only allowed to be licensed through individual virtual machines.</p>	4 licenses per physical processor
Virtualization rights	<p>Not allowed</p> <p><b>Note:</b> Only allowed to be licensed through individual virtual machines.</p>	<ul style="list-style-type: none"> <li>Without software assurance or subscription licenses, run virtual machines equal to the number of core licenses assigned to the physical server.</li> <li><b>Note:</b> Each additional virtual machine would require an additional core license.</li> <li>With active software assurance or subscription license, run an unlimited number of virtual machines if all physical cores on the server are fully licensed.</li> </ul>
Failover rights	Not allowed	For each server operating system environment (OSE) licensed with SQL Server

### Licensing by physical core rules (continued)

Rule	SQL Server Standard	SQL Server Enterprise
	<p><b>Note:</b> Only allowed to be licensed through individual virtual machines.</p>	<p>subscription licenses covered by active Software Assurance, you can use the following passive replicas ahead of a failover event:</p> <ul style="list-style-type: none"> <li>• One passive failover replica for High Availability in a separate OSE</li> <li>• One passive failover replica for Disaster Recovery in a separate OSE</li> <li>• One passive failover replica for Disaster Recovery in a single virtual machine or instance on Azure</li> </ul>
Components services licensing	<p>Not allowed</p> <p><b>Note:</b> Only allowed to be licensed through individual virtual machines.</p>	<p>The software components of a single SQL Server license can't be separated. An OSE running any of the licensed components of SQL Server requires its own license. For more information about SQL Server components, see <a href="#">Editions and supported features of SQL Server 2022</a></p>

When deploying Microsoft products like Windows Server or System Center (using the Per Core license model) on cluster virtualization technologies such as VMware vSphere, Microsoft Hyper-V, or Nutanix Acropolis HyperVisor (AHV), the number of licenses required for the physical host depends on the virtual machines that could potentially migrate to it within the cluster.

Technologies like VMware vMotion, which enables live migration of virtual machines across all hosts, and host affinity, which helps lock virtual machines to hosts within a cluster, manage the movement of virtual machines across hosts. To understand more about cluster virtualization technology and its support on the Software Asset Management application, see [Understanding your cluster infrastructure](#).

According to Microsoft licensing rules, if a virtual machine with a Microsoft product like Windows Server installed is hosted on one server but can potentially migrate to another, the destination server must be licensed as if the virtual machine is already running on it.

**Tip:** As only the Enterprise edition license can be used for this option and you must license the physical host based on the number of virtual machines that can run on it, this licensing option can be more costly.

### Licensing by virtual machines

The Software Asset Management application supports licensing by individual virtual machines rules, introduced by Microsoft in 2022.

**Note:** This licensing option is the only option available for SQL Server Standard Edition when using the Per Core licensing model.

**Licensing by individual virtual machines rules**

Rule	SQL Server Standard and SQL Server Enterprise
Required number of licenses	<p>Equals the number of virtual cores on the virtual machine</p> <p>The virtual cores on servers are equal to CPU count * Core count * CPU thread count.</p>
Min licenses required	4 licenses per virtual machine
<p>Software assurance or subscription license</p> <p><b>Note:</b> The option to license by virtual machine is only available with software assurance or a subscription license.</p>	Required
<p>License mobility within Server farms (Software assurance benefit)</p> <p><b>Note:</b> Licenses can be reassigned within the same server farm as often as needed. The 90-day rule applies only when moving to another server farm or cloud provider.</p>	Supported
Component services licensing	<p>The software components of a single SQL Server license can't be separated. An OSE running any of the licensed components of SQL Server requires its own license. For more information about SQL Server components, see <a href="#">Editions and supported features of SQL Server 2022</a>.</p>
Failover rights	<p>For each server OSE licensed with SQL Server subscription licenses or licenses covered by active software assurance, use the following passive replicas ahead of a failover event:</p> <ul style="list-style-type: none"> <li>• One passive failover replica for High Availability in a separate OSE</li> <li>• One passive failover replica for Disaster Recovery in a separate OSE</li> <li>• One passive failover replica for Disaster Recovery in a single virtual machine or instance on Azure</li> </ul>

### Microsoft Per Core (with CAL) licensing rules

The Per Core (with CAL) metric licensing model is followed by various Microsoft Server products such as Windows Server, System Center, and Core Infrastructure Server Suite. The number of licenses depends on the number of installations and operating system environments (OSE).

The licensing rules for on-premise installations of these products and the cloud installations are separate. The cloud licensing rules follow Bring Your Own License (BYOL). For more information, see [Licensing rules for BYOL and BYOS](#).

To license the on-premise installation of these products using the Per Core (with CAL) licensing model, consider the following two options.

- Licensing by physical cores, also known as licensing by physical hosts
- Licensing by individual virtual machines

**Note:** You can either allocate to individual hosts or individual virtual machines, not to cluster.

You can either allocate manually, or the Software Asset Management application can automatically select the most cost-effective licensing option based on optimization criteria. For more information about how to perform allocation, see [Allocation management](#) and how the Software Asset Management application performs automated optimization, see [View realized and potential cost-based licensing optimizations for Microsoft](#).

**Note:** Both options, whether licensing by physical cores or licensing by individual virtual machines, come with their own set of Microsoft rules that must be followed. For more information, see [Windows Server Standard, Datacenter, and Essentials](#).

### Licensing by physical cores

The Software Asset Management application supports licensing by physical core rules, introduced by Microsoft in 2016.

#### Licensing by physical core rules

Rule	Windows Server Standard	Windows Server Data Center
Required number of licenses	Equals the number of physical cores on the licensed server The physical cores on servers are equal to CPU count * Core count.	
Min licenses required	<ul style="list-style-type: none"> <li>• 8 per physical processor</li> <li>• 16 licenses per server</li> </ul>	
CAL requirement	Device or user CALs are required for users or devices accessing the server	
Virtualization rights	Rights to use 2 virtual machines if all cores of the host are licensed with the option for license stacking	Rights to run unlimited virtual machines when all cores of the host are licensed

### Licensing by physical core rules (continued)

Rule	Windows Server Standard	Windows Server Data Center
	<p><b>i Note:</b> You must license the host again to get rights to use 2 additional virtual machines.</p>	
<p>License mobility within Server Farms (Software assurance benefit)</p> <p><b>i Note:</b> License mobility isn't available for Windows Server. Licenses can be reassigned to servers as often as every 90 days.</p>	Not supported	

When deploying Microsoft products like Windows Server or System Center (using the core with CAL license model) on cluster virtualization technologies such as VMware vSphere, Microsoft Hyper-V, or Nutanix AHV, the number of licenses required for the physical host depends on the virtual machines that could potentially migrate to it within the cluster.

Technologies like VMware vMotion, which enables live migration of virtual machines across all hosts, and host affinity, which helps lock virtual machines to hosts within a cluster, manage the movement of virtual machines across hosts. To understand more about cluster virtualization technology and its support on the Software Asset Management application, see [Understanding your cluster infrastructure](#).

According to Microsoft licensing rules, if a virtual machine with a Microsoft product like Windows Server installed is hosted on one server but can potentially migrate to another, the destination server must be licensed as if the virtual machine is already running on it.

### Licensing by virtual machines

The Software Asset Management application supports licensing by individual virtual machines rules, introduced by Microsoft in 2022.

#### Licensing by individual virtual machines rules

Rule	Windows Server Standard and Windows Server Data Center
Required number of licenses	<p>Equals the number of virtual cores on the virtual machine</p> <p>The virtual cores on servers are equal to <math>\text{CPU count} * \text{Core count} * \text{CPU thread count}</math>.</p>
Min licenses required	8 licenses per virtual machine
Software assurance or subscription license	Required

**Licensing by individual virtual machines rules (continued)**

Rule	Windows Server Standard and Windows Server Data Center
<p><b>i Note:</b> The option to license by virtual machine is only available with software assurance or a subscription license.</p>	
<p>License mobility within Server farms (Software assurance benefit)</p> <p><b>i Note:</b> Licenses can be reassigned within the same server farm as often as needed. The 90-day rule applies only when moving to another server farm or cloud provider.</p>	Supported

**Software Asset Management health check**

The Health Check ServiceNow Store application gives a correct and reliable overview of your Software Asset Management configurations and recommends you to correct any errors that may exist.

The Health Check application can be used by multiple personas such as implementation partners, SAM managers, and support analysts to determine the health check of their configurations.

Use the Health Check ServiceNow Store application at any point during the deployment of the Software Asset Management application to identify errors. For example, configuration errors such as incorrect setup of entitlements or software models, or missing data attributes found from Discovery. For details on running a health check scan, see [Run a health check scan for Software Asset Management](#).

The current set of checks include checks for the following configurations:

- SQL Server Config
- SQL Server CMDB
- Windows Server CMDB
- Windows Server Config
- Database Server - Oracle
- Java - Oracle
- Microsoft 365
- General

The scheduled job, *SAM - Trigger Full Scan*, runs weekly on the KPI categories, shipped as part of the content service, on your ServiceNow instance. The KPI categories can be related to entitlement misconfiguration, downgrade, allocation, or any other configuration issue.

You can configure these KPIs or even add more KPI categories. The scheduled job performs an overall health scan to check for any errors that may exist in your Software Asset Management configuration.

Notifications regarding the health checks can be viewed in the Software Asset overview view.

After the health scan is performed, view the results on the Health Check dashboard. View the results in the form of reports that you can download and those reports give recommendations on resolving the issues. For more information, see [Health check](#).

## Reconciliation of licenses across global entities

Share entitlements across different entities within your organization by creating consumption rules for entitlements.

Limit consumption of entitlements to specific set of entities during the reconciliation process. This allows a cost center to purchase licenses and provide it as a service to other cost centers to license software running on their devices without requiring allocations.

## Overview of consumption rules

Create consumption rules for entitlements to restrict all entities from using that entitlement. If a consumption rule isn't defined for an entitlement and when the reconciliation process runs, any entity can use that entitlement regardless of who owns that entitlement.

Consumption rules can be created for the following reconciliation groups:

- Company
- Department
- Region
- Cost center
- Country

A single consumption rule can be used across multiple entitlements that helps in reuse of consumption rules.

After you create consumption rules in the License operations view, you must link a consumption rule to one or more entitlements in the **Entitlement Consumption Rules** related list in the entitlement page. After you link a consumption rule to an entitlement, consumption is limited to the users or devices belonging to at least one of the specified entities specified in the consumption rule.

If no active consumption rules exist in the **Entitlement Consumption Rules** related list, anyone in your organization can use the entitlement.

**Note:** Consumption rules aren't supported for the following license metrics: IBM RVUs, IBM UVUs, and Workday.

Irrespective of grouping, consumption rules apply and licensing is restricted. After you link consumption rules with an entitlement and run the reconciliation process, the following actions take place:

- with grouping: The reconciliation result appears in the form of product results, software model results, and licenses metric results; all generated individually for each group.
- without grouping: The reconciliation result appears in the form of product results, software model results, and license metric results, all under a single heading.

The License Consumption Breakdown [samp\_lmr\_consumption\_result] table reports the allocated and unallocated rights used per license metric results per consumption rule.

Further reporting can be done through the consumption rule column in the Licenses Required By [samp\_licenses\_required\_by] table. The consumption rule column stamps the consumption rule satisfied by that entity.

## Use case for consumption rules

Let's say that you've created three separate consumption rules for three departments, namely Sales, HR, and Marketing.

You now link all these three consumption rules to an entitlement, titled ENT A. After you run reconciliation, ENT A can be used by the Sales, HR, and Marketing departments. No allocations need to be created for ENT A.

## Parent and child hierarchy

Consumption rules also support parent or child hierarchy for groups. If you have a consumption rule for parent company A, you can choose to include child company B and child company C without creating separate rules.

The *Create New Consumption Rule* page in the Enterprise Asset Workspace lets you include the children of the company, department, and cost center in the consumption rule. This reduces the effort required to create individual consumption rules for each entity and to update consumption rules when new entities are added, update, or deleted.

## License pools

Consumption rules allow you to define license pools for entities. A license pool is a reservation of rights for a group entity defined on a consumption rule. License pools are specific to an entity per entitlement. If no license pool is defined, the entity can consume rights, but none will be set aside as a guarantee.

For example, an entitlement with 100 available rights can have an HR consumption rule with a license pool of 50. This sets aside 50 rights for HR consumers, and the remaining 50 rights can be used by HR or other entities defined in the consumption rules.

You can view the consumption rules and associated license pools in the **Entitlement Consumption Rules** related list in the entitlement page.

If you don't want license consumption to be limited to entities in the consumption rules, you can use the **Unrestricted consumption** check box on the entitlement page. Once this check box is selected, any entity can consume rights, but the entities in the consumption rules have a reservation of rights set aside.

**Note:** While both allocations and the **Unrestricted consumption** check box allow other groups to access the entitlement; only allocations provide priority.

## Allocations

Allocations take precedence over consumption rules. You don't need to create consumption rules for allocations to work. For example, let's say you have a consumption rule that states that only HR devices can use this entitlement. This entitlement can still include allocations outside of HR such as Sales or Marketing.

Allocations are automatically counted towards license pools when the first applicable consumption rule is satisfied. This is the default setting, but allocations will still be honored even if there is no defined consumption rule or license pool.

Any new allocations that exceed the license pool count will be honored. Any allocations that do not satisfy a consumption rule will also be honored.

## Upgrading from Pre Utah releases

If you're upgrading from a Pre Xanadu release and based on what you have selected in the *com. snc. samp. recon. group* and *com. snc. samp. recon. subgroup* properties (in the Software Asset Management Properties page), the following upgrade actions take place:

- Grouping: **Company, Cost Center, Region, Department, or Country** is selected. A consumption rule is automatically created for the grouping entity selected if the entitlement is in use. For example, if **Department** is selected, and **Company** is selected as the subgroup, then one combined consumption rule is created for both the group, Department and the subgroup, Company. When reconciliation is run, the entitlement usage is restricted to only the Department group and the Company subgroup.

**i Note:** An entitlement is considered to be in use, if in the Entitlement table, the Install status column has the value 1.

- Non-grouping: **None** is selected. No consumption rule is created as reconciliation runs without grouping. The entitlements can be used by any group.

## Software reconciliation for compliance

Automated license reconciliation keeps license positions accurate and up-to-date without manual calculations. Reconciliation runs weekly or on demand.

Reconciliation is a scheduled job that is run at a specified frequency (default is weekly). It can also be run on demand for specific or all publishers, groups, and subgroups.

Group and subgroup values include country, department, company, region, or cost center. Default group and subgroup [properties](#) that apply to the weekly reconciliation run can be set in **Software Asset > Administration > Properties**.

When reconciliation runs, a list of reconciliation results is created that shows the compliance status of software products concerning discovery and entitlements. Users with the `sam_user` role can view reconciliation results.

In addition to creating a purchase order for new software licenses, additional remediation options are available in software model results. Use the results to automatically create and remove allocations, remove unallocated installs, and remove unlicensed installs.

Review reconciliation results in a simplified License Workbench view, and use the License Position report to see compliance details for each software model in a single list.

### Software reconciliation results

Software reconciliation results show the compliance status of software products concerning discovery and entitlements. Users with the `sam_user` role can view the reconciliation results.

When software reconciliation runs, it calculates compliance based on how many rights are in use compared to the number of active rights that have been purchased. Reconciliation runs weekly or on demand for a specific publisher or all publishers. This process generates a list of reconciliation results that display the compliance status of the software in relation

to discovery and entitlements. For more details on running software reconciliation, see [Run software reconciliation](#).

There are three tiers of reconciliation results:

- Product Results
- Software Model Results
- License Metric Results

You can view reconciliation results using both Core UI and Software Asset Workspace.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>1. Navigate to <b>All &gt; Software Asset &gt; Reconciliation &gt; Historical Results</b>.</li> <li>2. Select a reconciliation result.</li> <li>3. On the Reconciliation Result form, select a Product Results record to view the product result details.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>1. Navigate to <b>Software Asset Workspace &gt; License usage</b>.</li> <li>2. Select a publisher card and then select a Product Results record to view the product result details.</li> </ol>

## Reconciliation results

### Product Results

The screenshot displays a list of software products on the left and a detailed view of a 'Product Result' on the right. The product list includes various versions of SQL Server and System Center components, each marked as either 'Not compliant' or 'Compliant'. The 'Product Result' view shows the following details:

- Number:** PR0001744
- Reconciliation result:** RR0001012
- Publisher:** Microsoft
- Status:** Not Compliant
- Product:** SQL Server
- True-up cost:** USD (\$) 53,484.82
- Group:** None
- Over-licensed amount:** USD (\$) 11,640,874.22
- Subgroup:** None
- Potential savings:** USD (\$) 0.00

These results are for all models and installations associated with a software product and are specific to a publisher. Product results for licensable products are generated after reconciliation even if the products don't have defined software models for them. These results determine the license compliance status of the product. Additionally, product results provide details on true-up cost, overlicensed amount, and potential savings. The following related lists appear when you select a Product Results record:

- Software Model Results
- Licensed Installs
- Unlicensed Installs (SAP: Unlicensed Users or Unlicensed Engines)
- Unlicensed Subscriptions (Subscription-based software)
- Removal Candidates

### Software Model Results

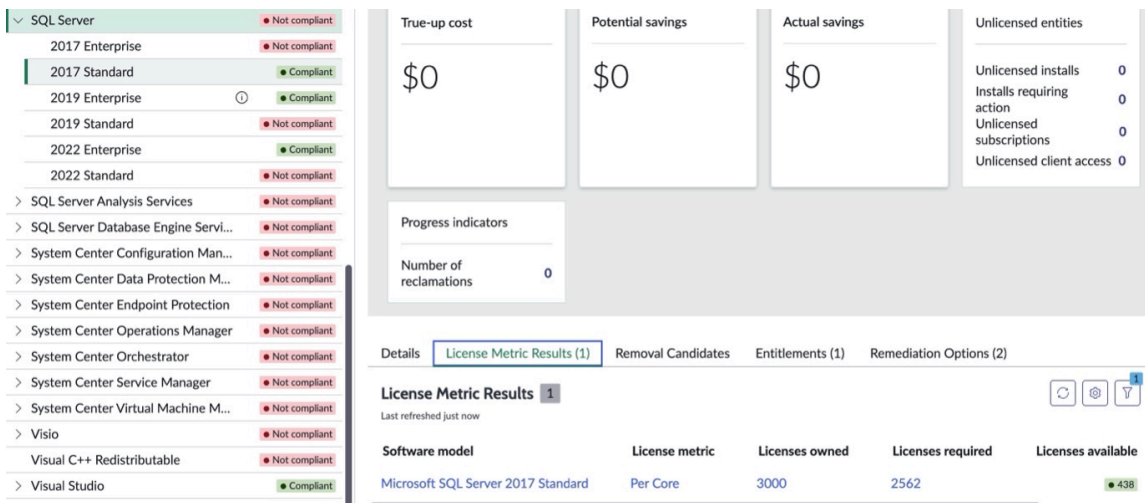
The screenshot displays the 'Software Model Results' interface. On the left, a tree view shows a list of software models under 'SQL Server'. The '2017 Standard' model is selected and highlighted in blue. To its right, a summary box shows 'Number of reclamations' as 0. Below this, a navigation bar includes 'Details', 'License Metric Results (1)', 'Removal Candidates', 'Entitlements (1)', and 'Remediation Options (2)'. The main content area shows the details for the 'Microsoft SQL Server 2017 Standard' model, which is 'Compliant'. Other details include 'Product result' (PRO001744), 'Group' (None), 'Subgroup' (None), 'Unlicensed installs' (0), 'True-up cost' (USD \$ 0.00), 'Over-licensed amount' (USD \$ 328,500.00), and 'Potential savings' (USD \$ 0.00). A 'Latest' checkbox is checked.

These results are for each individual software model related to the product. The Software Model Results appear as a related list on the product results records after reconciliation is run. A software model results record is created only when a software model or entitlement exists for the software product. The following related lists appear when you select the software model details:

- License Metric Results
- Remediation Options
- Licensed Installs
- Unlicensed Installs (SAP: Unlicensed Users)
- Unlicensed Subscriptions (Subscription-based software)
- Unlicensed Consumptions (Consumption-based software models)
- Unlicensed Options (Oracle only)
- Removal Candidates
- Purchase Orders (only when the Procurement (com.snc.procurement) plugin is active)

For more details on software model results related lists and descriptions, see [View software model results](#).

### License Metric Results



These results are for each license metric associated with the software model. The License Metric Results appear as a related list on the software model results. License metric result details include rights owned and rights used, and the license allocation breakdown so that you can determine your options to stay compliant. There can be multiple license metric results for a software model because multiple licenses can be purchased for the same software.

From the Software Model Results form, you can drill down on a specific metric result. The following related lists appear when you select license metrics results details:

- Rights Used By (This tab isn't visible for the Resource Value Unit (RVU) IBM license metric.)
- Licensed Installs
- Installs Used (SAP: System Users)
- Downgrades/Upgrades
- Licensed Subscriptions
- Cloud Special Rights (This tab is visible only if you have cloud installations on cloud platforms such as AWS or Azure.)

For more details on license metric results related lists and descriptions, see [Software model results license metric results fields](#).

### Accurately reporting your software true-up cost

Accurately report your software true-up costs to avoid compliance issues.

Specify the license cost or the license plus maintenance cost in the software model to accurately report the true-up costs during reconciliation. If you don't specify a license cost or a license plus maintenance cost, the average software entitlement cost is used for true-up cost calculations.

**Note:** For the Employee license metric in the Oracle publisher pack, the true-up cost is shown for a subscription period of one year.

If you use a license metric to create a software entitlement for a software model, an override license cost record is created if one already doesn't exist for the same license metric. The license cost record is added in the Override License Cost related list. The license cost and license plus maintenance cost is set to zero. If a maintenance license exists, you can override the license cost or the license plus maintenance cost. For details, see [Create or update an override license cost record](#).

### Software license compliance position

The Software Asset Management License Position report shows compliance details for each software model in a single list.

You can view and export the software model compliance list for your environment to understand your license position.

Two license metric results are generated if a software model has two entitlements, one with a perpetual SA license type and the other with a subscription license type. One license metric result where active maintenance is true and the other where the active maintenance is false. In such a scenario, two license position reports are generated, one with active maintenance true and the other one with active maintenance false.

A single license position report is generated if there are any unlicensed installations. A single license position report is also generated if there are any unlicensed subscriptions. If both are present, two license position reports are generated.

### License compliance position report

Software publisher	Software product	Edition	Version	Software model status	License metric	Total spend	Licenses owned	Licenses required	Unlicense
Adobe Systems	InDesign	(empty)	CC 2017	Compliant	Per Named Device	\$50,376.00	200	185	
Adobe Systems	Photoshop	(empty)	CC 2017	Compliant	Per Named Device	\$12,594.00	50	6	
Adobe Systems	Acrobat	Professional	DC	Not compliant	Per Core	\$8,141.67	122	5	
Adobe Systems	Photoshop	(empty)	CC 2017	Compliant	Per Named User	\$5,037.60	20	20	
Adobe Systems	InDesign	(empty)	CC 2017	Compliant	Per Named User	\$12,477.40	40	40	
Adobe Systems	Creative Cloud	Single App		Compliant	User Subscription	\$300.00	3	3	
Adobe Systems	Acrobat	Professional	DC	Not compliant	User Subscription	\$2,160.00	12	15	
Adobe Systems	Illustrator	(empty)	CC 2017	Compliant	Per Device	\$46,782.00	150	50	
Adobe Systems	Dreamweaver	(empty)	CC 2017	Compliant	Per Device	\$19,599.50	50	0	
Adobe Systems	Captivate	(empty)	8	Compliant	Per User	\$40,788.00	100	0	

### License Position Report list

Field	Description
Software publisher	Software publisher of the software model.
Software product	Software product of the software model.
Edition	Edition of the software product.
Version	Version of the software product.
Software model status	Compliance status of the software model. <ul style="list-style-type: none"> <li>Compliant (indicated with a green dot)</li> <li>Not Compliant (indicated with a red dot)</li> </ul>
License metric	License metric of the software model.
Total spend	Total cost of rights owned.
Rights owned	Sum of all active rights.
Rights used	Sum of rights allocated in use and not allocated in use.

**License Position Report list (continued)**

Field	Description
Rights needed	Rights needed to cover the number of unlicensed installs.
Rights available	Rights owned less rights used.
Unlicensed installs	Number of unlicensed software installations that are not covered by any entitlements.
True-up cost	Estimated cost of remediating non-compliance based on the least number of rights needed.
Potential savings	Estimated savings from reclaiming unused installs.
Over-licensed amount	Total cost of unused rights.
Software model	Software model name.

The License Position Report form also contains **Group** and **Subgroup** fields that specify the group and subgroup on which reconciliation was run.

**Grouping and consumption rules in reconciliation**

Grouping and consumption rules can work in tandem during the reconciliation process in the Software Asset Management application.

Grouping is a reconciliation configuration that controls how reconciliation results are displayed. Results are broken down by the entitlement owner, determined by the group and the subgroup set. For example, if you choose to group by company during reconciliation, the results display only the entitlements associated with the products and owned by that specific company. However, this doesn't imply that these entitlements are exclusively used by the selected company; other companies may also use them.

Consumption rule is a methodology to restrict entitlement consumption to a particular group or combination of groups. For details on consumption rules, see [Reconciliation of licenses across global entities](#).

You can create a consumption rule by specifying any combination, such as company, department, and country. Only installations that match these criteria are eligible to use that entitlement. However, it's not restricted solely to the group with which you perform reconciliation.

**Note:** Consumption rules aren't automatically added to new entitlements.

Grouping doesn't affect licensing. Licensing remains the same whether you run reconciliation with or without grouping.

Licensing rules can only be altered if you employ both grouping and consumption rules simultaneously or use just consumption rules. Using grouping by itself doesn't change the licensing rules.

**Related topics**

[Use cases for grouping and consumption rules](#)

**Use cases for grouping and consumption rules**

Learn how grouping and consumption rules are used during the reconciliation process through some use cases.

The following use cases help you understand the ramifications of using only grouping, only consumption rules, or using both grouping and consumption rules during the reconciliation process.

We have two entitlements. Entitlement 1 is owned by company A and entitlement 2 is owned by company B. Each entitlement has its own consumption rule. Both the entitlements belong to the same license metric, the same product and both have five rights each. Additionally, there are 11 installations; five installations for company A, 5 installations for company B, and one installation for company C.

### **Without grouping and without consumption rules use case**

In this use case, no grouping or consumption rules leads to a single product result that shows the following outcomes:

#### **Product Result**

- License Metric Result – 10 rights
- 10 licensed installations (any)
- One unlicensed installation (any)

In this scenario, the entitlement owners are ignored and consumption is unrestricted. Available rights of the two entitlements are combined into one license metric result under one product result. Additionally, any installation can be licensed with the last one installation being unlicensed due to insufficient rights.

### **With grouping and no consumption rules use case**

In this use case, grouping is specified but there are no consumption rules that lead to a parent product result that shows the following outcomes:

#### **Product Result**

- Product Result (company A)
  - License Metric Result (company A)- 5 rights
  - 5 licensed installations (any)
  - 1 unlicensed installation (any)
- Product Result (company B)
  - License Metric Result (company B)
  - 5 licensed installations (any)
  - 0 unlicensed installation (any)

In this scenario, the entitlement owner is recognized and reconciliation results are broken down. See there is a parent product result individual product results and license metric results for company A and company B. Note, however, that the five installs under the company A LMR might be any 5 installs since consumption is unrestricted. Same for company B. It will depend on the order of the devices processed which entitlement is used.

## Without grouping and with consumption rules use case

In this use case, no grouping is specified but consumption rules are specified that leads to a single product result that shows the following outcomes:

### Product Result

- License Metric Result – consumption rule A, 5 rights
- 5 licensed installations (installation 1- 5 from company A)
- 0 unlicensed installation
  
- License metric Result – consumption rule B, 5 rights
- 5 licensed installations (installation 6 - 10 from company B)
- 0 unlicensed installation

### 1 unlicensed installation (Installation 11 from company C)

In this scenario, there's a single product result but the entitlements can no longer be combined into one license metric result. Two license metric results are created that only company A and company B can consume from respectively. The company C installation is unlicensed.

## With grouping and with consumption rules use case

In this use case, both grouping and consumption rules are specified that lead to a parent product result that shows the following outcomes:

### Product result

- Product Result (company A)
  - License metric Result- company A, 5 rights
  - 5 licensed installations (only company A)
  - 0 unlicensed installations (only company A)
  
- Product Result (company B)
  - License Metric Result- company B, 5 rights
  - 5 licensed installations (only company B)
  - 0 unlicensed installation (only company B)
  
- Product Result (company C)
  - 1 unlicensed installation from company C.

In this scenario, consumption is restricted and the products results are broken down by company grouping. Company C also gets its own product result with no license metric result to show the unlicensed installation.

## Determining license compliance through Virtualization Adapter

Software Asset Management Virtualization Adapter determines the license compliance of Microsoft SQL Server, Windows Server, and Red Hat Enterprise Linux Server (RHEL) deployed on virtualization technologies by applying license compliance rules. This feature is activated and installed with the base system in Software Asset Management.

Virtualization is a process of simulating hardware functionality and creating a virtual environment in which you can run more than one virtual machine on a single server in a clustered environment. The virtualization technologies supported by Software Asset Management are:

- VMware
- Microsoft Hyper-V
- Red Hat
- Nutanix

ITOM Discovery discovers virtualization technologies based on their relationship architecture. Software Asset Management depends on the discovered relationships to determine the license compliance of the software installs.

Software Asset Management Virtualization Adapter standardizes the relationship architecture through database views and metadata views, which are used by Software Asset Management to determine license compliance.

Software Asset Management considers the architecture of the virtualization technology while applying the licensing rules. For example, Microsoft Hyper-V architecture permits Windows Server Standard edition to use one running instance of the server software in the physical OSE on the licensed server in addition to two virtual OSEs if the physical OSE is used only to host and manage the virtual OSEs. Software Asset Management Virtualization Adapter automatically applies this rule set.

## Software reclamation rules

Reclamation rules aggregate usage over time and specify a minimum number of hours or the latest date that a software unit must be used before the software is flagged for reclamation.

### Overview of reclamation rules

You can avoid purchasing more software rights for products by knowing which rights have already been allocated but are being used infrequently, haven't been used recently enough, or aren't being used at all. Reclamation rules reclaim those software rights so that these rights can be freed up and allocated elsewhere. Reclamation rules are configured to specify a period of time, amount of time, or most recent date that a software unit must be used before the software is flagged for reclamation.

When a reclamation rule is created for a suite parent, the usage for the suite parent as well as that of the suite components are automatically pulled into the rule.

When you create a reclamation rule, you can add software products associated to the reclamation rule. When you add a product, which is a suite parent, all the suite components automatically get added and appear in the Software Products related list in the Reclamation rule form. Similarly, the product processes for all the added software suite products and component products also get added and appear in the Product Processes related list.

**Note:** The products in the Software Products related list are updated based on the content updates in the Software Asset Management Content Service. For example, if a suite component has been added or removed from a suite parent, the change is reflected in the Software Products related list.

After a suite parent is added to a reclamation rule, you can't edit or delete any suite components, but you can edit or delete the suite parent. If you delete the suite parent, the suite components are also automatically deleted along with the product processes. If you edit a suite parent, then the changes of the edit are reflected for the suite components and the associated product processes. For example, if you change the suite parent from Microsoft Office 365 to Microsoft Word, all the suite components and product processes for Microsoft Office 365 get deleted. Microsoft Word becomes the new parent and all suite components and product processes for Microsoft Word are automatically added.

## Filter conditions

You can add a filter condition on a suite parent record. The filter condition that you specify for a suite parent is automatically applied to all the suite components of the parent and the filter condition field on the suite component record is no longer editable. You can, however, edit the filter condition on the suite parent record. You can open a suite parent record from the Software Products related list and specify your filter condition in the record.

You can also specify a filter condition at the reclamation rule level. The filter condition that you specify applies to all the products that belong to the reclamation rule. The filter condition can only be applied when the **Applies to** field in the Reclamation rule form has the value **Installed Software** or **Subscription Software**. For details, see [Add a software reclamation rule](#).

## Reclamation rules for SaaS and SSO applications

When you create a direct integration profile for a SaaS application or connect an SSO application, a reclamation rule is automatically created for the software product. It's important that you review the reclamation rule to verify that it meets your specifications. For more information, see [Review a software reclamation rule](#).

For more information about the reclamation rules for each application, see [Reclamation rules](#).

## Upgrading to Xanadu

If you're upgrading to Xanadu from any past release, your existing reclamation rules do not automatically take bulk reclamation into account. You must manually set up your existing reclamation rules for bulk reclamation to take effect. For example, in an existing reclamation rule, you have Microsoft Office 365 listed in the Software Installations related list. When you upgrade to Xanadu, you must delete Microsoft Office 365 from the Software Product related list and re-add it to the same reclamation rule to trigger the automatic addition of suite components and their product processes.

### Add a software reclamation rule

Add a reclamation rule to aggregate usage records and to identify unused software.

### Before you begin

Role required: sam\_admin

### About this task

If you select the **Notify user** option in the reclamation rule, then the user has a chance to respond with approval during the process of reclamation. If no response is received during a specified period, the software rights are automatically reclaimed. If the user still wants to keep

the software installation, it becomes the responsibility of the manager to approve or decline the removal.

For information on creating a reclamation rule for SCCM products, see [Create a reclamation rule to import Microsoft SCCM usage data.](#)

**Procedure**

1. Navigate to **All > Software Asset > Administration > Reclamation Rules.**
2. Select **New.**
3. On the form, fill in the fields.

**Note:** You can edit the software members of the Software Products list after the reclamation rule is created.

**Reclamation Rules form**

Field	Description
Name	Name for the reclamation rule.
Applies to	Item type that the reclamation rule applies to.
Reclamation type	Type of reclamation rule. The possible values are the following: <ul style="list-style-type: none"> <li>○ Total Usage Time (default)</li> <li>○ Last Used Date</li> <li>○ Peak Concurrent Usage (appears only when you select <b>Engineering App License</b> from the Applies to list)</li> <li>○ Active Transaction Codes (appears only when you select <b>SAP Named User</b> from the Applies to list)</li> </ul>
Named user type	SAP named user type. This field appears only when you select <b>SAP Named User</b> from the Applies to list. <p><b>Note:</b> This field is applicable to only to the SAP publisher.</p>
Create reclamation candidate	When selected, a removal candidate is created for this reclamation rule, in addition to pulling in usage for all the software products associated with this rule. <p>By default, this check box is selected. If you unselect this check box, a removal candidate is not created for this rule, although usage of the software products is still pulled in.</p>
Include no activity	When selected, software products that have installations on devices but don't have usage

Field	Description
	<p>records in the usage table are also reclaimed based on the following rules:</p> <ul style="list-style-type: none"> <li>○ Usage is available for the selected product (at least one usage record) within the time period of the reclamation rule.</li> <li>○ For the <b>Last Used Date</b> reclamation type, the install must be created greater than the <b>Last used before</b> value.</li> <li>○ For the <b>Total Usage Time</b> reclamation type, the install date must be greater than the <b>Aggregate usage by</b> value.</li> </ul>
Assignment group	<p>The assignment group to manage the removal candidates created by the specific reclamation rule. Whenever a removal candidate is created based on this rule, the assignment group mentioned in the reclamation rule is copied over to the removal candidate.</p> <p>By default, the value <b>Software managers</b> is selected. You can select any other group or create a group from the Group [sys_user_group] table.</p>
Notify user	Option to notify the relevant user that you're requesting permission to remove the software.
Days before auto-reclamation	This field appears if you select <b>Notify user</b> . Once the removal candidate goes for approval and no response is received from the user, after the number of days mentioned in this field, the software product is revoked.
Software install condition/Subscription condition	<p>The software install condition field appears if you select <b>Installed Software</b> in the <b>Applies to</b> field.</p> <p>The Subscription condition field appears when the <b>Applies to</b> field is set to <b>Subscription software</b> in preconfigured rules.</p>
Usage Metering Data	
This section appears only when you select <b>Total Usage Time</b> , <b>Peak Concurrent Usage</b> , or <b>Active Transaction Codes</b> from the <b>Reclamation type</b> field.	
Aggregate usage by	<p>Time period over which usage information is aggregated. Possible values are the following:</p> <ul style="list-style-type: none"> <li>○ Last Month</li> <li>○ Last Two Months</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>○ Last Three Months</li> <li>○ Last Six Months (available only if you select <b>Installed Software</b> from the <b>Applies to</b> list)</li> </ul>
Total hours used	Amount of time that the software must be used to avoid reclamation.
Percent utilized	License utilization percentage. For example, If you specify 60% and you utilized less than 60%, then a reclamation candidate is automatically created for the remaining 40% rights. This field is available only when you select <b>Engineering App License</b> from the <b>Applies to</b> list.
Minimum transaction codes required	<p>Minimum number of SAP transaction codes that must be active so that a named user can avoid reclamation. You can specify the applicable transaction codes in the SAP Transaction Codes related list. The list appears after you submit the reclamation rule.</p> <p>This field is applicable to only to the SAP publisher. This field is available only when <b>SAP Named User</b> is selected from the <b>Applies to</b> list.</p>
Last Used Data	
This section appears only when you select <b>Last Used Date</b> from the <b>Reclamation type</b> field.	
Last used before	<p>Amount of time to keep unused software before it's reclaimed.</p> <ul style="list-style-type: none"> <li>○ One Month Ago</li> <li>○ Two Months Ago</li> <li>○ Three Months Ago</li> <li>○ Six Months Ago</li> <li>○ Nine Months Ago</li> <li>○ One Year Ago</li> </ul>

**4. Select **Submit**.**

After the reclamation rule is created, add software products to the reclamation rule. You can also add a custom software product.

Additionally, you can specify filter conditions on software products that are suite parents. For details on adding a custom software product, see [Add a custom software product in Software Asset Management classic](#). For details on filter conditions, refer to [Software reclamation rules](#).

**5. Select **Edit** in the Software Products related list to add software products.**

When you add a product that is also a suite parent, all the suite components automatically get added and appear in the Software Product related list. The **Parent** field is automatically populated for all the suite components but it's empty for the suite parent.

Additionally, when a product is added to the related list, the product process related list appears as well as any product processes (if already present in the system) for the parent and suite products.

6. If a product process doesn't exist for the software product, you can add a custom product process.

a. Select **New** in the Product Process related list.

b. On the form, fill in the fields.

**Note:** The Product Process related list appears only when you select a software product with a product process.

Field	Description
Product	Software product.
File name	File name of the software product. The file name is required for the SCCM Usage to pull data.
Platform	Platform of the software product.

c. Select **Save**.

**Note:** The Product Process related list is displayed only when a software product with a product process is selected.

7. If you selected **SAP Named User** from the Applies to list, specify the SAP transaction codes that must be active to help prevent reclamation.

**Note:** This step is applicable to only the SAP publisher.

Not all specified transaction codes must be active to help prevent reclamation. The minimum number of transaction codes that must be active is based on the value of the **Minimum transaction codes required** field.

a. From the SAP Transaction Codes related list, select **Edit...**

b. On the Edit Members form, select a transaction code from the Collection list or from the SAP Transaction Codes List.

The Collection list displays all available transaction codes. The SAP Transaction Codes List displays only the transaction codes that must be active to help prevent reclamation.

c. Select the right and left arrow icons to move the transaction code between the lists.

d. Select **Save**.

## Microsoft SCCM software usage

Activate the Microsoft SCCM software usage plugin to integrate your software usage data with the ServiceNow AI Platform.

One of the following Microsoft SCCM Software Usage plugins must be installed to import software usage data from Microsoft SCCM to Software Asset Management.

- Integration — Microsoft SCCM 2012 v2 Software Usage (com.snc.samp\_usage\_sccm) plugin
- Integration — Microsoft SCCM 2016 Software Usage (com.snc.samp.usage\_sccm\_2016) plugin

The Integration — Microsoft SCCM 2016 plugin is compatible with SCCM version 1606, 1906, 1910, and 2002.

**i Important:** Both Microsoft SCCM plugins will be deprecated in the Tokyo release. If you are integrating with SCCM for the first time, request and install the Service Graph connector for Microsoft SCCM application from the [ServiceNow Store](#) instead. If you have already activated one of the Microsoft SCCM plugins on your ServiceNow instance, use the Migration Readiness Tool for Service Graph Connector for SCCM store application to prepare your instance for migration from the Microsoft SCCM plugin to the Service Graph connector. See [Service Graph connector for Microsoft SCCM](#) for more information on the Service Graph connector.

The SCCM integration plugin installs [several components](#).

After the SCCM usage plugin is [activated and configured](#), a scheduled import runs monthly to [bring SCCM software usage data into your instance](#). The usage data is then mapped to Software Usage table. During the scheduled job, a SQL query is executed.

The scheduled import runs once a month, but you can run the import on demand by clearing the **Conditional** option on the Scheduled Data Import form. However, the data is always pulled from the previous month, so there won't be a change in the data until the following scheduled import.

**i Note:** The SCCM software usage data source can't be executed directly because the SQL statement doesn't actually pull in the data, so the records aren't retrieved. A valid SQL statement on the data source is updated dynamically through a scheduled import. So, if you need to pull the data into your ServiceNow instance, use the scheduled import.

There are two types of data (total usage and last used) that you can extract from SCCM and import into your instance. Last used data will only show the last time the software was used during the previous month.

Total usage data will show down to the second when the software was used in the previous month, which can be a large amount of data imported into your instance. A usage record tracks the sum of usage on a monthly basis so that you can assess the software usage in your environment.

Depending on what you've specified in the reclamation rule for the product, one of the following scheduled imports will run to pull in the data.

- SAMP Usage Import
- SAMP Usage 2016 Import
- SCCM 2012 v2 Software Last Used
- SCCM 2016 Software Last Used

**Note:** Only usage data for products associated with a reclamation rule is imported. The **Reclamation type** field on the Reclamation Rule form must match the scheduled import that you are running, otherwise the data is not pulled into your instance. For more information, see [Create a reclamation rule to import Microsoft SCCM usage data](#).

You can also pull in user data from SCCM. User data is compared to the user\_name field of the sys\_user record. If the names don't match, the user data isn't imported.

**Note:** Configuration item (CI), user, product, and publisher values are used to identify a matching software installation.

Duplicate usage information cannot be created for the same CI, user, product, or publisher values in the same month and year.

You can also import usage information using ServiceNow [import sets](#) feature.

### Components installed with the Microsoft SCCM software usage plugin

Several types of components are installed with activation of the Microsoft SCCM software usage plugin.

#### Installed with SCCM Software Usage plugin

	SCCM 2012 v2	SCCM 2016
Data source	<ul style="list-style-type: none"> <li>SAMP Usage (Total usage)</li> <li>SCCM 2012 v2 Software Last Used (Last used)</li> </ul>	<ul style="list-style-type: none"> <li>SAMP Usage 2016 (Total usage)</li> <li>SCCM 2016 Software Last Used (Last used)</li> </ul>
Scheduled imports	<ul style="list-style-type: none"> <li>SAMP Usage Import</li> <li>SCCM 2012 v2 Software Last Used</li> </ul>	<ul style="list-style-type: none"> <li>SAMP Usage 2016 Import</li> <li>SCCM 2016 Software Last Used</li> </ul>
Transform map	<ul style="list-style-type: none"> <li>SAMP usage import (Total usage)</li> <li>SAMP last used data import (Last used)</li> </ul> <p>(An onComplete transform script is associated with the transform map)</p>	<ul style="list-style-type: none"> <li>SAMP usage import 2016 (Total usage)</li> <li>SAMP last used data 2016 import (Last used)</li> </ul> <p>(An onComplete transform script is associated with the transform map)</p>
Script include	SAMPUsageUtil	SAMPUsage2016Util

If you've activated the Integration – Microsoft SCCM 2012 v2 Software Usage (com.snc.samp\_usage\_sccm) plugin, navigate to **Integration – Microsoft SCCM 2012 v2 > Scheduled Import**.

#### SCCM data imported for SCCM 2012 v2

	SCCM table	Staging table	Target table
Total usage	v_MonthlyUsageSummary	Software usage import [imp_samp_usage_import]	Software Usage [samp_sw_usage]

**SCCM data imported for SCCM 2012 v2 (continued)**

	SCCM table	Staging table	Target table
Last used	v_GS_CCM_RECENTLY_USED_APPS	SCCM_APPS_v2 Software Last Used [imp_sccm2012v2_software_last_used]	Software Usage [samp_sw_usage]

If you've activated the Integration – Microsoft SCCM 2016 Software Usage (com.snc.samp.usage\_sccm\_2016) plugin, navigate to **Integration – Microsoft SCCM 2016 > Scheduled Import**.

**SCCM data imported for SCCM 2016**

	SCCM table	Staging table	Target table
Total usage	v_MonthlyUsageSummary	Software usage 2016 import [imp_samp_usage_2016_import]	Software Usage [samp_sw_usage]
Last used	v_GS_CCM_RECENTLY_USED_APPS	SCCM 2016 Software Last Used [imp_sccm2016_software_last_used]	Software Usage [samp_sw_usage]

**Create a reclamation rule to import Microsoft SCCM usage data**

To import your Microsoft SCCM data, create a reclamation rule for the product that you want the usage information for.

**Before you begin**

Role required: sam\_admin

**About this task**

A software product must have a product process, which consists of a filename, that is required for SCCM Usage to pull data. When adding a software product to a reclamation rule, any product processes associated with the software product are shown in the **Product Process** related list. Product processes are stored in the Software Product Process [samp\_sw\_product\_process] table.

If a product process does not exist for a software product, you can create a custom one on the form. Product processes are stored in the Custom Product Process [samp\_custom\_product\_process] table.

Some software products may not include a product process, but new product processes are added weekly through the content library updates.

**Procedure**

1. Navigate to **All > Software Asset > Administration > Reclamation Rules** and select **New**.
2. On the Reclamation Rule form, create a new record (see table for field descriptions).

**Reclamation Rule form**

Field	Description
Name	Name of the product that you are creating the reclamation rule for.
Applies to	Type of software to which the reclamation rule applies.

Field	Description
	<ul style="list-style-type: none"> <li>○ Installed Software</li> <li>○ Engineering App License</li> </ul>
Reclamation type	Type of data pulled from SCCM. <ul style="list-style-type: none"> <li>○ Total Usage Time</li> <li>○ Last Used Date</li> </ul>
Notify user	Check box for notifying the user assigned to the software requesting permission via email to remove the software.

3. If you selected **Total Usage Time** in the **Reclamation type** field, complete the fields in the Usage Metering Data section.

Field	Description
Aggregate usage by	Time period over which to aggregate usage information. <ul style="list-style-type: none"> <li>○ Last Month</li> <li>○ Last Two Months</li> <li>○ Last Three Months</li> <li>○ Last Six Months</li> </ul>
Total hours used	Amount of time the software must be used to avoid being reclaimed.

4. If you selected **Last Used Date** in the **Reclamation type** field, complete the fields in the Last Used Data section.

Field	Description
Last used before	Amount of time a user can keep unused software before it is reclaimed.

5. Select **Save**.

6. On the Software Product related list, complete the following steps if a product doesn't exist for your reclamation rule.

a. Select **New**.

b. On the Custom Software Product form, [fill in the details](#) to add the product information.

c. Select **Submit**.

d. On the Reclamation Rule form, select **Edit** in the Software Product related list.

7. On the Software Product related list, select **Edit**.

8. Select the product that you created with on the Custom Software Product form.

9. Select **Save**.

10. Complete the following steps if the software product that you selected doesn't have a product process associated with it.

- a. Select the link in the banner that displays on the Reclamation Rule form after you've applied the software product.
- b. On the Custom Product Process form, fill in the details to add a process to the product.

**Custom Product Process form**

Field	Description
Product	Name of the product.
File name	Name of the file associated with the product.
Platform	Platform of the product.

- c. Select **Submit**

**Example: Create a reclamation rule to import Microsoft SCCM usage data**

Create a reclamation rule to pull in the total usage data for Microsoft Excel from Microsoft SCCM.

To begin creating a reclamation rule, add the following information to the Reclamation Rule form.

Field	Description
Name	Microsoft Excel
Applies to	Installed Software
Reclamation type	Total Usage Time
Usage Metering Data	
Aggregate usage by	Last Month
Total hours used	20

Click **Save**.

A software product already exists for Microsoft Excel, so you need to associate the product with the reclamation rule.

On the Software Product related list, click **Edit**.

On the Edit Members form, navigate to Excel in the Collection column and select Excel. Add it to the Software Product List column.

Click **Save**.

Reclamation Rule: Microsoft Excel

Name: Microsoft Excel  Notify user

Applies to: Installed Software

Reclamation type: Total Usage Time

Usage Metering Data

Aggregate usage by: Last Month  Total hours used: 20

Specify the amount of time software must be used to avoid being reclaimed.

Update Delete

Software Product (1) Product Process (2)

Software Product: New Edit... Search Software product Search

Reclamation rule = Microsoft Excel

File name	Product	Platform
Excel	Excel	

Two product processes are associated with Excel. Click the Product Process related list to view the product processes.

Reclamation Rule: Microsoft Excel

Name: Microsoft Excel  Notify user

Applies to: Installed Software

Reclamation type: Total Usage Time

Usage Metering Data

Aggregate usage by: Last Month  Total hours used: 20

Specify the amount of time software must be used to avoid being reclaimed.

Update Delete

Software Product (1) Product Process (2)

Product Process: New Search File name Search

Software product process

File name	Product	Platform
EXCEL.EXE	Excel	
Microsoft_Excel	Excel	macosx

On the Reclamation Rule form, click **Save**.

### What to do next


The reclamation rule is added to the Reclamation Rules list and the data of the product will be imported from SCCM during the next monthly scheduled import.

## Software installation optimization and removal

You can optimize your environment by reclaiming unused software as well as removing unauthorized software.

If a user is not **using software** installed, or infrequently, that software can be a candidate for removal. Removal means uninstalling and reallocating the software to an individual who will use it more often. Removal candidates are used to reclaim software installations.

## Overview of software reclamation

Software reclamation is integrated with Workflow and **Client Software Distribution**  (CSD) to automate the process of uninstalling software from devices and reclaiming those software rights. During the workflow, the state of the removal candidate changes based on the progression within the workflow.

**i Note:** If you change a software asset's state to **Retired** or **Missing**, the installation associated to the software asset gets removed and a removal candidate won't be created.

Reclamation can be performed for suite based products and for individual products that are not part of a suite.

For suite based products, bulk reclamation is performed at the user level. One removal candidate is created for reclaiming the suite. You can add the suite components to the same removal candidate via the Software Installation related list on the removal candidate form. The potential savings displayed is for the entire suite. Suite components cannot be reclaimed individually. In the Software Asset Workspace, you can add the suite components to the removal candidate one at a time. In the Software Asset Management classic framework, you can add the suite components all at one go.

For individual products, you can specify the software installation that you wish to reclaim.

There are multiple ways that removal candidates get created. A monthly scheduled job, *SAM - Identify new reclamation candidates*, uses the reclamation rules and software usage to create removal candidates. Additionally, removal candidates are also created as part of using remediation options for unlicensed and unallocated software installations, and for restricted software. When a software model is marked as restricted, removal candidates are created for any software associated to that software model. The reclamation flow and process is the same in all these use cases.

The *SAM - Identify new reclamation candidates* scheduled job creates removal candidates and these removal candidates automatically have the bulk reclamation flag checked. The removal candidates created are based on the results from the reconciliation process. Verify that at least one reconciliation process has run with successful results before running the *SAM - Identify new reclamation candidates* scheduled job. This ensures that the *SAM - Identify new reclamation candidates* scheduled job accurately creates removal candidates to identify the right potential savings.

In each list of Removal Candidates, you can select individual records for reclamation (**Reclaim**) or **Reclaim All** to reclaim all qualifying removal candidates. Qualifying candidates are those candidates in the Ready state. Once you select **Reclaim** or **Reclaim All**, the workflow to remove the software is initiated.

## Upgrading to Xanadu

When you upgrade to Xanadu and if you have an existing removal candidate in the **Awaiting revocation** state, nothing will be done with that removal candidate. If that removal candidate was part of a suite, then removal candidates are created for each of the other software installations in that suite. However, if the state of the existing removal candidates is anything other than **Awaiting revocation** then those removal candidates are canceled and a single removal candidate gets created for all the software installations that are part of that suite. In the **Activity** section on the removal candidate form, a reason is mentioned for the closure of each removal candidate.

## Removal candidate grouping

Removal candidates are grouped according to justification.

- Low Usage
- Restricted Software
- All other justifications ( such as Unlicensed, Unallocated)

### Removal candidate state

State	Description
Attention Required	<p>A removal candidate requires attention if the <b>User</b> field is empty on an automatic removal candidate that has the <b>Notify User</b> check box selected.</p> <p>Once the <b>User</b> field is populated, the state automatically changes to Ready.</p>
Ready	<p>When a removal candidate is in the Ready state, you can select <b>Reclaim</b> to advance the workflow.</p>
Awaiting User	<p>If the <b>Notify User</b> check box was selected, the user was sent a notification of the removal candidate to approve or deny.</p>
Awaiting Approval	<p>If the <b>Notify User</b> check box was selected, the user can approve or deny the removal candidate. If the user still wants to keep the software installation, it becomes the responsibility of a member of the assignment group to approve or decline the removal.</p>
Awaiting Revocation	<p>The final step in the workflow. You can select <b>Close Complete</b> to reclaim software rights in the removal candidate manually.</p> <p>Otherwise, a weekly scheduled job (named SAM – Updating Existing Reclamation Candidates) automatically updates removal candidates in the <b>Awaiting Revocation</b> state and with the software install field empty to <b>Closed Complete</b> state.</p> <p>If the removal candidate is in any other state AND the software install is empty, the Reclamation workflow is canceled and updated to <b>Closed Skipped</b> state.</p> <p>The state for a removal candidate that has restricted software is automatically set to <b>Awaiting Revocation</b> and the justification is set to <b>Restricted Software</b>.</p>
Closed Complete	<p>Software rights have been reclaimed.</p>

### Removal candidate state (continued)

State	Description
Closed Skipped	Software rights not reclaimed by the removal candidate.
Closed Canceled	Software rights not reclaimed by the removal candidate as user activity is detected.

### Restricted software justification and unlicensed justification

Workflows for removal candidates with a restricted software justification or an unlicensed justification get executed automatically. The user is notified of unauthorized software use and is not prompted for approval.

- Restricted Software:

Unauthorized Software Use

[Publisher] [Product] installed on the device, [device name], is not authorized to be used on company property. Do not install this software again.

- Unlicensed:

Unauthorized Software Use

You are not licensed to use [Publisher] [Product] installed on the device, [device name]. Use the appropriate process to request a license for the software.

The workflow state for a Restricted software justification and an unlicensed justification is then set to Awaiting Revocation and, once discovery identifies that the installation no longer exists, the state is changed to Closed Complete.

### Unallocated justification and Low Usage justification

Workflows for removal candidates with an unallocated justification or a low usage justification prompt the user for approval.

- Unallocated:

[Publisher] [Product] installed on the device, [device name], has been flagged for removal because an allocation to use the software does not exist. Do you still require access to this software?

- Low Usage:

[Publisher] [Product] has been flagged for reclamation. Do you still need this software installed on [device name]?

### Justification descriptions

Removal candidate descriptions get updated based on the justification.

- Unallocated:

[Publisher] [Product] installed on the device, [device name], has been flagged for removal because an allocation to use the software does not exist. If you do not require this software, Reject this task. If you still require access to this software, Approve this task and your request for continued use of the software will be routed for software manager approval.

- Unlicensed:

[Publisher] [Product] installed on the device, [device name], has been flagged for removal because the licenses to use it are not owned. Please request access to this software through the appropriate process.

- Restricted Software:

[Publisher] [Product] installed on the device, [device name], is not authorized for use on company owned property.

- Low Usage:

[Publisher] [Product] installed on the device, [device name], has been flagged for reclamation due to low usage. If you do not require this software, Reject this task. If you still require access to this software, Approve this task and your request for continued use of the software will be routed for manager approval.

When the **Reclaim** action is clicked, if the **Notify User** field is selected and the days before reclamation is greater than 0, then the state is set to Awaiting User. Otherwise the state is set to Awaiting Reclamation.

When the state changes to Awaiting User, a notification is sent to the user.

## Related topics

[Reclaim software](#)

## Allocation management on Software Asset Management

Software Asset Management (SAM) offers optimal license assignment confirming that licensing entities are allocated according to the available entitlements.

For example, Software Asset Management determines the most cost-effective license assignment for a specific host or virtual machine based on the available Microsoft SQL Server Standard or Enterprise entitlements. Software Asset Management streamlines the licensing process and helps you optimize costs by selecting the most efficient licensing options. Allocation management saves your time, reduces the risk of compliance issues, and unnecessary expenses.

License allocations enable you to prioritize license assignments for specific hosts, virtual machines, users, devices, and more, according to the licensing strategy of your organization. You can override the default license assignment so that your unique needs are met.

There are several ways to manage allocations and here are a few scenarios to help you use allocation management effectively.

- Using allocation to license entities with other licenses

License a device or user with a different license than the one assigned by Software Asset Management for a flexible license management process.

- Locking license assignment by creating allocations

Lock a license assignment for the same license consumption to occur every time the reconciliation runs to maintain consistency and avoid unexpected changes.

- Removing unnecessary allocations

Remove unnecessary allocations when they're no longer needed for an efficient license management process.

- Copying allocations

SAM Managers can copy allocations from one entitlement to another which helps to apply the same allocation strategy across multiple entitlements, saving time and maintaining consistency.

- Overriding license assignment

Override Software Asset Management license assignment and allocate the license to the Host or the Virtual Machine (VM) in a Hypervisor Cluster.

### Example: Licensing entities with other licenses

Software Asset Management automatically licenses entities such as a virtual machine with Microsoft SQL Server Microsoft Standard license based on cost effectiveness. But the SAM Manager wants to change the license assignment to SQL Server Enterprise according to the licensing strategy of the organization.

SAM Manager analyzes the license consumption of a particular entity, Cluster A- VM 13, and verifies that it has been consumed by SQL Server Standard and the software installed on this virtual machine is also SQL server Standard.

The screenshot shows the 'Licenses Required By' table for the entity 'Cluster-A-VM-13'. The table has columns for 'Required by (Device)', 'Cluster', 'Assigned to', 'Licenses required', 'Licensing status', and 'Is Virtual'. Three rows are visible, all for 'Cluster A' and 'Assigned to (empty)', each requiring 4 licenses and having a 'Licensed' status. The 'Is Virtual' column is 'true' for all. To the right, the 'Software Installations' section shows 'Microsoft SQL Server Standard 2017' installed on the device.

Required by (Device)	Cluster	Assigned to	Licenses required	Licensing status	Is Virtual
Cluster-A-VM-13	Cluster A	(empty)	4	Licensed	true
Cluster-A-VM-17	Cluster A	(empty)	4	Licensed	true
Cluster-A-VM-14	Cluster A	(empty)	4	Licensed	true

But according to the licensing strategy of the organization, SAM Manager wants to assign the SQL Server Enterprise license to this entity. In this scenario, the SAM Manager or SAM Admin can add an allocation to the SQL Server Enterprise entitlement, which would allocate SQL Server Enterprise licenses to the entity.

**Note:** You don't have to remember the quantity of licenses to allocate. Software Asset Management automatically determines the licenses required for the entity, so the SAM Manager or SAM Admin can allocate a license.

After reconciliation, Cluster A- VM 13 has consumed licenses from SQL Server Enterprise. Four rights have been consumed wherein only 1 was allocated. You can also verify that the **Allocated in use** field to confirm that the added allocations are

Required by (Device)	Cluster	Assigned to	Licenses required	Licensing status	Is Virtual	Allocated in use
Azure_shared_comp1_d16v3	(empty)	Alejandra Prenatt	16	Licensed	true	0
ESX1-CVM1-SQL Cluster B	SQL Demo Cluster B	Carol Krisman	4	Licensed	true	0
ESX-5-SQL-Cluster-Y	Cluster Y	(empty)	4	Licensed	false	0
ESX-7-SQL-Cluster-Y	Cluster Y	(empty)	4	Licensed	false	0
ESX-5-SQL-Cluster-C	Cluster C	(empty)	4	Licensed	false	0
ESX2-CVM2-SQL Cluster B	SQL Demo Cluster B	Alene Rabeck	4	Licensed	true	0
Azure_shared_comp_d2v3	(empty)	Alene Rabeck	4	Licensed	true	0
Server-WS2	(empty)	Tia Lino	24	Licensed	false	24
mssqlcontainer1	(empty)	Billie Cowley	4	Licensed	true	0
Cluster-X-VM-3	Cluster X	(empty)	4	Licensed	true	0
ESX-4-SQL-Cluster-C	Cluster C	(empty)	4	Licensed	false	0
Cluster-A-VM-13	Cluster A	(empty)	4	Licensed	true	1

consumed.

For more information about the allocation fields, see [Software model results license metric results fields](#).

In the Cluster A- VM 13 Software installation list, the installed software is SQL Server Standard. However, the Software model result indicates that the entity is being consumed by the SQL Server Enterprise software

Display name	Publisher	Version	Discovery model	Normalized Product	Normalized Publisher	Software model result
Microsoft SQL Server Standard 2017	Microsoft	2017	Microsoft SQL Server Standard 2017	SQL Server	Microsoft	Microsoft SQL Server 2019 Enterprise

model.

The use case of prioritizing certain entities to consume a specific license over others can be extended to many other scenarios. For example, software suites can be prioritized to consume licenses first, or licensing a particular device with a different license metric over others.

### Example: Locking license assignments

Lets say, the SAM Manager is happy with the assignment of license consumption performed by the Software Asset Management application. You can view License Metric Results and Remediation Options for a software model result from a Product Result record. On the License Metric Results page, the **Not allocated in use** column shows the number of rights that are used to license installations, but not allocated. When this value is greater than zero, remediation options **Create Allocations** and **Remove Unallocated** are displayed on the Remediation Options page. For more information, see [View software model results](#).

Remediation action	Status	Affects compliance	Display name	Actionable rights	True-up cost
Create Allocations	New	false	Per Core	103	\$0.00
Remove Unallocated Installs	New	false	Per Core	103	\$0.00

The **Create Allocations** remediation option enables the SAM Manager to lock assignments for all entities (device/user) or individual entity, so that during future reconciliation runs, the license consumption occurs exactly as previously performed.

The allocation will be added to the entitlement immediately after performing the remediation action. For more information about remediation options, see [View software model results](#).

### Example: Overriding license assignment to a host or VM

Lets say, there’s a SQL Server Enterprise license, and Software Asset Management has optimized licensing by assigning it to the virtual layer. If your license strategy involves assigning licenses to the host layer, you can adjust this approach.

To override the license assignment:

1. In the Software Asset Workspace, navigate to **License Operations > Licensing**.
2. Select **Software entitlements**.
3. Select the software entitlements for SQL Server. For example, select the Microsoft SQL Server 2017 Enterprise software

Display name ?	Metric group	License metric	License type	State	Active rights	Purchased rights	Total cost	Data source
<input type="checkbox"/> Microsoft SQL Server 2017 Enterprise	Microsoft	Per Core	Perpetual + Software Assurance	In use	8,000	8,000	\$12,000,000.00	Manual

4. Select the **Device Allocations** tab and then select **New**.
5. Add the Device Allocations details. For more information, see [Create device allocation](#). When allocating license to the Host or VM, based on the value provided in the **Quantity** field, the Software Asset Management application determines the core count based on the following criteria:

- If an exact number of cores isn't provided, the Software Asset Management application automatically uses the actual core count of a machine for licensing purposes.
- If fewer cores than the actual machine is provided, the Software Asset Management application counts the exact number of cores present on the machine for licensing purposes.
- If more cores than the actual machine is provided, the Software Asset Management application uses the number you entered. However, the surplus is marked as Allocated not in use for licensing.

Lets allocate one license to the Microsoft SQL Server 2017 Enterprise Software entitlement, and save the entitlement, then run software reconciliation. For more information, see [Run software reconciliation in the workspace](#).

[workspace](#).

Cluster 103 has 3 hosts each with 16 cores. In the previous example, the license allocation was adjusted to 1 for one entitlement. The Software Asset Management application assigns the host the correct licenses based on the number of

Allocated to	Display name	Entitlement	Quantity
Cluster103_ESX2	Cluster103_ESX2 - (Microsoft SQL Server 2017 Enterprise)	Microsoft SQL Server 2017 Enterprise	1
Cluster103_ESX0	Cluster103_ESX0 - (Microsoft SQL Server 2017 Enterprise)	Microsoft SQL Server 2017 Enterprise	16
Cluster103_ESX1	Cluster103_ESX1 - (Microsoft SQL Server 2017 Enterprise)	Microsoft SQL Server 2017 Enterprise	16

cores.

The Software Asset Management Manager can check the license usage by the cluster. To check the license usage, navigate to **License usage > License Metrics Result > Licenses Required By**. Select the **Is Virtual** column value as **false** to verify that it's licensed at the Host layer.

Required by (Device)	Cluster	Assigned to	Licenses required	Licensing status	Is Virtual
Server-WS2	(empty)	Tia Lino	24	Licensed	false
ESX2 - SQL Cluster A	SQL Demo Cluster A	Adela Cervantstz	4	Not licensed	false
ESX3 - SQL Cluster A	SQL Demo Cluster A	Alejandra Prenatt	4	Licensed	false
Server-WS23	(empty)	Ted Bozelle	16	Licensed	false
ESX1 - SQL Cluster A	SQL Demo Cluster A	Amelia Caputo	4	Licensed	false

You can customize the Licenses Required By page by adding columns such as **Allocated in use**, **Not allocated in use**, and **Allocation**. The Allocated in use column displays the count of rights that are allocated and are used to license installations. For more information about license usage by the cluster, see [View calculations for your licenses in workspace](#).

Required by (Device)	Cluster	Assigned to	Licenses required	Licensing status	Is Virtual	Allocated in use	Allocated not in use	Not allocated in use	Allocation	Allocation
Cluster103_ESX0	Cluster103	Abel Tuter (Architect)	16	Licensed	false	16	0	0	Cluster103_ESX0 - (Microsoft SQL Server 2017 Enterprise)	
Cluster103_ESX1	Cluster103	Abel Tuter (Architect)	16	Licensed	false	16	0	0	Cluster103_ESX1 - (Microsoft SQL Server 2017 Enterprise)	
Cluster103_ESX2	Cluster103	Abel Tuter (Architect)	16	Licensed	false	1	0	15	Cluster103_ESX2 - (Microsoft SQL Server 2017 Enterprise)	

When allocating software licenses, follow the licensing rules supported by the publisher.

**Important:**

- Allocation isn't required for the subscription products.
- According to Microsoft licensing rules, host layer licensing isn't supported for SQL Server Standard. When you allocate the license at host level, the allocated license number is shown in the **Allocated not in use** column.
- Avoid allocating licenses to a cluster directly. Instead, allocate them to the hosts or VMs within the cluster. When you allocate a license to a cluster, the allocated license number is shown in the **Allocated not in use** column.
- When the **Allocated not in use** column value is greater than zero, the **Remove Allocations** remediation option is automatically created for each unique license metric in the software model.

**Related topics**

[Create device allocation](#)

**Employee off-boarding process for asset reclamation**

Coordinate an employee's off-boarding process via a workflow that lets you request, assess, and remove assets.

The Software Asset Management off-boarding process entails the return of all software licenses assigned to the employee. Additionally, all software installations are removed from the devices, all user allocations are removed, and access to SSO, SAP, and Citrix products is revoked.

When an employee leaves an organization or moves to a different role, retrieving the assets assigned to the employee necessitates extensive coordination between the Human Resources department and the asset manager. You can create an off-boarding catalog request, which initiates a prescriptive workflow to efficiently retrieve assets and restock them in the inventory, reassign them, send them for repair, or dispose as required.

**Note:** For information on the Hardware Asset Management asset reclamation process, see [Asset reclamation](#).

You can create an asset reclamation request via the Service Catalog. Once the request is created, reclamation line items are created that comprise of a series of tasks. These tasks can only be accessed and performed only by the sam\_user role. Once all the tasks are closed, the reclamation line item is complete. After all the reclamation line items are complete, the catalog request is also completed. For information on creating an off-boarding catalog request, see [Create a catalog request to reclaim assets](#).

**Note:** Software reclamation line items of the type Device Reclamation are created for each device that is returned, provided the device has software installations on it and that device was selected in the Reclaim Asset form. An additional software reclamation line item of the type User Reclamation is created if the **Employee Separation** check box was selected in the Reclaim Asset form.

### Bring your own license or subscription to the public cloud

Bring your own license (BYOL) support enables you to determine the license compliance of your Microsoft and Oracle software products across hybrid infrastructures. Bring your own subscription (BYOS) support enables you to determine the license compliance of your Red Hat Enterprise Linux (RHEL) software products across hybrid infrastructures.

When organizations move to the public cloud, existing on-premise perpetual licenses are carried over to the cloud using BYOL. Existing on-premise subscription licenses are also carried over to the cloud using BYOS. BYOL and BYOS help improve license optimization, as organizations must pay only for infrastructure costs.

The Software Asset Management application supports BYOL for Microsoft and Oracle software products and BYOS for RHEL software products as follows:

Product	Product edition	BYOL or BYOS	Supported cloud providers	Supported service model	Supported infrastructure type
Microsoft SQL Server	All editions	BYOL	<ul style="list-style-type: none"> <li>• AWS</li> <li>• Microsoft Azure</li> <li>• Google Cloud Platform (GCP)</li> </ul>	Infrastructure as a Service (IaaS)	Shared and dedicated
Microsoft Windows Server	All editions	BYOL	<ul style="list-style-type: none"> <li>• AWS</li> <li>• Microsoft Azure</li> <li>• Google Cloud Platform (GCP)</li> </ul>	Infrastructure as a Service (IaaS)	Shared and dedicated

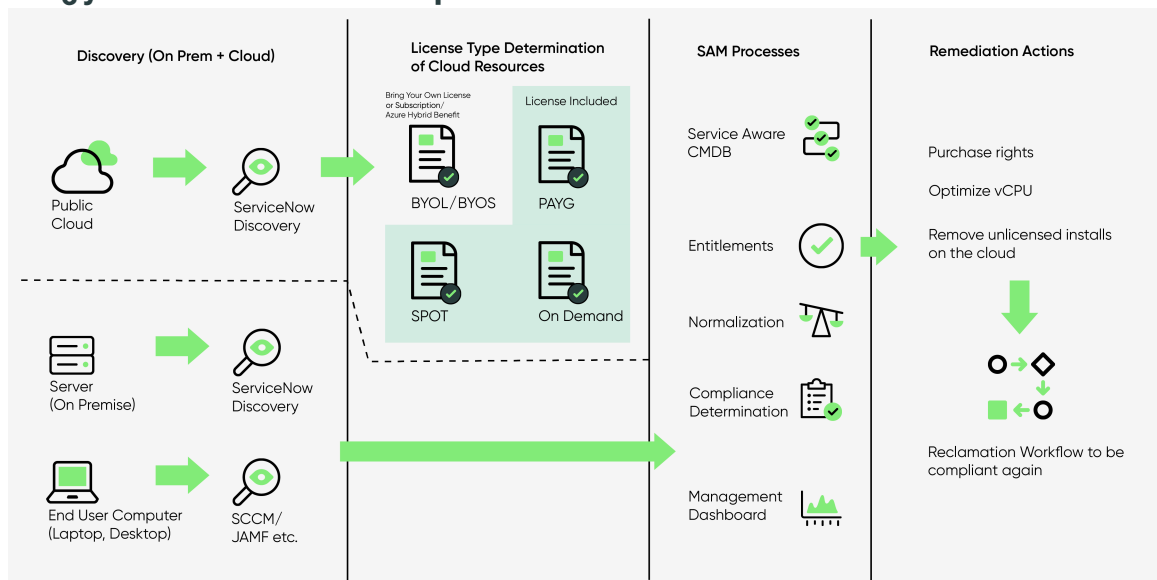
**Note:** This column applies to Infrastructure as a Service (IaaS) models only.

Product	Product edition	BYOL or BYOS	Supported cloud providers	Supported service model	Supported infrastructure type
Oracle Database	<ul style="list-style-type: none"> <li>Oracle Database Standard Edition</li> <li>Oracle Database Standard Edition One</li> <li>Oracle Database Standard Edition 2</li> <li>Oracle Database Enterprise Edition</li> </ul>	BYOL	<ul style="list-style-type: none"> <li>AWS</li> <li>Microsoft Azure</li> </ul>	<ul style="list-style-type: none"> <li>AWS: Infrastructure as a Service (IaaS) and Platform as a Service (PaaS)</li> </ul> <p><b>Note:</b> In AWS, the IaaS model refers to the Amazon Elastic Computing (EC2) web service, while the PaaS model refers to the Amazon Relational Database Service (RDS).</p> <ul style="list-style-type: none"> <li>Microsoft Azure: Infrastructure as a Service (IaaS)</li> </ul>	<p><b>Note:</b> This column applies to Infrastructure as a Service (IaaS) models only.</p> <p>Shared and dedicated</p>
Oracle WebLogic Server	<ul style="list-style-type: none"> <li>Oracle WebLogic Server Standard Edition</li> <li>Oracle WebLogic Server Enterprise Edition</li> </ul>	BYOL	<ul style="list-style-type: none"> <li>AWS</li> <li>Microsoft Azure</li> </ul>	Infrastructure as a Service (IaaS)	Shared and dedicated
Red Hat Enterprise Linux Server	All editions	BYOS	<ul style="list-style-type: none"> <li>AWS</li> <li>Microsoft Azure</li> <li>Google Cloud Platform (GCP)</li> </ul>	Infrastructure as a Service (IaaS)	Shared

BYOL and BYOS support on the Software Asset Management application help you:

- Discover perpetual and subscription-based software licenses automatically across on-premise and cloud environments, such as AWS, Microsoft Azure, and GCP.
- Determine the license compliance of the following software products across your hybrid infrastructure:
  - Microsoft SQL Server
  - Microsoft Windows Server
  - Oracle Database
  - Oracle WebLogic Server
  - Red Hat Enterprise Linux Server
- Provide advanced support for optimization through Cloud Special Rights, such as dual use rights, edition flexibility, and unlimited virtualization.
- Perform remediation when your software is out of compliance.

### Bring your own license or subscription flow



## Prerequisites

Before you can begin determining the license compliance of software across your hybrid infrastructures, you must complete the following prerequisites:

- Activate the Discovery (com.snc.discovery) plugin on your ServiceNow instance.

See [Request Discovery](#) for detailed instructions.

- Request and install the Discovery and Service Mapping Patterns application from the [ServiceNow Store](#).

See [Discovery patterns used by ITOM Visibility](#) for more information on Discovery and Service Mapping patterns.

- Migrate cloud discoveries from Cloud API (CAPI) probes to pattern-based discovery.

See [CAPI to Pattern Migration: Procedure for switching from CAPI-based Cloud Discovery to pattern-based Cloud Discovery \[KB0827153\]](#) for detailed instructions.

- Request and install the CMDB CI Class Models application from the [ServiceNow Store](#).

See [CMDB CI Class Models store app](#) for more information on the CMDB CI Class Models application.

- Request and install the Cloud Cost Management application from the [ServiceNow Store](#).

The Cloud Cost Management application is required for discovering the license types of software in your Microsoft SQL Server deployments on AWS. See [Cloud Insights application](#) for more information on the Cloud Cost Management application.

## BYOL and BYOS discovery

With BYOL and BYOS, the ServiceNow® Discovery application locates and identifies licensable software in both your on-premise and cloud environments using Discovery and Service Mapping patterns. The Discovery application uses Amazon AWS Cloud, Microsoft Azure Cloud, and Google Cloud discovery patterns to discover the following resources for software in cloud environments:

- Cloud provider
- Virtual machine details
- Service model type, such as IaaS or PaaS
- Host infrastructure type for IaaS, such as shared or dedicated
- License type, such as BYOL, BYOS, or License Included
- Software that is installed on the virtual machine

**Note:** The Amazon AWS Cloud, Microsoft Azure Cloud, and Google Cloud discovery patterns are included in the Discovery and Service Mapping Patterns store application. For more information on Amazon AWS Cloud discovery patterns, see [Amazon AWS Cloud components discovery using patterns](#). For more information on Microsoft Azure Cloud discovery patterns, see [Microsoft Azure Cloud components discovery using patterns](#). For more information on Google Cloud discovery patterns, see [Google Cloud Platform \(GCP\) resource inventory discovery](#) and [Google Cloud Platform \(GCP\) Organization discovery with Patterns](#).

Resources for your discovered software are populated and stored in corresponding Configuration Management Database (CMDB) tables, including the Host [cmdb\_ci\_cloud\_host] and Serverless Hardware [cmdb\_ci\_serverless\_hardware] tables, on your ServiceNow instance.

The Software Asset Management application then determines the license types of your discovered software either independently or with the Discovery or Cloud Cost Management application.

- For Microsoft Windows Server and Oracle Database on AWS, Microsoft Azure, and Google Cloud Platform (GCP), the Software Asset Management application determines license types independently.
- For Microsoft SQL Server on AWS, the Software Asset Management application determines license types using billing records from the Cloud Cost Management application.
- For
  - Microsoft SQL Server on Microsoft Azure and Google Cloud Platform (GCP)
  - and Red Hat Enterprise Linux Server on AWS, Microsoft Azure, and Google Cloud Platform (GCP),

the Software Asset Management application determines license types using resources that are discovered through the Discovery application.

- For Oracle WebLogic Server on AWS and Microsoft Azure, you must specify license types manually.

For all software products except Oracle WebLogic Server, license types are applied to associated configuration items (CIs) using automatically generated key-value pairs. The key-value pairs are stored in the Key Values [cmdb\_key\_value] table. Each key-value pair consists of a **Key** in the `<software-product>_License_Type_automatic` format and a **Value** of either **License Included**, **BYOL**, or **BYOS**.

For Oracle WebLogic Server, you must specify license types manually by creating key-value pairs. The key-value pairs must have a **Key** of `Oracle_WebLogic_Server_License_Type` and a **Value** of either `License Included` or `BYOL`. After you create these key-value pairs, the specified license types can be applied to the associated CIs.

- **Note:** If the license type is not manually specified for a software product, the Software Asset Management application won't license the installation due to insufficient information.

You can use these key-value pairs to determine whether the associated software licenses are using the BYOL, BYOS, or License Included licensing model. The BYOL and BYOS licensing models include license purchasing options such as Azure Hybrid Benefit. The License Included licensing model includes license purchasing options such as Pay As You Go (PAYG), SPOT, and On Demand. With the License Included licensing model, the cloud provider is responsible for managing licenses.

- **Note:** For Oracle Database, support for the BYOL and License Included licensing models is based on the cloud provider and Oracle Database version that you're using.
  - AWS RDS (PaaS): The BYOL licensing model is supported on Oracle Database Standard Edition, Standard Edition One, Standard Edition 2, and Enterprise Edition. The License Included licensing model is supported on only Oracle Database Standard Edition 2.
  - AWS EC2 (IaaS): Only the BYOL licensing model is supported.
  - Microsoft Azure (IaaS): Only the BYOL licensing model is supported.

## Software reconciliation for BYOL and BYOS license compliance

After your discovered software is marked as BYOL, BYOS, or License Included, reconciliation runs on the software that is marked as BYOL or BYOS. You can then use the resulting information to determine the software compliance across your hybrid infrastructure.

BYOL and BYOS licensing rules can differ for the same software products across different cloud providers. For example, Windows Server has different licensing rules on AWS and on Microsoft Azure. These rules must be combined with existing on-premise rules so that you can determine the complete license compliance position of each software product across your hybrid infrastructures. Microsoft offers special rights for products that are deployed on AWS vs Microsoft Azure, such as dual use rights, edition flexibility, and unlimited virtualization. For more information on licensing rules, see [Licensing rules for BYOL and BYOS](#).

The Software Asset Management application automatically reconciles these rules and provides an accurate license position report that can be viewed in the License usage view of the Software Asset Workspace.

- You can view BYOL license rights for your Microsoft software products in the Microsoft publisher overview of the Software Asset Workspace. For more information on the Microsoft publisher overview, see [Publisher overview for Microsoft in the Software Asset Workspace](#).
- You can view BYOL license rights for your Oracle software products in the Oracle publisher overview of the Software Asset Workspace. You can also view information about your Oracle Database server deployments across hybrid infrastructures, based on the agreement type, in the Oracle DB Server Deployments per Agreement report. For more information on the Oracle publisher overview, see [Publisher overview for Oracle in the Software Asset Workspace](#). For more information on the Oracle DB Server Deployments per Agreement report, see the [Oracle DB Server Deployments per Agreement report](#).
- You can view BYOS license rights for your RHEL software products in the Red Hat publisher overview of the Software Asset Workspace. For more information on the Red Hat publisher overview, see [Publisher overview for Red Hat in the Software Asset Workspace](#).

## Cloud-based remediation options

To remediate non-compliance for cloud installations, the Software Asset Management application provides the following remediation options:

### Remove Unlicensed Installs - Cloud

The **Remove Unlicensed Installs - Cloud** remediation option removes all cloud installations that are unlicensed for the associated software product.

When you select the **Remove Unlicensed Installs - Cloud** remediation option, removal candidates that follow the regular remediation workflow are created. After the removal candidates reach the **Awaiting Revocation** state, you can uninstall the cloud installations from your cloud provider and then mark the removal candidates as complete.

### Optimize vCPU

The **Optimize vCPU** remediation option provides vCPU sizing optimizations based on the core count and core thread count. This remediation option is applicable only to Oracle Database Per Processor licenses on AWS RDS (PaaS). That Per Processor licensing is based on the number of vCPUs on which you install or run an Oracle database.

For more information on AWS core counts and core thread counts, see [Configuring the processor for a DB instance class](#).

## Licensing rules for BYOL and BYOS

View the bring your own license (BYOL) licensing rules for Microsoft and Oracle products in public cloud environments. In addition, view bring your own subscription (BYOS) licensing rules for Red Hat Enterprise Linux (RHEL) products in public cloud environments. Licensing rules can differ for virtual machines that reside on shared hosts or dedicated hosts across different cloud providers.

## Licensing rules for Microsoft Windows Server and Microsoft SQL Server

- **Note:** The following tables list only a subset of rules for Windows Server and SQL Server BYOL. Refer to the official Windows Server and SQL Server websites for the complete list of licensing rules.

**Windows Server licensing rules**

Cloud provider	Instance type	With software assurance	Without software assurance
AWS for Windows Server	Shared host	BYOL isn't supported because Windows Server doesn't have license mobility rights.	BYOL isn't supported.
	Dedicated host	<ul style="list-style-type: none"> <li>• BYOL is supported for purchases or software releases only before October 1, 2019.</li> <li>• License by physical host.</li> <li>• Unlimited virtualization for Windows DC for purchases before October 1, 2019.</li> </ul>	<ul style="list-style-type: none"> <li>• BYOL is supported for purchases or software releases only before October 1, 2019.</li> <li>• License by physical host.</li> <li>• Unlimited virtualization for Windows DC for purchases before October 1, 2019.</li> </ul>
Microsoft Azure for Windows Server	Shared host	<ul style="list-style-type: none"> <li>• BYOL is supported using Microsoft Azure Hybrid Benefits (AHB).</li> <li>• Enough eligible core licenses must be allocated to cover all cores on the virtual machines that are running.</li> <li>• A minimum of eight core licenses are allocated for using AHB.</li> <li>• Windows DC allows concurrent or dual use rights.</li> </ul>	BYOL isn't supported.

Windows Server licensing rules (continued)

Cloud provider	Instance type	With software assurance	Without software assurance
		<p><b>Note:</b> Microsoft Windows Server Data Center provides the option of dual use rights, enabling you to utilize your Windows Server licenses simultaneously on Microsoft Azure and on licensed servers within your data centers. This feature, Azure Hybrid Benefit is only available on Microsoft Azure. For more information, see <a href="#">Azure Hybrid Benefit for Windows Server</a>.</p> <ul style="list-style-type: none"> <li>• Edition flexibility: Windows Standard can license Windows DC.</li> </ul>	
	Dedicated host	<ul style="list-style-type: none"> <li>• BYOL is supported using Microsoft Azure Hybrid Benefits (AHB).</li> <li>• License by virtual machine or available cores. Only for Windows DC.</li> </ul>	<ul style="list-style-type: none"> <li>• BYOL is supported for purchases or software releases only before October 1, 2019.</li> <li>• License for total physical cores for purchases before October 1, 2019.</li> </ul>

Windows Server licensing rules (continued)

Cloud provider	Instance type	With software assurance	Without software assurance
		<ul style="list-style-type: none"> <li>• Unlimited virtualization for Windows DC if licensing available cores.</li> <li>• Windows DC allows concurrent or dual use rights for virtual machines only.</li> </ul> <p><b>Note:</b> Microsoft Windows Server Data Center provides the option of dual use rights, enabling you to utilize your Windows Server licenses simultaneously on Microsoft Azure and on licensed servers within your data centers. This feature, Azure Hybrid Benefit is only available on Microsoft Azure. For more information, see <a href="#">Azure Hybrid Benefit for Windows Server</a>.</p>	<ul style="list-style-type: none"> <li>• Unlimited virtualization for Windows DC for purchases before October 1, 2019.</li> </ul>
GCP for Windows Server	Shared host	BYOL isn't supported because Windows Server doesn't have license mobility rights.	BYOL isn't supported.
	Dedicated host	BYOL isn't supported.	BYOL isn't supported.

**SQL Server licensing rules**

Cloud provider	Instance type	With software assurance	Without software assurance
AWS for SQL Server	Shared host	<ul style="list-style-type: none"> <li>• BYOL is supported via license mobility rights.</li> <li>• License virtual cores (vCPU) - minimum of four cores per virtual machine.</li> </ul>	BYOL isn't supported.
	Dedicated host	<ul style="list-style-type: none"> <li>• BYOL is supported via License Mobility rights.</li> <li>• License by physical host.</li> <li>• Unlimited virtualization (SQL Server Enterprise) for purchases before October 1, 2019.</li> </ul>	<ul style="list-style-type: none"> <li>• BYOL is supported for purchases or software releases only before October 1, 2019.</li> <li>• License by total physical cores for purchases before October 1, 2019.</li> <li>• Unlimited virtualization for Windows DC for purchases before October 1, 2019.</li> </ul>
Microsoft Azure for SQL Server	Shared host	<ul style="list-style-type: none"> <li>• BYOL is supported using Microsoft Azure Hybrid Benefits (AHB).</li> <li>• Edition flexibility: 1 SQL Enterprise license on-premise can cover 4 SQL Server Standard cores. Similarly, 4 SQL Server standard licenses on-premise can cover 1 SQL Server Enterprise.</li> <li>• License virtual cores (vCPU) - minimum of four cores per virtual machine.</li> </ul>	BYOL isn't supported.

**SQL Server licensing rules (continued)**

Cloud provider	Instance type	With software assurance	Without software assurance
	Dedicated host	<ul style="list-style-type: none"> <li>• BYOL is supported using Microsoft Azure Hybrid Benefits (AHB).</li> <li>• License by virtual machine or available cores (SQL Server Enterprise).</li> <li>• License by virtual machine or total cores (SQL Server Standard).</li> <li>• Unlimited virtualization (SQL Server Enterprise) if licensing available cores.</li> </ul>	<ul style="list-style-type: none"> <li>• BYOL is supported for purchases or software releases only before October 1, 2019.</li> <li>• License by total physical cores for purchases before October 1, 2019.</li> </ul>
GCP for SQL Server	Shared host	<ul style="list-style-type: none"> <li>• BYOL is supported via license mobility rights.</li> <li>• License virtual cores (vCPU) - minimum of four cores per virtual machine.</li> </ul>	BYOL isn't supported.
	Dedicated host	BYOL isn't supported.	BYOL isn't supported.

**Licensing rules for Oracle Database and Oracle WebLogic Server**

**i Note:** The following tables list only a subset of rules for Oracle Database and Oracle WebLogic Server BYOL. Refer to the official Oracle Database and Oracle WebLogic Server websites for the complete list of licensing rules.

**i Note:** Unless otherwise specified, licensing rules are the same for both AWS and Microsoft Azure.

**Oracle Database licensing rules**

Licensing type	Licensing rule
Per Processor licensing	Licensing is based on the number of vCPUs that the Oracle database is installed or running on. Different licensing rules are applied based on the Oracle Database version that is installed or running.

**Oracle Database licensing rules (continued)**

Licensing type	Licensing rule
	<p><b>i Note:</b> The Oracle Processor Core Factor Table is not applicable in cloud environments.</p> <p><b>Oracle Database Standard Edition, Standard Edition One, and Standard Edition 2</b></p> <p>Four vCPUs are equivalent to one socket, and one socket requires one license.</p> <p>The number of vCPUs is rounded up to the nearest multiple of four. For example, an Oracle database that is running on 10 vCPUs requires a total of three licenses.</p> <p><b>Oracle Database Enterprise Edition</b></p> <p>If hyper-threading is enabled, one license is required for every two vCPUs on which you install or run an Oracle database. If hyper-threading isn't enabled, one license is required for every vCPU on which you install or run an Oracle database.</p>
<p>Named User licensing</p>	<p>One license is required for every user or physical device that accesses an Oracle database.</p> <p>Different licensing minimums are applied based on the Oracle Database edition that your users and devices are accessing:</p> <p><b>Oracle Database Standard Edition and Standard Edition One</b></p> <p>These database editions don't have any licensing minimums.</p> <p><b>Oracle Database Standard Edition 2</b></p> <p>You must have a minimum of 10 licenses per eight vCPUs.</p> <p><b>Oracle Database Enterprise Edition</b></p> <p>You must have a minimum of either 25 licenses per vCPU or the total number of users and devices that are accessing this database edition. The licensing minimum is set to the larger of the two values.</p>
<p>Oracle Database option and management pack licensing</p>	<p>Database options and management packs must be licensed separately from database servers.</p> <p>The following database options and management packs aren't supported in cloud environments:</p> <ul style="list-style-type: none"> <li>• Oracle Real Application Clusters (RAC)</li> <li>• Oracle Data Mining</li> <li>• Oracle Change Management Pack</li> <li>• Oracle Provisioning and Patch Automation Pack for Database</li> </ul>
<p>Oracle Database option licensing for Active Data Guard</p>	<p>If you're using the Oracle Active Data Guard option on an Oracle Enterprise Edition database, the primary database instance and read replicas that are associated with that database each require one Oracle Database Enterprise Edition license and one Oracle Active Data Guard license.</p>

### Oracle Database licensing rules (continued)

Licensing type	Licensing rule
	<p><b>i Note:</b> The Active Data Guard option is available only on Oracle Database Enterprise Edition.</p>
Unlimited License Agreement (ULA) licensing	Licenses that are acquired through an Unlimited License Agreement (ULA) are supported in authorized cloud environments. However, certification of these licenses isn't required at the end of the ULA term.
High availability (Multi-AZ) licensing	High availability, or Multi-AZ, deployments require twice the number of licenses as Single-AZ deployments so that they can account for standby Oracle Database instances.

In addition to these Oracle Database licensing rules, consider the following vCPU size limitations when you're setting up an Oracle deployment in the cloud. These size limitations can help you determine the maximum number of licenses that are supported on your cloud instances.

**i Note:** The vCPU size limitations are the same for both AWS and Microsoft Azure

#### vCPU size limitations

Oracle Database edition	vCPU size limitation
Oracle Database Standard Edition	Oracle Database Standard Edition is supported only on cloud instances that have a maximum of 16 vCPUs.
Oracle Database Standard Edition One and Standard Edition 2	Oracle Database Standard Edition One and Standard Edition 2 are supported only on cloud instances that have a maximum of eight vCPUs.
Oracle Database Enterprise Edition	Oracle Database Enterprise Edition is supported on all cloud instances, regardless of the vCPU count.

### Oracle WebLogic Server licensing rules

Licensing type	Licensing rule
Per Processor licensing	<p>Licensing is based on the number of vCPUs that the Oracle WebLogic server is installed or running on. Different licensing rules are applied based on the Oracle WebLogic Server version that is installed or running.</p> <p><b>i Note:</b> The Oracle Processor Core Factor Table is not applicable in cloud environments.</p> <p><b>Oracle WebLogic Server Standard Edition</b></p> <p>Four vCPUs are equivalent to one socket, and one socket requires one license.</p> <p>The number of vCPUs is rounded up to the nearest multiple of four. For example, an Oracle WebLogic server that is running on seven vCPUs requires a total of two licenses.</p>

**Oracle WebLogic Server licensing rules (continued)**

Licensing type	Licensing rule
	<p><b>Oracle WebLogic Server Enterprise Edition</b></p> <p>If hyper-threading is enabled, one license is required for every two vCPUs on which you install or run an Oracle WebLogic Server. If hyper-threading isn't enabled, one license is required for every vCPU on which you install or run an Oracle WebLogic server.</p>
<p>Named User licensing</p>	<p>One license is required for every user or physical device that accesses an Oracle WebLogic server.</p> <p>Different licensing minimums are applied based on the Oracle WebLogic Server edition that your users and devices are accessing:</p> <p><b>Oracle WebLogic Server Standard Edition</b></p> <p>You must have a minimum of either 10 licenses per eight vCPUs or the total number of users and devices that are accessing this WebLogic Server version. The licensing minimum is set to the larger of the two values.</p> <p><b>Oracle WebLogic Server Enterprise Edition</b></p> <p>If hyper-threading is enabled, you must have a minimum of either 10 licenses per two vCPUs or the total number of users and devices that are accessing this WebLogic Server edition.</p> <p>If hyper-threading isn't enabled, you must have a minimum of either 10 licenses per vCPU or the total number of users and devices that are accessing this WebLogic Server edition.</p> <p>The licensing minimum is set to the larger of the two values.</p>

**Licensing rule for Red Hat Enterprise Linux Server**

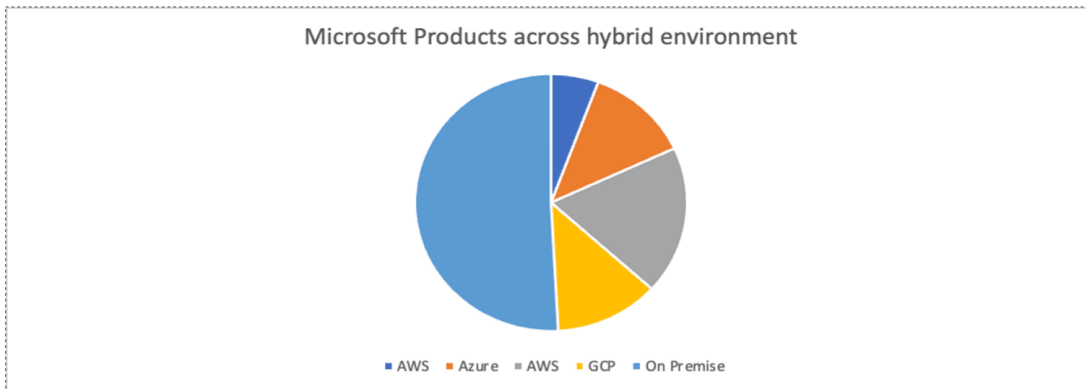
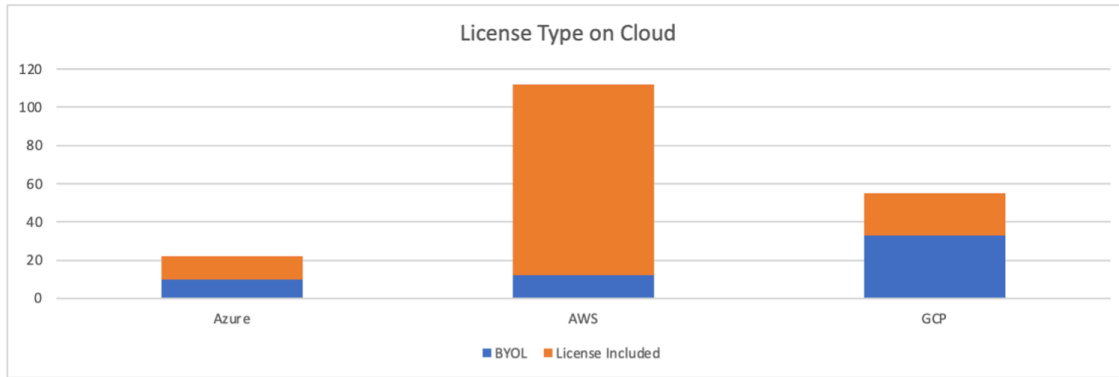
One on-premise subscription license is required for every two cloud-based virtual machines (VMs) on which you install and run Red Hat Enterprise Linux Server.

**Note:** This rule is only one of the licensing rules for Red Hat Enterprise Linux Server BYOS. Refer to the official Red Hat Enterprise Linux website for the complete list of licensing rules.

**Microsoft Windows and SQL Server infrastructure details reports**

You can use the Microsoft Windows and SQL Server infrastructure details reports to gain visibility into the SQL Server and Windows Server deployments and infrastructure for different cloud providers including Microsoft Azure, AWS, and GCP.

## License types on cloud



## Azure BYOL Realized Savings report

You can use the Azure BYOL Realized Savings report to gain visibility into the potential and actual cost savings for your Microsoft SQL Server and Microsoft Windows Server deployments on Microsoft Azure when using Azure Hybrid Benefit, which is the bring your own license (BYOL) licensing model for Microsoft Azure.

The Azure BYOL Realized Savings report is generated only if you have requested and installed the ServiceNow® Cloud Cost Management application from the ServiceNow Store. See [Cloud Cost Management application](#) for more information on Cloud Cost Management.

**Note:** This report is available only in the Software Asset Workspace. This report isn't available in the Software Asset Management classic application.

To view this report, launch the Software Asset Workspace by navigating to **Software Asset > Software Asset Workspace** on your ServiceNow instance. From the Software Asset Workspace, navigate to **License usage > Reports > Azure BYOL Realized Savings Report**.

### Azure BYOL Realized Savings report

Field	Description
Virtual Machine	Azure virtual machine (VM) that Microsoft SQL Server or Microsoft Windows Server is running on.
Host Type	Type of Azure host that the Azure VM is running on. The options are <b>Shared</b> and <b>Dedicated</b> .
Location	Geographic location that the Azure host resides in.

**Azure BYOL Realized Savings report (continued)**

Field	Description
vCPU	Number of virtual CPUs (vCPUs) that are assigned to the Azure VM.
Hardware Type	Hardware type of the Azure host.
Operating System	Operating system (OS) version and edition that is running on Azure.
SQL Server	Microsoft SQL Server version and edition that is running on the Azure VM.
AHB on Windows Server	Field indicating if Azure Hybrid Benefit is enabled for Microsoft Windows Server.
AHB on SQL Server	Field indicating if Azure Hybrid Benefit is enabled for Microsoft SQL Server.
Standard price per month without AHB	Potential VM cost per month when Azure Hybrid Benefit isn't enabled. This value is based on the assumption that the VM is running for the entire month (720 hours).
Standard price per month with AHB	Potential VM cost per month when Azure Hybrid Benefit is enabled. This value is based on the assumption that the VM is running for the entire month (720 hours).
Standard Savings Realized	Potential VM cost saved per month by using Azure Hybrid Benefit. This value is based on the assumption that the VM is running for the entire month (720 hours).
Actual price per month without AHB	Actual VM cost per month when Azure Hybrid Benefit isn't enabled. This value is based on the actual number of hours that the VM was running for within a month.
Actual price per month with AHB	Actual VM cost per month when Azure Hybrid Benefit is enabled. This value is based on the actual number of hours that the VM was running for within a month.
Actual Savings Realized	Actual VM cost saved per month by using Azure Hybrid Benefit. This value is based on the actual number of hours that the VM was running for within a month.

**Core infrastructure suite (CIS) support for BYOL**

Use your on-premise CIS entitlements to license Windows Server installations on cloud platforms such as AWS and Microsoft Azure.

The CIS entitlements would license the Windows Server installations in accordance with the Microsoft licensing rules on cloud: If you licensed Windows Server through CIS, you can use the Azure Hybrid Use Benefit. The System Center component in CIS, however, is not covered.

**Understanding your cluster infrastructure**

Get a holistic and strategic analysis of all the entities in your clusters in one view on the Software Asset Management application.

The SAM Cluster 360° feature simplifies the process of analyzing a cluster, which is typically a time-consuming task. This feature helps SAM managers to make strategic decisions by providing them with a visually comprehensive view of their cluster setup, licensing, and cluster health issues. Drill down to each node on a cluster for a deeper understanding. For detailed information on your cluster, see [View your cluster setup in 360 degrees](#).

## Cluster overview

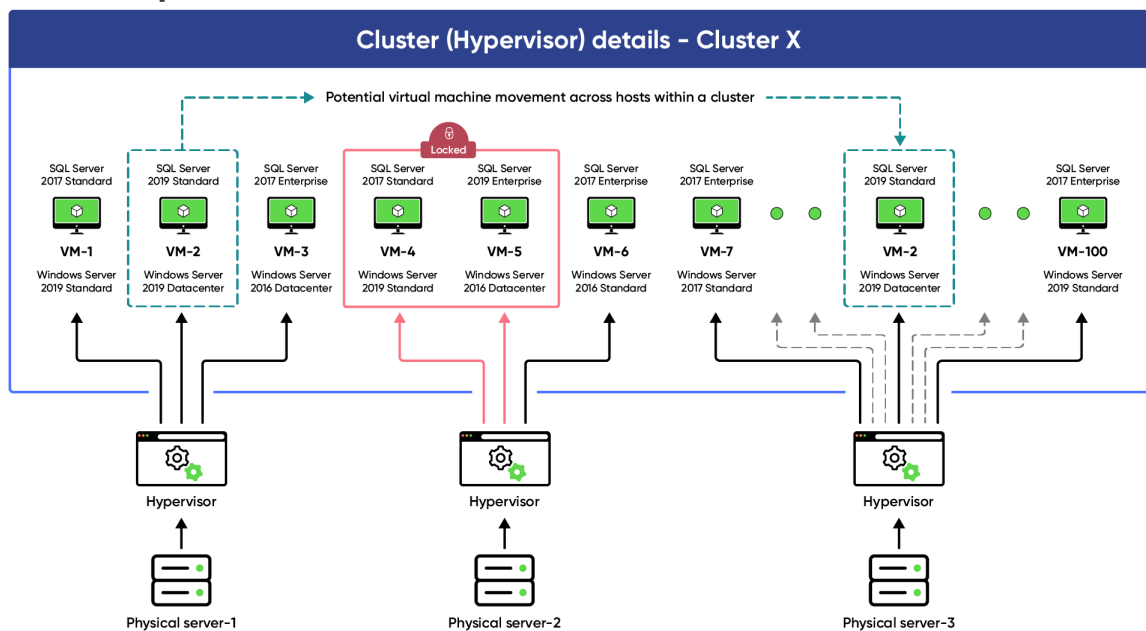
A cluster is a type of virtualization where hosts are grouped and share resources. This technology provides high availability, resource pooling, and load balancing for virtual machines that run on it. This technology provides the foundation for building highly resilient, scalable, and efficient virtualized environments.

Each host has the capacity to run multiple virtual machines (VMs) and can be configured to support features such as high availability, DRS (Dynamic Resource Scheduling), and host affinity.

The VMs can move across the hosts depending on certain settings such as High availability or Distributed Resource Scheduler (DRS). Settings such as Host affinity can lock VMs to certain hosts.

Factors such as the number of VMs, movement of VMs, hosts, and VM cores in a cluster can affect your license compliance.

### Cluster setup



## Benefits of SAM Cluster 360°

SAM Cluster 360° provides a holistic and strategic analysis of clusters to support infrastructure understanding, license compliance, and health checks across the cluster.

The SAM Cluster 360° feature helps you to view and analyze the following concepts:

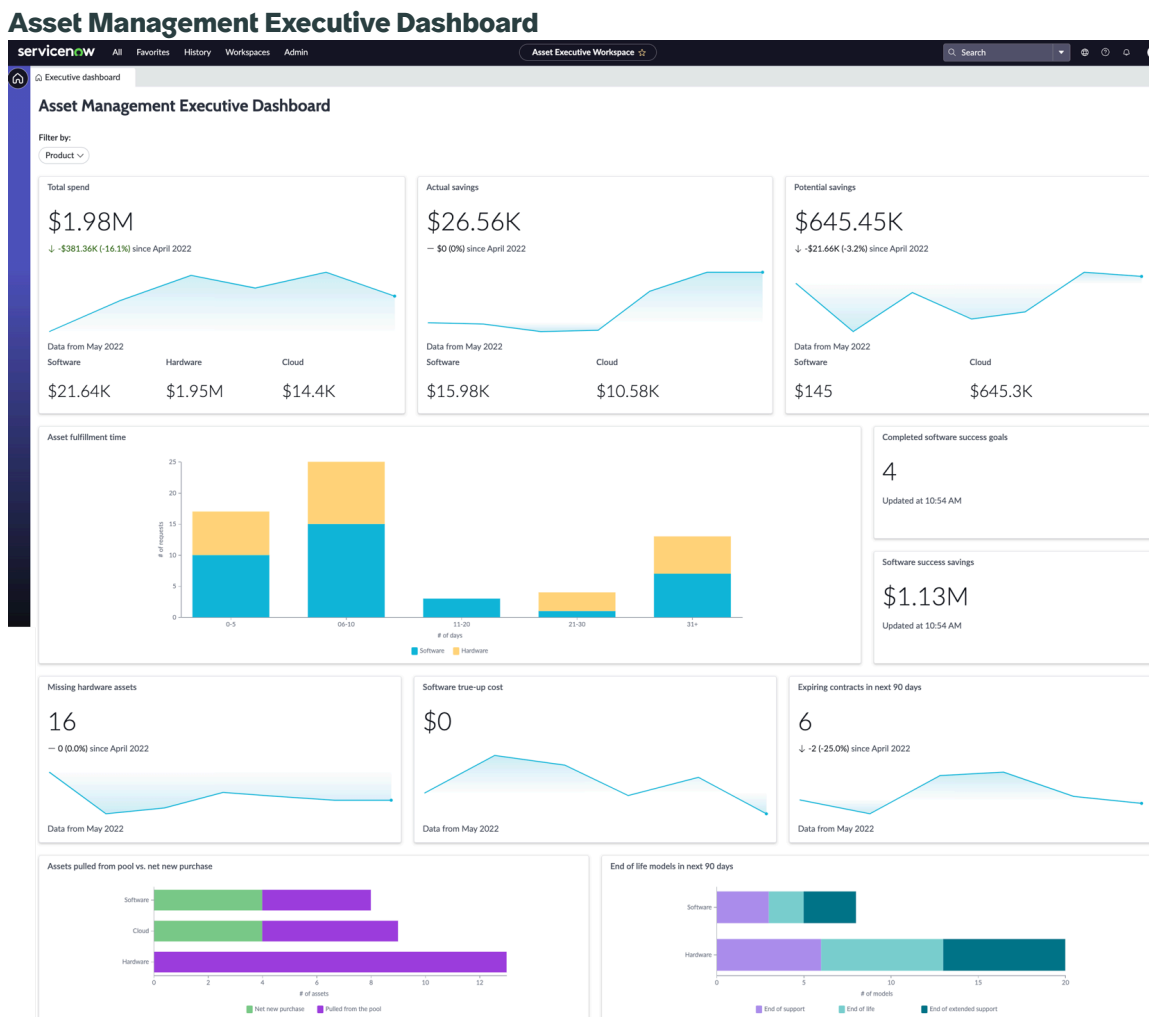
- Core infrastructure of a cluster: hosts, VMs, software, cores, and processors.
- All hosts and the VMs that can potentially move on them.
- All software, licensable and non-licensable, running on a cluster.
- All software consuming licenses.

## Executive insights into KPIs using the Asset Management Executive dashboard

Use the Asset Management Executive dashboard to gain visibility into critical KPIs for the Software Asset Management application, Hardware Asset Management application, and the Cloud Cost Management application via a single dashboard.

To access the Asset Management Executive dashboard, you must either have the Software Asset Management application or the Hardware Asset Management application in your ServiceNow instance.

To view the Asset Management Executive dashboard, navigate to **Asset Executive Workspace > Asset Management Executive Dashboard**. A user with the role of `sn_itam_common.asset_exec` can access the dashboard.



You can filter the results in the dashboard by product, domain, or by both product and domain. If you filter by domain, the filter gets applied to all the widgets. If you filter by product, since some widgets are specific to certain products, the filter is not applied to all the widgets.

After you select a filter, a blue box appears on the right side of each widget, displaying one of the following numbers:

- 0: Indicates that no filter is applied to a widget.
- 1: Indicates that only one filter is applied to a widget.
- 2: Indicates that both the filters are applied to a widget.

**Note:** To use the domain filter, you must activate the plugins: `com.glide.domain.msp_extensions.installer` and `com.snc.pa.domain_support`.

The scheduled job, *Asset Management - Populate KPI aggregate table*, runs daily to update the data on the dashboard. To view the latest data for a widget, click the widget to display the list view page.

The dashboard widgets vary depending on the application plugins that you've activated in your instance. The widgets available with each application are listed in the following table:

**Asset Management Executive Dashboard widgets**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
Total spend	<p>Total cost of all entitlements for all products.</p> <p>Source table: License Metric Results [samp_license_metric_result].</p>	<p>Total cost of all hardware assets whose status is either <b>In stock, In use, In maintenance, or In transit.</b></p> <p>Source table: Hardware [alm_hardware].</p>	<p>Total active cost of all cloud resources.</p> <p>Source table: Spend Report Daily Aggregated Cost [sn_clid_spend_core_daily_aggregated_cost].</p>
Actual savings	<p>Total yearly savings for all products. This value is calculated as the total savings from closed complete reclamation candidates.</p> <p>Source table: Removal Candidate [samp_sw_reclamation_candidate].</p>	Not applicable.	<p>This value is calculated as the monthly savings on cloud resources.</p> <p><b>Note:</b> This widget appears only if you have the Software Asset Management application installed on your instance.</p> <p>Source table: Cloud Insights Rightsizing Recommendation Automatics (sn_clin_core_rs_recommendation_automatic) where State = Completed.</p>
Potential savings	<p>Cost saved if removal candidates are reclaimed.</p> <p>Source table: Removal Candidate [samp_sw_reclamation_candidate].</p>	Not applicable.	<p>Total of potential savings on a monthly basis on cloud rightsizing, cloud unused machines, cloud reservations, and cloud business hours.</p> <p><b>Note:</b> This widget appears only if you have the Software Asset Management application installed on your instance.</p> <p>Source tables:</p>

Asset Management Executive Dashboard widgets (continued)

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
			<ul style="list-style-type: none"> <li>• Cloud Insights Rightsizing Recommendation Automatics [sn_clin_core_rs_recommendation_automatic].</li> <li>• Cloud Insights Unused Recommendation [sn_clin_core_rs_unused_recommendation].</li> <li>• Reserved Instance Recommendation [sn_clin_core_ri_recommendation].</li> </ul>
<p>Assessment fulfillment time</p>	<p>Fulfillment time bar graph of software requests from the Service Catalog. The graph shows the number of requests and the number of days taken to close those requests in the ranges of 0-5, 6-10, 11-20, 21-30, or 31+ days.</p> <p>Source table: Asset fulfillment time [asset_fulfillment_time]</p>	<p>Fulfillment time bar graph of hardware requests from the Service Catalog. The graph shows the number of requests and the number of days taken to close those requests in the ranges of 0-5, 6-10, 11-20, 21-30, or 31+ days.</p> <p>Source table: Asset fulfillment time [asset_fulfillment_time].</p>	<p>Not applicable.</p>
<p>Completed software success goals</p>	<p>Number of success goals completed for the Software Asset Management application.</p> <p>Source table: SAM Success Goal [samp_success_goal].</p> <p><b>i Note:</b> This widget is available only when the Software Asset Workspace (com.sn_sam_workspace) plugin is installed.</p>	<p>Not applicable.</p>	<p>Not applicable.</p>

**Asset Management Executive Dashboard widgets (continued)**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
Software success savings	<p>Actual savings from completed success goals.</p> <p>Source table: SAM Success Goal [samp_success_goal].</p> <p><b>i Note:</b> This widget is available only when the Software Asset Workspace (com.sn_sam_workspace) plugin is installed.</p>	Not applicable.	Not applicable.
Missing hardware assets	Not applicable.	<p>Count of missing, lost, or stolen hardware assets.</p> <p>Source table: Missing Hardware Assets [missing_hardware_assets].</p>	Not applicable.
Software true-up cost	<p>Cost of the products actually being used.</p> <p>Source table: Product Results [samp_product_result].</p>	Not applicable.	Not applicable.
Expiring contracts in 90 days	Count of software contracts that are going to expire in the next 90 days.	Count of hardware contracts that are going to expire in the next 90 days.	Not applicable.

Asset Management Executive Dashboard widgets (continued)

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
	<p><b>i Note:</b> If the Software Asset Management application and the Hardware Asset Management application both exist in your instance, then this widget shows the total number of software and hardware contracts together; not individual contracts for software and hardware.</p>	<p><b>i Note:</b> If Software Asset Management application and the Hardware Asset Management application both exist in your instance, then this widget shows the total number of software and hardware contracts together; not individual contracts for software and hardware.</p>	
<p>Assets pulled from pool vs net new purchase</p>	<p>Bar charts representing the number of requests for software assets being fulfilled from your inventory versus creating purchase orders for new assets.</p> <p><b>i Note:</b> Ensure that the Procurement (com.snc.procurement) plugin is activated in your instance to view software-related data for this widget.</p> <p>Source tables:</p>	<p>Bar charts representing the number of requests for hardware assets being fulfilled from your inventory versus creating purchase orders for new assets.</p> <p>Source tables:</p> <ul style="list-style-type: none"> <li>Pool assets: Consume Asset Task [consume_asset_task].</li> <li>Net new assets: Purchase order line items [proc_po_item].</li> </ul>	<p>Bar charts representing the number of assets used from your inventory versus new assets being procured via purchase orders.</p> <p>Source tables:</p> <ul style="list-style-type: none"> <li>Pool assets: Spend Report Monthly Cost [sn_cld_spend_core_monthly_cost].</li> <li>Net new assets: Purchase order line items [proc_po_item].</li> </ul>

**Asset Management Executive Dashboard widgets (continued)**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
	<ul style="list-style-type: none"> <li>Pool assets: Assigned Allocations [alm_licenses_assigned].</li> <li>Net new assets: Purchase order line items [proc_po_item].</li> </ul>		
End of life models in next 90 days	<p>Number of software models that are reaching their end of life in the next 90 days.</p> <ul style="list-style-type: none"> <li>End of life</li> <li>End of support</li> <li>End of extended support</li> </ul> <p>Source table: Software Lifecycle Report [sam_sw_product_lifecycle_report].</p>	<p>Number of hardware models that are reaching their end of life in the next 90 days.</p> <ul style="list-style-type: none"> <li>End of life</li> <li>End of support</li> <li>End of extended support</li> </ul> <p>Source table: Hardware model [cmdb_hardware_model_lifecycle].</p>	Not applicable.

**Cloud cost simulation**

Simulate the cost of moving your on-premise resources to the cloud environment before performing the migration.

**Plugins required**

The following plugins are required for supporting cloud cost stimulator recommendations:

- Cloud Insights application plugin (sn\_clin\_billing): for cloud infrastructure details and cost.
- Hardware Asset Management (sn\_hamp): for end of life cycle for hardware.
- Cloud Migration Assessment application (com.sn\_cloud\_migration): for resource utilization.

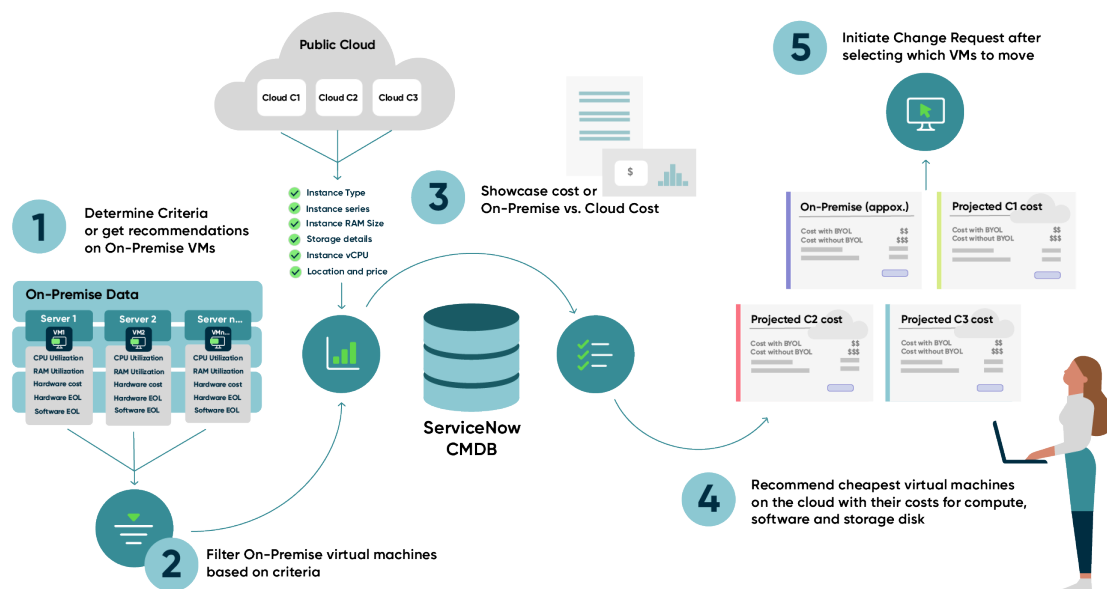
**Overview**

The sam\_manager role specifies the criteria for migrating the resources to the cloud. For example, you may need all virtual machines installed with SQL Server or all virtual machines having end of life software. In addition the Software Asset Management application automatically provides recommendations based on End of Life software and hardware and resource utilization.

Based on the criteria or recommendation, the Software Asset Management application automatically selects the virtual machines that match your criteria. Once all the on-premise virtual machine have been identified, the Software Asset Management application matches those virtual machines with the virtual machines on the cloud: AWS or Azure.

The most optimal matching of resources is conducted and the total cost involved is given to you. Cost for the various cloud providers: AWS and Azure is mentioned along with or without the cost of Bring Your Own License (BYOL). Once the decision is made to move to a particular cloud provider, a change request can be created to move forward with the implementation.

For information on comparing and evaluating the estimate cost of migrating your resources to the cloud, see [Cloud simulator dashboard](#).



## Use cases

A sam\_manager role can receive recommendations for migrating on-premise resources to the cloud while taking into account the following considerations:

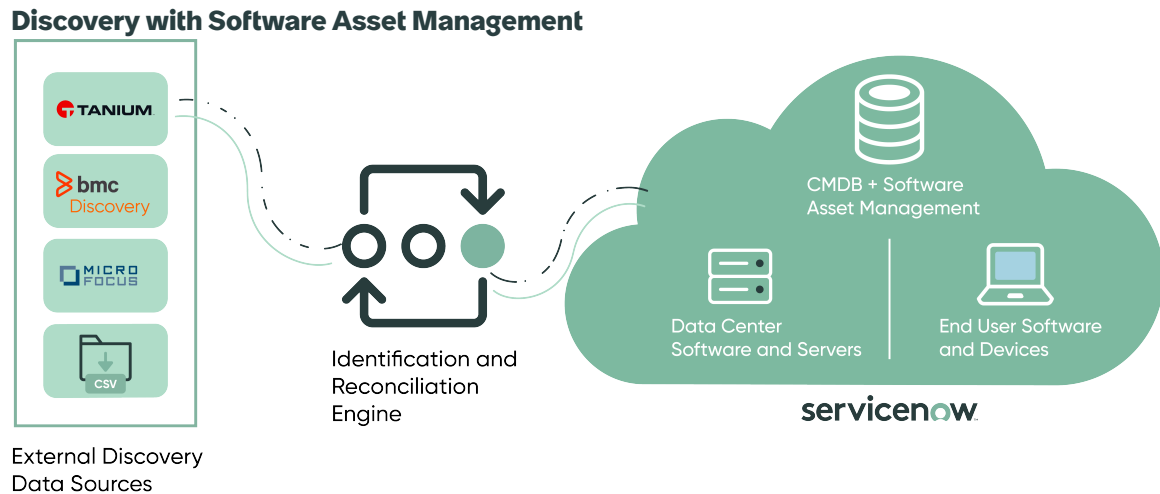
- End of life for software: On some virtual machines, you may have software that is nearing the end of its life cycle. Calculate the cost of migrating these virtual machines to the cloud, taking into account all of the benefits. For example, Microsoft Azure offers free extended security updates for certain Microsoft products that have reached the end of their life cycle.
  - **Note:** Recommendations are only shown for Microsoft Azure and AWS shared VMware virtual machines and not for dedicated host machines.
- End of life for hardware: You may have virtual machines running on hardware that is nearing its end of life phase. Simulate the cost of moving these virtual machines to the cloud.
  - **Note:** Ensure that you have activated of the Hardware Asset Management (sn\_hamp) plugin to get data on end of life cycle for hardware and hardware cost.
- Resource utilization: Some on-premise virtual machines may have low CPU and RAM utilization. Simulate the cost of moving these virtual machines to the cloud by recommending the appropriate sized virtual machines. For example, if a 32 vCPU virtual machine on-premises, is utilizing only 4 vCPU, the recommendation would be a 4-vCPU virtual machine on the cloud, resulting in cost savings.
  - **Note:** Ensure that you have activated the Cloud Migration Assessment application (com.sn\_cloud\_migration) plugin to get data on resource utilization.

## Software asset connections

Use third-party discovery sources to discover the installed software data that you can integrate with the Software Asset Management application.

The discovery process is an integral part of the Software Asset Management application. The discovery process consists of discovering where the installed software in your organization is installed, who the owner of the device is, and where it's located. The discovered information is then merged into a common configuration management database such as the CMDB application.

The CMDB application enables other business applications to use the discovered information to support various business needs.



ServiceNow platform's identification and reconciliation engine (IRE) framework enables all third-party data integrations with the CMDB application.

IRE provides a centralized framework where you can perform reconciliations and de-duplication of the data when multiple sources are ingesting data at the same time. IRE uses identification rules, reconciliation rules, and IRE data source rules to process the incoming data and then inserts the data into the corresponding CMDB tables. You can extend these rules to insert the data into tables that extend the CMDB core tables such as the Software Asset Management tables. There are two types of identification rules for IRE:

- Independent: If the **Independent** check box is selected on a CI identifier, it means that the CI is not dependent on any other CI.
- Dependent: If the **Independent** check box is not selected on a CI identifier, it implies that this CI is dependent on other CIs.

For more information on IRE, see [Identification and Reconciliation Engine](#).

You should have already configured loading the CIs in the ServiceNow instance. For each CI in your environment, the Hardware [cmdb\_ci\_hardware] table has a corresponding CI identifier rule. When the third-party discovery application runs, the software is identified on CIs. The third-party application constructs a payload and sends the payload via the IRE REST API endpoint to the ServiceNow instance to insert or update data into the Software Asset Management tables.

A [generic payload](#) is used for creating installed software records. For Oracle, VMware, and Citrix, specific payloads feed additional publisher-specific data apart from software installations.

If multiple discovery sources are enabled and if the key details of the software, such as the display name and the version for all discovery sources, match, the Installation record is

overwritten. If multiple discovery sources identify the same software with different field values, an entry is created in the Software Installation [cmdb\_sam\_sw\_install] table. When the schedule job *SAM- Deduplication install table* runs and if all the normalized values of these installations match, only one record is set to active. The rest of the records are marked as inactive.


Domain separation is supported for third-party discovery with SAM with the following considerations:

- The IRE REST API stamps the domain that you are logged in to when the REST call is made.
- Log in to the domain where the CI resides and from where you run the payload.
- Don't log in to the parent domain. Being logged in the parent domain updates the existing CI and also creates a new CI in the parent domain.
- Send the payload from the same domain where the CIs reside. For example, if you send a payload from Domain A and if the payload has CIs that belong to Domain B, a new CI gets created in Domain A.

### Configure third-party discovery sources for Software Asset Management

Set up a third-party discovery source for Software Asset Management to populate the Software Installation [cmdb\_sam\_sw\_install] table with software found in your environment.

#### Before you begin

To use the features of the Software Asset Management application with any third-party discovery source, you must populate the CMDB application and the related tables that reside on the ServiceNow instance. The Software Asset Management application uses the IRE API to help you populate the Software asset management tables. As the IRE API relies on the configuration item (CI) identifiers, the SAM tables require a relationship to the CI for IRE support. For more information on the IRE API, see [Identification and Reconciliation Engine](#) .

Role required: sam\_developer

#### Procedure

1. Navigate to **All > Software Asset > Properties**.
2. Select the **Enable scheduled jobs when using third party Datasource Integration Framework** [com.snc.samp.ire.datasource.integration] property.
3. Run your discovery source to identify software on the CIs.  
The CI is used to construct a payload.
4. Send the payload to the ServiceNow instance using the IRE REST API.

For information on a sample payload, see [Sample payload for generic software install records](#).

In the payload, make sure to send the sys\_class\_name of the CI, so that the CI is not reclassified when an insert or update operation is performed.

An entry is created in the Software Installation [cmdb\_sam\_sw\_install] table with a display name, publisher, and version. Reconciliation is run against the content service and a discovery model is identified for that software. If a discovery model does not exist, a discovery model is automatically created for the software. You can start using the Software Asset Management application.

#### Delete uninstalled software from the Software Installation table

Delete installations from the Software Installation [cmdb\_sam\_sw\_install] table if those software installations are also uninstalled from a CI.

## Before you begin

After the discovery process runs and you identify software installations that are uninstalled from a CI, delete those installations from the Software Installation [cmdb\_sam\_sw\_install] table in the CMDB application.

Create a script to delete multiple software installation records from the Software Installation [cmdb\_sam\_sw\_install] table. You can use the Table API to query the Software Installation table to get the installation list for the CI.

Role required: sam\_developer

## About this task

You can also delete software installation records for specific publishers like Oracle, VMware, and Citrix.

## Procedure

1. Use the REST Table API `api/now/table/cmdb_sam_sw_install?sysparm_query=installed_on%3D28c9c3b8c0a8000b009b2d941d7e3ee9` to query and identify the list of software installs on a specific CI.  
For more information on the REST endpoint API, see [Table API-GET](#).
    - a. Specify the table name, Software Installation [cmdb\_sam\_sw\_install] table and query parameters.  
For the query parameters, specify either the sys\_id of the CI or a list of fields that are separated by commas such as publisher, version, and product on which you want to perform the delete operation.
    - b. After entering the query parameters, send the request.  
You get a response in a JSON format listing of all the software installations for that specific CI. You can view the sys\_id for all the software installations in the response.
2. Based on the response, identify the sys\_ids of the software installations that are deleted on a CI.  
Only the sys\_ids of those software installations need to be passed through the Delete API.
3. Use the Delete API `request.setEndpoint('http://xyz/api/now/table/cmdb_sam_sw_install/728e87dafd841010fa9bea491bfdc1ff');`  
`request.setHttpMethod('DELETE');` to delete the software installs from the Software Installation [cmdb\_sam\_sw\_install] table.  
xyz in the URL refers to your ServiceNow instance.
    - a. Specify the table name, Software Installation [cmdb\_sam\_sw\_install] table, and the sys\_ids of the software installations that are deleted on the CIs.
    - b. Send the request.  
The software installations are deleted from the Software Installation [cmdb\_sam\_sw\_install] table.

## Sample payload for generic software install records

A sample payload that populates the Software Installation [cmdb\_sam\_sw\_install] table in the ServiceNow instance with discovery data collected by third-party discovery sources.

The following is a sample payload for creating software install records for publishers such as Microsoft, IBM. For Oracle, VMware, and Citrix, specialized payloads are used.

In this sample payload, you are passing the information of the installed software, Microsoft Word 2016, and the related CI to inform where it is installed (on a computer CI "SAMILMT8"). You can look up column names in the cmdb\_sam\_sw\_install table and send information by passing the columns, value pairs in the payload. For example, in this payload you are sending the publisher, version and display\_name columns. You can also send additional information such as the edition column.

**Note:** For more information on CI Identifier rules, see [Identifier Rules](#).

```
{ 'items': [ { 'className': 'cmdb_ci_computer',
              'related': [ {
                            className: 'cmdb_sam_sw_install',
                            values: {
                                'publisher': 'Microsoft',
                                'version': '2016',
                                'display_name': 'Word'
                            }
                          }
                        ],
              'values': { 'name': 'SAMILMT8' }
            }
          ]
}
```

Element	Value	Description
className	cmdb_ci_computer	The class name of the CI.
className	cmdb_sam_sw_install	The name of the related table in the CMDB application where the CI is to be created.
publisher	Microsoft	The name of the publisher for whom this entry is being created in the table.
version	2016	The version of the software for which this entry is created in the table.
display name	Word	The display name for this entry in the table.
name	SAMILMT8	Unique identifier of the CI.

### Sample payload for Oracle software install records

A sample payload for Oracle publisher pack that populates the Oracle Instance [cmdb\_ci\_db\_ora\_instance] table with software install records from third-party discovery sources.

After you discover Oracle software installs via your discovery source, send a payload that contains the Oracle Instance and the Oracle options associated with the Oracle Instance.

**Note:** In the Properties page, make sure to select the Enable scheduled jobs when using third party Datasource Integration Framework [com.snc.samp.ire.datasource.integration] property.

When the schedule job, SAM- Software Asset Connections, runs, it looks for records with null software installs, populates the software install field in the Oracle Instance table and creates the software install record associated to the instance.

The following is a sample payload to create software install records for Oracle in the Oracle Instance [cmdb\_ci\_db\_ora\_instance] table. The sample input contains a list of CIs and relationships that exist between these CIs. The payload states that there is an Oracle database server, Dev development 1969 with a standard edition. The Oracle database server has many Oracle options enabled such as Armstrong, Aldrin, Collins and runs on a Linux server.

```
{
  'items': [
    {
      'className': 'cmdb_ci_db_ora_instance',
      'related': [
        {
          'className': 'samp_oracle_options',
          'values': {
            "option": "Armstrong",
            "currently_used": "true"
          }
        },
        {
          'className': 'samp_oracle_options',
          'values': {
            "option": "Aldrin",
            "currently_used": "true"
          }
        },
        {
          'className': 'samp_oracle_options',
          'values': {
            "option": "Collins",
            "currently_used": "true"
          }
        }
      ],
      'values': {
        'name': 'Dev development 1969',
        'edition': 'Standard',
        'sid': '1-2-569',
        'version': '11.2'
      }
    },
    {
      'className': 'cmdb_ci_linux_server',
      'values': {
        'name': 'CI DATAI 6-002',
        'mac_address': '4653XYZAA',
        'ip_address': '10.10.10.8',
        'asset_tag': 'HWR0003',
        'assigned_to': 'a8f98bb0eb32010045e1a5115206fe3a',
        'cpu_count': '16',

```

```

'cpu_manufacturer': '820351a1c0a8018b67c73d51c074097c',
'manufacturer': '820351a1c0a8018b67c73d51c074097c',
'os': 'Linux Red Hat',
'os_version': '2.6.9-22.0.1.ELsmp',
'ram': '2014'
}
},
],
'relations': [
{
'type': 'Runs on::Runs',
'parent': 0,
'child': 1
}
]
}

```

Element	Value	Description
className	cmdb_ci_db_ora_instance	Name of the related Oracle instance table.
className	samp_oracle_options	Name of the Oracle database option table.
option	Armstrong	Name of the Oracle database option.
currently_used	true	Indicates the Armstrong option is currently enabled.
className	samp_oracle_options	Name of the Oracle database option table.
option	Aldrin	Name of the Oracle database option
currently_used	true	Indicates the Aldrin option is currently enabled.
name	Dev Development 69	Name of the Oracle database server
edition	standard	edition of the Oracle database server
sid	1-2-569	Oracle system ID
version	11.2	Version of the Oracle database server
className	cmdb_ci_linux_server	Name of the related Linux Server table.
mac address	4653XYZAA	MAC address of the interface in the Linux server.

**Sample payload for VMware software install records**

A sample payload for VMware publisher pack that populates the VMware Discovered License key consumption [samp\_vmware\_license\_key\_usage] table with software install records from third-party discovery sources.

After you discover software installs via your discovery source, send a payload via the IRE REST API endpoint to the ServiceNow instance to populate the VMware Discovered License key consumption [samp\_vmware\_license\_key\_usage] table with software install records.

**Note:** In the Properties page, make sure to select the Enable scheduled jobs when using third party Datasource Integration Framework [com.snc.samp.ire.datasource.integration] property.

1. Send a payload to create a license key in the VMware Discovered License key [samp\_vmware\_license\_key] table.
2. From the response body of the payload, copy the sys ID of the new license key and paste it in a text editor for later use.
3. Use the Enhanced IRE API to query the sys IDs of the CIs that use the new license key.
4. From the response body, copy the sys IDs of the CIs and paste them in a text editor for later use.
5. Send a payload with the sys ID of the license key and the sys ID of the CIs.
6. Run the schedule job, SAM- Update Software Usage to populate the VMware Discovered License key consumption [samp\_vmware\_license\_key\_usage] table with the software install records.

```
Request Body
{ 'items': [
    { 'className': 'cmdb_ci_vcenter',
      'related': [
        {
          className: 'samp_vmware_license_key',
          values: {
            'cost_unit': 'cpuPackage',

            'edition': 'esxEnterprisePlus.vram',

            'features': 'autodeploy,das,dpvmotion',

            'license_key': 'SYDOJ-28J5Q-78X48-0NC24-REKAR',
            'product_name': 'VMware
vSphere 5 Enterprise Plus',
            'product_version': '5.0',
            'rights_owned': '8',
            'rights_used': '6'
          }
        }
      ]
    },
    {
      'values': {
        'name': 'VCenter Ref 1A'
      }
    },
    {
      'className': 'cmdb_ci_win_server',
      'values': { 'name': 'VirtualMachine-WS2'
      }
    }
  ],
  'relations': [{
```

```

        'type': 'Runs on::Runs',
        'parent': 0,
        'child': 1
    }
  ]
}

```

## Response Body

```

{
  "result": {
    "items": [
      {
        "className": "cmdb_ci_vcenter",
        "operation": "INSERT",
        "sysId": "8fb47793e7cc10107aea07d8d2f6a93a",
        "relatedSysIds": [
          "cbb47793e7cc10107aea07d8d2f6a93f"
        ],
        "relatedItems": [
          {
            "className": "samp_vmware_license_key",
            "sysId": "cbb47793e7cc10107aea07d8d2f6a93f",
            "markers": [],
            "inputIndices": [
              {
                "mainIndex": 0,
                "subIndex": 0
              }
            ]
          }
        ],
        "additionalRelatedItems": [],
        "identifierEntrySysId": "Unknown",
        "identificationAttempts": [
          {
            "attributes": [
              "name"
            ],
            "identifierName": "VMWare VCenter Ref CI",
            "attemptResult": "NO_MATCH",
            "searchOnTable": "cmdb_ci_vcenter",
            "hybridEntryCiAttributes": []
          }
        ],
        "errorCount": 0,
        "markers": [],
        "inputIndices": [
          0
        ]
      },
      {
        "className": "cmdb_ci_win_server",
        "operation": "UPDATE",
        "sysId": "30ccb31ddbe7720087b9fd441d961992",
        "identifierEntrySysId":
"556eb250c3400200d8d4bea192d3ae92",
        "identificationAttempts": [

```

```

    "attributes": [
      "serial_number",
      "serial_number_type"
    ],
    "identifierName": "Hardware Rule",
    "attemptResult": "SKIPPED",
    "searchOnTable": "cmdb_serial_number",
    "hybridEntryCiAttributes": []
  },
  {
    "attributes": [
      "serial_number"
    ],
    "identifierName": "Hardware Rule",
    "attemptResult": "SKIPPED",
    "searchOnTable": "cmdb_ci_hardware",
    "hybridEntryCiAttributes": []
  },
  {
    "attributes": [
      "name"
    ],
    "identifierName": "Hardware Rule",
    "attemptResult": "MATCHED",
    "searchOnTable": "cmdb_ci_hardware",
    "hybridEntryCiAttributes": []
  }
],
"errorCount": 0,
"markers": [],
"inputIndices": [
  1
]
}
],
"additionalCommittedItems": [],
"relations": [
  {
    "className": "cmdb_rel_ci",
    "operation": "INSERT",
    "sysId": "43b47793e7cc10107aea07d8d2f6a940",
    "identifierEntrySysId": "Unknown",
    "errorCount": 0,
    "markers": [],
    "inputIndices": [
      0
    ]
  }
],
"additionalCommittedRelations": []
}
}

```

From this we get the samp\_vmware\_license\_key sys id

```

"relatedSysIds": [
  "cbb47793e7cc10107aea07d8d2f6a93f"
]

```

```
-- Obtaining the CI sys id (POST)
```

```
role: sam_admin
```

```
https://k8s0057813-node1.thunder.lab3.service-now.com/api/now/identifyreconcile/queryEnhanced?sysparm_data_source=ServiceNow
```

#### Request Body

```
{ 'items': [ { 'className': 'cmdb_ci_win_server', 'values':
  { 'name': 'Server-WS11' } } ] }
```

#### Response Body

```
{
  "result": {
    "items": [
      {
        "className": "cmdb_ci_win_server",
        "operation": "UPDATE",
        "sysId": "99ccb31ddbe7720087b9fd441d9619da",
        "identifierEntrySysId":
"556eb250c3400200d8d4bea192d3ae92",
        "identificationAttempts": [
          {
            "identifierName": "Hardware Rule",
            "attemptResult": "SKIPPED",
            "attributes": [
              "serial_number",
              "serial_number_type"
            ],
            "searchOnTable": "cmdb_serial_number",
            "hybridEntryCiAttributes": []
          },
          {
            "identifierName": "Hardware Rule",
            "attemptResult": "SKIPPED",
            "attributes": [
              "serial_number"
            ],
            "searchOnTable": "cmdb_ci_hardware",
            "hybridEntryCiAttributes": []
          },
          {
            "identifierName": "Hardware Rule",
            "attemptResult": "MATCHED",
            "attributes": [
              "name"
            ],
            "searchOnTable": "cmdb_ci_hardware",
            "hybridEntryCiAttributes": []
          }
        ],
        "markers": [],
        "inputIndices": [
          0
        ],
        "mergedPayloadIds": [],

```

```

        "errorCount": 0
      }
    ],
    "additionalCommittedItems": [],
    "relations": [],
    "additionalCommittedRelations": []
  }
}

where "sysId": "99ccb31ddb7720087b9fd441d9619da" is the sys id
of the ci/used_by

// create usage table
POST
https://k8s0057813-node1.thunder.lab3.service-now.com/api/now/table/samp_vmware_license_key_usage?sysparm_fields=sys_id

{"license_key": "cbb47793e7cc10107aea07d8d2f6a93f", "rights_used": "1", "used_by": "99ccb31ddb7720087b9fd441d9619da"}

```

Element	Value	Description
className	cmdb_ci_vcenter	Name of the table related [samp_vmware_license_key] table
className	samp_vmware_license_key	Name of the table where the license key is created.
className	cmdb_ci_win_server	The name of the Windows server table
name	VirtualMachine-WS2	Name of the Windows server virtual machine.

**Sample payload for Citrix software install records**

A sample payload for the Citrix publisher pack that populates the Software Installation [cmdb\_sam\_sw\_\_install] table with software install records from third-party discovery sources.

The Citrix publisher pack supports two products: virtual applications and virtual desktop. For these products, Citrix supports concurrent licensing and user/device licensing.

**Note:** For information on license metrics, see [Software License Metrics](#)

The IRE API relies on two CI identifier rules for creating Citrix software install records. The Citrix License server [cmdb\_ci\_appl\_license\_server] identifier populates the CAL entries and the Citrix Delivery Controller [cmdb\_ci\_appl\_delivery\_controller] identifier creates the software install records.

The CAL entries are used during reconciliation to compare against the purchased rights in entitlements to get the correct license position for Citrix products. The Citrix License server identifier provides information on the samp\_concurrent\_license\_consumption and the samp\_user\_device\_license\_consumption tables. Based on your licensing entitlements, you need to populate either of these two tables.

Send a payload to populate the samp\_concurrent\_license\_consumption or the samp\_user\_device\_license\_consumption table. Ensure that you mention the key attributes for the tables in the payload:

- samp\_concurrent\_license\_consumption: product\_code and number
- samp\_user\_device\_license\_consumption: product\_code, consumer, and consumer\_type

**Note:** The two tables are passed in one payload since both are related entries of the parent CI table, cmdb\_ci\_appl\_license\_server. In the payload, specify the relationship between the tables and the CI parent table.

Once you send the payload, entries are created in the samp\_concurrent\_license\_consumption and the samp\_user\_device\_license\_consumption tables. Now execute the scheduled job, SAM-Create Citrix CAL entries, to update the Client Access [samp\_sw\_client\_access] table. Client access records are created for each product with user/device count.

**Note:** Ensure that you configure the schedule job, SAM- Create Citrix CAL entries to execute after processing the payload successfully.

Using the Citrix Delivery Controller [cmdb\_ci\_appl\_delivery\_controller] identifier, send a payload to populate all the 7 Citrix tables. Make sure that you mention the key attributes for the 7 tables in the payload.

**Note:** Click **Related Entries** in the Citrix Delivery Controller identifier to look up the key attributes (**Criterion attributes**) for the Citrix tables.

Once the entries are created in the tables, execute the scheduled job, SAM- Create Citrix Software installs. The Citrix software install records are created in the Software Installation [cmdb\_sam\_sw\_install] table.

```
{ 'items': [ { 'className': 'cmdb_ci_appl_license_server',
              'related': [
                {
                  'className': 'samp_concurrent_license_consumption',
                  'values': {
                    'product_code': 'MW2ZPSE0001',
                    'in_use_count': 511,
                    'overdraft': 11,
                    'pooled_available': 0,
                    'total_count': 500
                  }
                },
                {
                  'className': 'samp_user_device_license_consumption',
                  'values': {
                    'product_code': 'XDT_PLT_CCS',
                    'consumer': 'consumer1',
                    'consumer_type': 'user'
                  }
                }
              ]
            },
            {
              'className': 'samp_user_device_license_consumption',
              'values': {
```

```

        'product_code': 'XDT_PLT_CCS',
        'consumer': 'Device1',
        'consumer_type': 'device'
    }
},
{
'className': 'samp_user_device_license_consumption',
  'values': {
    'product_code': 'XDT_PLT_CCS',
    'consumer': 'consumer2',
    'consumer_type': 'user'
  }
},
{
'className': 'samp_user_device_license_consumption',
  'values': {
    'product_code': 'XDT_PLT_CCS',
    'consumer': 'consumer3',
    'consumer_type': 'user'
  }
},
{
'className': 'samp_user_device_license_consumption',
  'values': {
    'product_code': 'XDT_PLT_CCS',
    'consumer': 'consumer4',
    'consumer_type': 'user'
  }
},
{
'className': 'samp_user_device_license_consumption',
  'values': {
    'product_code': 'MW2ZPSE0001',
    'consumer': 'consumer5',
    'consumer_type': 'user'
  }
},
{
'className': 'samp_user_device_license_consumption',
  'values': {
    'product_code': 'MW2ZPSE0001',
    'consumer': 'Device1',
    'consumer_type': 'device'
  }
}
],
'values': {
  'name': 'ACME License Server 2',
  'tcp_port': 22,
  'install_directory': 'Documents'
}
},

```

```

        {
          'className': 'cmdb_ci_win_server',
          'values': { 'name': 'sam1abvm450' }
        },
        'relations': [{
          'type': 'Runs on::Runs',
          'parent': 0,
          'child': 1
        }]
      }
    }
  }
}

```

### Sample payload for BYOL

A sample payload that populates the Software Installation [cmdb\_sam\_sw\_install] table in the ServiceNow instance with discovery data collected by the BYOL licensing model.

Certain entities need to be populated for BYOL to work with software asset connection as a third party discovery source. The relationship between these entities is crucial for BYOL to work smoothly with software asset connections. For example, some values required for populating Cloud Hosts is different for AWS and Azure. Though the object ID and the name of the host is required for both AWS and Azure, for AWS, the CPU core count is required and for Azure, the host type value is required. For details on entities and their relationships, refer to [Entities for BYOL](#) and [Relationships between the entities for BYOL](#).

In this example, Cloud Service Account is the topmost entity. All the other entities listed in the Entities for BYOL table are dependent entities of Cloud Service Account. If an entity is marked as a dependent entity, then the parent entity and the relationship between that entity and it's parent needs to be mentioned in the same payload. For example, if you want to create an AWS data center on Cloud Service Account, you need to include the Cloud Service Account entity in the same payload; even if Cloud Service Account already exists in your instance. Similarly, when you create software installations, you need to include all the dependent entities for software installations all through the hierarchy in the same payload.

### Entities for BYOL

Entities	Required fields
Cloud Service Account [cmdb_ci_cloud_service_account]	account_id – Unique identifier
AWS Datacenters [cmdb_ci_aws_datacenter]	object_id – Unique identifier
Azure Datacenters [cmdb_ci_azure_datacenter]	object_id – Unique identifier
Cloud Hosts [cmdb_ci_cloud_host]  <b>Note:</b> Not needed for shared VMs.	<ul style="list-style-type: none"> <li>object_id – Unique identifier</li> <li>name - name of the host</li> <li>host_type - host type for Azure. For example, Dsv3-Type1 (for Azure hosts only).</li> <li>cpu_core-count - Total CPU core count of the host (for AWS hosts only).</li> </ul>
Virtual Machine Instances [cmdb_ci_vm_instance]	object_id – Unique identifier

Entities	Required fields
Computers [cmdb_ci_computer]	<ul style="list-style-type: none"> <li>• name - name of the virtual machine</li> <li>• cpu_count - CPU count of the virtual machine</li> <li>• cpu_core_count - CPU core count of the virtual machine</li> <li>• cpu_core_thread - CPU core thread count of the virtual machine</li> <li>• virtual – indicates if the computer is a VM (always set to true)</li> </ul>
Software Installations [cmdb_sam_sw_install]  <b>Note:</b> Software Installations [cmdb_sam_sw_install] is a related entry for Computers [cmdb_ci_computer]	<ul style="list-style-type: none"> <li>• publisher</li> <li>• version</li> <li>• display_name</li> <li>• cloud_license_type - license type of the cloud install (BYOL or License Included)</li> <li>• cloud_license_type_source - source from where cloud license type gets populated. The value is set to third_party_integration for Software asset connections.</li> </ul>

### Relationships between the entities for BYOL

Entity relationships	Type	Parent	Child
AWS/Azure Datacenters – Cloud Service Account	Hosted on::Hosts	AWS/Azure Datacenters	Cloud Service Account
AWS/Azure Datacenters – Cloud Hosts	Hosted on::Hosts	Cloud Hosts	AWS/Azure Datacenters
AWS/Azure Datacenters – Virtual Machine Instances	Hosted on::Hosts	Virtual Machine Instances	AWS/Azure Datacenters
Cloud Hosts - Virtual Machine Instances	Runs on::Runs	Virtual Machine Instances	Cloud Hosts
Computers - Virtual Machine Instances	Virtualized by::Virtualizes	Computers	Virtual Machine Instances

### Sample payload for Computer and Installations for dedicated VM (similar for AWS and Azure)

In this sample payload, a dedicated computer record is being passed. This computer record has a related array that contains all the software installations. A VM instance corresponds to the computer record. Cloud host is the dedicated host on which the virtual machine resides and the AWS datacenter is to be created on the Cloud Service Account. If you have multiple dedicated

virtual machines, you can send one REST API for each dedicated virtual machine. For example, if you have 50 dedicated VMs, you need to send 50 REST API calls each having the same payload. All the software installations on a dedicated VM can be sent in a single payload in the related array.

```
var payload = {
  'items': [{
    'className': 'cmdb_ci_computer',
    'values': {
      'name': 'Comp - Dedicated AWS - 1',
      'cpu_count': 1,
      'cpu_core_count': 4,
      'cpu_core_thread': 1,
      'virtual': true
    },
    'related': [{
      'className': 'cmdb_sam_sw_install',
      'values': {
        'publisher': 'Microsoft',
        'display_name': 'SQL Server',
        'version': '2017',
        'cloud_license_type': 'BYOL',
        'cloud_license_type_source': 'third_party_integration'
      }
    }]
  }], {
    'className': 'cmdb_ci_vm_instance',
    'values': {
      'object_id': 'sample_object_id_aws_vm_dedicated',
      'name': 'VM Dedicated AWS - 1',
    }
  }
}
```

```

}, {
  'className': 'cmdb_ci_cloud_host',
  'values': {
    'object_id': 'sample_object_id_aws_host',
    'name': 'AWS Dedicated Host - 1',
    'cpu_core_count': 32
  }
}, {
  'className': 'cmdb_ci_aws_datacenter',
  'values': {
    'object_id': 'sample_object_id_aws_dc',
    'name': 'AWS DataCenter - 1'
  }
}, {
  'className': 'cmdb_ci_cloud_service_account',
  'values': {
    'account_id': 'sample_account_id_aws_service_account',
    'name': 'Cloud Service Account AWS - 1'
  }
}],
'relations': [{
  'type': 'Virtualized by::Virtualizes',
  'parent': 0,
  'child': 1
}, {
  'type': 'Runs on::Runs',
  'parent': 1,
  'child': 2
},

```

```

{
  'type': 'Hosted on::Hosts',
  'parent': 2,
  'child': 3
}, {
  'type': 'Hosted on::Hosts',
  'parent': 3,
  'child': 4
}
]
}

var jsonUntil = new JSON();
var input = jsonUntil.encode(payload);
gs.info("Input: " + input.toString());
var options = {
  "partial_payloads": false,
  "deduplicate_payloads": true
};

var output =
  SNC.IdentificationEngineScriptableApi.createOrUpdateCIEnhanced(
  'ServiceNow', input, options);
gs.print("Output:" + output);

```

## Use Software Asset Management with Governance, Risk, and Compliance

Use the Software Asset Management application in conjunction with the Governance, Risk, and Compliance suite of applications to holistically work on compliance, risk, and regulatory aspects.

IT asset management directly feeds critical information required by GRC programs to monitor cyber security measures such as CIS controls from The Center for Internet Security™ to enhance the overall security preparedness and cyber defense posture. For example, CIS controls 2.2, 2.4 require that organizations keep an inventory of all software assets and ensure that they are supported by the vendor. This information is automatically collected and surfaced on the CIS control indicate template from GRC.

For detailed information on Cybersecurity Control Accelerators and regulations such as CIS controls, ISO 27001, 27002, see [Cybersecurity Controls Accelerators](#).

## Using Software Asset Management with Agent Client Collector

Use the Agent Client Collector application to collect software inventory and usage data for the Software Asset Management application.

An agent is useful in discovering software deployed on end user machines such as laptops as well as machines deployed on isolated networks that only allow outgoing data transmission. You do not need to keep track of login credentials or IP ranges, nor do you need to create a discovery schedule. The agent, along with other software, can be deployed via a deployment image and then it continuously performs discovery and sends data back to your ServiceNow instance. For more details on the Agent Client Collector application, see [Agent Client Collector for Visibility](#).

You can download the Agent Client Collector application from the ServiceNow Store.

## Use Software Asset Management and Application Portfolio Management to manage technology onboarding

Use the Software Asset Management application along with Technology Reference Model (TRM) of Application Portfolio Management to manage onboarding of technologies.

TRM is a list of software products with information on their approval of use. Each product is associated with a set of lifecycle phases with a start and end date. The TRM library is maintained by the enterprise architect and used by application owners. For detailed information on TRM, see [Technology Reference Model](#).

The Software Asset Management application gives visibility into the TRM lifecycle phases for all products associated with software models. When a software model is created and associated with a product that is approved for use in TRM, the **Certified** check box in the software model form is selected by default. All software models associated with that product are then available for use.

The screenshot shows the 'General' tab of a software model configuration form. It includes the following fields and options:

- Short description:** A text input field with a hyphen '-'.
- Platform:** A dropdown menu set to '-- Anything --'.
- Language:** A dropdown menu set to '-- Anything --'.
- Asset tracking strategy:** A dropdown menu set to 'Leave to category'.
- Asset tracking unit:** A dropdown menu set to 'Individual Unit'.
- Cost:** A text input field set to 'USD (\$)0.00'.
- Checkboxes:**
  - Certified
  - Restricted software
  - License all installs accessed by clients

If the same product in TRM is later marked as unapproved, the existing software models associated with that product don't reflect that change. However, when you open the existing software models, a banner appears stating **This software is not approved for use in the Technology Reference Model (TRM).** To be in sync with the TRM, set the **Certified** flag to **FALSE**.

If a new software model is created with this product, that software model is marked as unapproved, and a banner isn't displayed as this software model is in sync with TRM.

If a product is marked as unapproved in TRM, reclamation candidates are automatically created for all software installations that are associated with that product. After the product is approved for use in TRM, the existing reclamation candidates are either marked **Closed complete** or **Closed canceled**.

## Software Asset Management and TRM use case

This section describes a use case that demonstrates how the Software Asset Management application and TRM interact.

For example, you create a software model SW1, on September 15, 2022, and associate it with PostgreSQL, which is an unapproved product in TRM. By default, the **Certified** check box in the SW1 form is set to false and the **Restricted software** check box is set to true. Also removal candidates are created for any installations discovered.

On September 18, 2022, release 14.5 of PostgreSQL gets approved for use in TRM. If you now open SW1 a banner appears stating the following `This software is approved for use in the Technology Reference Model (TRM). To be in sync with the TRM, set the Certified flag as true.` However software models with older versions would continue to be restricted.

If you create another software model SW2, on September 19, 2022, and associate it with PostgreSQL, the **Certified** check box is set to true and the **Restricted software** check box is set to false in the SW2 form.

## Software Asset Management Guided Experiences

The Software Asset Management Guided Experiences application provides step-by-step guidance for completing tasks in your daily software management activities.

### Playbook overview

A playbook takes a workflow and breaks it into multiple lanes. Each lane includes:

- A list of tasks that you must perform.
- Status indicators that display the current state of each task.
- Check boxes that indicate where you are in the workflow.

As you mark a task complete in a lane, you move to the next task. You can save a task at any time and return to the playbook later and time. After you complete all the tasks in a lane, you can move to the next lane. As you keep completing tasks and lanes, the status keeps getting reflected in the left-hand panel. An activity log on the playbook shows all the data that you've entered for each task. After you complete all the tasks, you're asked to review the details you entered in all the lanes. You can choose to edit any field or select **Finish** to complete the process of creating the entitlement.

A playbook is divided into three parts:

- lanes on the left-hand side.
- work area in the center.
- activity log on the right-hand side.

## Playbook layout

Create New Software Entitlement

Entitlement Playbook ▾

- Product Details 4 remaining 1
- Entitlement Details 2 remaining
- Additional Details 4 remaining
- Review 1 remaining

Product Details

In Progress

Is this an on-premise or a SaaS product?

Product Type

Select 'SaaS' to manage software subscriptions of your pure SaaS and hybrid applications.

Pending

Do you have a publisher part number (PPN) to set-up this license?

Please wait while Playbook progresses.

Pending

Publisher part number

Please wait while Playbook progresses.

Pending

Select a software model

Please wait while Playbook progresses.

Activity ▾ 17

kalpana.thakar@snc

2021-04-26 09:02:04 - Field Changes

Agreement t...	Generic
Metric group	Common
State	Build
License type	Perpetual

## Using playbook to set up entitlements

You can use the guided walk-through playbook for setting up entitlements. The guided walk-through playbook takes you step by step through each stage of the entitlement creation process, from initiation to completion.

To access the Software Asset Management playbook, you need to install it from the ServiceNow Store and then access the playbook from the landing page on the Software Asset Workspace.


## Using Guided Setup to implement Microsoft SQL Server

Microsoft SQL Server License Management Guided Setup provides a sequence of tasks that help you configure Microsoft SQL Server on your ServiceNow instance. To open Microsoft SQL Server License Management guided setup, navigate to **Software Asset Workspace > Success portal > Product Setups**. For more information, see [Software asset overview](#).

For more information about using the Guided Setup interface, see [Using guided setup](#) .

## Using Guided Setup to implement Microsoft Windows Server


Microsoft Windows Server Guided Setup provides a sequence of tasks that help you to configure Microsoft Windows Server on your ServiceNow instance. To access Microsoft Windows Server Guided Setup, navigate to **Software Asset Workspace > Success portal > Product Setups**.

For more information about using the Guided Setup interface, see [Using guided setup](#) .

## Install Software Asset Management Guided Experiences

Install the Software Asset Management Guided Experiences (com.sn\_sam\_playbook) application for step-by-step guidance for completing tasks in your daily software management activities. The application includes demo data and installs related ServiceNow® Store applications and plugins if they aren't already installed.

## Before you begin

- Ensure that the application and all of its associated ServiceNow Store applications have valid ServiceNow entitlements. For more information, see [Get entitlement for a ServiceNow product or application](#) .

Role required: sam\_admin or sam\_user

## About this task

The following items are installed with the Software Asset Management Guided Experiences application:

- Plugins
  - Software Asset Management Professional (com.snc.samp)
  - Software Asset Workspace (com.sn\_sam\_workspace)
  - com.glide.playbook\_experience.config
- Store applications: Playbook Experience (sn\_playbook\_exp) and Playbook Experience Components (now\_playbook\_exp)
- Tables

## Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.

2. Find the Software Asset Management Guided Experiences (com.sn\_sam\_playbook) using the filter criteria and search bar.

You can search for the application by its name or ID. If you can't find the application, you might have to request it from the ServiceNow Store.

Visit the [ServiceNow Store](#) website to view all the available apps and for information about submitting requests to the store. For cumulative release notes information for all released apps, see the [ServiceNow Store version history release notes](#).

3. In the Application installation dialog box, review the application dependencies.

Dependent plugins and applications are listed if they'll be installed, are currently installed, or must be installed. If any plugins or applications must be installed, you must install them before you can install the Software Asset Management Guided Experiences application.

4. **Optional:** If demo data is available and you want to install it, select the **Load demo data** check box.

Demo data comprises the sample records that describe application features for the common use cases. Load the demo data when you first install the application on a development or test instance.

5. Select **Install**.

## Create entitlements using the guided walk-through

Use the guided walk-through playbook for a step-by-step process of creating entitlements.

### Before you begin

You can create perpetual entitlements with or without a publisher part number. You can also create SaaS entitlements to manage software subscriptions of your pure SaaS and hybrid applications.

The guided walk-through takes you through the entire process of creating an entitlement. Initially the entitlement is in the **build** status when you start creating it. Once you publish the entitlement, the status changes to **in use** and makes the entitlement eligible to be included in the reconciliation process.

The process of creating an entitlement is organized into lanes. The lanes appear in the left pane of the page. Each lane has a few tasks that you are asked to complete. After you complete a task, click **Mark Complete** to move to the next task. You can click **Save** at any time in the process to save your changes and return to the playbook later. You can also click **Cancel** to abort the

entitlement setup at any point of time. While you are performing a particular task, a status of in progress appears for that task. As you mark a task complete, the status of that task changes to complete. Once you complete all the tasks in a lane, you move to the next lane.

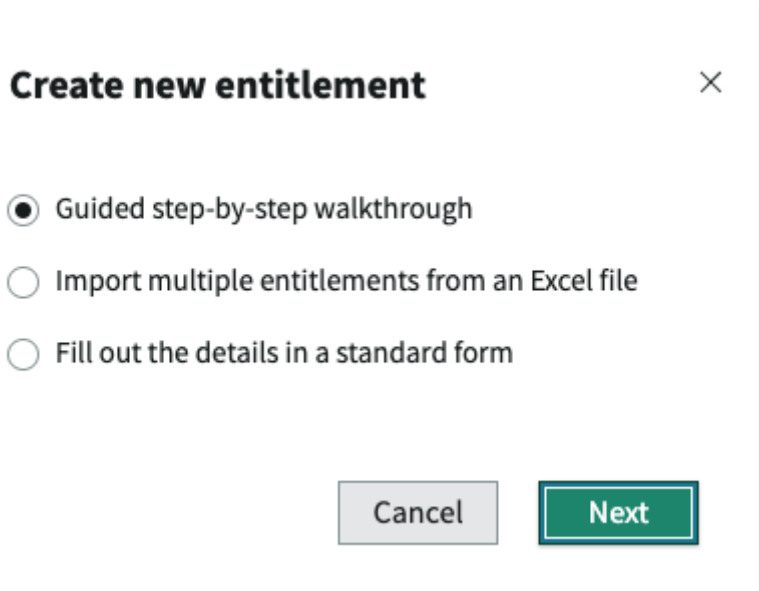
Role required: sam\_user or sam\_admin

**Procedure**

**1. Navigate to All > Software asset > Software Asset Workspace.**

The Software asset overview page appears.

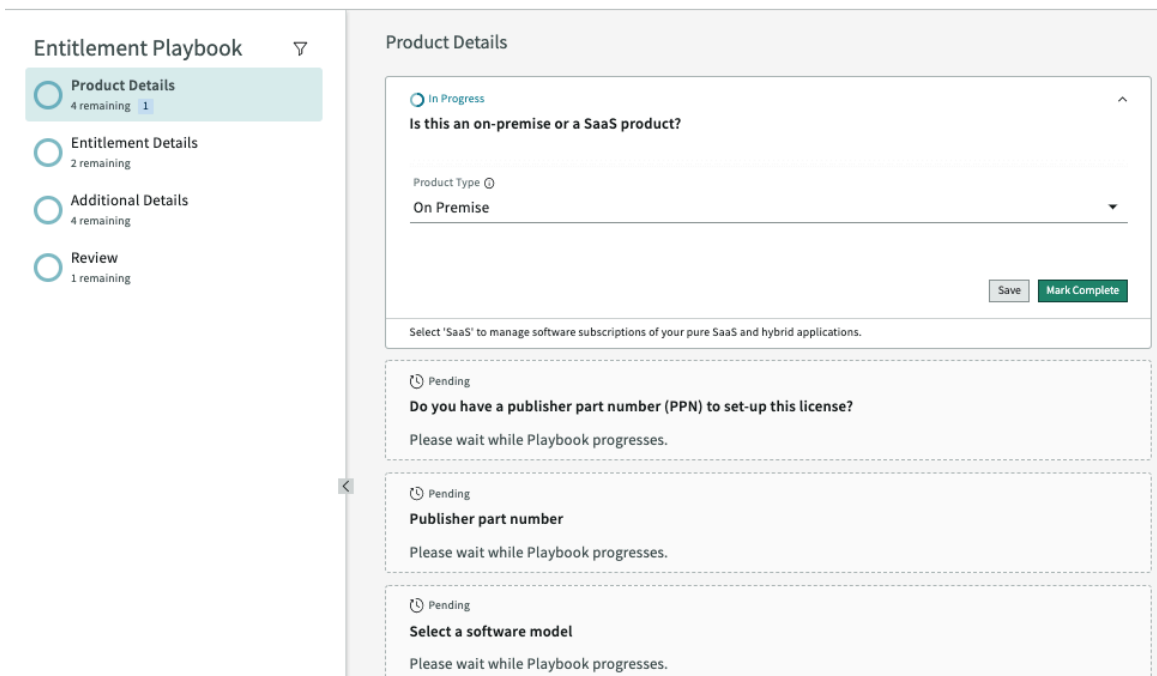
**2. Select Create entitlement.**



**3. Select Guided step by step walk-through and select Next.**

The Create New Software Entitlement page opens and the status of the entitlement is in **build**.

Create New Software Entitlement



4. Select whether you are creating an entitlement for an on-premises product or for a SaaS product.
  - If you select **on-premise**, enter the fields listed in the on-premise entitlement table below.
  - If you select **SaaS**, enter the fields listed in the SaaS entitlement table below.

**i Note:** You are asked to select on-premise or SaaS only if the Software Asset Management - SaaS License Management Integrations (sn\_sam\_saas\_int)SaaS plugin is activated. If this plugin is not activated, then the product type is automatically selected as on-premise.

**On-premise entitlement**

on-premise entitlement fields	Description
Do you have a PPN	Select if you have a publisher part number (PPN) for setting up the entitlement.
Publisher Part number	Enter the PPN if you have one; else create a custom PPN by clicking the link in the informational message to take you to the Custom Part Numbers page.

**SaaS entitlement**

SaaS entitlement fields	Description
Has an integration profile being set-up	If you have an integration profile already set-up, select it; else, click the appropriate link to create a direct or a SSO integration profile.  <b>i Note:</b> Integration profile is needed to view software usage information and optimize stale licenses.
Are you using a direct or SSO integration profile for this SaaS product	Select the type of profile, direct or SSO, that you are using for this SaaS product.
Select an integration profile	Based on the type of profile you specified, select an integration profile.

5. Select a software model for the entitlement.
 

Once you complete all the tasks in the Product Details lane, you can move to the Entitlement Details lane.
6. Select **Entitlement Details**.
 

If you entered a PPN, then the metric group, agreement type, and license type are automatically populated. You can change the values if required.
7. Enter a value in **Asset tag** to track the asset through its life cycle.
8. Select a value in **License metric** for the license group that the software license is counted against when reconciliation is run.
 

If you select Per Core or Per Core (with CAL), you need to enter values in the following fields:

  - a. In **Rights per license pack**, enter rights associated with each pack that is purchased for Microsoft Per Core or Microsoft Per Core with CAL licenses.
  - b. In **Number of packs**, enter the number of packs for Microsoft Per Core or Microsoft Per Core with CAL licenses.

9. Enter the number of rights purchased in **Purchased rights**.  
If you've specified a Microsoft Per Core or Microsoft Per Core with CAL license type, this field is automatically populated. This value is based on the values entered in the Rights per license pack field multiplied by the value in the Number of packs field.
10. Enter the cost of the software in **Unit cost**.  
Once you complete all the tasks in the Entitlement Details lane, you can move to the Additional Details lane.
11. Select **Additional Details**.
12. Enter the name of the company that this asset belongs to in **Company**.
13. Enter the location where the license is used.  
For example, you can specify a specific site, country, or region.
14. Enter the department of the person assigned to this software license in **Department**.
15. Enter the user or department with financial ownership of the asset in **Owned by**.  
The asset owner can be different than the manager.
16. Enter the financial details for the vendor in **Vendor, Invoice Number, Request Line, Purchased, Opened, GL account** and **Cost Center** fields.
17. Enter contract details in **Lease Contract, Warranty expiration, Support Group** and **Supported by** fields.  
Once you complete all the tasks in the Additional Details lane, you can move to the Review lane.
18. Select **Review** to show all the details that you have entered in all the lanes.
19. You can choose to edit any field, else select **Finish**.
20. Select **Publish** to publish this entitlement for use.  
The entitlement is created and state of the entitlement is changed to **in use** from **build**. The entitlement is ready to be used for the reconciliation process.

## Engineering license servers

View the list of all the license management servers that OpenLM or Open iT connect with to get data into your ServiceNow instance.

You can view information about all the license management servers by navigating to **All > Software Asset > Administration > Engineering License Server**.

Information such as the name of the server, the current status of the server, and the last connection time is displayed in the *Engineering Application License Servers* form layout.

## Setting up Software Asset Management

Before you can begin using the Software Asset Management application, complete the setup process.

You will need to request the Software Asset Management plugin. Then, integrate your discovery software so your software installation data can be pulled into your instance. You can then opt-in to the Software Asset Management Content Service Library to securely send your data back to ServiceNow. The data is used to help build the content service to automatically normalize your data. If necessary, determine if you need to exclude any software assets on configuration items that you manage.

## Request Software Asset Management

The ServiceNow® Software Asset Management Professional (com.snc.samp) plugin requires a separate subscription. This plugin includes demo data. Depending on your environment, you may choose to request one or more related plugins.

### Before you begin

To purchase a subscription or load demo data after activation, contact your ServiceNow account manager. Within a few days, the account manager can activate the plugin and load any demo data on the production and non-production instances of your organization.

If you do not have an account manager, decide to delay activation until after your purchase, or want to evaluate the product on a non-production instance at no extra charge, you can use this procedure to submit a plugin activation request through the ServiceNow® Now Support Service Portal.

**Warning:** If you upgrade to the Software Asset Management Professional (com.snc.samp) plugin from the Software Asset Management plugin (com.snc.software\_asset\_management), then you cannot revert to the Software Asset Management plugin (com.snc.software\_asset\_management).

Role required: admin

### About this task

Depending on your environment, you can request related plugins with the Software Asset Management Professional (com.snc.samp) plugin. You can request the optional plugins through either the Now Support Service Portal or through the ServiceNow Store.

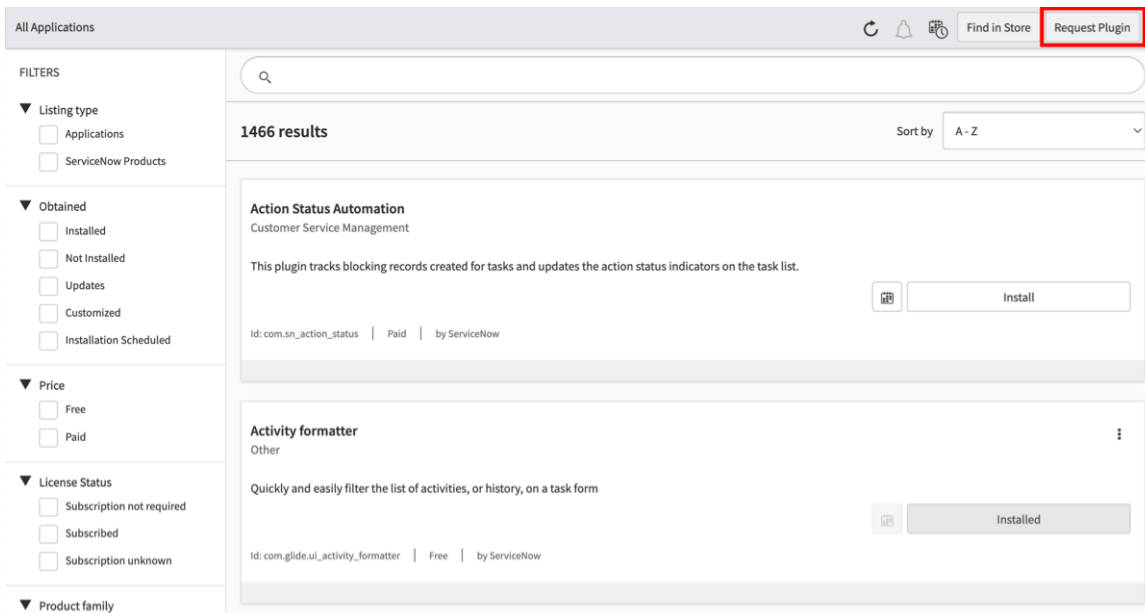
For the list of Software Asset Management Professional plugins, see [Components installed with Software Asset Management Professional](#).

Only ServiceNow personnel can activate the Software Asset Management Professional (com.snc.samp) plugin and other related plugins. The plugins are not visible in the plugin list, even after activation.

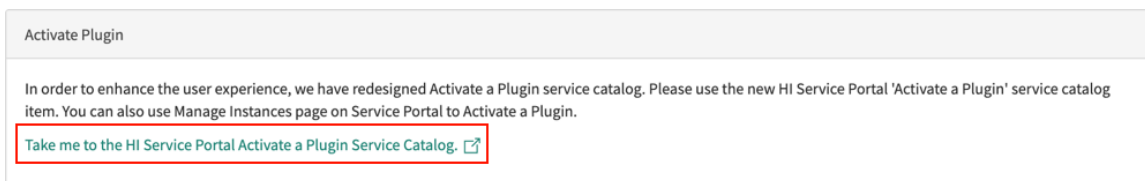
**Warning:** After installing the Software Asset Management application for the first time, or upgrading from the Software Asset Management Foundation plugin, you need to revert customizations for all features work. The Revert Customizations module in the Software Asset Management application can revert customized files related to Software Asset Management back to the base configurations that were skipped during the installation or upgrade process. See [Revert Software Asset Management customizations](#)

### Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.
2. On the All Applications page, select **Request Plugin** to open the **Activate Plugin** form on Now Support.



3. On Now Support, select the link to access the Now Support Service Portal Service Catalog.



4. Select your instance.

5. Select **Actions > Activate Plugin**.

6. On the **Activate Plugin** form, provide the following information.

### Activate Plugin form

Field	Description
What is your target instance	Instance on which to activate the plugin.
Which plugin would you like to activate	Name of the plugin to activate.  <b>Note:</b> Select Software Asset Management Professional Master Workspace (com.sn_samp_master_ws) plugin. If the system does not list the plugin you want or if you are activating the plugin on an OEM or on-premise instance, select the <b>Plugin I'm looking for is not listed</b> check box and then enter the name of the plugin.
Select Maintenance Date and Time	The date and time to activate the plugin.

Field	Description
	<p><b>Note:</b> Plugins are activated in two batches, once in the morning and once in the evening, on every business day in the US Pacific time zone. If the plugin must be activated at a specific time, enter the request in the <b>Reason/Comments</b> field.</p>

### Example

For example, see the following form to activate the CSM Workspace plugin on an instance named My Instance.

#### Activate Plugin form

### 7. Select **Submit**.

For additional details about requesting a plugin, see [Requesting a Plugin from the Service Catalog \[KB0751715\]](#) article in the Now Support Knowledge Base. [↗](#)

## Software Asset Management migration

Migrate from the Software Asset Management plugin (ITSM Software Asset Management feature of Asset Management) to the Software Asset Management application to take advantage of more powerful features. Manual actions by the customer are required after plugin activation.

After automatic changes are performed during plugin activation, successful migration from the Software Asset Management (com.snc.software\_asset\_management) plugin to the Software Asset Management Professional (com.snc.samp) plugin requires a [manual procedure](#) to be performed by the customer.

Customizations to forms and lists may need to be manually overwritten by the customer after plugin activation. In addition, certain fields in software models, software entitlements, user/device allocations forms require manual configuration by the customer after plugin activation.

## Automatic changes

The Software Asset Management Professional (com.snc.samp) plugin performs these automatic changes:

- Tables
  - Table labels renamed

Table	Original Label	New Label
[alm_license]	Software License	Software Entitlement
[alm_entitlement_user]	User Entitlement	User Allocations
[alm_entitlement_asset]	Device Entitlement	Device Allocations

- Adds new tables and script includes.
- Adds any string value in the Software Entitlements **License key** field to the License Key [samp\_sw\_license\_key] table

- Field names and values

- **Inference mandatory** field

For software models that have suite components (to bundle software models), the **Inference mandatory** field value in the Software Suite [cmdb\_m2m\_suite\_model] table is transferred to a new **Mandatory** field

- **Rights** field

The Software Entitlements (formerly Software Licenses) **Rights** field value in the License Entitlements [alm\_entitlement] table is transferred to a new **Purchased rights** field, and name changed from **Rights** to **Active rights**

- The **Software model** field for a software entitlement allocation (Software Entitlement [alm\_license] table) is automatically set to the software model on the entitlement (License Entitlements [alm\_entitlement] table)
- The quantity for a software entitlement allocation (License Entitlements [alm\_entitlement] table) is set to 1 unless there are multiple allocations

If there are multiple software entitlement allocations for the same user or device, the allocations are aggregated into one record, the quantity is set to the count of aggregated records, and duplicate allocations are not allowed.

- Forms and lists

Software Models, Entitlements (formerly Software License), Discovery Models, and Software Installations form and list layouts are modified to fit the new application

**i Note:** Any customizations to these forms and lists must be manually overwritten after plugin activation.

- Functionality

### Functionality disabled

Functionality	Description
License and software counters	The scheduled job trigger for SAM License Counters is changed to None so that it is deactivated, and software counters are disabled.
Auto-match functionality	The auto-match functionality, which attempts to match a discovery model to a corresponding software model, is deactivated.
Navigation menu	The navigation menu for the Software Asset Management (com.snc.software_asset_management) plugin is deactivated and renamed.
Business rules	Legacy business rules applied to discovery models are disabled.

### Overwrite customizations for Software Asset Management migration

When migrating from the Software Asset Management plugin (ITSM Software Asset Management feature of Asset Management) to the Software Asset Management application, further actions are required by the customer after plugin activation to ensure successful migration of customized forms and lists.



#### Before you begin

Role required: admin

#### About this task

If these lists and forms have been customized before the migration, they may have been skipped during plugin activation and, in that case, require further action.

- Software Entitlements (formerly Software Licenses)
- Software Allocations (formerly Software Entitlements)
- Software Models
- Discovery Models
- Software Installations

You can review plugin activation changes in the [Upgrade History](#)  module to determine what changes have automatically been skipped so you can [resolve a skipped update](#) , if needed.

Certain fields added by the migration also must be configured to take advantage of the new features offered.

### Procedure

1. Navigate to **All > System Diagnostics > Upgrade History**.
2. Identify the records that correspond to the upgrade history for the activation of the Software Asset Management Professional (com.snc.samp) plugin. The records in System Upgrades list that represent plugin activation contain the value **n/a** in the **From** field, and plugin name in the **To** field (such as com.snc.samp, com.snc.samp.core, com.snc.sam.core, com.glide.data\_services\_canonicalization.client,

com.snc.asset\_management, com.snc.model, com.snc.procurement). You can determine the list of related plugins based on the time stamp of when the Software Asset Management plugin was activated by sorting on the **Upgrade started** column.

3. Open a Software Asset Management upgrade record that has changes skipped.
4. In the **Upgrade Details** related list, open an Upgraded Details record, and then click **Resolve Conflicts** to view a side-by-side comparison of the base system file with the customized file.
5. Click **Revert to Base System** to overwrite the skipped change if it applies to form or list customization, and note down the changes.  
Repeat these steps for all upgrade entries with skipped changes relating to customizations.
6. In the Software Asset Management application, manually reconfigure your original form and list customizations.
7. In the Software Asset Management application, set new field values (added as part of the automatic changes performed by plugin activation) to take advantage of the new features offered.
  - a. Navigate to **Software Asset > Licensing > Software Models**.
    - Select the software product in the **Product** reference field.
    - Select a discovery map, or clear the **Discovery Map** field and set the discovery conditions to find all discovery models that correspond to the software model.
  - b. Navigate to **Software Asset > Licensing > Software Entitlements** (formerly Software Licenses).
    - Navigate to **Software Asset > Licensing > Software Entitlements** (formerly Software Licenses).
    - Select the **License Metric** that the software license is counted against when reconciliation is run.
    - Define the upgrade and downgrade scenarios covered by certain rights.
  - c. In the **User Allocations** and **Device Allocations** related lists (formerly User/Device Entitlements), verify that the number of allocated rights are not more than rights owned. If so, delete allocations so that the number of allocations does not exceed the number of rights owned.
8. If you have entitlements that require management of license keys, you can create multiple license keys associated to the same entitlement, as well as allocate these license keys to a user or device.

## Related topics

[plugin](#) 

## Configure SCCM for Software Asset Management

Set up Microsoft SCCM for Software Asset Management to populate the Software Installation [cmdb\_sam\_sw\_install] table with client software found in your environment. You can also set up SCCM for Client Software Distribution to reclaim unused and underused software.

### Before you begin

Role required: sn\_client\_sf\_dist.csd\_admin or admin

 **Tip:** Sign up for the [Software Asset Management: Integration with SCCM for Reclamation and Distribution](#)  course to learn about SCCM setup, reclamation, and more.

## Procedure

### 1. Activate the SCCM integration plugin [🔗](#) for your version of SCCM.

- Integration – Microsoft SCCM 2012 v2 (com.snc.integration.sccm2012v2)
- Integration – Microsoft SCCM 2016 (com.snc.integration.sccm2016)

If you want to pull software usage data from SCCM, activate the software usage plugin for your version of SCCM.

- Integration – Microsoft SCCM 2012 v2 Software Usage (com.snc.samp\_usage\_sccm) plugin
- Integration – Microsoft SCCM 2016 Software Usage (com.snc.samp.usage\_sccm\_2016) plugin

**i Important:** These Microsoft SCCM plugins will be deprecated in the Tokyo release. If you are integrating with SCCM for the first time, request and install the Service Graph connector for Microsoft SCCM application from the [ServiceNow Store](#) [🔗](#) instead. If you have already activated one of the Microsoft SCCM plugins on your ServiceNow instance, use the Migration Readiness Tool for Service Graph Connector for SCCM store application to prepare your instance for migration from the Microsoft SCCM plugin to the Service Graph connector. See [Service Graph connector for Microsoft SCCM](#) [🔗](#) for more information on the Service Graph connector.

### 2. **Optional:** If you want to reclaim unused and underused software, set up SCCM for Client Software Distribution (CSD).

#### a. Request the [Client Software Distribution](#) [🔗](#) (com.snc.orchestration.client\_sf\_distribution) plugin.

Client Software Distribution requires a subscription to [Orchestration](#) [🔗](#).

#### b. In SCCM, create an application, install collection, and uninstall collection for any software that you have not already created these items for.

(Optional) After you create these items, you can then deploy the application for both the install and uninstall collection. For detailed instructions, see [Create and deploy an application with SCCM](#) [🔗](#) and [Create collections in SCCM](#) [🔗](#) from the Microsoft SCCM product documentation.

To reclaim software, an application, install collection, and uninstall collection must exist for the software. If you installed software manually or using an SCCM legacy package, you must still create these items so that you can reclaim the software.

**i Note:** If you installed software using an SCCM legacy package, you can use [Microsoft Package Conversion Manager](#) [🔗](#) to create the application.

### 3. Setup the MID Server [🔗](#).

### 4. Configure SCCM and the ServiceNow AI Platform [🔗](#).

### 5. To offer an application from the Service Catalog, [create a catalog item](#) [🔗](#).

## What to do next

Once you've configured SCCM and discovered your software applications, you can [create reclamation rules](#) to identify unused or underused software, [view software usage](#), and [reclaim software](#).

## Managing software suites

Simplify licensing and lower the cost of licenses from vendors. Get visibility into your complex suite licenses, manage compliance, and optimize your spending on these licenses.

Create a suite and add components to the suite so that your organizations' rights are accurately counted during reconciliation.

A software suite is a group of related software that is offered as one unit. An example is the Microsoft Office Professional suite that includes PowerPoint, Word, Excel, Outlook, and Access.

Another example of a server-side suite is the Microsoft Core Infrastructure Server (CIS) Suite. The CIS Suite can include the Windows Server software as well as the System Center suite, which includes Configuration Manager, Operations Manager, and other titles. CIS Suite, which is licensed with Microsoft server metrics (Per Core, Per Core (with CAL), Per Instance, Per Processor, Per Server), are considered during reconciliation.

For any software model, you can specify whether the model is a suite (parent) or a component (child). A software model can be a component in multiple suites. For example, Microsoft Word is a component in two suites: Microsoft Office Standard and Microsoft Office Professional. Although you can set a single software model as both a suite and a component, software isn't typically sold as nested suites.

Whenever a software model is automatically created as part of a scheduled job, its child components are automatically created and appear in the [Suite Components](#) section.

Use the **Inference percent** or **Inference number** and **Mandatory** fields when the suite parent isn't defined in the install table.

- **Inference percent:** Specifies the percentage of the components that must be installed for the suite.
- **Mandatory:** Enforces whether a specific component must be installed to infer that the suite is installed. Choices are Optional, Always Mandatory, Mandatory Group.

**Note:** If two or more software components are part of a Mandatory Group, then at least one of them must be present so that all the software components are considered a suite. This assumes that the inference percent and other requirements are also fulfilled.

For example, let's say you specify the **Inference percent** as 75% and set the **Mandatory** field to **Always Mandatory** on Microsoft Access. These settings specify that Microsoft Access must be installed, along with three out of four other products (Microsoft Word, Microsoft Excel, Microsoft PowerPoint, and Microsoft Outlook), to infer that Microsoft Office Professional is installed on a device.

When a suite parent is detected during reconciliation, the child components don't count for the individual license.

**Note:** Users with the model\_manager role can navigate to **Product Catalog > Product Model > Software Models**, but can't administer all aspects of software models.

The rules of inference suite ranking are as follows:

- If one of the software installations belongs to the suite software model, the suite is inferred directly without the need to meet the Inference percentage.
- If the preceding rule isn't met, then any suite that meets the Inference percentage or the Inference number on that device can be considered an Inferred suite candidate.
- The candidate with highest number of installed components is chosen.

- If there's still a tie, the suite with the lower downgrade is chosen. For example, Office 2016 and Office 2013 are both candidates and have the same number of installed components. However, because Office 2013 is the downgraded version of Office 2016, Office 2013 is chosen.
- If there's still a tie, the one with the highest percentage of installed components is chosen.

Software Asset Management supports hybrid and subscription-based software suites. In a hybrid software suite, either the suite parent or child component is subscription-based. In a subscription-based software suite, both the suite parent and child component are subscription-based. The license that you use to determine compliance is dependent on whether the suite parent and child component are subscription-based:

- If only the suite parent is subscription-based, then all the child component installations are inferred as part of the suite parent. You can determine your license compliance using the suite parent license.
- If only the child component of a suite parent is subscription-based, then the instances of that child component aren't inferred as part of the suite parent. You can determine your license compliance using the child component license.
- If both the suite parent and child components are subscription-based, then the instances of the child components are inferred as part of the suite parent. You can determine your license compliance using the suite parent license. For example, Microsoft 365 E5 is a subscription-based software suite that consists of the Office 365 E5, EMS E5, and Windows 10 subscription software. Because both the suite parent and child components are subscription-based, they're reconciled against the Microsoft 365 E5 parent license.

## Windows Server cluster license optimization

Optimize rights used for Windows Server clustering based on costs and compliance criteria.

Windows Server installations are categorized into two editions - Standard and Datacenter. Windows Server Standard and Datacenter editions are licensed by physical cores. The licenses are available in packs of 2 and packs of 16. The minimum license requirements for Windows Server clustering is:

- All physical cores must be licensed
- 8 core licenses per processor
- 16 core licenses per server

A cluster is licensed by calculating the maximum number of virtual machines (VMs) that can run on one physical host.

The Windows Server Standard edition is licensed for 2 operating system environments (OSEs) or Hyper-V containers. Additional OSEs require additional licenses (physical server is licensed for every 2 OSEs, minimum of 16 rights). Windows Server Datacenter edition is licensed for unlimited OSEs.

The cluster or host density is determined by dividing the active operating systems by 2. The system property `com.snc.samp.windowserver.license.threshold` with a default value of 4.59 is used for marking the host or cluster density. This property is a ratio of the cost of Datacenter and non Datacenter licenses and identifies the optimal cluster size for Datacenter licenses. You can modify the value of this property based on the purchase costs for these licenses. Low density clusters are licensed by non Datacenter licenses starting from low to high density. High density clusters are licensed by Datacenter licenses starting from high to low density. Optimal license and potential savings are generated for host or cluster using non optimal licenses.

The Windows Standard rights are used first for the Standard list by using them from the smallest to the largest within this list. After using Standard rights for low density host or cluster, the remaining low density host or cluster are licensed by the remaining Datacenter rights from high to low density. After using Datacenter rights for high density host or cluster, the remaining high density host or cluster are licensed by the remaining Standard rights from low to high density. Clusters that do not have enough Datacenter or Standard rights to consume are marked as unlicensed.

A new table, Potential savings by optimizing licenses, [samp\_license\_optimization\_summary] is created to store information about licensing Windows Server software installed on each device.

## Create a catalog request to reclaim assets

Create a catalog request to efficiently reclaim software assets when an employee leaves an organization or moves to a different role.

### Before you begin

Role required: sam\_admin or sam\_user

### Procedure

1. Navigate to **Service Catalog**.
2. In the Service Catalog page, enter **Reclaim asset** in the **Search catalog** field on the right-hand side of the page.
3. Select **Reclaim Asset**.
4. On the form, fill in the fields.

#### Reclaim Asset form

Fields	Description
Requested by	The role of the person, such as HR, manager, or employee, who creates this catalog request.
Requested for	Name of the person for who you are submitting the catalog request.
Employee separation	Whether the person for who you are submitting the asset reclamation is leaving the organization or moving to a different role.
Asset	Assets assigned to the person for who you are submitting the asset reclamation.
Reclaim date	The date by which you want the asset reclaimed by. You can enter today's date or a date in the future.
Reclaim method	The method you intend to use to collect the assets from the departing employee. You can pick up the assets, the employee can drop them off, or ship them to the organization.
Legal hold method	If the assets need to be kept on hold because of any legal reasons.
Notes/Special instructions	Any instructions that you may want to mention.

## 5. Select **Submit**.

The asset reclamation request is created. Once the request is created, the sam\_user needs to close all the tasks mentioned in the request. For more details, see [Close an asset reclamation request](#).

### Close an asset reclamation request

Close an asset reclamation request to efficiently reclaim software assets when an employee leaves an organization or moves to a different role.

### Before you begin

Role required: sam\_user or asset.

### Procedure

#### 1. Navigate to **Inventory > Asset Reclamation > Asset Reclamation Requests**.

#### 2. Open the request that you want to fulfill.

In the Software Asset Reclamation Lines related list, a device reclamation line item is created for each device that is returned, has a corresponding CI record, has software installations on it, and that device was selected in the Reclaim Asset form. For example, if five computers were assigned to an employee, then for each computer a separate device reclamation line item is created.

An extra user reclamation line item is created if the **Employee Separation** check box was selected in the Reclaim Asset form.

#### 3. Click the device reclamation line item.

The Software Asset Reclamation Line page opens, where a software asset reclamation task titled **Receive, evaluate and update asset** is created.

#### 4. Click the **Receive, evaluate, and update** task.

The Software Asset Reclamation Task page opens. You now need to manually receive the asset, evaluate if the asset can be redeployed or reused, and then update the asset.

#### 5. Select values for the **Assignment group** and **Assigned to** fields.

#### 6. Click **Close Task** once you have completed all the tasks.

The line item state now changes to **Closed Complete**

For each software asset reclamation line item where the type is device reclamation, perform steps 3 to 6.

**Note:** Once you receive the asset from the employee, navigate to the Asset page and change the values for the **State** and **Assigned to** fields. Since the asset is no longer assigned to a user, ensure that the **Assigned to** field is empty and the **State** field is not in the **In use** status.

If the asset that was updated has device allocations, then a software asset reclamation line task titled **Remove device license allocations** is created. All the device allocations records on that Asset (CI) are removed, and the task is marked as **Closed complete**.

If the asset that was updated has software install records, then a software asset reclamation line task titled **Remove software installs** is created. All the software install records on that Asset (CI) are removed, and the task is marked as **Closed complete**.

Once all the device reclamation tasks are complete and if a user reclamation line item is not created, then the status of the catalog request changes to **Complete**. However, if a user

reclamation task is created, then you need to take care of the following steps to complete and close the user reclamation line item.

**Note:** A user reclamation task is created if the **Employee Separation** check box was selected in the Reclaim Asset form.

A user reclamation workflow is initiated once the reclaimed date mentioned in the Asset Reclamation Request form has lapsed. A user license allocation task titled **Revoke user license allocations** is automatically created to remove all user license allocations. A few manual tasks are also created that need to be completed.

**7.** Complete the following manual user reclamation tasks:

- Revoke SSO access (if the employee had any SSO provider plugin enabled)
- Revoke Citrix access (if the employee had the Citrix plugin enabled)
- Revoke SAP access (if SAP publisher pack plugin was enabled)
- Revoke user subscriptions. Open the task and ensure that removal candidate records are created for each user subscription record.

**8.** Once all the user reclamation tasks are closed, the status of the catalog request changes to **complete**.

## Configuring Software Asset Workspace

Once you have finished setting up the Software Asset Management application, you need to configure the Software Asset Workspace.

If you have multiple entitlements, you can import them at one go using a Microsoft Excel spreadsheet template. You can also create software entitlements with the help of the Software Asset Management Playbook or you can use the standard form. For information on using the Software Asset Management Playbook, see [Software Asset Management Guided Experiences](#).

If software models haven't automatically been created, you need to manually create software models. For information on creating software models, see [Create software models in workspace](#).

### Import bulk entitlements in workspace

You can import multiple entitlements at one go in the Software Asset Workspace.

#### Before you begin

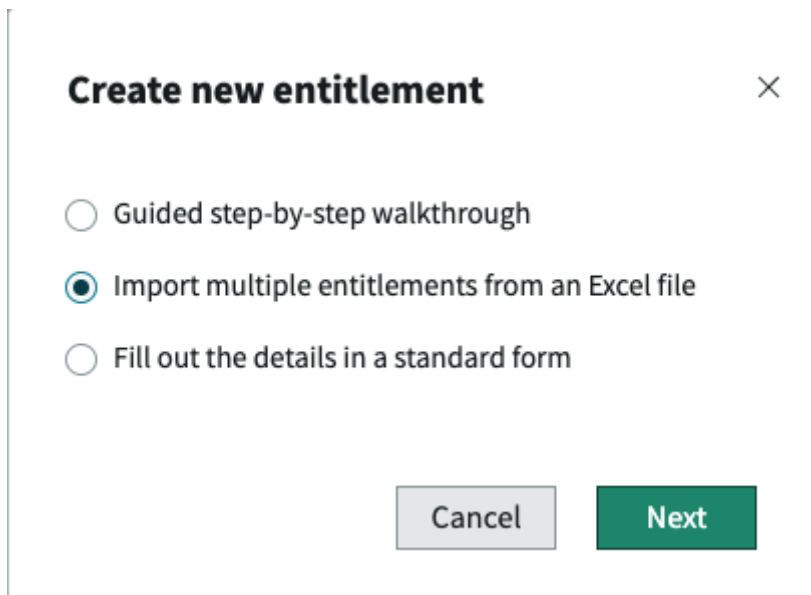
Role required: sam\_user or sam\_admin

#### About this task

The entitlement import records are stored in the Entitlement import [samp\_bulk\_import] table. You can leverage the Activity center in the Software asset overview landing page to view import errors and the import status.

#### Procedure

- 1.** Navigate to **All > Software asset > Software Asset Workspace**.
- 2.** Select **Create entitlement**.



3. In the Create new entitlement dialog box, select **Import multiple entitlements from an Excel file** and select **Next**.
4. In the Create New Entitlement Import page, select **Download template** to download a spreadsheet template (.xlsx).

You can add software entitlement fields to the template to include additional fields in your import. Add each field as a new column in the template. The column name must match the field label exactly. Besides the Publisher, Product, Version, Edition, Platform and Language, the Install condition name column is also taken into account to find the correct software model while importing entitlements.

You can include base system software entitlement fields as well as your custom software entitlement fields. Custom choice columns (where the type is Choice) created in the Asset [alm\_asset] or Software Entitlement [alm\_license] table are also supported.

**i Note:** By default, the **Unit cost** column in the spreadsheet takes into account the currency that your system is set to. However you can manually change the currency and the Software Asset Management application will honor the currency that you specify. To specify a currency, enter the currency code followed by a semicolon and the cost. For example, EUR ; 200. Valid currency codes are the ones listed in the Currency [fix\_currency] table and have the **Active** column set to true.

5. Enter the entitlement details in the template and select **Attach File** to upload the spreadsheet. Once the file is uploaded, the name of the file appears and the **Description** field is automatically populated. You can change the description to make it more specific.
6. Select **Import**.

An import record is created that retains the history of the upload for you to view later.

A confirmation message appears informing you that the import of entitlements is in progress. Once the import record is processed, the **Status** field displays one of the following values: **Completed**, **Completed with errors**, or **Failed**.

7. Select the link in the confirmation message to check the status of the record. The License operations view appears displaying the entitlement record in the Entitlement Import page

8. Open the entitlement record to view its details.
9. Click the **Entitlements** tab to view the list of entitlements that got successfully created.

**Note:** The **Entitlements** tab only appears if the **Status** field displays the values, **Completed**, or **Completed with errors**.

10. If any errors occur and the status says **Completed with errors**, click **Review import errors**.

The Review entitlement import errors page opens containing two tabs:

- **Import errors:** displays records whose error status is **Needs review**.
- **Relate entitlements:** lists entitlements, such as maintenance entitlements, that are in the build state and can be linked to the base entitlements.

11. Select the import error record to view the errors.

For a detailed description of the entitlement import error fields, see [Entitlement import error fields](#)

12. Correct the errors and select **Import**.

The entitlement is successfully created. Further processing of the entitlement continues such as validation of downgrade models for the entitlement. For more information on resolving errors, see [Entitlement import error actions](#).

## Create entitlements in workspace

Create entitlements in the Software Asset Workspace to enter your license details and allocate purchased software rights to users or devices.

### Before you begin

These instructions are for using the standard form for creating software entitlements one at a time. You can also use the step by step approach of a [guided walk-through](#) for creating entitlements. If you already have software entitlement details entered in a spreadsheet, you can also [import](#) them using the bulk import functionality.

When you start creating the entitlement it is in the **build** status. Once you publish the entitlement, the status changes to **in use** and makes the entitlement eligible to be included in the reconciliation process.

If you installed SaaS License Management, a software model is generated automatically after you create an integration profile. Create an entitlement for the software model to track software used against software owned.

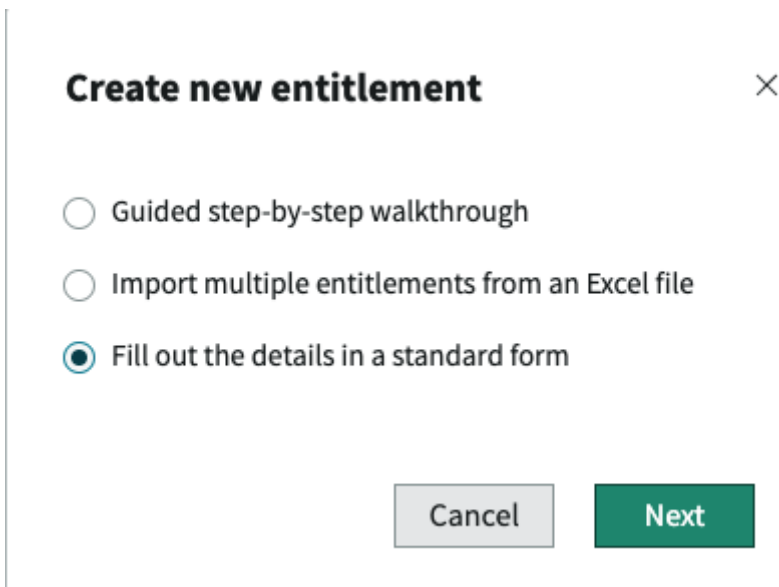
if you installed the SAP publisher pack, see [Create entitlements for SAP](#).

You can also create entitlements for RHEL and Citrix publisher packs. For details on the entitlement form fields for RHEL, see [Software Entitlement form](#).

Role required: sam\_admin or sam\_user

### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace**.
2. Select **Create entitlement** to open the Create new entitlement dialog box.  
You can also navigate to the Create new entitlement dialog box from **Software asset > Software Asset Workspace > License operations**



**3.** Select **Fill out the details in a standard form** and then select **Next**.

**4.** In the Create New Software Entitlement page, fill in the fields.  
For a detailed description of the fields, see [Software entitlement fields](#).

**5.** Select **Save**.  
After you save the entitlement, the **Allocations**, **General**, **Financial**, and **Contracts** tabs appear on the page. You can now add details in these related tabs.

**6.** Once you have entered the required details, select **Publish**.

The entitlement is created and state of the entitlement is changed to **in use** from **build**. The entitlement is ready to be picked up for the reconciliation process.

You can perform additional configuration on the new entitlement by entering details in the other tabs such as Contracts, Downgrade Rights, Expense Lines, Entitlement History. For a detailed description of the fields in these tabs, see [Software entitlement fields](#).

## Related topics

[Create device allocation](#)

## Create maintenance entitlements in workspace

Define license details, for all publishers other than Microsoft in the Software Asset Workspace. Create maintenance entitlements to manage all your software license maintenance needs such as start and end dates of your contracts and software upgrades.

## Before you begin

Role required: sam\_user or sam\_admin

## Procedure

- 1.** Navigate to **All > Software asset > Software Asset Workspace**.
- 2.** Click **Create entitlement** to open the Create new entitlement dialog box.  
You can also navigate to the Create new entitlement dialog box from **Software asset > Software Asset Workspace > License operations**.
- 3.** Select **Standard form** and then click **Next**.  
The Create New Software Entitlement page opens and the entitlement is in build status.

4. On the Create New Software Entitlement page, fill in the mandatory fields and select **Maintenance** in the **License type** field.

For a detailed description of all the fields, refer to [Software entitlement fields](#).

If the **Next Version** field is populated in the software model that the maintenance entitlement is associated with and the metric group selected in the maintenance entitlement is **Common**, then the maintenance entitlement is updated with the next version of the software model. Next version is applicable only for the **Common** metric group.

5. Once you have entered the required details, click **Publish**.  
The maintenance entitlement is created and state of the entitlement is changed to **in use** from **build**. The maintenance entitlement is ready to be picked up for the reconciliation process.

**i Note:** If you purchase a perpetual entitlement and associate only some of the rights of that entitlement with a maintenance entitlement, your perpetual entitlement is automatically split into two entitlements. For example, you purchased a perpetual entitlement with 50 active rights (E1). You associate 20 of these rights with 20 rights of a maintenance entitlement. Your E1 perpetual entitlement is now automatically split into two entitlements: one perpetual entitlement (E1) with 20 active rights (and 50 purchase rights) associated with 20 rights of the maintenance entitlement (M1) and another perpetual entitlement (E2) with 30 active rights without any maintenance association and no purchased rights.

6. You can perform additional configuration on your new maintenance entitlement record.

For a detailed description, see [Software entitlement fields](#).

You can't add user or device allocations for maintenance entitlements.

- a. Enter information pertaining to finance such as the vendor from which the asset was purchased, the invoice number, in the **Financial** tab.
- b. Enter information relating to contracts such as the lease contracts, the expiration date of the warranty in the **Contracts** tab.
- c. Link related perpetual entitlements to your maintenance entitlement from the **Related Entitlements** related list.

- i. Select the **Related Entitlements** related list and then click **New**.

The Create New Related Entitlement form opens in a new tab.

- ii. On the form, fill in the fields.

**Create New Related Entitlement form**

Field	Description
Active rights	Number of rights that you want to grant to the related perpetual entitlement.
Software Entitlement	Software entitlement that you are linking the related perpetual entitlement to. This field populates automatically.
Related Entitlement	Related perpetual entitlement that you want to link.

Field	Description
Domain	Domain that the related perpetual entitlement applies to. The default value is <b>global</b> .

iii. Click **Save**.

To remove the relationship between the perpetual and maintenance entitlement, remove the entitlement from the **Related Entitlements** related list in the maintenance entitlement.

If the entitlement has split and you've deleted the maintenance entitlement, the perpetual entitlement is not removed.

- d. View the downgrade rights for the software model associated with the maintenance entitlement in the **Downgrade Rights** related list.
- e. To manage license keys, and specify which licenses keys are allocated to entitlements, click the **License Keys** related list
- f. To track the cost of your software over its lifecycle, click the **Expense Lines** related list.
- g. To view the history of all maintenance entitlements that you have purchased, click the **Entitlement History** related list.  
For example, if you purchased two maintenance entitlements, M1 (which is now retired) and M2 (currently in use), the Entitlement History related link displays both M1 and M2.
- h. To view the history of the newly upgraded software model related to your entitlement and the previous software model, click the **Upgrade History** related list.

7. Once you have completed filling in the additional configuration details, click **Save**.

**Create Microsoft Software Assurance entitlements in workspace**

Define license details for Microsoft Software Assurance (SA) in the Software Asset Workspace to manage your contracts start and end dates, software upgrades, and related software entitlements.

**Before you begin**

Role required: sam\_user or sam\_admin

**Procedure**

1. Navigate to **All > Software asset > Software Asset Workspace**.
2. Click **Create entitlement** to open the Create new entitlement dialog box.  
You can also navigate to the Create new entitlement dialog box from **Software asset > Software Asset Workspace > License operations**.
3. Select **Standard form** and then click **Next**.  
The Create New Software Entitlement page opens and the entitlement is in build status.
4. On the Create New Software Entitlement form, fill in the mandatory fields and select **SA** in the **License type** field.

You must enter the number of rights to be granted for the SA entitlement in the **Active rights** field.

For a detailed description of the fields related to all entitlements, see [Create entitlements in Software Asset Management classic](#).

**Note:** You can't add user or device allocations for SA entitlements.

**5. Click Publish.**

An entitlement appears in the Software Entitlement list.

**Note:** If you purchase a perpetual entitlement and associate only some of the rights of that entitlement with a SA entitlement, your perpetual entitlement is automatically split into two entitlements. For example, you purchased a perpetual entitlement with 50 active rights (E1). You associate 20 of these rights with 20 rights of a SA entitlement. Your E1 perpetual entitlement is now automatically split into two entitlements: one perpetual entitlement (E1) with 20 active rights (and 50 purchase rights) associated with 20 rights of the SA entitlement (M1) and another perpetual entitlement (E2) with 30 active rights without any SA association and no purchased rights.

**6. To perform additional configuration, select your new software entitlement record from the Software Entitlements list.**

**a.** To link related perpetual and SA entitlements, use the following steps:

**i.** Select the Related Entitlements related list and then click **New**.

The Create New Related Entitlement form opens in a new tab.

**ii.** On the form, fill in the fields.

**Create New Related Entitlement form**

Field	Description
Active rights	Number of rights that you want to grant to the related perpetual or SA entitlement.
Software Entitlement	Software entitlement that you are linking the related perpetual or SA entitlement to. This field populates automatically.
Related Entitlement	Related perpetual or SA entitlement that you want to link.
Domain	Domain that the related perpetual or SA entitlement applies to. The default value is <b>global</b> .

**iii.** Click **Save**.

To remove the relationship between the perpetual and SA entitlement, remove the entitlement from the Related Entitlements related list in the SA entitlement.

If you delete either the perpetual or SA entitlement that is linked, the other entitlement isn't deleted.

If the entitlement has split and you've deleted the SA entitlement, the perpetual entitlement is not removed.

**b.** To link your software to a newer version as part of your maintenance contract, click the Upgraded Entitlements related list.

**Note:** This related list is only available if you selected **Step-up** as the entitlement license type.

If the **Next Version** field is populated on the software model, entitlements with active SA are updated to the new version of the software model.

After you've linked your related entitlements, if there aren't enough SA rights to cover the perpetual entitlement rights, an error message displays.

- c. To view all previously related entitlements that are linked, click the Entitlement History related list.

**Note:** Validation is run against the active rights of all related entitlements automatically. If there's an error with the calculation, a message with additional information on how to resolve the problem is displayed.

7. Click **Update**.

## Create software models in workspace

Create a software model in the Software Asset Workspace to add product details that are used to connect software rights you purchased with software installations discovered on your system.

### Before you begin

Role required: sam\_user, sam\_admin, or model\_manager

### About this task

You can manually create a software model. However, you can leverage the Software Asset Management Content Service Library to automate the creation of software models through their relationship to software entitlements. While creating or importing a software entitlement, specifying a publisher part number automatically creates a software model (if needed) or links to an existing software model. You need to manually create a software model if a publisher part number is not available, a publisher part number does not exist in the Content Service Library, or if you are creating a software model for a custom product.

### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace**.
2. Select **License operations** view on the left hand bar.
3. Under **Licensing**, select **software models**.
4. Select **New**.

5. On the Create New Software Model page, fill in the details in the fields.  
See [Software model fields](#).

6. Select **Save**.

After you save the software model, the **General**, **Suite Components**, **Suite Parents**, and the **Product Catalog** tabs appear on the page. You can now add details in these related tabs.

7. Specify whether your software publisher is part of a suite.

- To designate your software model as a suite parent, click [Suite Parents](#) and add all software included with the suite.
- To designate your software model as a suite component, click [Suite Components](#) and add the parent suite.

**i Note:** If you've added a discovery map to your product details, predefined suites are used and suite components are created automatically for known suite parent.

8. To view all the product lifecycles associated with your software model, select [Software Product Lifecycle](#).

Select **New** to create a custom product life-cycle.

9. To view the override license cost for your entitlements, select [Override License Cost](#).

10. To set the attribute value, select the [Metric Attributes](#) and complete the form.

When you add an attribute value, entitlements with this publisher information associated with them automatically have the **Metric Group** field populated. Based on the metric group, only license metrics related to the publisher are available.

11. To associate your software model with a vendor, select [Vendor Catalog Items](#) and complete the form.

12. To specify the number of devices or users that are accessing the software, select [Client Access](#) and complete the form.

13. To create a new record for the software downgrade rights, click [Downgrade Rights](#) and complete the form.

**i Note:** If your software model has a discovery map associated with it and the discovery map has downgrade rights, the downgrade rights are populated automatically. Downgraded versions of the software appear in a hierarchical list. For more information, see [Downgrade Rights](#).

14. To enable self-service capabilities for the software that is associated with your software model, publish the software model to your service catalog.

a. Select **Publish to Software Catalog**.

The Publish *<software-model>* to Software Catalog dialog box opens.

b. On the dialog box, set the **Category** field to **Software**.

c. Select **OK**.

## Create averages for product life cycles in workspace

Create averages to calculate software End of Life (EOL) and End of Support (EOS) life cycles in the Software Asset Workspace.

### Before you begin

Role required: model\_manager

### About this task

You can create averages that can be used globally for all products and publishers or you can create averages specific to a product or a publisher. These averages are used to create calculated life cycles for products.

Ensure that *com.snc.samp.generate.calculated.lifecycles* system property is enabled. For additional details, see [End of Life \(EOL\) and End of Support \(EOS\) life cycles](#).

### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations > Software lifecycle averages**.
2. Select **New** to open the Create New Software lifecycle averages page.
3. On the form, fill in the fields.

Field	Description
Type	The type of option you select for creating life cycles. Choose from the following options: <ul style="list-style-type: none"> <li>○ <b>Custom industry average:</b> Refers to the industry averages based on the General Availability (GA) dates.</li> <li>○ <b>Product:</b> Refers to a specific product. This includes custom products too.</li> <li>○ <b>Publisher:</b> Refers to a specific publisher. This includes custom publishers too.</li> </ul>
Display name	A unique name for this life cycle average record.
Product	This field appears only if you select the value <b>Product</b> in the <b>Type</b> field.
Publisher	This field is automatically populated once you select a product. If you selected the value

Field	Description
	<b>Publisher</b> in the <b>Type</b> field, then you select a publisher.
Domain	Indicates the domain in which your instance is located.
Average end of life period (months)	Specify the number of months for the EOL life cycle.
Average end of support period (months)	Specify the number of months for the EOS life cycle.
Active	Indicates that the life cycle average record will be used for creating software life cycles.

**4. Select Save.**

The record is created and appears in the Software lifecycle averages list view.

**Run a health check scan for Software Asset Management**

Run a health check scan on your Software Asset Management configurations and get recommendations on fixing any errors that may exist.

**Before you begin**

Role required:

- sam\_user
- implementation partners
- support analyst

**About this task**

You can run a health check scan to know the health score for the complete configuration of the Software Asset Management application or for a specific part of the configuration.

**Procedure**

- 1. Navigate to **Software asset > Software Asset Workspace > Success portal > Health check.****
- 2. Select the **Suites check available** widget.**  
The Suites page appears listing all available health checks per suite.
- 3. Select the suite on which you want to run the health check scan.**  
All checks for that particular suite appear in the page along with a short description and the category of each check.
- 4. Select **Execute Suite scan** to begin the scan.**  
The Execute Suite Scan dialog box appears and shows the progress of the scan. All the checks in that suite get executed across your environment.
- 5. Select **Go to results** once the scan is complete.**  
All issue records for the health checks are displayed under **Scan Findings** in the Scan Result page.
- 6. Select on an issue record to get more details on an error such as detailed description of the error, resolution details.**  
You can create tasks and assign the tasks to individuals to take action on the recommendations.
- 7. Create tasks and assign the tasks to individuals to take action on the recommendations.**  
Once the errors are fixed, you can run the scan again to see improved health scores.

## Using Software Asset Workspace

Use the Software Asset Workspace, the intuitive and streamlined user interface of the Software Asset Management application, to manage software licenses, compliance, and optimization.

### Software Asset Workspace landscape

The Software Asset Workspace is a unified medium with multiple views. The views let you create entitlements, software models, run and review reconciliation results, remediate non compliance, give visibility into your software assets, and provides access to analytics via dashboards. Additionally, you can export asset information from the Software Asset Workspace using the **Export** button on all the related lists. To use the export functionality for versions earlier than Xanadu, see knowledge base article [KB1709844](#).

The Software Asset Workspace contains the following views:

- **Software asset overview:** The landing page of the Software Asset Workspace. You can create entitlements, run reconciliation, view key metrics and get time sensitive alerts and notifications regarding your software assets.
- **License usage:** You can view the compliance status of all your publishers, review reconciliation results, reclaim unused software, and view and run reports.
- **License operations:** Lists all the entitlements, software models, import entitlement errors, discovery models.
- **Software asset analytics:** View consolidated dashboards for SaaS, discovered inventory, optimization, lifecycle management, cloud cost simulator, Engineering License, and normalization and content.
- **Success portal view in Software Asset Workspace:** Assess the performance of the Software Asset Management application in your environment.
- **Renewals calendar:** View the entitlements nearing their expiry date and contracts nearing their expiry date or are already expired.
- **Overlapping usage:** View the feature level usage of your SaaS and SSO applications.
- **Content lookup:** View the data stored in the Software Asset Management Content Service.

### Software asset overview

Enhance your software asset management experience by using the modernized and user-friendly software asset overview view. The software asset overview is a simplified and intuitive environment that helps you use the application more effectively by reducing complexity.

Use the software asset overview view to:

- Gain insights into key metrics such as compliance trends, true-up costs, potential savings, normalization rates.
- Execute routine tasks such as running reconciliation or creating entitlements.
- Configure Microsoft SQL Server and Microsoft Windows Server on your ServiceNow instance through the Guided Setup. For more information, see [Software Asset Management Guided Experiences](#).
- Get actionable insights into your software assets via alerts and notifications.
- Sort by product or publisher to narrow down your results.

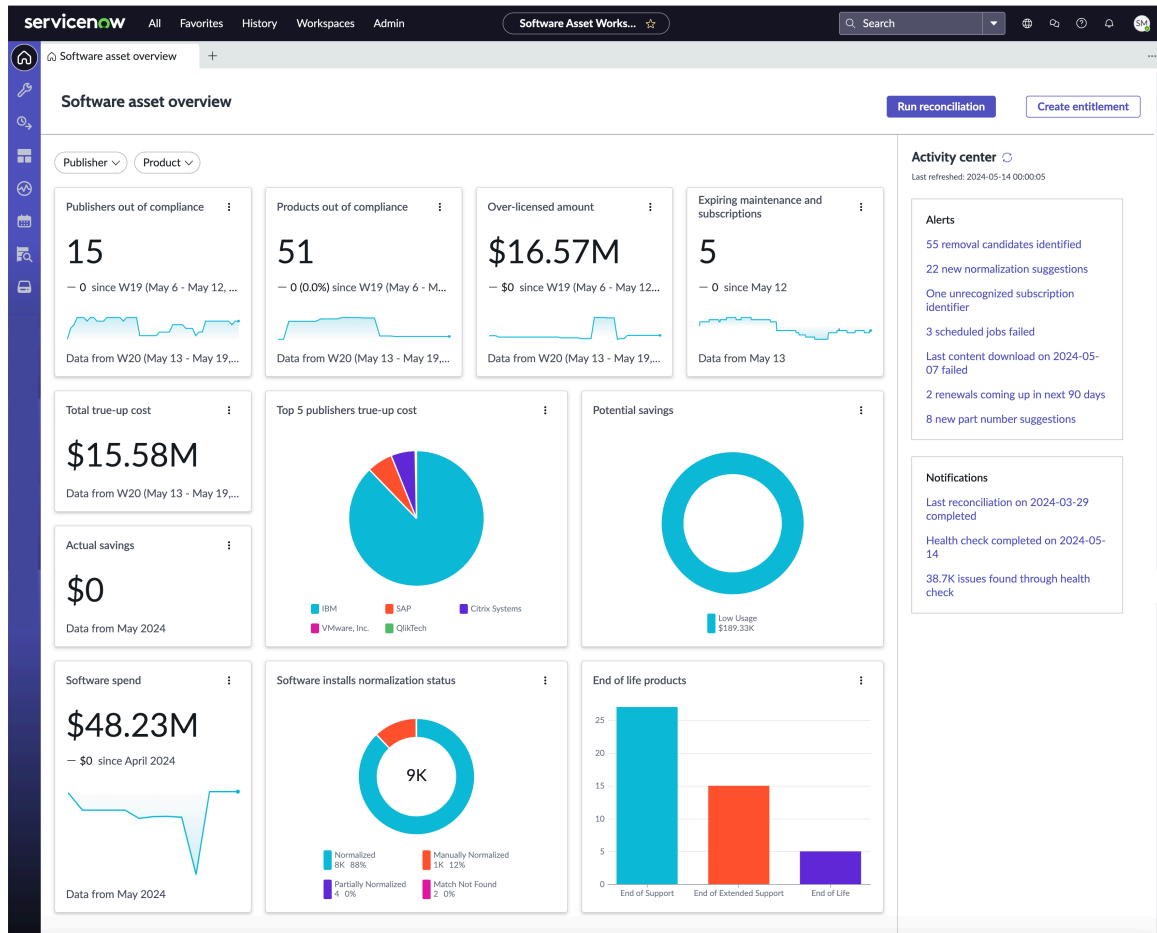
- Filter by Published status to view reports and dashboards only related to the software products that you manage in a phase-wise implementation of Software Asset Management.

**Note:** The Published status filter is shown only when the system property `com.snc.samp.manage.published.products` is enabled on your ServiceNow instance. By default, this filter is set to **Published** and the following reports show details of published products:

- Publishers out of compliance
- Products out of compliance
- Over-licensed amount
- Total true-up cost
- Top 5 publishers true-up cost
- Software spend

However, you can also view reports related to the products that aren't published by setting this filter to **Unpublished**. To view reports related to all the products, clear the Published status filter.

### Software asset overview view



Select any widget to view detailed information. All the widgets are updated whenever a new reconciliation result is available.

To narrow down your results, you can filter the workspace by publisher or product.

**i Note:** If you select more than one publisher in the filter and then select the **Publishers out of compliance** widget, all non-compliant publishers are listed. The same is true for products.

**Software asset overview dashboard**

Report	Source	Description
Publishers out of compliance	Product Results [samp_product_result]	The number of publishers that have at least one software model out of compliance.  Select the report to view the results in the License usage view.
Products out of compliance	Product Results [samp_product_result]	The number of products that have at least one software model out of compliance.  Select the report to view the results in the License usage view.
Over-licensed amount	Product Results [samp_product_result]	Cost of licenses owned but not being used.
Expiring maintenance and subscription	Software Entitlement [alm_license]	End date of the total sum of all entitlements that are going to expire within 6 months.  The total sum of entitlements includes: <ul style="list-style-type: none"> <li>• Perpetual</li> <li>• Maintenance</li> <li>• Perpetual + Maintenance</li> <li>• Upgrade</li> <li>• SA</li> <li>• Perpetual +SA</li> <li>• Step-up</li> </ul> Select the report to view details about the specific entitlements that are going to expire.  <b>i Note:</b> Maintenance and SA entitlements aren't displayed as the Perpetual entitlements associated with them are displayed.

Software asset overview dashboard (continued)

Report	Source	Description
Total true-up Cost	Product Results [samp_product_result]	Cost to be compliant based on the average prices in entitlements for the rights by publisher.
Top 5 publishers true-up cost	Product Results [samp_product_result]	The top 5 publishers illustrated in a pie chart in order of true-up cost.
Potential Savings	Product Results [samp_product_result]	Cost saved if removal candidates are reclaimed.  Hover on the donut chart to view the number of removal candidates for a specific justification along with the cost. Removal candidates are grouped by justification. Select on a justification on the donut chart to take you to the list of removal candidates with that specific justification.
Actual savings	Reclamation Candidate [samp_sw_reclamation_candidate]	Sum of potential savings in a given month of closed complete removal candidates.
Software Spend	License Metric Results [samp_license_metric_result]	Total software cost of all entitlements that aren't retired.
Software installs normalization status	Software Discovery Models [cmdb_sam_sw_discovery_model]	Count of software installs based on the normalization status.  Select a normalization status on the donut chart to view the list of discovery models along with the installation count for each discovery model. You can further select a discovery model to view the list of software installations.  The report for this widget is populated only once the following daily scheduled jobs have run: <ul style="list-style-type: none"> <li>• SAM - Normalize discovery models using content library rules</li> <li>• SAM - Daily Job</li> </ul>

### Software asset overview dashboard (continued)

Report	Source	Description
		<b>Note:</b> Only the Product filter can be applied to this widget.
End of life products	Product Lifecycle [sam_sw_product_lifecycle]	Graph of software product lifecycles that are reaching their end of life cycle. Select to drill down to the software installations.

### Activity center

Get alerts and notifications regarding your software assets. These alerts and notifications are asynchronous in nature. The Activity center displays a pre-defined set of alerts to notify you of actions that require your immediate attention. Notifications about events or activities that you should be aware of also appear in the Activity center. Select an alert or notification for more information.

Any user with the role of sam\_user can access all alerts and notifications except for the following alerts that require the sam\_admin role.

- Scheduled jobs failed.
- Last content download failed.

### Alerts in the Activity center

Alerts	Source	Description
Removal candidates identified	Removal Candidate [samps_sw_reclamation_candidates]	New removal candidates whose active status is true and the state is ready.  Select to view the entire list of removal candidates in the License usage view.
New normalization suggestions	Normalization Suggestions [samps_normalization_suggestions]	Normalization suggestion records created where the state is new.  Select to view the new normalization suggestion records in detail.
Unrecognized subscription identifiers	Unrecognized Subscription Identifier [samps_sw_unrecognized_subscription_identifiers]	The number of unrecognized subscriptions are identified where the model column is empty.

Alerts in the Activity center (continued)

Alerts	Source	Description
New software request	Request [sc_request]	<p>Software requests where the request state is pending approval.</p> <p>Select to view the software request list in the classic Software Asset Management interface.</p>
Last reconciliation failure	Reconciliation Result [samp_reconciliation_result]	<p>The latest scheduled job for the reconciliation process failed.</p> <p>Select to view the results in the License usage view.</p> <p><b>Note:</b> Last reconciliation failed (an alert) or Last reconciliation completed (a notification) is shown depending on the status of the reconciliation process. If the reconciliation process failed, an alert is shown. If the reconciliation process was successful, a notification is shown.</p>
Scheduled jobs failed	Software Asset Job Result [samp_job_log]	<p>Scheduled jobs that failed in their latest run within the last one week.</p> <p>Select to open the Software Asset job Logs in a new tab.</p> <p><b>Note:</b> Only a user with the sam_admin role can access the Software Asset Job result table.</p>
Entitlement import errors	Entitlement Import Error [samp_entitlement_import]	Entitlement import errors where the error status column has the value open.
New entitlement import error created via purchase receipts	Entitlement Import Errors [samp_entitlement_import]	The number of entitlement import errors where the purchase orders have an associated procurement integration profile.

Alerts in the Activity center (continued)

Alerts	Source	Description
		<p><b>Note:</b> This alert appears only when the Asset Management - Procurement Integration (app-itam-procurement-integration) store application is installed. For more information, see <a href="#">Install Asset Management - Procurement Integration</a>.</p>
Last content download failed	Asset Job Log [asset_job_log]	<p>The latest scheduled job for content download failed.</p> <p><b>Note:</b> Only a user with the sam_admin role can access the Asset Job Log table.</p>
Failed - entitlement import of <<.xlsx>>	Entitlement Import [samp_bulk_import]	<p>Entitlement import status based on its success or failure. The failed status is displayed as an alert or one of the completed statuses is displayed as a notification:</p> <ul style="list-style-type: none"> <li>Completed - entitlement import</li> <li>Completed with errors - entitlement import</li> </ul>
New CPE normalization suggestion	CPE Normalization Suggestions [sn_samp_vr_cpe_mapping_suggestions]	<p>CPE normalization suggestion records created where the status is new.</p> <p>Select to view the new CPE normalization suggestion records in detail.</p>
Number of renewals coming up in 90 days	<ul style="list-style-type: none"> <li>Contract [ast_contract]</li> <li>Software License [alm_license]</li> </ul>	<p>The number of software contract and entitlement renewals coming up in 90 days.</p> <p>Select the alert to view the upcoming renewals within 90 days from the current date.</p>

### Notifications in the Activity center

Notifications	Source	Description
New SSO applications identified last week	SSO Application [samp_sso_application]	New single sign-on (SSO) applications that have the SSO status as disconnected and were created within the last one week from the current date.
Last reconciliation completed	Reconciliation Result [samp_reconciliation_result]	The latest scheduled job for the reconciliation process was successfully completed.  Select to view the results in the License usage view.
Products nearing end of life	Software Lifecycle Report [sam_sw_product_lifecycle_report]	Products that are nearing the end of their lifecycle and the install count is greater than 0.
New PPNs added to the library	Software Product Definition [samp_sw_product_definition]	New PPNs added to the Content Service library with the latest content version as compared to the present date.
Software asset demands approved	Software Asset Demand [samp_demand]	Software Asset Demand list view filtered by those that are approved.
Completed - entitlement import  or  Completed with errors - entitlement import	Entitlement Import [samp_bulk_import]	Entitlement import is successfully completed or completed with some errors.  <b>Note:</b> If the entitlement import fails, it's shown as an alert.
New entitlement created via purchase receipts	Software Entitlements [alm_license]	Number of entitlements created from purchase orders that have an associated procurement integration profile.  <b>Note:</b> This notification appears only when the Asset Management - Procurement Integration (app-itam-procurement-integration) store application is installed. For more information, see <a href="#">Install Asset Management - Procurement Integration</a> .

## License usage view

Use the license usage view as a single plane to understand the license position of all software products, remediate non-compliance, view reconciliation results, view, or add removal candidates, and view Software Asset Management related reports.

The License usage view enables you to view the license usage trends for your organization and helps forecast the needs of your organization by trending the number of licenses required against the number of licenses purchased. Manage your license positions by purchasing additional rights before software consumption surpasses the number of rights owned.

Access the License usage view by navigating to **Software Asset Workspace > License usage**.

**License usage view**

servicenow All Favorites History Workspaces Software Asset Works... Search

License usage +

License usage

Publishers Reconciliation Removal candidates Reports

Compliance status Search publisher Sort by ATOZ Show all Run Reconciliation

Pinned publishers 0

No content to display  
Contact your ServiceNow administrator for more information.

Unpinned publishers 18

Publisher	Compliance	Compliant products	True-up cost	Over-licensed amount	Potential savings
Adobe ...	75% compliant	6/8	\$5.78K	\$144.09K	\$0.00
Aspent...	100% compliant	1/1	\$0.00	\$9.1K	\$0.00
Autode...	67% compliant	2/3	\$5.5K	\$13K	\$0.00
Citrix Sy...	0% compliant	0/2	\$901.5K	\$33K	\$0.00
Corel	100% compliant	1/1	\$0.00	\$1.07K	\$0.00
ej-techn...	0% compliant	0/1	\$0.00	\$0.00	\$0.00
ESRI	100% compliant	2/2	\$0.00	\$5K	\$0.00
IBM	71% compliant	10/14	\$13.67M	\$2.09M	\$0.00
LogRh...	100% compliant	1/1	\$0.00	\$0.00	\$0.00
Microsoft	31% compliant	4/13	\$2.81M	\$5.24M	\$0.00
Oracle	67% compliant	2/3	\$29.00	\$4.96M	\$0.00
QlikTech	0% compliant	0/1	\$11.28K	\$0.00	\$0.00
SAP	47% compliant	8/17	\$975.1K	\$1.71M	\$480.9K
Splunk	100% compliant	1/1	\$0.00	\$56.72K	\$0.00
Sublime ...	0% compliant	0/1	\$0.00	\$0.00	\$0.00
Synclu...	100% compliant	1/1	\$0.00	\$17.47K	\$0.00
Tracker...	100% compliant	1/1	\$0.00	\$0.00	\$0.00
VMware...	50% compliant	1/2	\$35.35K	\$0.00	\$0.00

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Use the License usage view to:

- pin publishers (user specific, saved).
- view key metrics for the publishers, such as over-licensed amount and true-up cost.
- filter by domain and compliance status.
- sort by true-up cost, over-licensed amount, and potential savings.
- run a reconciliation and view its results.


- be informed about the last reconciliation run.
- view and add new removal candidates.
- view and export reports.
- view publisher cards specific to the software products that you published as part of the phase-wise implementation of Software Asset Management. For more information, see [Publish a specific set of your software products](#).

**Note:** The filter for published status is automatically applied.

## Publishers tab

View the compliance status of all your publishers. Each publisher card displays its color-coded compliance status along with the percentage of compliance. As the products get compliant, the color changes to green.

- compliant: Indicated by the color green. All products under the publisher are compliant.
- non-compliant: Indicated by the color red. All products under the publisher aren't compliant.

A red icon  on a publisher card indicates that reconciliation failed for that publisher. Open the card to read the details. For details on which specific products failed, refer to the navigation tree on the Publisher details page.

**Note:** Even though a publisher card may display a red icon, you may not notice any failed products on the navigation tree because the failure may have occurred before the product results were generated.

The pinned publishers are displayed followed by unpinned publishers. To view the compliance of selected publishers, you can pin publishers for easy access. Select the bookmark icon on a card to pin it. As soon as you pin a publisher card, it moves from the Unpinned publishers section to the Pinned publishers section.

**Note:** The list of pinned publishers is saved on a per-user basis. The pinned publishers are stored in the Pinned User Publisher [samp\_pinned\_user\_publisher] table.

View publisher cards related to the software products that you manage in a phase-wise implementation of Software Asset Management using the Published status filter. Filtering by Published status enables you to reduce clutter on the License usage view.

**Note:** The Published status filter is shown when the system property `com.snc.samp.manage.published.products` is enabled on your ServiceNow instance. By default, this filter is set to **Published** and all the publisher cards show details of published products. However, you can also view license compliance reports related to the products that aren't published by setting this filter to **Unpublished**. To view reports related to all the products, clear the Published status filter.

To view compliance details about a publisher, select a publisher card. A summary of that publisher's compliance appears in the Publisher details page.

## Publisher details page

Number	Product	Status	True-up cost	Over-licensed amount	Potential savings
PR0003264	Dreamweaver	Compliant	£0.00	£23,432,5622	£0.00
PR0003265	Illustrator	Compliant	£0.00	£24,361,1131	£0.00
PR0003266	Photoshop	Compliant	£0.00	£8,833,4405	£0.00
PR0003268	Captivate	Compliant	£0.00	£29,909,1289	£0.00
PR0003311	Fireworks	Compliant	£0.00	£6,236,6877	£0.00
PR0003312	InDesign	Not Compliant	£3,011,4002	£0.00	£0.00

The navigation tree for the publisher appears on the Publisher details page with one of the following compliant statuses:

- **Compliant:** Reconciliation completed successfully and it was determined that installations and subscriptions are in compliance.
- **Not compliant:** Reconciliation completed successfully and it was determined that the installations and subscriptions aren't in compliance with purchased licenses.
- **Failed:** Reconciliation failure occurred and so can't correctly determine compliance. If a product fails, then everything underneath that product, such as software model results, also fails.

The navigation view shows license compliance details of products that were published. Scroll down to the reports mentioned in the Publisher metrics table to view details of published products. If you want to view details and compliance results of other unpublished products, you must set the Published status filter to **Unpublished**.

In the navigation view, a non-consumption icon is displayed next to a software model that has not utilized any licenses. Such software models are always positioned at the bottom of the tree and no software model results are shown for that software model.

A brief summary of metrics appears along with related lists pertaining to that publisher. For details on the metrics, refer to the Publisher metrics table. For details on the related lists, refer to [License usage publisher fields in workspace](#).

The navigation tree enables you to perform the following actions:

- drill down to a product, software model, or license metric to view the calculation and compliance information from the latest reconciliation results.
- filter products (active filtering, including collapsed items).
- expand and collapse tree links.

By default, the navigation tree is collapsed.

**Publisher metrics**

Report	Source	Description
True-up cost	Product Result [samp_product_result]	Estimated cost of remediating unlicensed installations based on the lowest number of rights needed (rights needed multiplied by average price per right from entitlements).  The lowest cost from Purchase Rights remediation options.
Potential savings	Removal Candidate [samp_sw_reclamation_candidate]	Estimated cost of savings if software installations are reclaimed. The sum of all potential savings from all removal candidates.  Select the report to see the list of removal candidates.
Actual savings	Removal Candidate [samp_sw_reclamation_candidate]	The total savings achieved if removal candidates are reclaimed.  Select the report to see the list of removal candidates.
Unlicensed entities	Software Installation [cldb_sam_sw_install]  Software Subscription [samp_sw_subscription]  Oracle Options [samp_oracle_options].  SAP Users [samp_sap_system_user]  SAP Engine Usage [samp_sap_sw_client_access]  Entity unlicensed reason [samp_entity_unlicensed_reason]	Indicates the unlicensed entities for this publisher, product, and software model. The following are some of the indicators:  <ul style="list-style-type: none"> <li>• Unlicensed installs: refers to installations for which you have purchased some entitlements, but the rights owned are not sufficient to cover all the entities that require rights.</li> <li>• Installs requiring action: indicates an action that you need to perform to fix an issue for an installation, such as problems with CIs, entitlement, or software model setup.</li> </ul>

**Publisher metrics (continued)**

Report	Source	Description
		<p><b>i Note:</b> An installation may have more than one issue. It is necessary to address each issue to fully resolve problems with an installation. Therefore, the number shown on the progress indicator and the details when you drill down may not align. Please ensure all issues are fixed for the installation.</p> <ul style="list-style-type: none"> <li>• Unlicensed subscriptions: subscriptions that are unlicensed.</li> <li>• Unlicensed client access: refers to unlicensed CAL records on account of not having enough rights on entitlements to cover the CAL records.</li> </ul> <p>Select the number adjacent to each category for a more detailed explanation of each installation, including the reason and causes of their unlicensed status.</p>
<p>Progress indicators</p>	<p>Software Installation [cldb_sam_sw_install]</p> <p>Requested Item [sc_req_item]</p> <p>Removal Candidate [smp_sw_reclamation_candidate]</p>	<p>Indicates the compliance progress already made for this publisher, product, and software model. The progress indicators differ for each publisher. The following are some of the indicators:</p> <ul style="list-style-type: none"> <li>• Ignored installs: installations ignored from the reconciliation process.</li> <li>• Removal candidates: Number of removal candidates created.</li> </ul> <p>Select the number adjacent to each category for a more</p>

**Publisher metrics (continued)**

Report	Source	Description
		detailed explanation of each installation.

**Reconciliation tab**

You can view all the historical reconciliation results in this tab along with the following status:

- **Completed:** If all the products and publishers completed reconciliation successfully.
- **Failed:** If all the products and publishers failed reconciliation.
- **Partially Completed:** If only some products or publishers completed reconciliation successfully.

Results of the latest reconciliation run are shown in the License usage view. For more details, see [Software reconciliation for compliance](#).

**Removal candidates tab**

View a list of all removal candidates in this tab. Removal candidates are used to reclaim software installations that aren't being used.

You can also create removal candidates. For more details, see [Add a software removal candidate in workspace](#).

**Reports tab**

You can create, view, and run reports from this tab. All the following base system reports are available in this tab:

- [Software product lifecycle report](#)
- [Software license compliance position](#)
- [Azure BYOL realized savings report](#)
- [Software models with deactivated discovery maps](#)
- [Oracle DB Server Deployments per Agreement report](#)
- [Oracle Infrastructure report](#)
- [Microsoft Windows and SQL Server infrastructure details reports](#)
- [SaaS detection report](#)

To create and manage reports, see [Create and manage reports in workspace](#).

**Run software reconciliation in the workspace**

Reconciliation is run as a scheduled job (default is weekly), but you can also run reconciliation manually to reconcile software products in the Software Asset Workspace environment on-demand.

**Before you begin**

Reconciliation is run for products that have software entitlements or software installs. Grouping and subgrouping are supported so you can narrow the compliance results.

When running reconciliation manually, allow enough time for the process to complete. For faster results, narrow the scope by selecting specific publishers.

Role required: sam\_user or sam\_admin

**Procedure**

1. Navigate to the Run Reconciliation dialog box from either of the two ways:
  - **Software Asset Workspace > Software asset overview > Run Reconciliation**
  - **Software Asset Workspace > License usage > Run Reconciliation**


The screenshot shows a dialog box titled "Run Reconciliation" with a close button (X) in the top right corner. It contains four dropdown menus: "Domains" with the value "All enabled domains", "Publishers" with "All publishers", "Group" with "None", and "Sub-group" with "None". At the bottom right, there are two buttons: a grey "Cancel" button and a green "Run reconciliation" button.

**Note:** If domain separation is enabled on your instance, then the Domain filter drop-down appears in the Run Reconciliation dialog box.

2. Select a particular publisher for which compliance should be calculated. You can also select all publishers.
3. To narrow results further, select a group or subgroup. Available group and subgroup values include None, Country, Department, Company, Region, and Cost Center.
4. Select **Run Reconciliation**. The reconciliation process may take some amount of time to complete. Once reconciliation is complete, the reconciliation results are shown in the **Reconciliation** tab.

**Reconciliation results**

Field	Description
Number	Unique identifying number that is generated during the reconciliation process.

Field	Description
Last reconciled	Date of last reconciliation run.
Status	Status of the reconciliation. <ul style="list-style-type: none"> <li>○ Completed</li> <li>○ In Progress</li> <li>○ Failed</li> </ul>
Ran for	All publishers, or specific publishers.
Publishers	Only shown if publishers were specified on which to run reconciliation.
Group	Group specified on which to run reconciliation. Values include <b>None, Country, Department, Company, Region, and Cost Center.</b>
Subgroup	Subgroup specified on which to run reconciliation. Values include <b>None, Country, Department, Company, Region, and Cost Center.</b>
Progress	Percent complete and progress bar for the reconciliation run.
Progress summary	Specific step within the reconciliation process. <p> <b>Note:</b> This list column is not shown by default. You can personalize your list column settings to add it, if desired.</p>
Updated	The date and time when the particular reconciliation process was completed.

### Add a software removal candidate in workspace

Removal candidates reclaim software resources in your environment. They are created automatically from reclamation rules or can be created manually.

### Before you begin

Role required: sam\_admin or sam\_user

### About this task

Software reclamation is integrated with Workflow and Client Software Distribution to automate the process of uninstalling software from devices and reclaiming software rights. However, you can also create a removal candidate manually. The following steps are for manually creating a removal candidate.

### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace.**
2. Select **License usage.**
3. Select the **Removal candidates** tab.
4. Select **New** to open the Create New Removal Candidate page.
5. On the form, fill in the fields.

#### Removal candidate form

Field	Description
Number	Unique removal candidate number that is automatically generated.

Field	Description
Assignment group	Automatically set to the software managers group authorized to respond to removal candidates.
Assigned to	Person primarily responsible for working on this task.
Name	<p>Removal candidate name that is automatically generated. Contains the software installation display name.</p> <p><b>Note:</b> If you are using the bulk reclamation functionality, for the name to be generated, at least one software installation must be selected in the removal candidate form. If no software installation is selected, a name isn't generated and the <b>Name</b> field is empty. If you add software installations and later decide to remove all of them, the <b>Name</b> field returns to being empty.</p>
Description	Description of why the task exists and what the user must do if they receive an approval.
State	<p>Current state of the removal candidate.</p> <ul style="list-style-type: none"> <li>○ Attention Required</li> <li>○ Ready</li> <li>○ Awaiting User</li> <li>○ Awaiting Approval</li> <li>○ Awaiting Revocation</li> <li>○ Closed Complete</li> <li>○ Closed Skipped</li> <li>○ Closed Canceled</li> </ul>
Opened	Date the task was opened.
Closed	Date the task was closed.
Justification	<p>Justification for becoming a removal candidate.</p> <ul style="list-style-type: none"> <li>○ Low Usage (default)</li> <li>○ Unallocated</li> <li>○ Unlicensed</li> <li>○ Restricted Software</li> </ul>
Applies to	Item type to which the reclamation rule applies.

Field	Description
	<ul style="list-style-type: none"> <li>○ Installed Software</li> <li>○ Subscription Software</li> <li>○ Engineering App License</li> </ul>
Software installation	The software installation being reclaimed.
Engineering App License  <b>Note:</b> Only appears if <b>Engineering App License</b> is selected in the <b>Applies to</b> list.	The Engineering application license that you want to reclaim.
User	Name of the user assigned to the software installation.  This value can be changed so that another user receives the notification of software being uninstalled.  If the <b>Bulk Reclamation</b> check box is selected, this becomes a mandatory field.
Bulk Reclamation	Select this check box to reclaim multiple software installations.  Once you select this check box, the <b>Software installation</b> field is no longer visible. To add software installations, refer to the sub steps mentioned in Step 6.
Configuration item	The device on which the software is installed.
Reclamation rule	The reclamation rule that created the removal candidate.
Rights to reclaim  <b>Note:</b> Only shown if <b>Engineering App License</b> is selected in the <b>Applies to</b> list.	The number of rights that you want to reclaim. For example, you have 100 rights installed on a license server but you want to reclaim only 40 rights.
Potential savings	Estimated cost of savings if all removal candidates are in the Closed Complete state, meaning the software was uninstalled and the rights were harvested (unused rights * average price per right from entitlements).
Notify user	Check box for notifying the user assigned to the hardware on which the software is installed, requesting permission via email to remove the software.
Configuration item	The device on which the software is installed.
Activity	

Field	Description
Work notes	Used to track the actions that have been performed on this task.

**6. Select Save.**

The removal candidate record is created. If you selected the **Bulk Reclamation** check box, the state of the removal candidate changes to **Attention Required**. Perform the following sub steps to add software installations before proceeding to the next step. If you didn't select the **Bulk Reclamation** check box, proceed to the next step.

**a.** Select **New** in the Software Installation related list.

**b.** Select a software installation and select **Save**.

The software installation you added appears in the Software Installations related list. The state of the removal candidate moves from **Attention Required** to **Ready** and a name is generated in the **Name** field. Continue to select **New** to add more software installations. If you decide to remove all software installations, then the state reverts back to **Attention Required** and the name no longer appears in the **Name** field. For the name to be generated and for the removal candidate to be in **Ready** state, at least one software installation must be selected in the removal candidate form.

**7. Select Reclaim.**

Once your software installation is reclaimed and removed from your system, the Software Installation column becomes empty. You can refer to the following fields on the Software installation related list to give you insights into the history of the reclaimed software installation.

- Display name
- Product
- Publisher
- Software model

You may select any action button on the form to further configure the removal candidate. Action buttons are dependent on the removal candidate's justification and state.

**Action buttons**

Action	Description
Update	Update the removal candidate.
Close Complete	Reclaim rights and close the removal candidate.
Close Skipped	Close the removal candidate without reclaiming rights.
Delete	Delete removal candidate.

**Reclaim software**


Optimize your environment by reclaiming or removing installed software that is not being used or used infrequently.

## Before you begin

Role required: sam\_admin

## About this task

Reclaiming software involves a workflow to remove software for a user. You can reclaim software for multiple reasons such as low usage, optimization generated due to consolidation, or overlapping subscriptions. The reclamation process can be managed manually through the creation of tasks or automatically using the Client Software Distribution (CSD 2.0) capabilities.

You can select **Show Workflow** at any point of time in the reclamation workflow to see the current stage the workflow is in. For information on CSD 2.0, see [Client Software Distribution 2.0 application](#) 

## Procedure

1. Navigate to **All > Software asset > Software Asset Workspace**.

2. Select **License usage**.

3. Select the **Removal candidates** tab.

4. Select to open a removal candidate record.

Ensure that the **Assigned to** field has a value. If not, select a value. Typically, the sam admin role takes ownership of the workflow and ensures that a group is mentioned in the **Assignment group** field. Having a group specified in the **Assignment group** field ensures that the approval goes to the correct group. The assignment group consists of users who can approve or reject a request to keep the software.

5. Select **Reclaim**

The state of the removal candidate record changes from **Ready** to **Awaiting User**. An email notification is sent to the user to whom the software license is assigned. The user details are mentioned under the removal candidate section.

An email notification is sent if the **Notify user** check box is selected in the reclamation rule record. If you don't select the **Notify user** check box, the task and email isn't sent to the user.

If the user is an ITIL user, then both email and the approval task will be created for the user. However, if the user is not an ITIL user then only an email is sent to the user.

The email mentions that the software is going to be reclaimed since it's not being used and provides the user with following two options:

- **Yes:** indicates keeping the software.
- **No:** indicates removing the software.

6. Select **Yes** or **No**.

If the user selects **Yes**, the following steps take place:

- a. A task gets created for the removal candidate record.
- b. The state of the removal candidate record changes to **Awaiting Approval** as a member of the assignment group needs to approve the request for keeping the software.
- c. A member of the assignment group approves or rejects the request.
  - If approved, the request in the email, the removal candidate record automatically moves to the **Close Skipped** state.
  - If the request is rejected, then the state of the removal candidate record changes to **Awaiting Revocation** which is handled by the sam admin role.

**Note:**

In case CSD 2.0 is not installed then the sam admin can assign the request to an individual who can manually uninstall the software. If CSD 2.0 is installed then the software is automatically removed. For more details, refer to the CSD 2.0 documentation.

If you have optimizations generated for Microsoft 365 products for low usage, consolidate, or overlapping subscription then you can automatically remove the subscriptions from the Microsoft 365 portal.

If you have integrations or API support reclamations, users will be removed automatically from the portal.

- If the installations or subscriptions are manually removed, then the sam admin role must manually mark the workflow as **Close Complete**. However if the process happens automatically then the system automatically updates the workflow record as **Close Complete**.

If the user selects **No**, the following steps take place:

- a. The state of the removal candidate record changes to **Awaiting Revocation**.
- b. Based on the scenarios mentioned in the above note, software removal takes place.

- **Note:** For removal candidates that are grouped into low usage or overlapping justifications, you do not need to manually remove subscriptions as auto reclamation is performed for these two justifications. For more information on justifications, see [Software installation optimization and removal](#).

## Create and manage reports in workspace

Create and manage your report tiles in the Software Asset Workspace.

### Before you begin

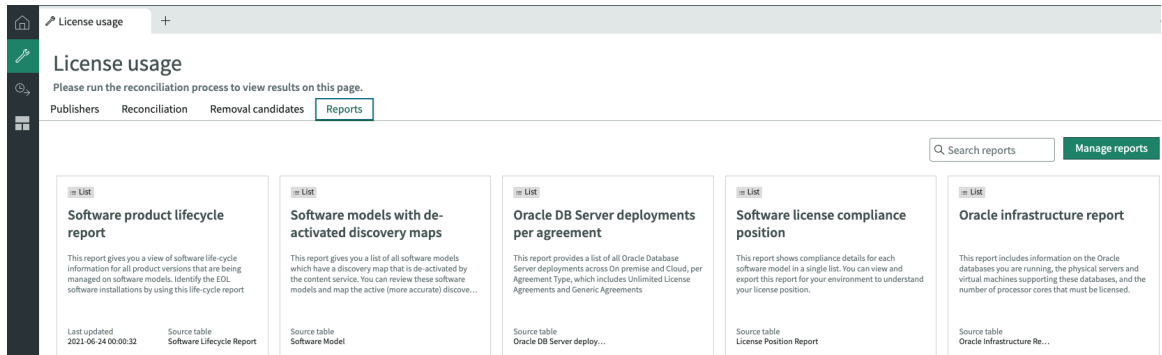
Role required: sam\_admin or admin

### About this task

All the base system Software Asset Management reports and the custom created reports are stored in the SAM Workbench Report [samb\_workbench\_report] table. List reports are supported by default. For creating other types of reports, you need to create a UIB page in the Software Asset Workspace with the necessary data visualization. A parameter called *reportSysId* needs to be passed to the UIB page. You can utilize the UIB page's route in the report tile creation form after it has been built.

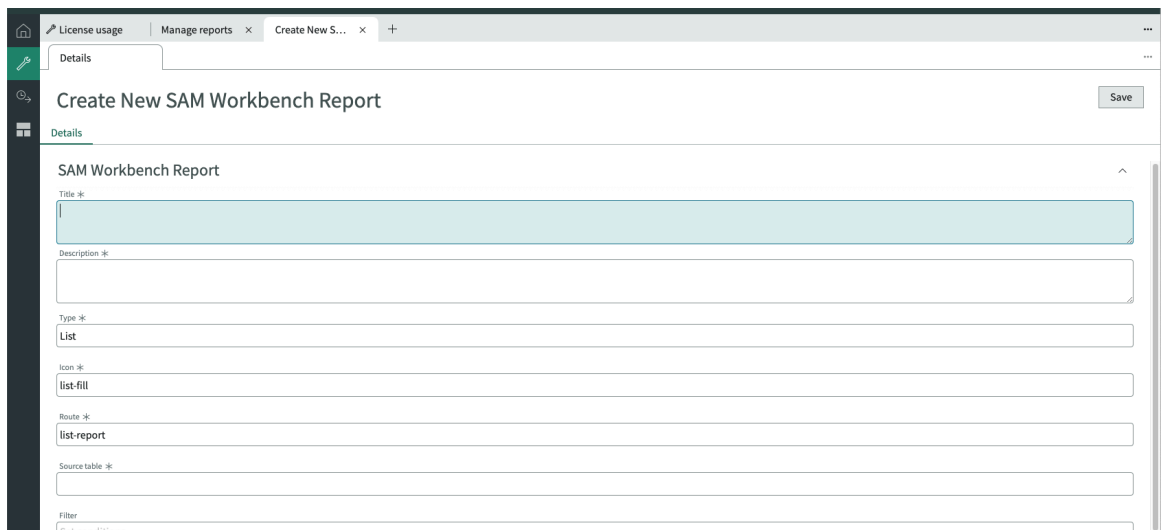
### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License usage**.
2. In the License usage view, select the **Reports** tab.



**3. Select Manage Reports.**

**4. In the Reports list view page, select New.**  
The Create New SAM Workbench Report page appears.



**5. Fill in the details in the page.**

Field	Description
Title	The title of the report tile.
Description	A brief description of the report tile.
Type	The type of the report. For example, list, bar, pie chart. The default value is List.
Icon	The unique icon identifier from the Now Design System icon library. Examples include chart-bar-group-fill, chart-pie-fill. The default value is list-fill.
Route	This the path taken by a report when it is clicked. This takes you to the list view of the source table with the specified filter conditions. This can be routed to any other page within the Software Asset Management application provided that the page accepts

Field	Description
	the <i>reportSysId</i> parameter. The default value is list-report.
Source table	The table on which the report is based.
Filter (Set conditions)	The filter to be used on the list report.

**6. Select Save.**

The new report tile appears on the Reports tab. You may need to reload the Reports tab to see the new report tile.

**View your cluster setup in 360 degrees**

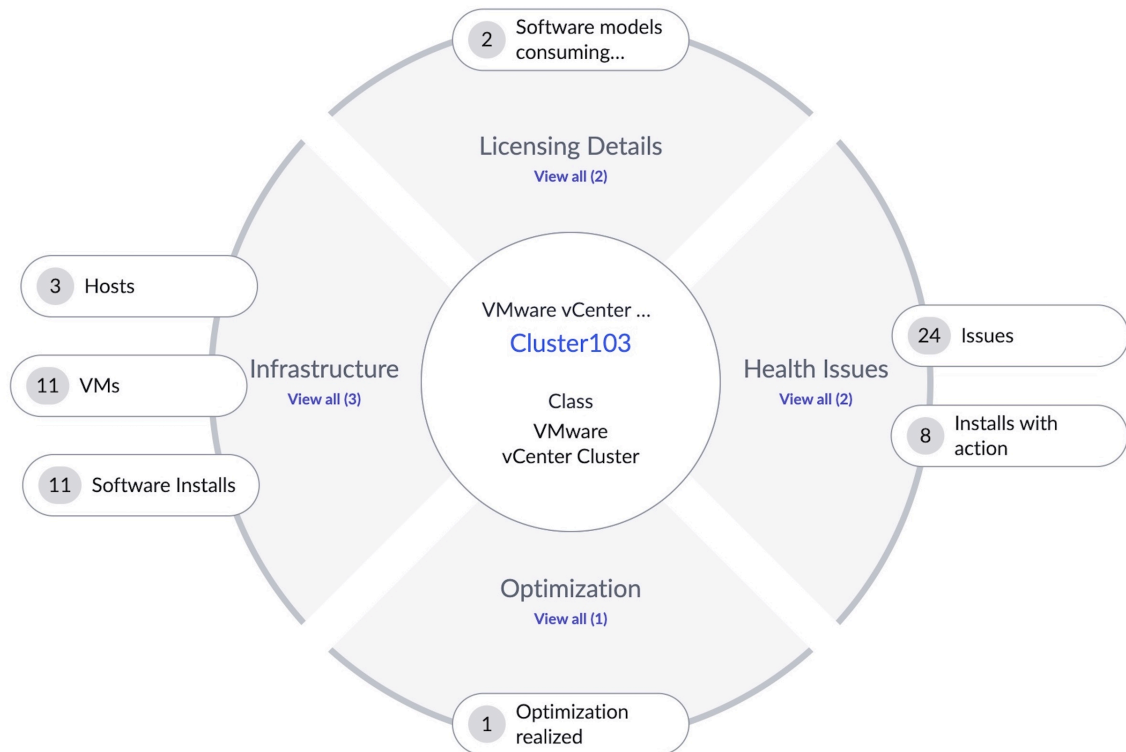
Get a 360-degree perspective of your cluster setup to manage license consumption across the cluster.

**Before you begin**

Role required: sam\_admin

**Procedure**

- 1.** Navigate to **Software Asset Workspace > License usage.**
- 2.** Select a publisher card to open the publisher details page.
- 3.** From the Publisher details page, select a software model from the navigation tree on the left hand side.
- 4.** From the **License Metrics Results** tab, select the value on the **Licenses required** column.
- 5.** In the Licenses Required By page, select a cluster from the **Cluster** column.  
The cluster record page opens.
- 6.** Select **SAM Cluster 360°.**  
The cluster setup appears.



**7. View the following details on the cluster.**

- **Infrastructure:** View entities such as hosts, virtual machines (VMs), host affinity rules, and software installations in the cluster. Select an entity to view the complete list. For example, select **Software Installs** to view all software installations. You can group the software installations by normalized publisher, normalized product, or by software model results. You can also select any software installation from the list such as SQL Server to view all SQL Server software installations in that cluster. Additionally, you can select **VMs** to view the potential list of all the hosts that a VM can move across in a cluster.
- **Licensing details:** View the software models consuming licenses, allocations, device license consumption analysis, and ignored installations on the cluster. Select an entity to view the complete list.
- **Health issues:** View all health issues across products in the cluster. Additionally, view installations that require your attention to be considered for reconciliation.
- **Optimization:** View cost saving optimization recommendations for Microsoft via the Microsoft Core License Optimization Report. View license optimizations performed by ServiceNow and determine if it results in cost reductions. Additionally, view recommendations for further savings. For details on Microsoft optimizations, see [Cost-based licensing optimization for Microsoft](#).

The 360-degree view lets you drill down from the top view of an entity to the lowest level to better understand license composition and remediation actions across the cluster. As an example, you can select a software model to drill down to view its metric attributes, override license costs, downgrade rights, software entitlements, and software model results. You can further select any of these entities, such as software model results, to get to its lowest denominator.

## View calculations for your licenses in workspace

Evaluate the license compliance of software applications by viewing the details for all required licenses through the Software Asset Workspace License usage view.

### Before you begin

Role required: sam\_admin and sam\_user

### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License usage**.
2. View the summary of a software model by selecting a publisher from the left pane.
3. View the number of licenses purchased and required by selecting the **License Metric Results** tab.

For more information about the fields in the License Metric Results tab, see the License metric results table in [License usage publisher fields in workspace](#).

4. View the details about the required licenses by selecting a value for a configuration item under the **License required** column.

Required by (Device)	Cluster	Assigned to	Licenses required	Licensing status	Is Virtual
Server-WS2	(empty)	Tia Lino	24	Licensed	false
ESX2 - SQL Cluster A	SQL Demo Cluster A	Adela Cervantsz	4	Not licensed	false
ESX3 - SQL Cluster A	SQL Demo Cluster A	Alejandra Prenatt	4	Licensed	false
Server-WS23	(empty)	Ted Bozelle	16	Licensed	false
ESX1 - SQL Cluster A	SQL Demo Cluster A	Amelia Caputo	4	Licensed	false

### Licenses Required by

Field	Description
Required by (Device)	Name of the configuration item such as server, cluster, which consumes the licenses.
Cluster	<ul style="list-style-type: none"> <li>○ If the configuration item is part of any cluster, the cluster name displays.</li> <li>○ If the configuration item is not part of any cluster, the value is empty.</li> </ul>
Assigned to	Name of the user assigned to that particular configuration item.
Licenses required	Sum of rights that the configuration item (allocated, not allocated, and installed) uses.
Licensing status	Indicates whether the configuration item is licensed or not licensed.
Is Virtual	Indicates whether the configuration item is a virtual or physical host.

5. View all the downgrades being used by the license.

This related lists only appears if the specified license is used by a downgrade version of the software. If a downgrade is not using any rights, that downgrade doesn't appear in this related list.

### Downgrades

Field	Description
Software model	Name of the software model.
Rights used	Number of rights used by the license.
Install count	The number of installations being used for the software model for the specified license.

6. In the Licenses Required By related list, view the details of required licenses by selecting the value for a device under the **License required** column.

The screenshot shows the ServiceNow interface for 'Licenses Required By'. The table lists devices, clusters, assigned users, license counts, licensing status, and whether licenses are virtual. A 'Licenses required calculation' panel is open, showing details for 'Server-WS2' with 24 licenses required. It includes a 'License metric' section with a 'Description' and a 'License consumption breakdown' table at the bottom.

Required by (Device)	Cluster	Assigned to	Licenses required	Licensing status	Is Virtual
Server-WS2	(empty)	Tia Lino	24	Licensed	false
ESX2 - SQL Cluster A	SQL Demo Cluster A	Adela Cervanteb	4	Not licensed	false
ESX3 - SQL Cluster A	SQL Demo Cluster A	Alejandra Prenatt	4	Licensed	false
Server-WS23	(empty)	Ted Bozelle	16	Licensed	false
ESX1 - SQL Cluster A	SQL Demo Cluster A	Amelia Caputo	4	Licensed	false

Required by	Processors	Cores	Licenses required
Server-WS2	2	12	24

### Licenses required calculation

Field	Description
Licenses required by	The cluster for which the calculations are shown.
Total # of licenses required	The total number of licenses consumed or required.
Licensing status	Shows the status of licenses. <b>Licensed</b> implies that all rights were used. <b>Not Licensed</b> implies that rights are required.
Allocated not in use	Rights allocated on the cluster but are unused to license any installations. The value 0 implies that there are no allocations on the cluster.

**Note:** Allocated not in use are the rights that are wasted because the user or device for which these rights have been allocated does not have the software installed.

Field	Description
Not allocated in use	Number of rights for license installations, but not allocated.
Level 1 Relationships	Relationship of hosts to the current configuration item.  <b>Note:</b> Appears only for server-based calculators.
Dependency View	Graphically displays an infrastructure view for a configuration item.
License Metric	Detailed explanation of the license metric.

**7. View the infrastructure of a configuration item and the metric attributes applied by selecting the **License consumption breakdown** tab.**

License consumption details | Software installs licensing details | Host affinity rules

License consumption breakdown <sup>1</sup> Refresh Filter Export

Last refreshed 6m ago.

Required by	Processors	Cores	Licensable cores	Licenses required
ESX1 - SQL Cluster A	1	2	4	4

Showing 1-1 of 1 ← 1 → 20 rows per page

Metric attributes applied

Attribute	Attribute value	Description
Minimum cores per processor	4	The amount of core rights that must be applied to a physical processor or set of vCores.

**License consumption breakdown**

Fields	Description
Required by	Name of the configuration item that consumes the rights.
Processors	Number of processors on this configuration item.
Cores	Numbers of cores in this processor.
Licensable cores	Number of core licenses required to license this configuration item.
Licenses required	Number of licenses required to license this configuration item.
Metric attributes applied	Software products from publishers such as Microsoft require a minimum number of licenses to be assigned. For example, Microsoft SQL Server requires a minimum of 4 core licenses for each processor on a

Fields	Description
	server. Metric attributes auto-assign these licenses.

8. View the details of the installations covered by licensing related to the configuration item by selecting **Software installs licensing details**.

License consumption details **Software installs licensing details** Host affinity rules

Software installs licensing details <sup>6</sup> Refresh Filter Edit Export

Last refreshed just now.

<input type="checkbox"/>	Normalized display name	Discovery model	Installed on	Assigned to	Unlicensed install
	Microsoft SQL Server Enterprise 2019	Microsoft SQL Server (64bit) Enterprise 2019	ESX3-CVM1-SQL Cluster A	(empty)	true
	Microsoft SQL Server Enterprise 2019	Microsoft SQL Server (64bit) Enterprise 2019	ESX2-CVM1-SQL Cluster A	(empty)	true
	Microsoft SQL Server Enterprise 2019	Microsoft SQL Server (64bit) Enterprise 2019	ESX2-CVM2-SQL Cluster A	(empty)	true
	Microsoft SQL Server Enterprise 2019	Microsoft SQL Server (64bit) Enterprise 2019	ESX1-CVM1-SQL Cluster A	(empty)	true
	Microsoft SQL Server Enterprise 2019	Microsoft SQL Server (64bit) Enterprise 2019	ESX1-CVM2-SQL Cluster A	(empty)	true
	Microsoft SQL Server Enterprise 2019	Microsoft SQL Server (64bit) Enterprise 2019	ESX3-CVM2-SQL Cluster A	(empty)	true

### Software installs licensing details

Field	Description
Normalized display name	The normalized display name of a software product.
Discovery model	Normalizes the software you own by analyzing and classifying models to reduce duplication.
Installed on	Configuration item on which the software is installed.
Assigned to	Name of the user assigned to this configuration item.
Unlicensed install	Indicates whether the install is licensed or unlicensed.

a. View the licensing status of an install on various hosts within a cluster by selecting a normalized display name for Per Core and Per Core (with CAL) license metrics.

License usage Microsoft x +

Details Licenses requ... x Microsoft SQL... x

Microsoft SQL Server Enterprise (64-bit)

Details Licenses Required By (1)

Licenses Required By <sup>1</sup>

Last refreshed just now.

Required by	Licenses required	Licensing status
Computer: VirtualMachine-WS14	1	Licensed

9. Check the accuracy of the license consumption and view the host affinity rules configured for a cluster by selecting the **Host affinity rules** tab.

Host affinity rules can be configured for SQL Server and Windows Server Standard while determining license consumption. This helps to optimize the number of licenses required and significantly minimizes the number of licenses required resulting in cost savings.

## Host affinity rules 1

Last refreshed just now.

<input type="checkbox"/>	Name ▲	Active ▾	Cluster ▾	VM Group ▾	Host Group ▾	Mandatory	Affinity
	Demo SQL Cluster B Rule	true	SQL Demo Cluster B	Cluster B VM Group	Cluster B Host Group	true	true

Showing 1-1 of 1      < 1 >      20 rows per page

### Host affinity rules

Field	Description
Name	Name of the rule configured for the cluster.
Active	Indicates whether the configured rule is active or inactive.
Cluster	Name of the cluster where the host affinity rule is configured.
VM Group	Name of the group of virtual machines.
Host Group	Name of the group of hosts.
Mandatory	Indicates whether the configured rule is required.
Affinity	Indicates whether the virtual machines live on a host group.

### License usage publisher fields in workspace

Field descriptions for the related lists for publishers in the Publishers page in the License usage view.

### Product Results

Field	Description
Number	Unique product result number that is generated during the reconciliation process.
Publisher	Publisher of the software.
Product	Name of software product.
Group	Group to which the product result belongs.
Subgroup	Subgroup to which the product result belongs.
Latest	Indicates whether this product result is from the most recent reconciliation run.
Reconciliation result	Unique reconciliation result number that is generated during the reconciliation process.
Status	Status of the product.

Field	Description
	<ul style="list-style-type: none"> <li>• Compliant</li> <li>• Not Compliant</li> </ul>
True-up cost	Estimated cost of remediating non-compliance based on the lowest number of rights needed.
Over-licensed amount	Estimated cost of rights not being used. The sum of all Over Licensed amount values from every software model result.
Potential savings	Estimated cost of savings if software installations are reclaimed. The sum of all potential savings from all removal candidates.
Licensed installs	Total number of installations that are licensed for the product.
Unlicensed installs	Total number of installations that are unlicensed for the product.

### Software Model Results


Field	Description
Software model result	Name of the software model.
Status	Status of the software model.
Unlicensed installs	Total number of installations that are unlicensed for the associated software product.
True-up cost	Estimated cost of remediating non-compliance based on the lowest number of rights needed.
Over-licensed amount	Estimated cost of rights not being used.
Potential savings	Estimated cost saved if reclamation candidates are reclaimed.

### License metric Results

Field	Description
Software model	Name of the software model
License metric	Name of the license metric that the software license is counted against when reconciliation runs.
Licenses owned	Sum of all active rights from entitlements that share a license metric.
Licenses required	Sum of rights that are used during reconciliation (allocated plus not allocated and installed).

Field	Description
Licenses available	Sum of rights that are not used during reconciliation (rights owned minus rights used).
True-up cost	Estimated cost of remediating unlicensed installations that are based on the lowest number of rights needed.

## Entitlements

Field	Description
Display name	Name of the publisher.
Metric group	The metric group specific to the publisher.
License metric	The license metric for the metric group that the software license is counted against when reconciliation is run.
License type	The type determines whether the rights grant full access to the software or if they are being upgraded from a previous version of the software.
Active rights	Number of rights to be granted for this entitlement.   <b>Note:</b> If an enterprise contract is attached to the license, the <b>Active rights</b> field is not shown
Purchased rights	Number of rights you purchased.
Total cost	

## Removal candidates

Field	Description
Number	Removal candidate number.
Name	Name of the removal candidate.
Publisher	Name of the publisher.
Product	Name of the product.
Potential savings	Savings to be gained from reclaiming unused software installations.
State	State of the removal candidate. <ul style="list-style-type: none"> <li>• Attention Required</li> <li>• Ready</li> <li>• Awaiting User</li> <li>• Awaiting Approval</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>• Approval</li> <li>• Awaiting Revocation</li> <li>• Closed Complete</li> <li>• Closed Skipped</li> </ul>
Justification	Reason for becoming a removal candidate. <ul style="list-style-type: none"> <li>• Low Usage (default)</li> <li>• Unallocated</li> <li>• Unlicensed</li> <li>• Restricted Software</li> </ul>

### Remediation options

Field	Description
Remediation action	Action to take for compliance. <ul style="list-style-type: none"> <li>• Purchase Rights</li> <li>• Remove Allocations</li> <li>• Create Allocations</li> <li>• Remove Unallocated Installs (Not available for Oracle database options)</li> <li>• Remove Unlicensed Installs (Not available for Oracle database options)</li> <li>• Remove Unlicensed Installs - Cloud (available only if you have cloud installations)</li> </ul>
Status	Status of the remediation option. <ul style="list-style-type: none"> <li>• New (blue)</li> <li>• Complete (green)</li> <li>• Void (red)</li> <li>• In Progress (yellow)</li> </ul> In Progress state indicates that removal candidates were created for the installs.
Affects compliance	Specifies whether the remediation options affect compliance.
Display Name	Specific license metric of the software model result.
Actionable rights	Total rights affected by the action.

Field	Description
True-up cost	Estimated cost of remediating unlicensed installations based on the lowest number of rights needed.

## License operations view

Use the License operations view in Software Asset Workspace to manage software asset operations such as licenses, contracts, discovery, client access, resource value, user subscriptions, content suggestions, software asset success, cloud cost simulation, SAM implementation, IBM ASP, and IBM ILMT V2 integrations.

You can access the License operations view by navigating to **Software Asset Workspace > License operations**.

The License operations view includes the following categories:

- **Licensing**

- **Software entitlements**

View the details of the software entitlements that record the terms of your software licenses. You can also create entitlements to enter your license details and allocate purchased rights to users or devices. For more information, see [Create entitlements in workspace](#).

- **Software models**

View the details of the software models created and also create a software model. For more information, see [Create software models in workspace](#).

- **Entitlement import**

View the details of the imported entitlements and also import entitlements at one go. For more information, see [Import bulk entitlements in workspace](#).

- **Entitlement import error**

View the details on entitlement import errors that gets generated while importing software entitlements. For more information, see [Entitlement import error fields](#).

- **Software lifecycle averages**

Create averages to calculate the End of Life (EOL) and End of Support (EOS) lifecycles of your software. For more information, see [Create averages for product life cycles in workspace](#).

- **Consumption rules**

Create consumption rules to restrict license consumption to certain entities within your organization. You must link this rule to one or many entitlements. For more information, see [Create consumption rules](#) and [Link consumption rules to entitlements](#).

- **Product install condition**

View the product install condition that accounts for all software model installations for a product during reconciliation. These installation conditions are applicable for the software product and all its components. For example, if you have purchased Microsoft Visual Studio, set up product installation conditions for using Visual Studio only to consume licenses in your non-production environment. These same conditions then apply across all software

models under Visual Studio, including downgrades and editions. For more information, see [Create product install conditions](#).

- **Software installs**

View the details of software installation such as discovery model, publisher, reconciliation details. For more information, see [Software installation fields](#).

- **Contract - Software contracts**

Create a software contract to bind agreement between two parties. [Create a contract](#).

- **Discovery**

- **Discovered engineering license**

View a list of all the discovered and normalized software for your engineering applications.

- **Discovery models**

View and update software discovery models that are created when a version of software is discovered in a network environment. For more information, see [Discovery models and software installations](#).

- **Engineering license server**

View a list of all the license management servers that OpenLM or Open iT connect with to get data into your ServiceNow instance. Details on license management servers such as the type of the server, the name of the server, the status of the server, and the last connection time are also provided.

- **Software usage**

View software usage records to track the usage of software products for which you've created reclamation rules. You can also create software usage records manually from third party integrations or Microsoft System Center Configuration Manager (SCCM) integrations. For more information, see [View or create software usage in workspace](#).

- **All SAP engines**

View the monthly engine usage measurements for SAP clients based on the license metric for each engine.

- **All SAP users**

View all the discovered users pulled from the SAP systems and their details such as SAP user roles, SAP user active transactions, SAP user activities, and SAP web activities. For more information, see [View SAP users in workspace](#).

- **SAP named user types**

Create a custom-named user type that can be used with your SAP software entitlement. Creating a custom-named user type enables users to track licenses of their SAP systems. For more information, see [Create a custom named user type in workspace](#).

- **SAP price lists**

Create custom SAP price lists so that you can track and manage SAP licenses based on the contracts of your SAP system. For more information, see [Create custom SAP price lists in workspace](#).

- **SAP USMM rules**

View SAP User License Measurement (USMM) rules that map roles to the named user type for an SAP client. For more information, see [SAP USMM-based optimization](#).

- **SSO applications**

View details related to applications that you can connect through an SSO provider. For more information, see [View SSO applications in workspace](#).

- **SSO groups**

View details related to all SSO groups that have access to an SSO application. For more information, see [View SSO groups in workspace](#).

- **SSO users**

View details of all users that have direct access to an SSO application, but not through membership in a group. For more information, see [View SSO users in workspace](#).

- **Client access**

View the details of software client access records. You can also create a record to track and manage the users or devices that are accessing a version of your server software using a client access license (CAL). For more information, see [Create a software client access record in workspace](#).

- **Resource value**

View and create Resource value records for the software models. For more information, see [Create a resource value record](#).

- **User subscription**

- **User subscription**

View the details of the software subscriptions for SaaS and SSO applications. You can also create a software subscription. For more information, see [Create user subscriptions in the workspace](#).

- **Direct integration profiles**

View the details of the already created SaaS integration profiles. You can also create an integration profile by selecting the integration type to view software usage and optimize stale licenses. For the supported SaaS applications and procedures, see [Integrate with SaaS applications](#).

- **SSO integration profiles**

View the details of the already created SSO integration profiles. You can also create an SSO integration profile by selecting the integration type to view software usage and track user login data for all connected SSO applications, and reclaim unused licenses. For the supported SSO applications and procedures, see [Integrate with SSO providers](#).

- **SaaS feature usage**

View the event details for each SaaS and SSO integration performed by the users, such as the event ID, event name, last activity, subscription, product, subscription profile, and publisher. For more information, see [Overlapping usage view](#).

- **Content suggestions**

- **Part number suggestions**

- View Content Service suggestions for your custom publisher part numbers (PPN). For more information, see [Custom publisher part numbers \(PPN\)](#).

- **Normalization suggestions**

- View Content Service normalization suggestion records that are created for discovery models. For more information, see [Normalization suggestions for discovery models](#).

- **Software asset success**

- **Software maturity**

- View the list of Software Asset Management maturity item details. For more information, see [View all maturity items for Software Asset Management](#).

- **Success goals**

- Create success goals to track the success of your Software Asset Management application and view the list of created success goals. For more information, see [Create success goals for Software Asset Management](#).

- **Success activities**

- Create success activities to track the success of your goals and view the list of already created ones. For more information, see [Create success activities for Software Asset Management](#).

- **Success categories**

- Create success categories to add categories to your success goal and view the list of already created ones. For more information, see [Create a success goal category for software assets](#).

- **All active value builder tasks**

- Create Value builder tasks for publisher packs that aren't being fully used and view the list of already created ones. For more information, see [Create a Value builder task](#).

- **My value builder tasks**

- Create Value builder tasks and view the list of tasks assigned to you. For more information, see [Value builder](#) and [Create a Value builder task](#).

- **Cloud cost simulator - Settings**

- View the simulation settings, that is, the cost of moving your on-premise resources to the cloud environment. You can also create Cloud Cost Simulator settings. For more information, see [Cloud cost simulation](#).

- **IBM ASP integration**

- **Daily aggregated peak usage**

- View the highest daily sub capacity and full capacity usage of your IBM software products based on the edition, license metric, domain, and region of each product. For more information, see [View the daily aggregated peak usage of your IBM software products](#).

- **Daily high water mark usage**

View the breakdown for the highest daily usage of your IBM software products by physical host based on both the edition and license metric of each product. For more information, see [View devices with the highest daily usage of your IBM software products](#).

- **Product classification**

View the product classifications for all IBM components that are installed in your environment. These product classifications enable you to track and manage licensing for your IBM components. For more information, see [View product classifications for your IBM components](#).

- **Devices to scan**

Specify the virtual machine (VM) managers, such as VMware vCenter Servers and IBM Hardware Management Consoles (HMCs), for which you want to track IBM licenses. You can track licenses for IBM software that is discovered within these specified VM managers only. For more information about updating the VM managers, see [Specify the virtual machine \(VM\) managers for which you are tracking IBM licenses](#).

- **Device settings**

To improve the accuracy of your IBM license calculations, verify the meta data for the physical hosts that your IBM software is installed on. Update any meta data that is incorrect or out of date. For information about updating meta data, see [Verify the meta data for your IBM hosts](#).

- **IBM ILMT V2 integration**

- **Peak consumption by product**

View the highest sub capacity and full capacity usage of your IBM software products based on the product name and the discovery model. For more information, see [View the peak usage of your IBM software products](#).

- **Peak consumption breakdown by device**

View the breakdown for the highest sub capacity and full capacity usage of your IBM software products by physical host based on the discovered device. For more information, see [View the peak usage of your IBM software products by device](#).

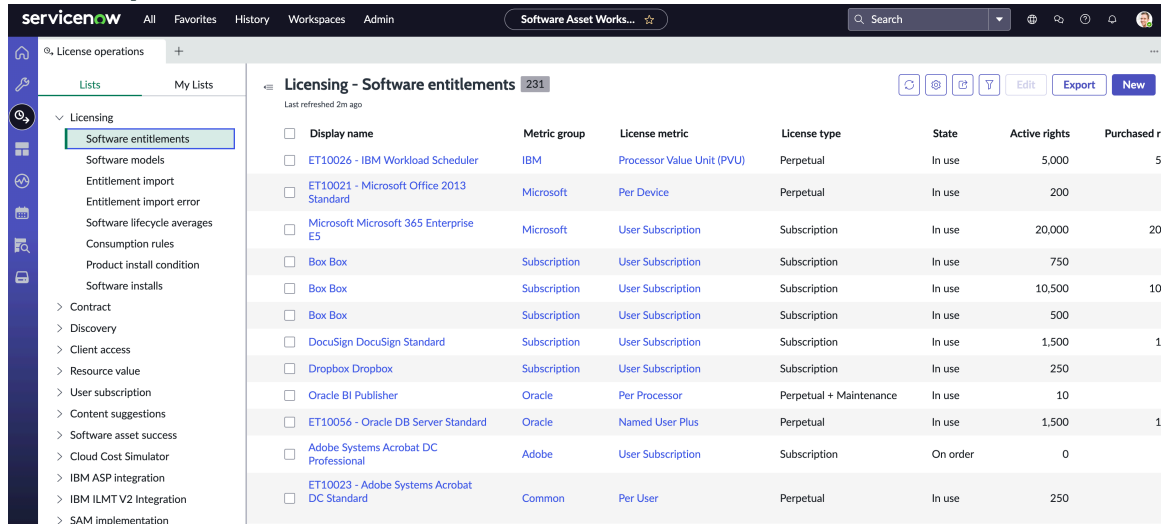
- **ILMT discovered computer**

View details for the discovered device including the server name, server id, server type, hardware model, hardware serial number, hardware vendor, total processor, and CMDB computer. For more information, see [View the devices that are running your IBM software products](#).

- **SAM implementation - Published products**

View the list of software products published in a phase-wise implementation of Software Asset Management. For more information, see [Manage phase-wise Software Asset Management implementation](#).

## License operations view



### Create device allocation

Create a device allocation for a software entitlement to specify devices that have been granted rights.

#### Before you begin

Role required: sam\_admin or sam\_user

#### Procedure

1. Navigate to **Software Asset Workspace > License operations**.
2. Select **Software entitlements**.
3. Select a software entitlements record.
4. Select the **Device Allocations** tab.
5. Select **New**.
6. On the form, fill in the fields.

#### Create New Device Allocations form

Display name	Display name for device allocation. This field value is automatically set based on the selected <b>Allocated to</b> and <b>Entitlement</b> field value. This field value appears only when the allocation record is saved.
Allocated to	The device to which the license is allocated.
Entitlement	Automatically set to the selected software entitlement.
Quantity	Quantity of licenses allocated to this device. Default is 1.
License key	License key of the software.

7. Click **Save**.

## Result

- Device allocation record is created for the device and listed in the **Device Allocations** tab.
- The device allocation record is saved in the Device Allocations [alm\_entitlement\_asset] table.

## Related topics

[Copy user or device allocations](#)

[Create entitlements in workspace](#)

[Allocation management on Software Asset Management](#)

## Copy user or device allocations

Copy user or device allocations from one entitlement to the other.

### Before you begin

Copy allocations from a source entitlement to a target entitlement to renew expired entitlements or add a new maintenance. Additionally you can also copy allocations while creating entitlements that require the same allocations as in another entitlement.

The entitlement from which you want to copy the allocations is referred to as the source entitlement. The entitlement to which you want to copy the allocations is referred to as the target entitlement.

User allocations can be copied to only entitlements that support user allocations. Similarly, device allocations can be copied to entitlements that support device allocations. For details on license metrics, see [Software license metrics](#).

If the selected user or device is already allocated in the target entitlement, the quantity of that allocation is incremented.

Prior to copying allocations, ensure that the following prerequisites are met:

- The target entitlement has enough allocations available. The **Copy allocations** button only appears when the allocations available on the entitlement is greater than zero. An error occurs if the number of allocations being copied exceeds the number of available allocations in the target entitlement
- The target entitlement is in **Build**, **In use**, or **On order** state.
- The target entitlement has enough available rights.

Role required: sam\_admin or sam\_user.

## Procedure

1. Navigate to **Software Asset Workspace > License operations > Software entitlements**.
2. Open the target entitlement in which you want to copy the user or device allocations.
3. Select the appropriate allocations related list (User Allocations or Device Allocations).
4. Select **Copy allocations**.  
The details of the target entitlement such as allocations available, license type, active rights appear at the top of the page.
5. Select the entitlement from which you want to copy the allocations from in the **Source entitlement** list.  
All the details of the source entitlement such as license metric, metric group appear on the Details page.
6. Select the Source allocations related list and select the allocations.

**7. Select **Submit**.**

If the copy allocation process is successful, then **Submit** gets disabled. A message informs you that the copy of allocations is being processed. You can check the status by clicking the link in the message.

The link takes you to the Software Asset Job Results [samp\_job\_log] table. Use the Name column to search for the job log record, titled *Copy Allocations to < >*, where the angle brackets refer to the display name of the target entitlement.

**Related topics**

[Create device allocation](#)

**Create consumption rules**

Create consumption rules to restrict license consumption to certain entities within your organization.

**Before you begin**

Role required: sam\_user

**Procedure**

1. Navigate to **Software Asset Workspace > License operations > Consumption rules**.
2. Select **New**.  
The Create New Consumption Rule page opens.
3. On the form, fill in the fields.

Field	Description
<b>Display name</b>	Name of the consumption rule.
<b>Company</b>	The subsidiary company for which the consumption rule is created.
<b>Cost center</b>	The cost center within a company for which the consumption rule is created.
<b>Country</b>	The country for which the consumption rule is created.
<b>Department</b>	The department for which the consumption rule is created.
<b>Region</b>	The region for which the consumption rule is created.
<b>Company children</b>	Select to include the children of the company.
<b>Department children</b>	Select to include the children of the department.
<b>Cost center children</b>	Select to include the children of the Cost center.

**4. Select **Save**.**

The new consumption rule appears in the Consumption rules list view. You must [link this rule](#) to one or many entitlements.

### Link consumption rules to entitlements

After you've created a consumption rule, you must link the rule to one or more entitlements.

#### Before you begin

Consumption rules aren't supported for the following license metrics:

- IBM RVUs
- IBM UVUs
- Workday
- Employee

The Entitlement Consumption Rules related list on the entitlement form doesn't appear for these license metrics.

Role required: sam\_user

#### Procedure

1. Navigate to **Software Asset Workspace > License operations**.
2. Open the entitlement to which you want to link the consumption rule.
3. Select the Entitlement Consumption Rules related list.
4. Select **New**.  
The Create New Entitlement Consumption Rule page opens.
5. On the form, fill in the fields.

Field	Description
<b>Software entitlement</b>	The software entitlement to which you're linking the consumption rule.
<b>Consumption rule</b>	The consumption rule that you want to link this entitlement to.
<b>License pool</b>	License pool associated to the consumption rule. A license pool is a reservation of rights for a group entity defined on a consumption rule.

6. Select **Save**,  
The consumption rule appears in the Entitlement Consumption Rules related list.

### View discovered engineering licenses in workspace

View a list of all the discovered and normalized software for your engineering applications in the Software Asset Workspace.

#### Before you begin

Role required: sam\_admin or sam\_user

You can view a list of all the normalized publishers and products for your engineering applications. Additional information such as the version, quantity of licenses, and the type of license is also displayed.

## Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations**.
2. Select **Discovered engineering license** from the Discovery list view.
3. You can click a record to view additional details.  
This takes you to the Company page in the classic view.

### View engineering license servers in workspace

View the list of license management servers that OpenLM or Open iT connect with to get data into your ServiceNow instance in the Software Asset Workspace.

### Before you begin

Information such as the name and type of the server, its current status, whether it's currently active, and the last connection time is displayed.

**i Note:** Engineering license servers only appear if the Software Asset Management Professional for Engineering Applications (com.sn\_samp\_eng\_app) [plugin](#) is activated.

Role required: sam\_admin or sam\_user

## Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations > Engineering license server**.
2. Select a license server record to view its details.

### Add custom software products in workspace

Add a custom software product for any publicly available software product that does not exist in the Software Asset Management Content Library. Custom software products enable you to normalize and account for software products that aren't part of the Software Asset Management Content Library yet.

### Before you begin

If you want to enable the Software Asset Management application to submit content requests for your custom software products, opt in to the Software Asset Management Content Service and then enable the Custom Software Products KPI. See [Enable sharing information with Software Asset Management content service](#) for detailed instructions.

Role required: sam\_admin

## Procedure

1. Navigate to **Workspaces > Software Asset Workspace**.
2. From the Software Asset Workspace, open the License operations view.
3. From the navigation menu of the License operations view, navigate to **Content > Custom software products**.
4. Select **New**.
5. On the form, fill in the fields.

### Create New Custom Software Product form

Field	Description
Publisher	Publisher of the custom software product.

Field	Description
Product	Name of the custom software product.
Subscription software	Option to indicate if the custom software product has a subscription.
Product type	Type of software product. Select one of the following options: <ul style="list-style-type: none"> <li>○ <b>Child:</b> A component of a main software product. This software product type isn't licensable.</li> <li>○ <b>Driver:</b> A software product that controls a device.</li> <li>○ <b>Licensable:</b> A software product that is licensable.</li> <li>○ <b>Not Licensable:</b> A software product that is not licensable.</li> <li>○ <b>Patch:</b> A software product that updates, fixes, or improves an existing computer program.</li> <li>○ <b>Unknown:</b> A software product that is unknown.</li> </ul>
Product classification	United Nations Standard Products and Services Code <sup>®</sup> (UNSPSC <sup>®</sup> ) classification for the custom software product.
Active	Option to indicate if the custom software product is active.
Exclude from content service	Option to prevent the custom software product from being shared with the Software Asset Management Content Service.

**6. Select Submit.**

**Result**

The custom software product is immediately available to use in your downstream processes, such as normalization and reconciliation. Depending on whether you enabled or turned off the **Exclude from content service** option, the Software Asset Management application can either continue using the custom software product or begin using the corresponding software product in the Software Asset Management Content Library.

- If you enabled the **Exclude from content service** option, the Software Asset Management application continues to use the custom software product in your downstream processes.
- If you turned off the **Exclude from content service** option, the Software Asset Management application proceeds as follows:
  - 1.** The Software Asset Management application automatically creates and sends a corresponding content request to the Content Service team.
  - 2.** After the Content Service team reviews and approves the request, the software product is added to the Software Asset Management Content Library.
  - 3.** During the next scheduled content update, the new software product in the Content Library is pushed to your ServiceNow instance and then mapped to the custom software product.
  - 4.** The Software Asset Management application automatically generates a product suggestion that enables you to consolidate the custom software product with the software product in the Content Library. This consolidation updates all references to the custom software product with references to the software product in the Content Library. You can choose to accept or reject the suggestion.

- If you accept the suggestion, the Software Asset Management application begins using the software product in the Content Library for your downstream processes.
- If you reject the suggestion, the Software Asset Management application continues to use the custom software product in your downstream processes.

For more information on product suggestions, see [View custom software product suggestions in workspace](#).

### View custom software product suggestions in workspace

View the product suggestions that enable you to consolidate your custom software products with corresponding software products in the Software Asset Management Content Library. By consolidating these software products, you can update all references to your custom software products with references to the software products in the Content Library. You can choose to accept or reject these suggestions.

### Before you begin

Role required:

- sam\_admin: Accept or reject product suggestions.
- sam\_user: View product suggestions.

### About this task

You can add custom software products for any publicly available software products that don't exist in the Software Asset Management Content Library. For more information on custom software products, see [Add custom software products in workspace](#).

### Procedure

1. Navigate to **Workspaces > Software Asset Workspace**.
2. From the Software Asset Workspace, open the License operations view.
3. From the navigation menu of the License operations view, navigate to **Content > Custom software product suggestions**.
4. View the list of all product suggestions for your custom software products.
  - Select a product suggestion record to view more details about the suggestion. You can also choose to accept or reject the suggestion.
    - If you accept the suggestion, all references to the custom software product are updated with references to the corresponding software product in the Software Asset Management Content Library.
    - If you reject the suggestion, all references to the custom software product remain the same.

### View normalization suggestions in workspace

View normalization suggestion records in the Software Asset Workspace that are created for discovery models. You can accept or reject these suggestions.

### Before you begin

Role required:

- sam\_admin: accepts or rejects the normalization suggestions.
- sam\_user: views normalization suggestions.

The normalization suggestion records are stored in the Normalization Suggestions [smp\_normalization\_suggestions] table.

## Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations.**
2. Select Normalization Suggestions in the Discovery list view
3. Select a normalization suggestion record to view its details.  
For a detailed description of the normalization suggestion fields, see [Normalization suggestions for discovery models.](#)
4. Select **Accept** to update the discovery model with the correct values or click **Reject** to retain the manually normalized values.

**Note:** Only the sam\_admin role can accept or reject the normalization suggestions. For details on accepting or rejecting suggestions, see [Normalization suggestions for discovery models.](#)

## Revert normalization in the workspace

You can revert the normalization of discovery models in the Software Asset Workspace.

### Before you begin

Discovery models with a status of **Normalized**, **Partially Normalized**, or **Publisher Normalized** revert to the status of **Match Not Found**. Discovery models with a status of **Manually Normalized** and discovery models that have been normalized using pattern rules cannot be reverted.

Role required: sam\_admin or sam\_user

## Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations > Discovery models.**
2. Select a discovery model record.
3. Select **Revert Normalization.**  
Once the revert normalization process is complete, fields are reset to their original values and any rules associated with the software discovery model are deactivated.

## Manually override edition value in workspace

If the edition of a software installation is not automatically discovered, you can specify the edition on the Software Installation form (if known) so the software can be successfully reconciled.

### Before you begin

Role required: sam\_admin

### About this task

For reconciliation to run successfully, the publisher, product, version, and edition fields of the software must be set. When the edition is not discovered automatically (edition value is not included as part of the **Display name** field) but you know the edition, you can manually set it to the correct value (for example Enterprise).

Once the edition value is set, the discovery model for the software install is automatically reset. If the appropriate discovery model does not exist, a new one is created.

**Note:** Not all software products consist of an edition. Of the software products consisting of an edition, not all edition values are automatically discoverable.

## Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations**.
2. Select **Discovery models**.
3. In the Discovery models page, open a discovery model.
4. Select the Software Installations tab and open the software installation record for which you want to set the edition value.

**Note:** The **Edition override** field is a free-form field (no lookup list) and since this field is used as a key, the value entered must be exact.

5. Select **Save**.  
The software installation is associated to a different discovery model containing the edition value as part of the primary key. If the appropriate discovery model does not exist, a new one is created.

## Manually normalize a software model in workspace

You can manually normalize a software discovery model that has not been fully normalized (partially normalized, publisher normalized, or match not found) in order to reconcile it.

### Before you begin

Role required: sam\_admin or sam\_user

## Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations > Discovery models**.
2. Select a discovery model record that has a normalization status of **Partially Normalized**, **Publisher Normalized**, or **Match Not Found**.
3. Select the ellipsis icon on the right hand side of the page.
4. Select **Normalize**.  
The normalization status changes to **Manually Normalized**.

## View or create software usage in workspace

View software usage records to track the usage of software products that you've created reclamation rules for in the Software Asset Workspace. You can also create software usage records manually from third party integrations or Microsoft SCCM integrations.

### About this task

The Software Usage [samp\_sw\_usage] table tracks usage down to the product level and not to the version or edition level.

### Before you begin

Role required: sam\_admin or sam\_user

### About this task

Use the following steps to create software usage records manually.

## Procedure



1. From your ServiceNow instance, navigate to **Software asset > Software Asset Workspace**.  
The Software Asset Workspace launches in a new tab.
2. On the left navigation menu of the Software Asset Workspace, select **License operations**.

The License operations view opens.

3. On the **Lists** tab of the License operations view, navigate to **Discovery > Software usage**.
4. Select **New**.
5. On the Create New Software Usage form, fill in the fields.

**Create New Software Usage form**

Field	Description
Software usage	
Publisher	Publisher of the software product.
Product	Name of the software product.
Reclamation type	Type of reclamation used on the software installation. The options are <b>Total Usage Time</b> and <b>Last Used Date</b> .  <b>Note:</b> If you select <b>Total Usage Time</b> , the Usage Metering Data form section appears. If you select <b>Last Used Date</b> , the Last Used Data form section appears.
Configuration Item	Configuration item (CI) that the software product is associated with.  <b>Note:</b> If the CI <b>Status</b> or <b>Hardware Status</b> field changes to Retired or Stolen, installations that are related to the CI are deleted.
User	Name of the user who is using the software product.
Discovery source	Discovery source of your software usage data.  If the appropriate discovery source is not displayed on the <b>Discovery source</b> list, you can display it by right-clicking the <b>Discovery source</b> field name and then selecting <b>Configure Choices</b> . When prompted, use one of the following options to display the discovery source: <ul style="list-style-type: none"> <li>○ If the discovery source already exists on your ServiceNow instance, it appears in the Available list. Move the discovery source to the Selected list so that it displays on the <b>Discovery source</b> list. Select <b>Save</b> to return to the Create New Software Usage form, where you can view the updated <b>Discovery source</b> list.</li> <li>○ If the discovery source does not already exist on your ServiceNow instance, enter</li> </ul>

Field	Description
	the name of the discovery source in the <b>Enter new item</b> field and then select <b>Add</b> . Move the new discovery source from the Available list to the Selected list so that it displays on the <b>Discovery source</b> list. Select <b>Save</b> to return to the Create New Software Usage form, where you can view the updated <b>Discovery source</b> list.
Usage Metering Data	
 <b>Note:</b> This form section appears only if the <b>Reclamation type</b> is set to <b>Total Usage Time</b> .	
Month	Month that the software product was used.
Year	Year that the software product was used.
Usage count	Number of times that the software product was accessed.
Total seconds used	Amount of time (in seconds) that the software product was used.
Last Used Data	
 <b>Note:</b> This form section appears only if the <b>Reclamation type</b> is set to <b>Last Used Date</b> .	
Last used time	Date and time that the software product was last used.

**6. Select Save.**

**Result**

After the software usage is created, you can view it by navigating to **License operations > Discovery > Software usage**.

**View SAP engines in workspace**

View the monthly engine usage measurements for SAP clients based on the license metric for each engine.

**Before you begin**

You can also view all the discovered users pulled from the SAP systems.

Role required: sam\_admin or sam\_user

**Procedure**

1. Navigate to **All > Software asset > Software Asset Workspace > License Operations**.
2. Select **All SAP engines**.
3. Select on a SAP engine record to view more details on SAP system users and SAP Engine usage.

**View SAP users in workspace**

View all the discovered users pulled from the SAP systems in the Software Asset Workspace.

### Before you begin

The Discovered Users [samp\_discovered\_user] table maps the discovered SAP users to system user records in the Users [sys\_user] table.

Role required: sam\_admin or sam\_user

### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations.**
2. Select **All SAP users.**
3. Select a record to view details such as SAP user roles, SAP user active transactions, SAP user activities, and SAP web activities.
  - SAP User Roles [samp\_sap\_user\_has\_role]: SAP users and their assigned roles.
  - SAP User Active transactions [samp\_named\_user\_type\_has\_transactions]: Data related to a named user's transaction activity on a SAP client. User transaction activity is based on SAP transaction codes, which are shortcuts for performing transactions or tasks on an SAP client. For example, the ME21N transaction code enables you to create a purchase order in SAP.
  - SAP User Activity [samp\_sap\_user\_activity]: Data related to a user's activity on a SAP client, such as the amount of time spent on a SAP system or the number of database records created or updated.
  - SAP Web Activity [samp\_sap\_web\_activity]: Data related to web activity or RFC connections performed on the SAP client, such as the number of calls or amount of data received or sent by each connection.

### Create a custom named user type in workspace

Create a custom named user type that can be used with your SAP software entitlement in the Software Asset Workspace. Creating a custom named user type allows users to track licenses that are specific to their SAP systems.

### Before you begin

Role required: sam\_admin or sam\_user

**Note:** The custom SAP named user types that you create directly on your ServiceNow instance are not reflected in your SAP system. You must make the same changes in your SAP system.

### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations.**
2. Select **SAP named user types.**
3. Select **New** and fill in the details.

Field	Description
Name	Name of custom named user.
Price list	Default price list.
Is developer	Indicates the user has a developer role.
Grant access to	Grant access to a named user type.
Value	Value associated with the named user type. This value can be either numbers or letters.

Field	Description
Rank	Priority of the named user type during reconciliation. Lower rank values take precedence.
Is licensable	Indicates the named user type license status.
Active	Indicates if the named user type is active.

**4. Select Save.**

The named user type is added to the Named User Types list.

**Create custom SAP price lists in workspace**

Create custom SAP price lists so that you can track and manage SAP licenses based on the contracts that are specific to your SAP system.

**Before you begin**

Role required: sam\_admin

**Note:** The custom SAP prices lists that you create directly on your ServiceNow instance are not reflected in your SAP system. You must make the same changes in your SAP system.

**Procedure**

1. From the Software Asset Workspace, open the License operations view.
2. From the left navigation menu of the License operations view, select **Discovery > SAP price lists**.
3. Select **New**.
4. On the Create New Custom Price List form, fill in the fields.

**Create New Custom Price List**

Field	Description
Name	Name of the price list.
Id	Unique identifier for the price list.
Default named user type	Default named user type for the price list.
Active	Option that indicates if the price list is active.

**5. Select Save.**

You are automatically redirected to the SAP price list record.

**6. Optional:** Associate SAP named user types with the custom SAP price list.

**a.** On the **Named User Types** tab of the SAP price list record, select **New**.

**b.** On the Create New Custom Named User Type form, fill in the fields.

**Create New Custom Named User Type form**

Field	Description
Name	Name of the named user type.

Field	Description
Price List	Price list that you want to associate the named user type with. This field populates automatically.
Is developer	Option that indicates if users with this named user type have a developer role.
Grants access to	Applications that the named user type has access to.
Value	Alphanumerical value that identifies the named user type.
Rank	Priority of the named user type during reconciliation. Lower rank values correlate with a higher priority during reconciliation.
Is licensable	Option that indicates if the named user type can be licensed.
Active	Option that indicates if the named user type is active.

c. Select **Save**.

d. Repeat steps a to c for each custom named user type that you want to add.

### View SSO applications in workspace

View details related to applications that you can connect through a SSO provider in the Software Asset Workspace.

#### Before you begin

Role required: sam\_admin or sam\_user

#### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations**.
2. Select **SSO applications**.  
List of all connected and disconnected SSO applications is shown.
3. Select a application record to view additional details such as SSO application groups, users, SSO subscriptions, and reclamation candidates for an application.

#### SSO Applications

List	Description
SSO Application Users	All users that have direct access to the application, but not through membership in a group.
SSO Application Groups	All groups that have access to the application.
SSO Subscriptions	Total number of subscriptions for the application. A user may have both direct access to an app and have access through a group. But the user's access counts as only one subscription so as only one record in the SSO Subscriptions list.

List	Description
	<p><b>Note:</b></p> <ul style="list-style-type: none"> <li>○ Add the <b>SSO application role</b> column to see how the user is granted access to the application. If the value is a group, then the user has access through membership in that group. If the value is the user's name, then the user has direct access to the application. User subscriptions can't be reclaimed in Software Asset Management if the user has access to the application through a group membership. To reclaim the subscription, remove the user from the group in the Azure AD portal and set the reclamation candidate state to <b>Closed Complete</b>.</li> <li>○ When SSO subscriptions are created through SSO application groups, the <b>Subscription assigned</b> value is empty. When the subscriptions are created through SSO Application Users, the <b>Subscription assigned</b> value shows the date of when the subscription is assigned to the user. After you upgrade to the Software Asset Management - SaaS License Management 13.1.0 version or later, the existing <b>Subscription assigned</b> values for the subscriptions that were created through SSO application groups turns empty.</li> </ul>
Reclamation Candidates	Subscriptions that don't meet the usage requirements that are defined by the reclamation rule for the application.

### View SSO groups in workspace

View details related to all SSO groups that have access to a SSO application in the Software Asset Workspace.

#### Before you begin

Role required: sam\_admin or sam\_user

#### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations**.
2. Select **SSO groups**.
3. Select a group record to view additional details such as the users and child groups within that group.

### View SSO users in workspace

View details of all users that have direct access to a SSO application in the Software Asset Workspace, but not through membership in a group.

#### Before you begin

Role required: sam\_admin or sam\_user

#### Procedure

1. Navigate to **All > Software asset > Software Asset Workspace > License operations.**
2. Select **SSO users.**
3. Select a user record to view additional details related to the user.

### Create a software client access record in workspace

Add a client access record to track and manage the users or devices that are accessing a particular version of your server software using a client access license (CAL).

#### Before you begin

Role required: sam\_admin

**i Note:** You can also use the sam\_user role to view and read client access records. However, you cannot use this role to create client access records.

#### About this task

Software Asset Management uses client access records to reconcile server software based on the following license metrics:

Metric group	License metric
Citrix	<ul style="list-style-type: none"> <li>• Per User</li> <li>• Per User/Device</li> </ul>
Common	<ul style="list-style-type: none"> <li>• User CAL</li> <li>• Device CAL</li> <li>• User/Device CAL</li> </ul>
IBM	<ul style="list-style-type: none"> <li>• Authorized User</li> <li>• Authorized User Value Unit</li> <li>• Employee User Value Unit</li> <li>• External User Value Unit</li> </ul>
Microsoft	<ul style="list-style-type: none"> <li>• User CAL</li> <li>• Device CAL</li> <li>• Per Core (with CAL)</li> </ul>
Oracle	Named User Plus

Metric group	License metric
CrowdStrike	<ul style="list-style-type: none"> <li>Reserved Hourly Average Sensor</li> <li>Sensor Subscription</li> </ul> <p><b>Note:</b> These license metrics are available with Xanadu Patch 6 and Software Asset Management - SaaS License Management (sn_sam_saas_int) 14.0.7 version onwards onwards. If you are on any version for Xanadu below Patch 6, refer <a href="#">KB1801232</a>.</p>

License metrics are set on the [software entitlement](#) form and can be accessed from the **Metric Attributes** related list on the [software model](#) form.

**Important:** You can enable the Software Asset Management application to automatically create client access records for Oracle Database Server using the **Auto-generate client access for allocations** option on the corresponding software model. To use this option, you must request the Data Collection for Oracle Global Licensing and Advisory Services application from the ServiceNow Store. See [Software model fields](#) for more details on the **Auto-generate client access for allocations** option. See [Request Data Collection for Oracle Global Licensing and Advisory Services \(GLAS\)](#) for more details on the Data Collection for Oracle Global Licensing and Advisory Services application.

### Procedure

1. From your ServiceNow instance, navigate to **Software asset > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.
2. On the left navigation menu of the Software Asset Workspace, select **License operations**. The License operations view opens.
3. On the **Lists** tab of the License operations view, navigate to **Client access > Client access**.
4. Select **New**.
5. On the Create New Client Access form, fill in the fields.

#### Create New Client Access form

Field	Description
Name	Name of the client access record.
Software model	Software model of the server that you are granting users or devices access to.
Type	Type of CAL that is associated with the client access record. Select one of the following options: <ul style="list-style-type: none"> <li>o <b>User CAL:</b> Licenses each user that accesses the associated server, regardless of the number of devices that each user is using to access the server.</li> </ul>

Field	Description
	<p>For example, if two users are accessing Microsoft Windows Server, the corresponding software entitlement must include two User CALs.</p> <p>If you select this option, you can assign the associated User CALs to specific users. See <a href="#">step 7</a> for more details.</p> <ul style="list-style-type: none"> <li>○ <b>Device CAL:</b> Licenses each device that accesses the specified server, regardless of the number of users that are using each device to access the server.</li> </ul> <p>For example, if two devices are accessing Microsoft Windows Server, the corresponding software entitlement must include two Device CALs.</p> <p>If you select this option, you can assign the associated Device CALs to specific devices. See <a href="#">step 7</a> for more details.</p> <ul style="list-style-type: none"> <li>○ <b>User/Device CAL:</b> Licenses each user or device that accesses the associated server.</li> </ul> <p><b>i Note:</b> If you are using a Citrix software model, the User/Device CAL type is based on the user/device licenses that are assigned to your users or shared devices.</p> <p>For example, if two users and two devices are accessing Microsoft Windows Server, the corresponding software entitlement must include two User CALs and two Device CALs.</p> <p>If you select this option, you can assign the associated User and Device CALs to specific users and devices. See <a href="#">step 7</a> for more details.</p> <ul style="list-style-type: none"> <li>○ <b>Authorized User:</b> Licenses each user who accesses an IBM software product.</li> </ul> <p><b>i Note:</b> This CAL type is applicable to IBM software only.</p> <ul style="list-style-type: none"> <li>○ <b>Authorized User Value Unit:</b> Licenses the number of select users who access an IBM software product.</li> </ul>

Field	Description
	<p><b>i Note:</b> This CAL type is applicable to IBM software only.</p> <ul style="list-style-type: none"> <li>○ <b>Employee User Value Unit:</b> Licenses the total number of users within your organization who access an IBM software product.</li> </ul> <p><b>i Note:</b> This CAL type is applicable to IBM software only.</p> <ul style="list-style-type: none"> <li>○ <b>External User Value Unit:</b> Licenses the total number of users outside your organization who access an IBM software product.</li> </ul> <p><b>i Note:</b> This CAL type is applicable to IBM software only.</p>
<p>WebLogic application</p> <p><b>i Note:</b> This field appears only if you select an Oracle WebLogic Server software model.</p>	<p>Oracle WebLogic Server application to which your users or devices are granted access.</p>
<p>Database instance</p> <p><b>i Note:</b> This field appears only if you select an Oracle Database Server software model.</p>	<p>Oracle database instance that accesses and manages the data in your Oracle database.</p>
<p>Source</p> <p><b>i Note:</b> This field appears only if you select an Oracle Database Server software model.</p>	<p>Source of your Oracle data. This field is automatically set to one of the following options:</p> <ul style="list-style-type: none"> <li>○ <b>ServiceNow:</b> Indicates that the client access record data was generated automatically through the SAM - Sync Auto-generated Client Access with DB Server Users scheduled job, which runs daily or on-demand.</li> <li>○ <b>Internal:</b> Indicates that the client access record data was added manually.</li> </ul>
<p>Count</p>	<p>Number of unique users or devices that are granted access to the associated server.</p>

Field	Description
	<p><b>Note:</b> On automatically generated client access records for Oracle Database Server, this field populates automatically based on the number of users or devices that are currently added to the record. See <a href="#">step 7</a> for more information on how to add users or devices to the client access record.</p> <p><b>Note:</b> If you are using a Citrix software model and User/Device CAL type, the <b>Count</b> field is based on the number of user/device licenses that are assigned to your users or shared devices.</p>
PaaS  <p><b>Note:</b> This field appears only if you select an Oracle Database Server software model.</p>	Option to indicate whether your Oracle database instance is managed by the Amazon Relational Database Service (RDS) on Amazon Web Services (AWS).
Cost Center	Cost center of the users or devices that are granted access to the associated server.
Department	Business department of the users or devices that are granted access to the associated server.
Location	Geographic location of the users or devices that are granted access to the associated server.
Company	Company of the users or devices that are granted access to the associated server.

**6. Select Save.**

The form reloads with the **Users** and **Devices** tabs.

**7. To assign the associated CALs to specific users or devices, add those users or devices to your client access record based on the CAL type that you selected in the **Type** field.**

By assigning CALs to specific users or devices, you can prevent those users or devices from being counted multiple times across different client access records during reconciliation.

- If you set the **Type** field to **User CAL, User/Device CAL, Authorized User, Authorized User Value Unit, Employee User Value Unit, or External User Value Unit**, add the users that you want to assign your user-based CAL to.

**Note:** If you are using a Citrix software model and User/Device CAL type, add the users that you want to assign a user/device license to.

**a. Select the **Users** tab and then click **New**.**

The Create New Client Access User Breakdown form opens in a new tab.

**b. In the **User** field, search for and select a user that you want to assign a user-based CAL to.**

The **Device**, **Active**, **User Type**, and **Source** fields populate automatically for the specified user. However, you can modify the **Device**, **Active**, and **User type** fields as needed.

- c. Select **Save**.
  - d. Close the form to return to your client access record.
  - e. Repeat steps a-d for each user that you want to assign a user-based CAL to.
- o If you set the **Type** field to **Device CAL** or **User/Device CAL**, add the devices that you want to assign your device CALs to.

**Note:** If you are using a Citrix software model and User/Device CAL type, add the devices that you want to assign a user/device license to.

- a. Select the **Devices** tab and then select **New**.

The Create New Client Access Device Breakdown form opens in a new tab.

- b. In the **Device** field, search for and select a device that you want to assign a device CAL to.

The **Active** and **Source** fields populate automatically for the specified device. However, you can modify the **Active** field as needed.

- c. Select **Save**.
- d. Close the form to return to your client access record.
- e. Repeat steps a-d for each device that you want to assign a device CAL to.

- 8. To track and license the configuration items (CIs) that the associated server is installed on, add them to the client access record.

**Important:** This step is not applicable if you have enabled the **License all installs accessed by clients** option on the associated software model. If this option is enabled, CIs are licensed based on conditions that you specify on the software model, such as software install conditions. See [Software model fields](#) for more details on this option.

For Windows Server, each server installation requires Per Core (with CAL) rights that are licensed separately from the User and Device CAL rights in associated client access records. Other products like Oracle Java do not require rights to be licensed separately for server installations. For example, if you use CALs to license the users and devices that are accessing Oracle Java, you can enable Software Asset Management to automatically mark the corresponding Oracle Java installations as licensed. In this scenario, Software Asset Management licenses the Oracle Java installations as part of CAL licensing.

To enable this capability, you must add all CIs that a given server is installed on to the associated client access record. By specifying these CIs, you can enable Software Asset Management to determine which server installations your users and devices are connected to. After all users and devices on the client access record are licensed, all server installations on the specified CIs are also marked as licensed. No additional licenses are consumed for these installations.

- a. Select the **Devices with Installations** tab and then click **New**.
- b. In the **Device** field of the Create New Client Access Installed Device form, search for and select a CI that the associated server is installed on.  
The **Active** field populates automatically for the specified CI. However, you can modify this field as needed.

- c. Select **Save**.
- d. Close the form to return to your client access record.
- e. Repeat steps a-d for each CI that the associated server is installed on.

**What to do next**

After you create a client access record, reconciliation runs on the associated server software as a scheduled job or on-demand. You can view your reconciliation results in the [License usage view](#). Use these results to determine your license compliance position and to remediate any non-compliance.

You can remediate non-compliance for your server software using the following remediation options:

- **Purchase Rights:** Generates a purchase order when the number of rights needed is greater than the number of rights owned across all client access records for the specified server software.
- **Create Allocations:** Allocates rights to unlicensed users or devices that have been added to the client access records for the specified server software.
- **Remove Allocations:** Removes rights from licensed users or devices when sufficient rights are unavailable.

**Create a resource value record**

Create a resource value record for each software model for which you want to calculate licensing requirements.

**Before you begin**

Role required: admin

**Procedure**

1. Navigate to **Workspaces > Software Asset Workspace > License operations > Resource Value**.
2. Select **New**.
3. On the form, fill in the fields.

**Resource Value form**

Field	Description
Name	Name of the resource value.
Software model	Software model of the software product that the resource value is associated with.
Company	Company of the associated resource value record.
Location	Physical location of the associated resource value record.
Units consumed	Total number of resource value units of the associated software product that you're currently consuming. For example, if you're protecting 50 terabytes of data using a data protection software product, set the <b>Units consumed</b> field to 50.

Field	Description
	For the Java SE software model with the Employee license metric, the <b>Units consumed</b> field must be set to the number of employees consuming the licenses.
Department	Department that the resource value record is assigned to.
Cost Center	Cost center that is financially responsible for the resource value.

**4. Select Save.**

**Note:** You can create multiple resource value records for the same software model and give them unique names. All the resource value records with the same software model are taken into consideration before reconciliation is run.

**Result**

The resource value record that you created appears in the Resource Value list view.

**Create user subscriptions in the workspace**

Create software subscriptions for SaaS and SSO applications for users in the Software Asset Workspace.

**Before you begin**

The User subscription option is available only if the Software Asset Management - SaaS License Management (sn\_sam\_saas\_int) plugin is activated.

Role required: sam\_admin or sam\_user

**About this task**

If you're using Software Asset Workspace, the option to create user subscriptions in Core UI is inactive.

**Procedure**

1. Navigate to the Create New Software Subscription form.

Interface	Action
Core UI	Navigate to <b>All &gt; Software Asset &gt; Software Subscriptions.</b>
Software Asset Workspace	<p><b>a.</b> Navigate to <b>Workspaces &gt; Software Asset Workspace &gt; License operations.</b></p> <p><b>b.</b> Select <b>User subscription.</b></p>

2. Select **New.**

3. On the Create New Software Subscription form, fill in the fields.

For more information on the Software subscription form fields and their descriptions, see [Software subscription fields.](#)

4. Select **Save.**

**Related topics**[Software models and Software entitlements](#)[Create software models in workspace](#)[Create entitlements in workspace](#)**View publisher part number (PPN) suggestions in workspace**

View Content Service suggestions for your custom PPNs and DMAPS in the Software Asset Workspace.

**Before you begin**

PPN suggestions are available only if a corresponding match is found for your custom PPN in the Content Service. The PPN suggestion records are stored in the Part number suggestions [samp\_sw\_part\_number\_suggestion] table.

Role required: sam\_admin.

**Procedure****1. Navigate to All > Software asset > Software Asset Workspace > License operations.**

You can also view the part number suggestions from the **License Usage** view by navigating to the Publisher details page and the **Progress indicators** section.

**2. Select Part number suggestions from the Content suggestions list view.****3. Open a suggestion record to view the Part number suggestion page.**

You can view the custom PPN details in the top part of the Part number suggestion page. The second half of the page contains the suggested part number details. All the entitlements where the custom PPN is used appear in the **Impacted entitlements** tab. All the software models where the custom DMAP is used appear in the **Impacted software models** tab. If no impacted software models exist, then this tab doesn't appear.

**4. Select Accept or Reject.**

- **Accept:** The Content Service PPN and DMAP replace the custom PPN and DMAP. In the impacted entitlement, the Content Service PPN is replaced. Similarly, the Content Service DMAP is replaced on the software model.
- **Reject:** The status of this record changes to rejected and you continue to use the custom PPN.

**Manage phase-wise Software Asset Management implementation**

Carry out phase-wise Software Asset Management implementation by publishing only on a few software products that you want to manage initially. You can also remove the software products from the published list when you no longer want to manage those products.

**Set the domain-specific property to publish your software products**

Use the domain separation application property of Software Asset Management to set the publish software products property for specific domains.

**Before you begin**

To set up domain separation application properties for Software Asset Management, you must activate the Domain Support - Domain Extensions Installer (com.glide.domain.msp\_extensions.installer) plugin on your ServiceNow instance.

Role required: sam\_admin or admin

### About this task

The *com.snc.samp.manage.published.products* application property enables you to specify the domains for which you want to enable publishing the software products in a phase-wise implementation of Software Asset Management.

### Procedure

1. Navigate to **All > Software Asset Management > Administration > Application Properties**.
2. From the list of available application properties, select **com.snc.samp.manage.published.products**.
3. Create or update an application property value.
  - To create an application property value, select **New**.
  - To update an existing application property value, select that application property value from the list of available values.
4. On the form, fill in the fields.

#### Application Property Values form

Field	Description
Value	Value of the application property. You can specify one of the following: <ul style="list-style-type: none"> <li>○ <b>true</b> to enable the property.</li> <li>○ <b>false</b> to disable the property.</li> </ul>
Domain	Domain that you want the application property value to apply to.

5. Save the application property values.
  - To update an existing application property value, select **Update**.
  - To save a new application property value, select **Submit**.

### What to do next

Publish the software products that you want to manage as part of phase-wise implementation of Software Asset Management. For more information, see [Publish a specific set of your software products](#).

### Publish a specific set of your software products

Report only on the licensable software products that are part of the current implementation phase of Software Asset Management by publishing those software products. By publishing only a few software products initially, you can assess the initial progress and gradually increase the scope of the implementation.

### Before you begin

To be able to publish your software products, make sure that either the *com.snc.samp.manage.published.products* system property or the *com.snc.samp.manage.published.products* application property is enabled on your ServiceNow instance.

- i Note:** The application property is domain-specific and available only on a ServiceNow instance that has domain separation activated for Software Asset Management. For more information, see [Domain separation and Software Asset Management](#) and [Set the domain-specific property to publish your software products](#).

Role required: sam\_admin

## About this task

- Note:** To view accurate data on the reports, you must run software reconciliation whenever the following occur:
- The system property *com.snc.samp.manage.published.products* is updated
  - The software products are published or removed from the list of published software

## Procedure

1. Navigate to **All > Software Asset Management Workspace > License operations**.
2. From the **SAM Implementation** list, select **Published products**.
3. Select **Add**.

- Note:** If the **Add** option isn't available, make sure the *com.snc.samp.manage.published.products* property is enabled.

4. In the **Add to published products** dialog box, select the licensable software products that you want to publish and select **Add**.

**Note:**

When you publish a software product that is part of a suite, messages with links that contain the details of the parent software suite and its child software components are shown. You can view the details and publish these software products if necessary.

## Result

- The software products are added to the Published products list that is grouped by the publisher.
- After you publish the products and run software reconciliation, you can view reports specific to only those published products in the License usage view and Software asset overview.

## Remove published software products

Remove published software products that you no longer manage or report on as part of your Software Asset Management implementation.

## Before you begin

To be able to remove software products from the list of published software products, make sure that either the *com.snc.samp.manage.published.products* system property or the *com.snc.samp.manage.published.products* application property is enabled on your ServiceNow instance.

- Note:** The application property is domain-specific and available only on a ServiceNow instance that has domain separation activated for Software Asset Management. For more information, see [Domain separation and Software Asset Management](#) and [Set the domain-specific property to publish your software products](#).

Role required: sam\_admin

## Procedure

1. Navigate to **All > Software Asset Workspace > License operations**.
2. From the **SAM Implementation** list, select **Published products**.

3. Select the published software products that you want to remove from the list.
4. Select **Remove**.

### Result

The software products that you removed are no longer shown in the Published products list.

### Create product install conditions

Create product install conditions in the Software Asset Workspace that apply across all software models of a product during reconciliation.

### Before you begin

Installs that do not meet the required product install conditions will be included in the reconciliation process; however, they are likely to be flagged as unlicensed.

To create product install conditions, you must request and activate the Software Asset Workspace (com.sn\_sam\_workspace) plugin. For details on requesting and activating the Software Asset Workspace (com.sn\_sam\_workspace) plugin, see [Request Software Asset Management](#).

Role required: sam\_admin

### About this task

Install conditions define where a software product can be installed. Product install conditions account for all the software model installations of a product during reconciliation.

- Note:** If you want to set up install conditions for specific software models and not the entire software product suite, you can choose to add software install conditions. For details on adding software install conditions, see [Create software models in workspace](#).

### Procedure

1. Navigate to **Software Asset > Software Asset Workspace > License operations > Licensing**.
2. Select **Product install condition**.
3. Select **New**.
4. From the list of available products, select a product.
5. Select **Set conditions**.
6. Add filter conditions that contain a field, operator, and value.  
You can add multiple install conditions to a software product using the following options:
  - **or:** Enables you to specify any of the conditions that a software installation can meet to be included in reconciliation.
  - **and:** Enables you to specify all the conditions that a software installation must meet to be included in reconciliation.
  - **+ New condition set:** Enables you to specify additional sets of conditions that a software installation can meet to be included in reconciliation.
7. Select **Set**.
8. After setting up the install conditions successfully, select **Save**.  
The install conditions are added for the complete suite of the software product. You can view the install conditions you have created on the Product install condition landing page.

## Create or update an override license cost record

Create or update an override license cost record for your software entitlements based on your requirements.

### Before you begin

Role required: sam\_user, sam\_admin

### About this task

You can manually add or update the override license cost information for your software models and entitlements. When you create an entitlement for the Employee license metric, override license cost records are populated for Oracle Java, based on the data present in the Price tier [samp\_price\_tier] table. You can update the existing override license cost records according to the licensing agreement. For details on the tier-based pricing model, see [Pricing model for Oracle Java SE Universal](#).

### Procedure

1. Navigate to **Software Asset Workspace > License operations**.
2. Select the target software model that you want to create or update the override license cost for.
3. Select the **Override License Costs** tab.
4. Select **New/Edit ranges**.
  - If you select **New**, the lower limit is calculated based on the employee count range in the Price tier [samp\_price\_tier] table, incrementing the previous upper limit by 1. For example, if the previous employee range is 40000-49999, then the lower limit is automatically populated as 50,000 for a new record.
  - If you select **Edit ranges**, all the existing records are set to inactive. You can select **Activate** after completing your updates to override license cost ranges.
5. On the form, fill in the fields.  
For details on the override license cost fields and descriptions, see [Override License Costs](#).

**Note:** You can revert your changes to the default values by selecting **Restore to default**.

6. Select **Save**.

### Result

The override license cost record you created or modified appears in the **Override License Cost** list view. The following details are displayed for each record:

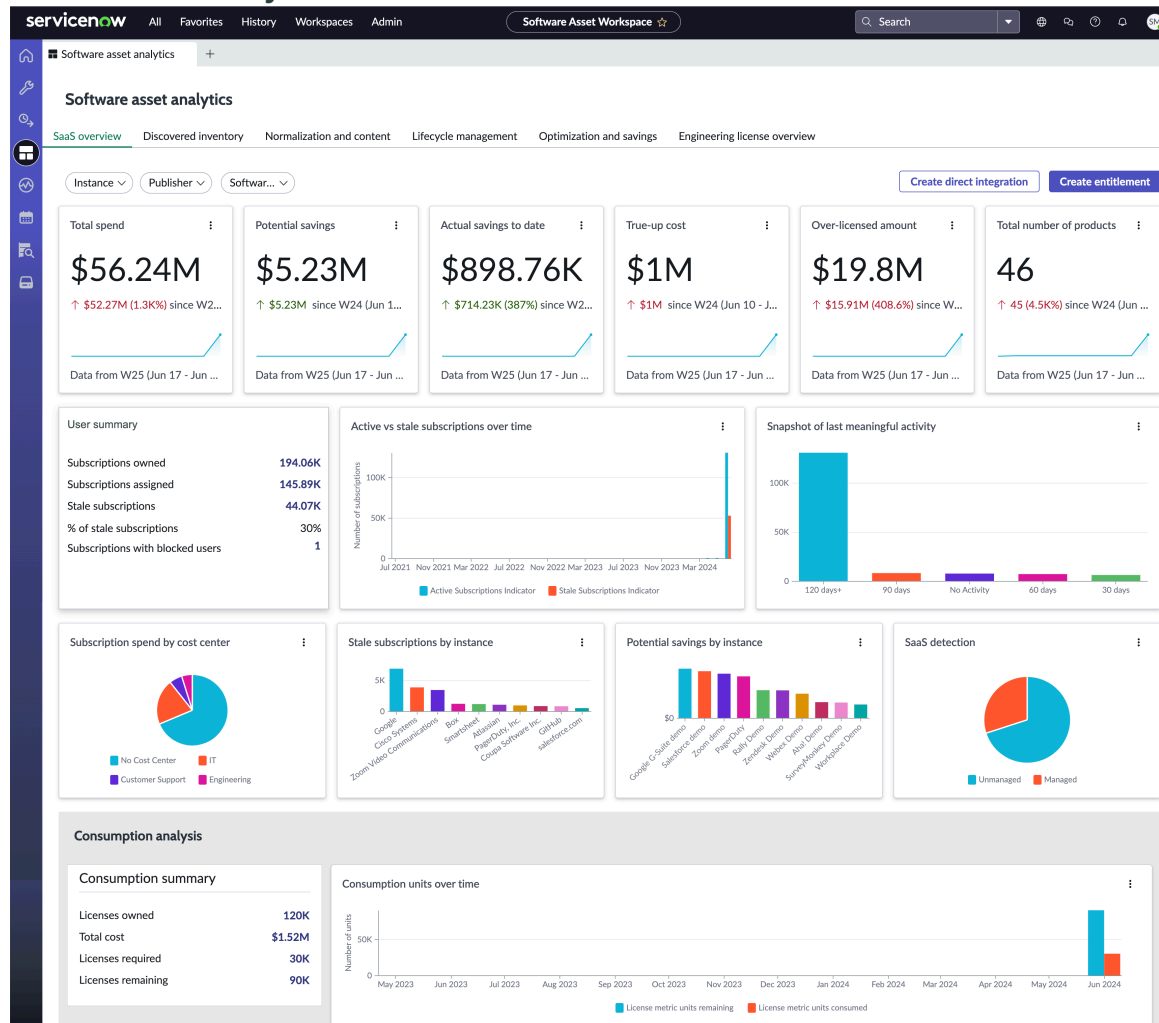
- Metric group
- License metric
- License cost
- License and maintenance cost

## Software asset analytics view

The unified and streamlined dashboards in the Software asset analytics view in the Software Asset Workspace enable you to track your performance and view your analytics.

You can access the Software asset analytics view by navigating to **Software Asset Workspace > Software asset analytics**.

## Software asset analytics view



The Software asset analytics view includes the following dashboards:

- **SaaS Overview:** A single Oracle dashboard showing key KPIs for both pure Oracle as well as Microsoft 365 and Adobe Cloud. For more details, see [SaaS overview dashboard in workspace](#).
- **Discovered inventory:** View your licensable discovered software and devices. For more details, see [Discovered inventory dashboard](#).
- **Normalization and content:** View normalization and Content Service trend charts. For more details, see [Normalization and content dashboard](#).
- **Lifecycle management:** Review and track the end of life (EOL) software products in your asset estate. For more details, see [Lifecycle management dashboard](#).
- **Optimization and savings:** View metrics on how to maximize and save costs on your software assets. The dashboard also displays licensing optimizations for third-party publishers such as Microsoft, Red Hat, Adobe, and SAP. For more details, see [Optimization and savings dashboard in workspace](#).
- **Engineering License Overview:** View all your engineering applications license position and usage. For more details, see [Engineering License overview dashboard in workspace](#).
- **Cloud cost simulator:** Compare and evaluate the estimated costs of migrating your on-premises resources to the cloud for each cloud environment. For more details, see [Cloud simulator dashboard](#).

### SaaS overview dashboard in workspace

View all SaaS related analytics for pure SaaS, Microsoft Office 365, and Adobe Cloud in the SaaS overview dashboard in the Software asset analytics view.

Optimize your organization's cost on SaaS by analyzing the subscription usage, cost, and compliance for your SaaS applications on the SaaS overview dashboard. You can also view compliance analysis results related to Microsoft Office 365 and Adobe Cloud.

**i Note:** The SaaS overview dashboard is only visible if you activate the Software Asset Management - SaaS License Management plugin from ServiceNow Store.

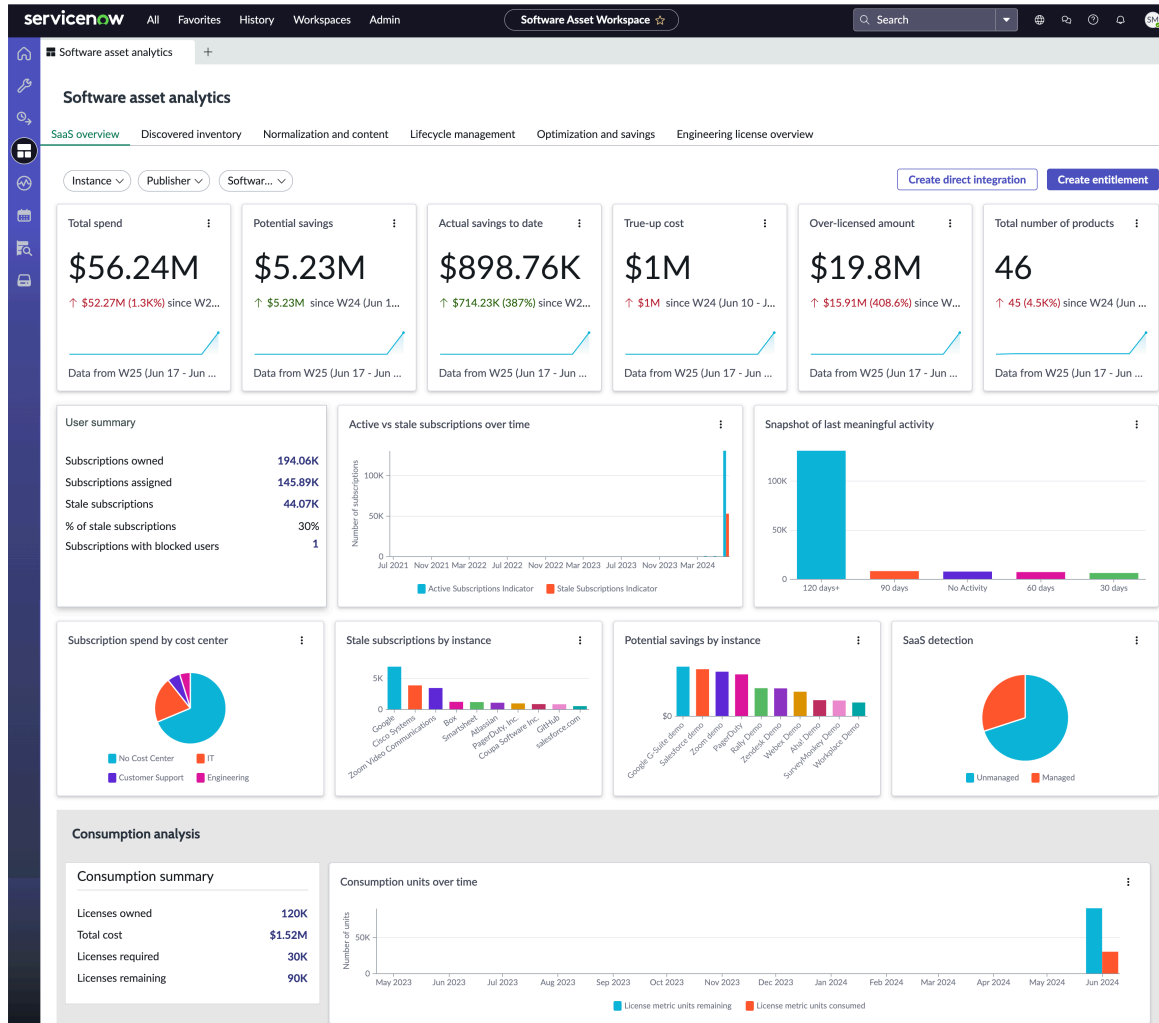
You can filter the dashboard by instance, publisher, software model, or domain. Select any report to see more information.

**i Note:** The Domain filter narrows your results based on the domain that you select. The default value for the domain filter is global. You can select a domain at any given time for widgets to reflect the selected domain. After you clear the selected domain, it defaults back to global. The Domain filter appears on the screen only if the following plugins are installed:

- Domain Support - Domain Extensions Installer (com.glide.domain.msp\_extensions.installer)
- Performance Analytics - Domain Support (com.snc.pa.domain\_support)

You can access the SaaS overview dashboard by navigating to **Workspaces > Software Asset Workspace > Software asset analytics**.

### SaaS overview dashboard



### SaaS overview dashboard metrics

Report	Source	Description
Total spend	License Metric Results [samp_license_metric_result]	Total cost of all active subscription software entitlements.
Potential savings	Removal Candidate [samp_sw_reclamation_candidate]	Potential costs saved if you reclaim unused subscriptions.
Actual savings to date	Removal Candidate [samp_sw_reclamation_candidate]	Total yearly savings for all subscription software. This value is calculated as the total savings from closed complete reclamation candidates.
True-up cost	License Metric Results [samp_license_metric_result]	Cost to have the number of rights you own match the number of rights you've assigned to users. This metric helps to verify that your organization is paying for all the rights that your organization is using.

SaaS overview dashboard metrics (continued)

Report	Source	Description
Over-licensed amount	License Metric Results [samp_license_metric_result]	Cost of licenses owned but not being used.
Total number of products	Software Subscription [samp_sw_subscription]	Total number of products, including products automatically detected from imported financial transactions and products manually added to transactions.
User summary Subscriptions Owned	Software Entitlement [alm_license]	All active entitlements with the license type as subscription.
User summary Subscriptions Assigned	Software Subscription [samp_sw_subscription]	Total number of assigned rights for SaaS software models.
User Summary Stale subscriptions	Software Subscription [samp_sw_subscription]	Number of subscriptions that don't meet the usage requirements defined by the reclamation rules.
User summary Percent of stale subscriptions	Software Subscription [samp_sw_subscription]	Percentage of subscriptions that don't meet the usage requirements defined by the reclamation rules. This percentage is calculated as the number of stale rights divided by the total number of assigned rights.
User summary Subscriptions with blocked users	Software Subscription [samp_sw_subscription]	Number of subscriptions that are consumed by users that have their access blocked by the admin due to security issues.  <b>Note:</b> Currently, the Blocked users report is supported only for Microsoft 365.
Active vs stale subscriptions over time	Software Subscription [samp_sw_subscription]	Graphical representation of actively used vs stale subscriptions over a given time period.
Snapshot of last meaningful activity	Software Subscription [samp_sw_subscription]	Distribution of users based on their subscription software usage behavior. Use this data to identify the users with the highest software usage and determine the most appropriate threshold for your

SaaS overview dashboard metrics (continued)

Report	Source	Description
		software reclamation rules. This report displays the data if there's no activity, for 30 days, and for 120 or more days.
Subscription spend by cost center	Software Entitlement [alm_license]	Total cost of all active subscription software entitlements by cost center.
Stale subscriptions by instance	Removal Candidate [samp_sw_reclamation_candidate]	Total number of stale subscriptions for each subscription profile. If you have multiple profiles for the same subscription software, this report displays each profile separately.
Potential savings by instance	Removal Candidate [samp_sw_reclamation_candidate]	Potential costs saved for each subscription profile when you reclaim unused subscriptions.
SaaS detection	DEX Applications [samp_dex_application]  <b>i Note:</b> This table has been repurposed for use with the ACC-VC product 1.3.0.	Number of SaaS applications or percentage of the total applications that are managed and unmanaged. <ul style="list-style-type: none"> <li>• <b>Managed:</b> A software model exists for a product.</li> <li>• <b>Unmanaged:</b> A software model doesn't exist for a product.</li> </ul>

SaaS overview dashboard metrics (continued)

Report	Source	Description
		<p><b>i Important:</b> To view this chart, you must do the following:</p> <ul style="list-style-type: none"> <li>Request and install version 14.0.9 or later of the Software Asset Management -SaaS License Management application from the <a href="#">ServiceNow Store</a>. For more information, see <a href="#">Request SaaS License Management</a>.</li> <li>Install the Agent Client Collector for Visibility - Content (ACC-VC) product version 1.3.0 or later. For more information, see <a href="#">Agent Client Collector</a>.</li> </ul> <p>For more information, see the <a href="#">SaaS detection report</a>.</p>
Consumption summary Total units	Subscription Consumption Summary [sam_saas_consumption_summary]	Total number of software units that you've purchased across all active entitlements for the software model.
Consumption summary Total cost	License Metric Results [samp_license_metric_result]	Total cost of the software units across all active entitlements for the software model.
Consumption summary units consumed	License Metric Results [samp_license_metric_result]	Number of software units that you've consumed. Unit of measure for the software units that can be consumed.
Consumption summary units remaining	License Metric Results [samp_license_metric_result]	Number of software units that haven't been consumed.
Consumption units over time	License Metric Results [samp_license_metric_result]	Graphical representation of the number of software units consumed vs the number of software units that aren't consumed over a period.

Discovered inventory dashboard

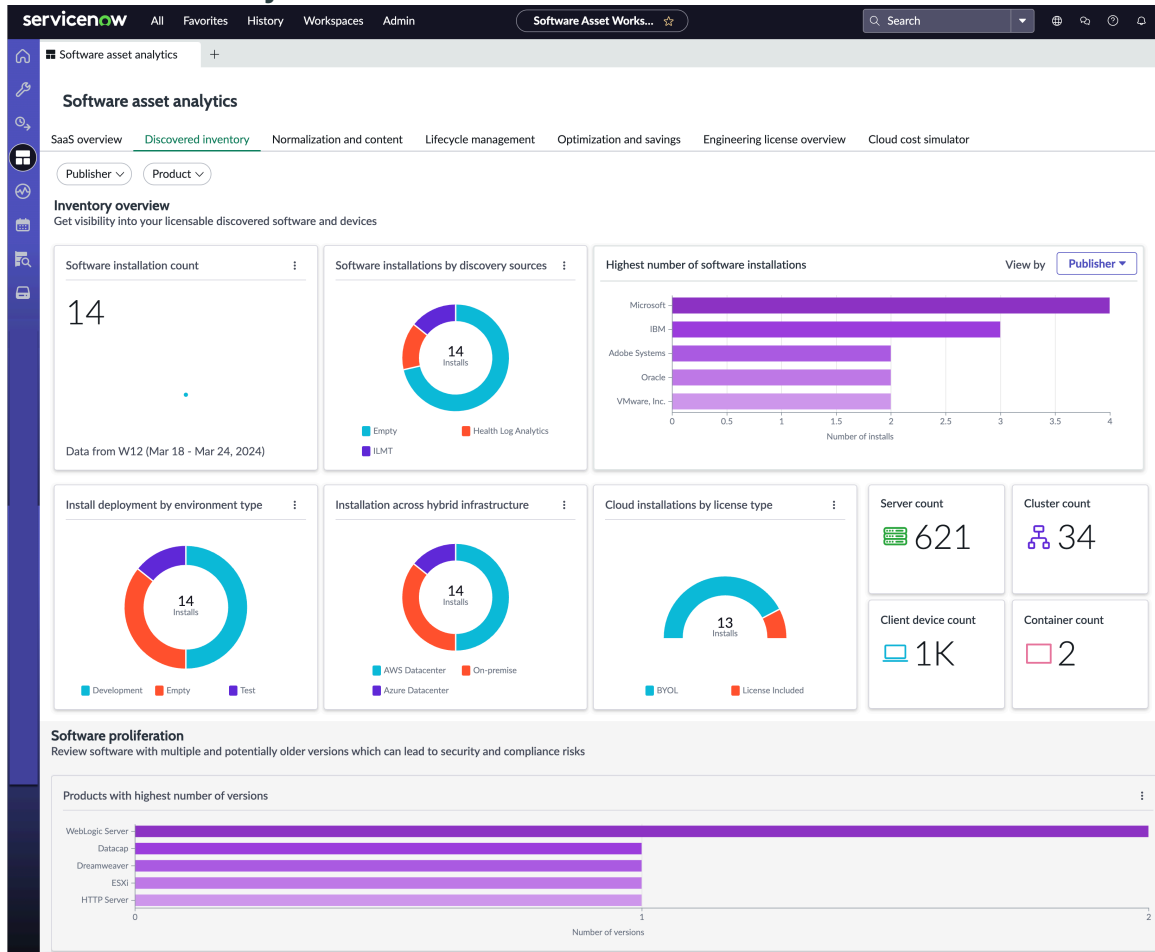
View your licensable discovered software and devices on the Discovered inventory dashboard in the Software asset analytics view of Software Asset Workspace.

Discovered inventory dashboard enables you to view all your licensable discovered software and devices. This dashboard also provides an insight into software products with multiple and potentially older versions that can result in security and compliance risk.

You can filter the count of installations based on a publisher or product. Select any report to see more information on software installations.

You can access the Discovered inventory dashboard by navigating to **Workspaces > Software Asset Workspace > Software asset analytics > Discovered inventory**.

### Discovered inventory dashboard



### Discovered inventory dashboard metrics

Report	Source	Description
Software installation count	Software Installation [cmdb_sam_sw_install]	Number of normalized and not normalized installs. For more information on normalized installations, see <a href="#">Normalization statuses</a> .
Software installations by discovery sources	Software Installation [cmdb_sam_sw_install]	Total number of software installations grouped by discovery sources.
Highest number of software installations	Software Installation [cmdb_sam_sw_install]	The highest number of software installations for different products or

**Discovered inventory dashboard metrics (continued)**

Report	Source	Description
		publishers. You can view the count of installations by publisher or product.
Install deployment by environment type	Software Installation [cmdb_sam_sw_install]	Number of software deployments grouped by the type of environment.
Installation across hybrid infrastructure	Software Installation [cmdb_sam_sw_install]	Number of installations grouped by the type of infrastructure.
Cloud installations by license type	Software Installation [cmdb_sam_sw_install]	Number of cloud installations grouped by license type.
Server count	Server [cmdb_ci_server]	Number of discovered servers.
Cluster count	Cluster [cmdb_ci_cluster]  Windows Cluster [cmdb_ci_win_cluster]  UNIX Cluster [cmdb_ci_unix_cluster]  VMware vCenter Cluster [cmdb_ci_vcenter_cluster]  Hyper-V Cluster [cmdb_ci_hyper_v_cluster]  Nutanix Cluster [cmdb_ci_nutanix_cluster]	Number of discovered clusters.
Client device count	Computer [cmdb_ci_computer]	Number of discovered computers.
Container count	Docker Container [cmdb_ci_docker_container]	Number of discovered Docker containers.
Products with highest number of versions	Software Discovery Models [cmdb_sam_sw_discovery_model]	Software products with the highest number of versions in descending order.

**Normalization and content dashboard**

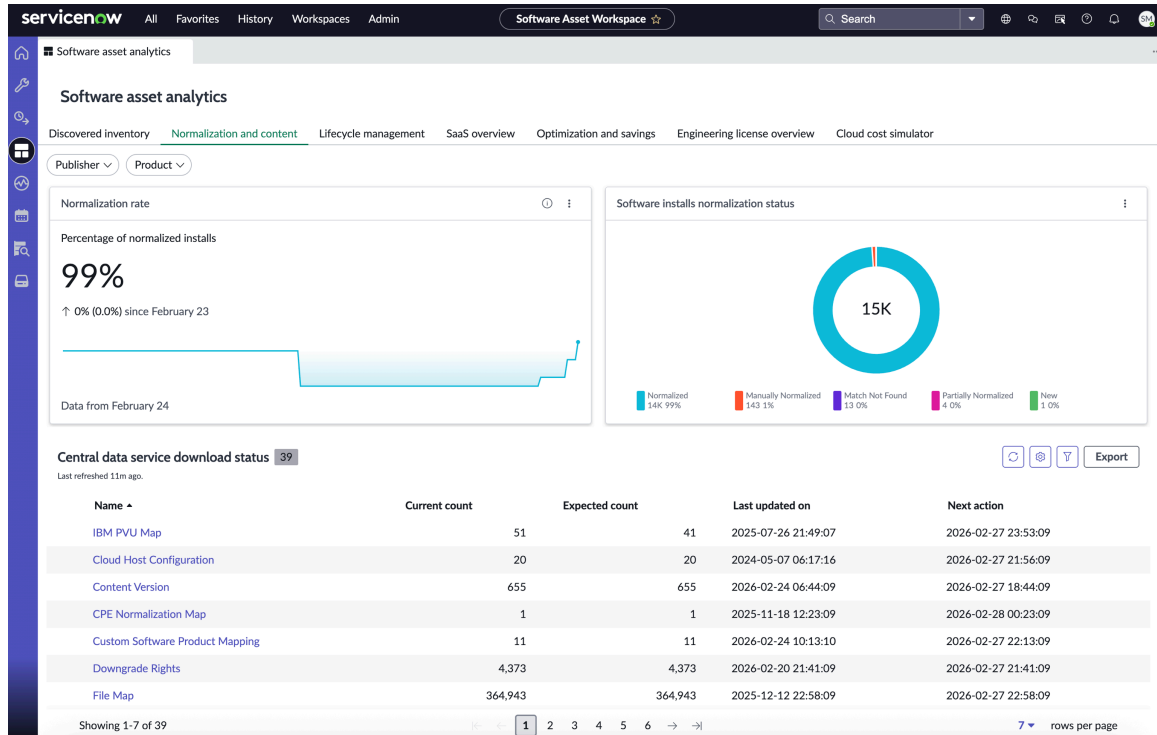
View normalization trend charts on the Normalization and content dashboard, which is integrated with Performance Analytics in Software Asset Workspace.

Normalization chart results are updated daily when the *SAM - Discovery Model Normalization* job is run.

You can filter the count of installations based on a publisher or product by using the Publisher or Product filter.

You can access the Normalization and content dashboard by navigating to **Workspaces > Software Asset Workspace > Software asset analytics > Normalization and content**.

### Normalization and content dashboard



### Normalization and content dashboard metrics

Report	Source	Description
Percentage of normalized installs	Software Discovery Models [cmdb_sam_sw_discovery_model]	The percentage of fully normalized software installations out of the total software installations.  You can view the percentage of installations by using the filter publisher or product.
Software installs normalization status	Software Discovery Models [cmdb_sam_sw_discovery_model]	Count of software installations based on the normalization status.  Select a normalization status on the donut chart to view the list of discovery models along with the installation count for each discovery model. You can further select

### Normalization and content dashboard metrics (continued)

Report	Source	Description
		<p>a discovery model to view the list of software installations.</p> <p>The report for this widget is populated only once the following daily scheduled jobs have run successfully:</p> <ul style="list-style-type: none"> <li>• <i>SAM - Normalize discovery models using content library rules</i></li> <li>• <i>SAM - Daily Job</i></li> </ul>

### Central Data Service Download Status

The Central Data Service Download Status related list is updated daily when the *SAM - Central Data Service Download Status* job is run.

#### Central Data Service Download Status fields

Field	Description
Name	Table name from which the content is pulled.
Current count	Number of records in the table.
Expected count	Expected number of records in the table.
Last updated on	Last date and time the data was pulled.
Next action	Next scheduled date and time to pull data from the table.

### Lifecycle management dashboard

Review and track the end of life (EOL) software products in your asset estate to reduce risks associated with software products that are reaching or have reached EOL.

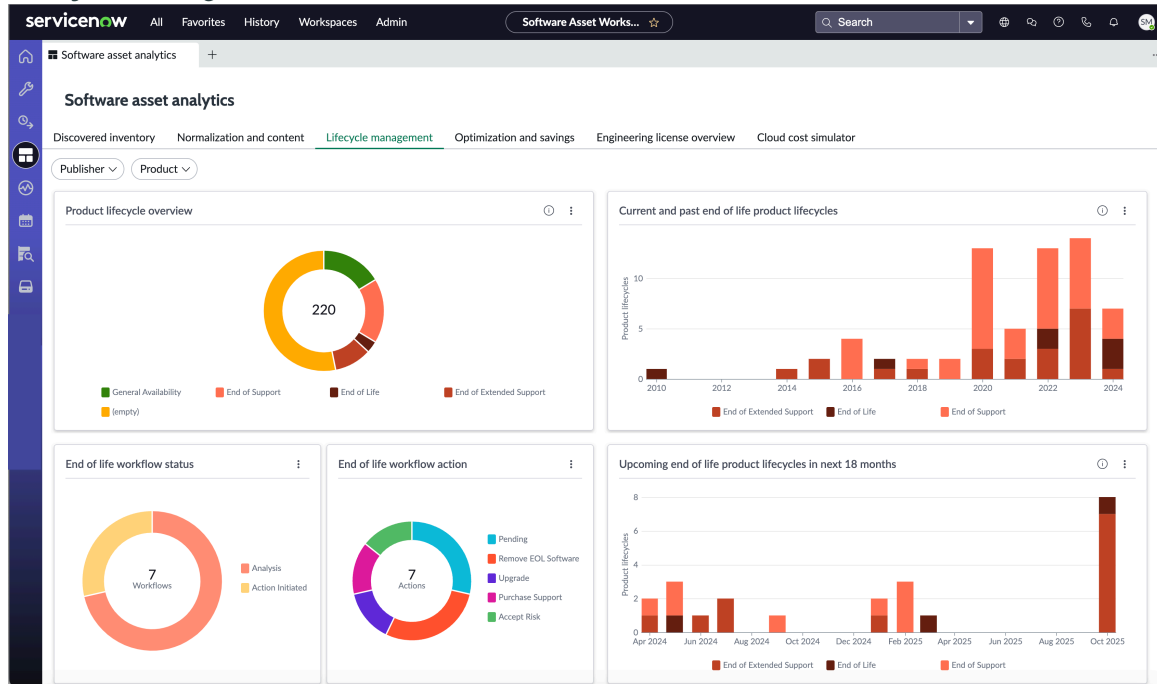
The Lifecycle management dashboard displays reports on product life cycles, the current and past EOL product life cycles, and the upcoming EOL product life cycles for the next 18 months. You can also view EOL workflow status and workflow action.

**Note:** The Lifecycle management dashboard is only visible if you activate the Software Asset Management Professional plugin from ServiceNow Store.

Access the Lifecycle management dashboard by navigating to **Workspaces > Software Asset Workspace > Software asset analytics > Lifecycle management**.

You can filter the dashboard reports based on a publisher or product. Select any report to view more information on product life cycles.

## Lifecycle management dashboard



### Lifecycle management dashboard metrics

Report	Source	Description
Product lifecycle overview	Software Lifecycle Report [sam_sw_product_lifecycle_report]	Product life-cycle details for all the software products installed in your environment.  Select a life-cycle phase to determine the current phase of the software products in your environment.
Current and past end of life product lifecycles	Software Lifecycle Report [sam_sw_product_lifecycle_report]	Software product life-cycles in your environment that are based on their EOL timelines.  The chart displays data from the current year and the previous 15 years.
End of life workflow stages	Software EOL Request [samp_sw_eol_request]	EOL workflows grouped by the following stages: <ul style="list-style-type: none"> <li>• Open</li> <li>• Analysis</li> <li>• Action initiated</li> <li>• Completed</li> <li>• Cancelled</li> </ul>
End of life workflow actions	Software EOL Request	EOL workflows grouped by action initiated:

**Lifecycle management dashboard metrics (continued)**

Report	Source	Description
	[samp_sw_eol_request]	<ul style="list-style-type: none"> <li>• Pending: Action is pending.</li> <li>• Remove EOL software: Remove the EOL software product from the asset inventory.</li> <li>• Upgrade: Upgrade to the latest or the supported software version.</li> <li>• Purchase support: Purchase additional support for maintenance.</li> <li>• Move to Azure: Migrate to Microsoft Azure. This action is available only for Microsoft products.</li> <li>• Accept risk: Accept the risks associated with the EOL software.</li> </ul> <p><b>Note:</b> This chart doesn't include EOL workflows that are in the Draft or Cancelled stage.</p>
Upcoming end of life product lifecycles in next 18 months	Software Lifecycle Report [sam_sw_product_lifecycle_report]	Software product life-cycles in your environment that are reaching EOL in the next 18 months.

**Managing workflow to reduce risks associated with EOL software**

Tracking product life cycles enables you to manage software products that are reaching or have already reached EOL, end of support (EOS), or end of extended support.

You can take required action for your EOL software products by using the Software Product Lifecycle report. The report opens when you select the **Upcoming end of life product lifecycles in next 18 months** or **Current and past end of life product lifecycles** report on the Lifecycle management dashboard. You can create an EOL request for the software products that have the Current phase as End of Support, End of Extended Support, or End of Life. For more details, see [Create an end of life workflow request for your software products](#).

**Create an end of life workflow request for your software products**

Manage risks associated with your software product installations that have reached the end of life (EOL) or are reaching EOL in the next 18 months. You can create an EOL request and take the required action for the EOL software.

**Before you begin**

Role required:

- Create or modify an EOL request: sam\_admin
- Read an EOL request: sam\_user, users with an itil role to whom a task is assigned
- Complete an EOL task: sam\_user, users with an itil role to whom a task is assigned

### About this task

When software products reach EOL, end of support, or end of extended support, their risk of failure increases. You can choose to remove such software products that are reaching or have reached EOL, upgrade them to the latest software version, or purchase additional support for their maintenance. The EOL workflow takes you through the process of completing your change request based on the action you choose for your EOL software products. If you want to purchase additional support for your EOL software, you can create a purchase order.

- Note:** You must have the Procurement plugin (com.snc.procurement) activated to complete a purchase order.

The EOL workflow can also be completed using the Software End of Life Flow in the Flow Designer application. You can customize the Software End of Life Flow according to your requirement by creating a copy of the flow and customizing the copy that you have created.

### Procedure

1. Navigate to **Software Asset Workspace > Software asset analytics > Lifecycle management**.
2. On the [Lifecycle management dashboard](#), select the **Upcoming end of life product lifecycles in next 18 months** report or the **Current and past end of life product lifecycles** report.

The End of life products page displays the current and upcoming life-cycle phases calculated using the Software Product Lifecycle [sam\_sw\_product\_lifecycle] table. For more details, see [Software models and Software entitlements](#).

3. Select a record that has the **Current phase** as either End of Support, End of Extended Support, or End of Life.  
The Software Product Lifecycle report opens for the selected record.

- Note:** You can also access the Software Product Lifecycle report by navigating to **Software Asset Workspace > License usage > Reports**.

4. Create an EOL request by selecting **Manage EOL risk**.

The product details in the Software EOL request form are populated from the Software Product Lifecycle Report [sam\_sw\_product\_lifecycle\_report] table.

5. On the Software EOL request form, fill in the fields.  
For details on the fields and descriptions, see [Software EOL request fields](#).
6. Start the EOL workflow to take required action for your EOL software.

**a.** Select **Start EOL Workflow**.

**b.** Select the **Software EOL Tasks** tab.

**c.** On the Software EOL task form, fill in the fields.  
For details on the form fields and descriptions, see [Software EOL tasks tab](#).

**d.** Complete the subtasks for the parent task by selecting the **Software EOL Subtasks** tab.

**Note:** If a parent task has subtasks, you must close all the subtasks.

- e. Repeat steps b through d for all the tasks listed on the **Software EOL Tasks** tab.
- If you select one of the following values in the **Action** field on the **Software EOL Tasks** tab, a change request is generated:
    - Remove EOL software
    - Upgrade
    - Move to Azure

For details on removing an EOL software product, see [Complete the end of life workflow request for your software product](#). For details on completing a change request and the role required for it, see [Process a change request](#).

- If you select **Purchase support** in the **Action** field and select the **Auto create PO** option in the EOL task, a purchase order is created. For details on completing a purchase order and the role required for it, see [Create a purchase order line item](#).

After you complete the parent task, the **Stage** field is updated to reflect the stage of the task. Additionally, the **Action initiated** field is updated to reflect the action you have selected for the EOL request.

**Note:** You can cancel the EOL workflow anytime by selecting the **More Actions** ellipsis icon and then selecting **Cancel EOL request**.

## Result

After the change request or the purchase order is complete, the workflow request is complete.

## Complete the end of life workflow request for your software product

Perform all the tasks that are required to remove the end of life (EOL) software products from your asset inventory. If you set the **Action** field to **Remove EOL Software** in the Decide on IT strategy task, you must perform these software EOL tasks.

### Before you begin

Before you proceed with removing the EOL software, you must start an EOL workflow request. For details, see [Create an end of life workflow request for your software products](#).

Role required: sam\_user, users with an itil role to whom a task is assigned

### About this task

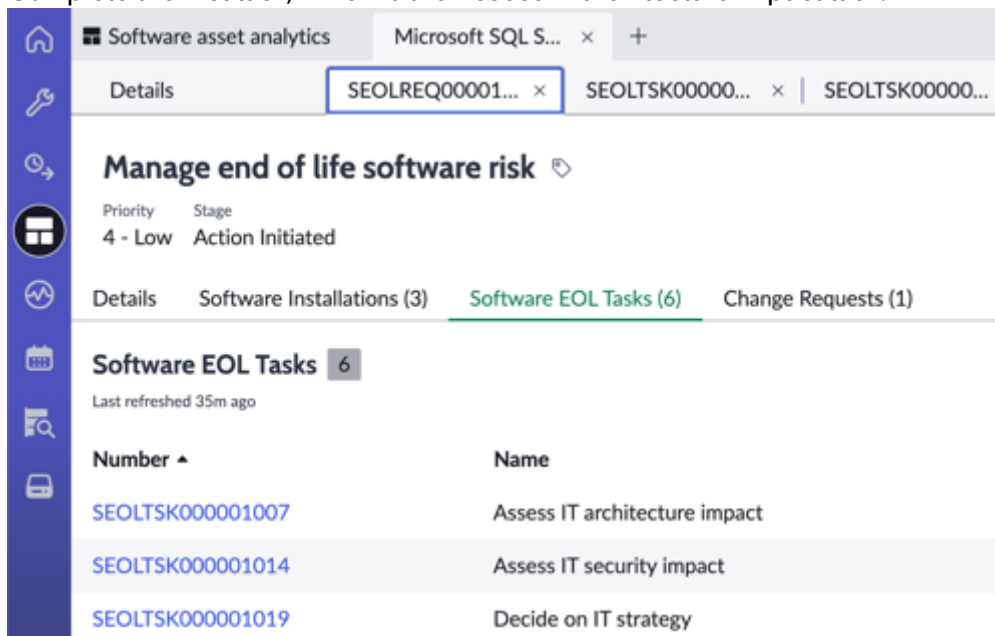
To close an EOL request, you have to close and complete all the tasks required to complete the workflow. The following procedure explains how to close the EOL request, when you set the **Action** field to **Remove EOL Software** in the Decide on IT strategy task. You can apply the same approach to close the EOL request for the following possible values in the **Action** field in the Decide on IT strategy task:

- Upgrade
- Purchase support
- Move to Azure
- Accept risk

Additionally, the EOL workflow can be completed using the Software End of Life Flow in the Flow Designer application. You can customize the Software End of Life Flow according to your requirement by creating a copy of the flow and customizing the copy that you have created.

**Procedure**

1. Navigate to **Software Asset Workspace > Software Asset Analytics > Lifecycle management**.
2. On the Lifecycle management dashboard, open the End of life (EOL) products page by selecting the **Upcoming end of life product lifecycles in next 18 months** report or the **Current and past end of life product lifecycles** report.
3. From the list of available EOL products, select the product for which you want to complete the EOL workflow.
4. On the product record, select the **Software EOL Requests** tab.
5. From the list of available software EOL requests, select the request number for which you want to complete the tasks.
6. Complete the first task, which is the Assess IT architecture impact task.




- a. On the **Software EOL tasks** tab, select the task number for the Assess IT architecture impact task.
- b. On the **Details** tab of the Assess IT architecture impact task, fill in the fields. For details on the form fields and their description, see [Software EOL tasks tab](#).
- c. Complete the subtasks for the Assess IT architecture impact task by selecting the **Software EOL Subtasks** tab.

**Note:** If a parent task includes subtasks, you must close all the subtasks. After you close all the subtasks, the parent task is automatically updated with a state of Closed Complete. Additionally, a new task appears on the **Software EOL tasks** tab only after you have closed and completed the preceding task.

7. Complete the Assess IT security impact task.

- a. On the **Software EOL tasks** tab, select the task number for the Assess IT security impact task.
  - b. On the **Details** tab of the Assess IT security impact task, fill in the fields.  
For details on the form fields and their description, see [Software EOL tasks tab](#).
  - c. Complete the subtasks for the Assess IT security impact task by selecting the **Software EOL Subtasks** tab.
8. Complete the Decide on IT strategy task.
  - a. On the **Software EOL tasks** tab, select the task number for the Decide on IT strategy task.
  - b. On the **Details** tab, select **Remove EOL software** in the **Action** field.  
For details on the form fields and their description, see [Software EOL tasks tab](#).
  - c. Select **Close Task**.  
The Decide on IT strategy task is automatically updated with a state of Closed Complete. The corresponding Assess software licensing impact task appears in the list view on the **Software EOL Tasks** tab.
9. Complete the Assess software licensing impact task.
  - a. On the **Software EOL tasks** tab, select the task number for the Assess software licensing impact task.
  - b. On the **Details** tab of the Assess software licensing impact task, fill in the fields.  
For details on the form fields and their description, see [Software EOL tasks tab](#).
  - c. Select **Close Task**.  
The Assess software licensing impact task is automatically updated with a state of Closed Complete. The corresponding Complete secure backup task appears in the list view on the **Software EOL Tasks** tab.
10. Complete the Complete secure backup task.
  - a. On the **Software EOL tasks** tab, select the task number for the Complete secure backup task.
  - b. On the **Details** tab of the Complete secure backup task, fill in the fields.  
For details on the form fields and their description, see [Software EOL tasks tab](#).
  - c. Select **Close Task**.  
The Complete secure backup task is automatically updated with a state of Closed Complete. The corresponding Create IT change plans task appears in the list view on the **Software EOL Tasks** tab.
11. Complete the Create IT change plans task.


- a. On the **Software EOL tasks** tab, select the task number for the Create IT change plans task.
  - b. On the **Details** tab of the Create IT change plans task, fill in the fields.  
For details on the form fields and their description, see [Software EOL tasks tab](#).
  - c. Select **Close Task**.  
The Create IT change plans task is automatically updated with a state of Closed Complete. A change request appears on the **Change Requests** tab.
12. Select the change request and review the values that are automatically populated in the Change Request form.  
For details on completing a change request, see [Process a change request](#) .

## Result

After the change request is complete, the workflow request is also complete.

## Optimization and savings dashboard in workspace

Use the Optimization and savings dashboard to view actual and potential cost savings for your software assets. In addition, view the recommended licensing optimizations for third-party software publishers, including Microsoft, Red Hat, and SAP. Use this information to downgrade or reclaim licenses so that you can optimize your licensing costs.

-  **Note:** You can use the Domain filter to narrow your results based on the domain that you select. The default value for the Domain filter is **global**. You can select a domain at any given time for widgets to reflect the selected domain. If you clear the selected domain, it defaults back to **global**.

The Domain filter appears on the screen only if the following plugins are installed:

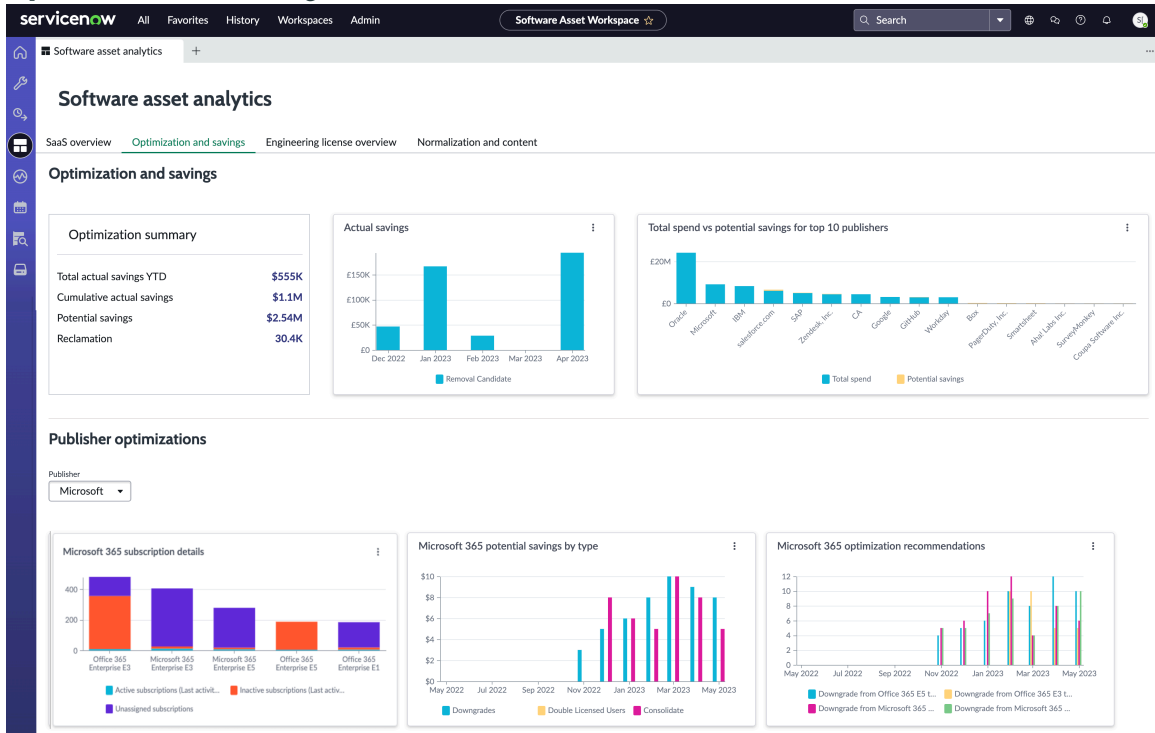
- Domain Support - Domain Extensions Installer  
(com.glide.domain.msp\_extensions.installer)
- Performance Analytics - Domain Support (com.snc.pa.domain\_support)

You can access the Optimization and savings dashboard by navigating to **Software asset** > **Software Asset Workspace** > **Software asset analytics** > **Optimization and savings**.

View the licensing optimizations for a publisher by selecting the publisher from the **Publisher** drop-down list.

- [Publisher optimizations for SAP](#)
- [Publisher optimizations for Red Hat](#)
- [Publisher optimizations for Microsoft](#)
- [Publisher optimizations for Adobe](#)

## Optimization and savings dashboard



### Optimization and savings dashboard metrics

Report	Source	Description
Total actual savings YTD	Removal Candidate [samp_sw_reclamation_candidate]	State is Closed Complete and closed on this year.
Cumulative actual savings	Removal Candidate [samp_sw_reclamation_candidate]	State is Closed Complete and the sum of potential savings.
Potential savings	Removal Candidate [samp_sw_reclamation_candidate]	State is NOT closed complete OR closed canceled OR closed skipped and the sum of potential savings.
Reclamation	Removal Candidate [samp_sw_reclamation_candidate]	Active is true.
Actual Savings	Removal Candidate [samp_sw_reclamation_candidate]	Five months of history of closed complete reclamation candidates and their corresponding savings.
Total spend vs. potential savings top 10 publishers	Product Result [samp_product_result] and Removal Candidate [samp_sw_reclamation_candidate]	History of top 10 publishers sorted by highest spend and their corresponding potential savings.

### Engineering License overview dashboard in workspace

Monitor and gain insights into your engineering applications license position and usage by viewing product usage reports in the Engineering license overview dashboard.

The Engineering license overview dashboard displays reports on normalized products and publishers that belong to engineering applications such as AutoCAD, GIS.

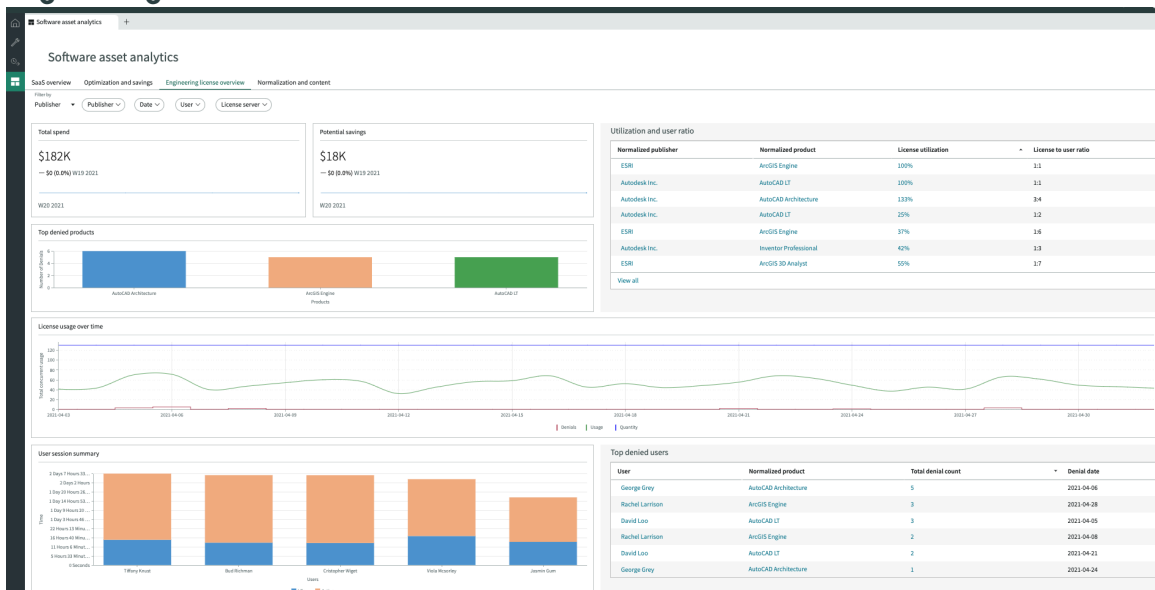
To narrow your results based on products or publishers across all tabs, use the filter in the left-hand corner of the dashboard. You can further narrow your results based on the date, user, or license server.

**Note:** Only products and publishers that belong to engineering applications and are listed in the Engineering Application License [samp\_eng\_app\_license] table appear in the filter. If no product or publisher is selected, the cumulative data for all products and publishers that belong to engineering applications appear.

All the reports are updated daily or whenever a new reconciliation result is available.

You can access the Engineering license overview dashboard by navigating to **Software asset > Software Asset Workspace > Software asset analytics > Engineering license overview**.

### Engineering license overview dashboard



### Engineering license overview dashboard metrics

Report	Source	Description
Total spend	Product Result [samp_product_result]	Total cost of all entitlements for all products.
Potential savings	Removal Candidate [samp_sw_reclamation_candidates]	Cost saved if removal candidates are reclaimed.
Top denied products	Engineering Application Denial [samp_eng_app_denial]	Top products that are denied to users as these products have reached their peak concurrent usage.
Utilization and user ratio	Engineering Application Utilization and User Ratio [samp_eng_utilization_user_ratio]	Ratio of license utilization, for normalized products and publishers, to the number of users using those licenses.

Engineering license overview dashboard metrics (continued)

Report	Source	Description
		<ul style="list-style-type: none"> <li>• Normalized publisher</li> <li>• Normalized product</li> <li>• License utilization: Percentage of peak consumption of the product against number of rights.</li> <li>• License to user ratio: Ratio of rights using this license to users using this product over the period of 90 days rights.</li> </ul>
License usage over time	<p>Engineering Application License [samp_eng_app_license]</p> <p>Engineering Application Concurrent Usage [samp_eng_app_concurrent_usage]</p> <p>Engineering Application Denial [samp_eng_app_denial]</p>	<p>The total number or quantity of all available licenses; not just the active products but all the products.</p> <ul style="list-style-type: none"> <li>• The blue line represents the total number of licenses allocated to a product or a publisher</li> <li>• The green line indicates the concurrent usage of the licenses.</li> <li>• The red line indicates denials or if and when the concurrent usage peaks.</li> </ul>
User session summary	Engineering Application Usage Summary [samp_eng_app_usage_summary]	<p>Duration of time spent by users (idle vs active) on products. Only the top 5 users with more idle duration appear on the report.</p> <p><b>Note:</b> Idle is the aggregate sum on Total idle duration column and Active is the aggregate sum on Total session duration column.</p>
Top denied users	Engineering Application Denial [samp_eng_app_denial]	Top users that are denied licenses to products.

Cloud simulator dashboard

Compare and evaluate the estimated costs of migrating your on-premises resources to the cloud for each cloud environment.

Access the Cloud cost simulator dashboard by navigating to **Software Asset Workspace > Software asset analytics > Cloud cost simulator.**

### Cloud cost simulator dashboard

Software asset analytics

Optimization and savings   Engineering license overview   Normalization and content   **Cloud cost simulator**

Select on-premise recommendation criteria

Software   Cluster   Hardware EOL   Software EOL   Low utilization   Show all matched vm's

**On premise (Approx. cost)**

36 asset records  
Capex cost: \$1.14M  
Opex cost per month: \$134.8K

**Projected AWS cost**

Without BYOL benefits per month: \$96K  
With BYOL benefits per month: \$40.25K  
Potential savings: \$1.61M  
Matched: 36  
Unmatched: 0  
SA required for BYOL: BYOL not supported for Windows Server (Shared Tenancy)

**Projected Azure cost**

Without BYOL benefits per month: \$165.34K  
With BYOL benefits per month: \$20.25K  
Potential savings: \$774.53K  
Matched: 36  
Unmatched: 0  
SA required for BYOL

Recommendation details 36

Last refreshed just now.

On-premise cluster	On-premise server	On-premise VM	On-premise OS	On-premise SQL software	On-premise CAPEX cost	On-premise OPEX cost (per month)	AWS In
(empty)	ccs1_host1	ccs1_cvm13	Microsoft Windows Server 2012 R2 Standard	Microsoft SQL Server 2008 R2 Enterprise	\$51,227.65	\$3,470.00	(empty)
(empty)	ccs1_host1	ccs1_cvm12	Microsoft Windows Server 2012 R2 Standard	Microsoft SQL Server 2008 R2 Enterprise	\$51,227.65	\$3,470.00	(empty)
(empty)	ccs1_host1	ccs1_cvm14	Microsoft Windows Server 2012 R2 Standard	Microsoft SQL Server 2008 R2 Enterprise	\$51,227.65	\$3,470.00	(empty)
(empty)	ccs1_host1	ccs1_cvm11	Microsoft Windows Server 2012 R2 Standard	Microsoft SQL Server 2008 R2 Enterprise	\$51,227.65	\$3,470.00	(empty)

Use filters on your on-premises resources to specify a criteria for receiving cost recommendations for cloud migration.

- Software
- Cluster
- Hardware EOL
- Software EOL
- Low utilization
- Show all matched VMs

**Note:** You can also use the Optimization and savings dashboard to view recommendations without a filter.

The recommendations are listed based on the criteria you specified. Virtual machine records that meet the criteria you specified are listed. In addition to the on-premises cost listed for each virtual machine, the Software Asset Management application automatically lists the most optimal price match for the corresponding virtual machines on cloud: AWS and Microsoft Azure.

You can view the total cost of all the on-premises records as well as compare the individual cost for AWS and Microsoft Azure in the Compare cost estimates section.

Once you decide on the cloud environment that you want to migrate to, click **Change Request** to initiate your cloud migration request.

### Compare cost estimates

Capex cost	Calculated hardware cost after including depreciation
Opex cost per month	Calculated from software entitlements: Windows Server, SQL Server, software

**Compare cost estimates (continued)**

	assurance, and extended security updates costs. Also calculated from configuration item (CI) rate cards that are created by the user.
Without BYOL benefits per month	Cost of the instance (compute cost, OS cost, and software cost) plus storage cost.
With BYOL benefits per month	Cost of the instance cost (compute Cost) plus storage cost.
Potential savings	Total savings if all recommendations are applied.
Matched	Number of virtual machines on the cloud that match the on-premises virtual machines.
Unmatched	Number of virtual machines on the cloud that don't match the on-premises virtual machines.

**Success portal view in Software Asset Workspace**

Use the Success portal view in Software Asset Workspace to track the progress of your Software Asset Management (SAM) application with success goals, assign activities to track the success of your goals, run health checks on your software, maximize the usage of your SAM capabilities, and mature your SAM program with predefined maturity items.

Success portal helps you perform the following actions:

- **Track the progress of your SAM application through success goals**

Success goals help you analyze the value that you get out of your software licenses and calculate your projected savings. Create success goals for the licenses that you want to track. For more information about creating a success goal, see [Create success goals for Software Asset Management](#).

- **Track the progress of your success goals**

Track the success of your goals by creating success activities for the goals. For more information, see [Create success activities for Software Asset Management](#).

- **Perform a health check on your software**

Run health checks to review the health of licenses, permissions, and configurations to get the best out of each software suite. For more information, see [Health check](#).

- **Keep your software up to date using Value builder tasks**

Get an overview of which software upgrades, publisher packs, and integrations you must set up with Value builder tasks. These tasks are created automatically, but you can create your own as necessary. For more information, see [Value builder](#).

- **Mature your SAM program with predefined maturity items**

The program maturity is categorized into Crawl, Walk, and Run stages to help you improve the value return of your SAM program, including processes, features, functionalities, and

capabilities within your organization. You can link these maturity items to Success goals and Value builder tasks to track and report on the improvements of your SAM application over time. For more information, see [View all maturity items for Software Asset Management](#).

Email notifications are sent when the following conditions are met:

- To a group, when a success goal is assigned to that group.
- To an owner, when a success goal is assigned to that owner.
- To an owner, when a success goal is marked as Pending Review.
- To an assigned user or an assignment group, when a success activity is assigned.

Access the Success portal view by navigating to **Software Asset Workspace > Success portal**.

The Success portal supports domain separation when the Performance Analytics - Domain Support plugin (com.snc.pa.domain\_support) is activated. To filter the data by domain, select a domain at the top of the dashboard.

### Success portal view

The screenshot displays the ServiceNow Success Portal interface. At the top, there's a navigation bar with 'servicenow' logo and menu items like 'All', 'Favorites', 'History', 'Workspaces', and 'Admin'. The main header includes 'Success portal' and a search bar. Below the header, there's a 'Success Portal' section with a 'Take a tour' button and a brief description of the portal's purpose. The dashboard is divided into several key sections:

- Performance overview:** Includes filters for 'Domain' and 'Time period: Last 30 days'. It features four summary cards:
  - Completed success goals:** 4
  - Total success savings:** \$170
  - Projected savings:** \$5.43K, broken down by category: Process Improvement (\$3.65K), Overlapping Software (\$1.24K), Vendor/Contract Negotiation (\$530), and New Publisher Onboarding (\$20).
  - All goals:** A bar chart showing goal counts by status (Draft, In Progress, Pending Review, Completed, Cancelled) and time period (Before Today, Today and beyond).
- Health check and value builder data:**
  - Health checks passed:** 48.39%
  - Completed value builder tasks:** 2
- Open activities:** A table listing activities with columns for Number, Short description, State, Assigned to, and Success Goal.

### Success portal dashboard

Widget	Description
SAM maturity	Current stage of your SAM program maturity such as the Crawl, Walk, or Run stage.  View the maturity items of each stage by selecting <b>View all maturity items</b> . For more information, see <a href="#">View all maturity items for Software Asset Management</a> .
Completed success goals	Total number of completed success goals.
Total success savings	Actual savings from the completed success goals.
Projected savings	Anticipated savings from the success goals are grouped by the status and category of the goal.
All goals	All success goals grouped by the following statuses: <ul style="list-style-type: none"> <li>• Draft</li> <li>• In Progress</li> <li>• Pending Review</li> <li>• Completed</li> <li>• Canceled</li> </ul>
Health check and value builder data	
Health checks passed	Percentage of successful health checks.
Completed value builder tasks	Number of value builder tasks that are completed.
Open activities	Open success goal activities.

#### Health check

Use the Health check dashboard to view the results of the health scan that is performed on the configurations in your Software Asset Management application.

To access the Health check dashboard, navigate to **Software Asset Workspace > Success portal > Health check**.

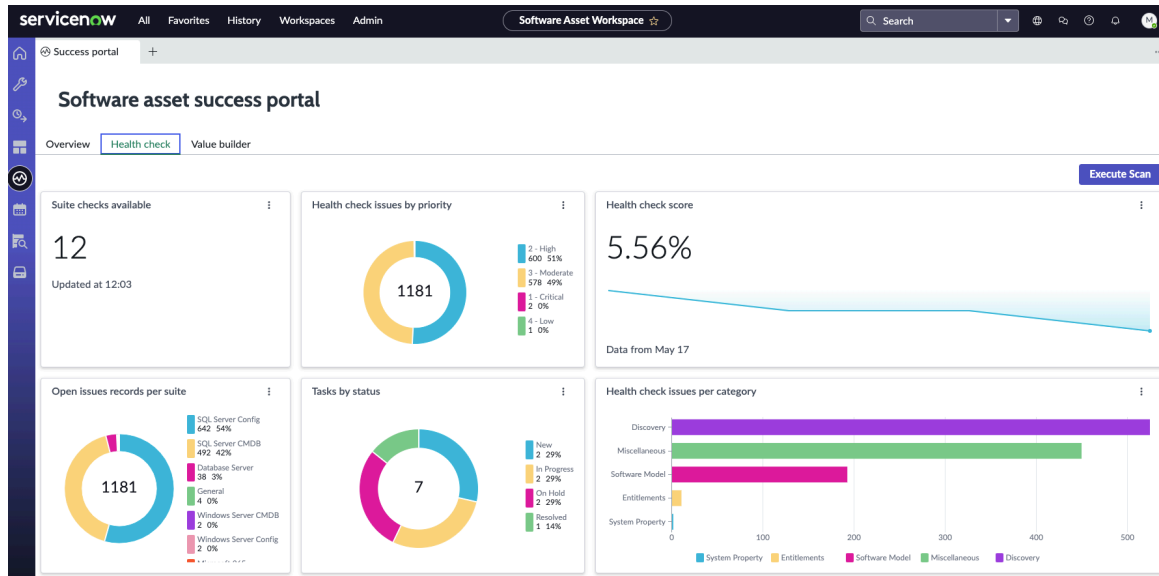
Ensure that you've activated the Software Asset Workspace (com.sn\_sam\_workspace) plugin and installed the ITAM Health Check application from [ServiceNow Store](#) to view the Health check dashboard. You must have the scan\_user and sam\_admin role to access this dashboard and view the health score data.

**Note:** If you are on the Rome or the San Diego releases, you must execute the full scan to view the results in the base system scan dashboard. For details on executing a full scan, see [Execute full scan](#).

Select **Domain** and choose a domain to view the health check results.

You can also perform a scan for a suite by selecting **Execute Scan**. Verify the scan result to act accordingly.

### Health check dashboard



### Health check dashboard widgets

Widget	Description
Suite checks available	<p>Number of checks available for the following suites:</p> <ul style="list-style-type: none"> <li>• SQL Server Config</li> <li>• SQL Server CMDB</li> <li>• Windows Server CMDB</li> <li>• Windows Server Config</li> <li>• Database Server - Oracle</li> <li>• Java - Oracle</li> <li>• Microsoft 365</li> <li>• General</li> </ul>
Health check issues by priority	<p>Issues based on priority. You can choose from the following:</p> <ul style="list-style-type: none"> <li>• Low</li> <li>• Medium</li> <li>• High</li> <li>• Critical</li> </ul>
Health check score	<p>Indicates the number of successful health checks. For example, if 10 health checks were performed and only 6 health checks passed, the score would be 60%.</p>

**Health check dashboard widgets (continued)**

Widget	Description
Open issue records per suite	<p>The number of open records for each of the following suites:</p> <ul style="list-style-type: none"> <li>• SQL Server Config</li> <li>• SQL Server CMDB</li> <li>• Windows Server CMDB</li> <li>• Windows Server Config</li> <li>• Database Server - Oracle</li> <li>• Java - Oracle</li> <li>• Microsoft 365</li> <li>• General</li> </ul>
Tasks by status	<p>The status of the tasks created in relation to the health score results.</p> <ul style="list-style-type: none"> <li>• New</li> <li>• In Progress</li> <li>• On Hold</li> <li>• Resolved</li> </ul>
Health check issues per category	<p>Categorization of issues identified as a result of the health check scan.</p> <ul style="list-style-type: none"> <li>• Discovery</li> <li>• Software Model</li> <li>• Entitlements</li> <li>• System Property</li> <li>• Miscellaneous</li> </ul>

**Value builder**

Maximize the usage of your Software Asset Management application capabilities by getting insights into integrations, playbooks, and other installations.

**Overview of the Value builder**

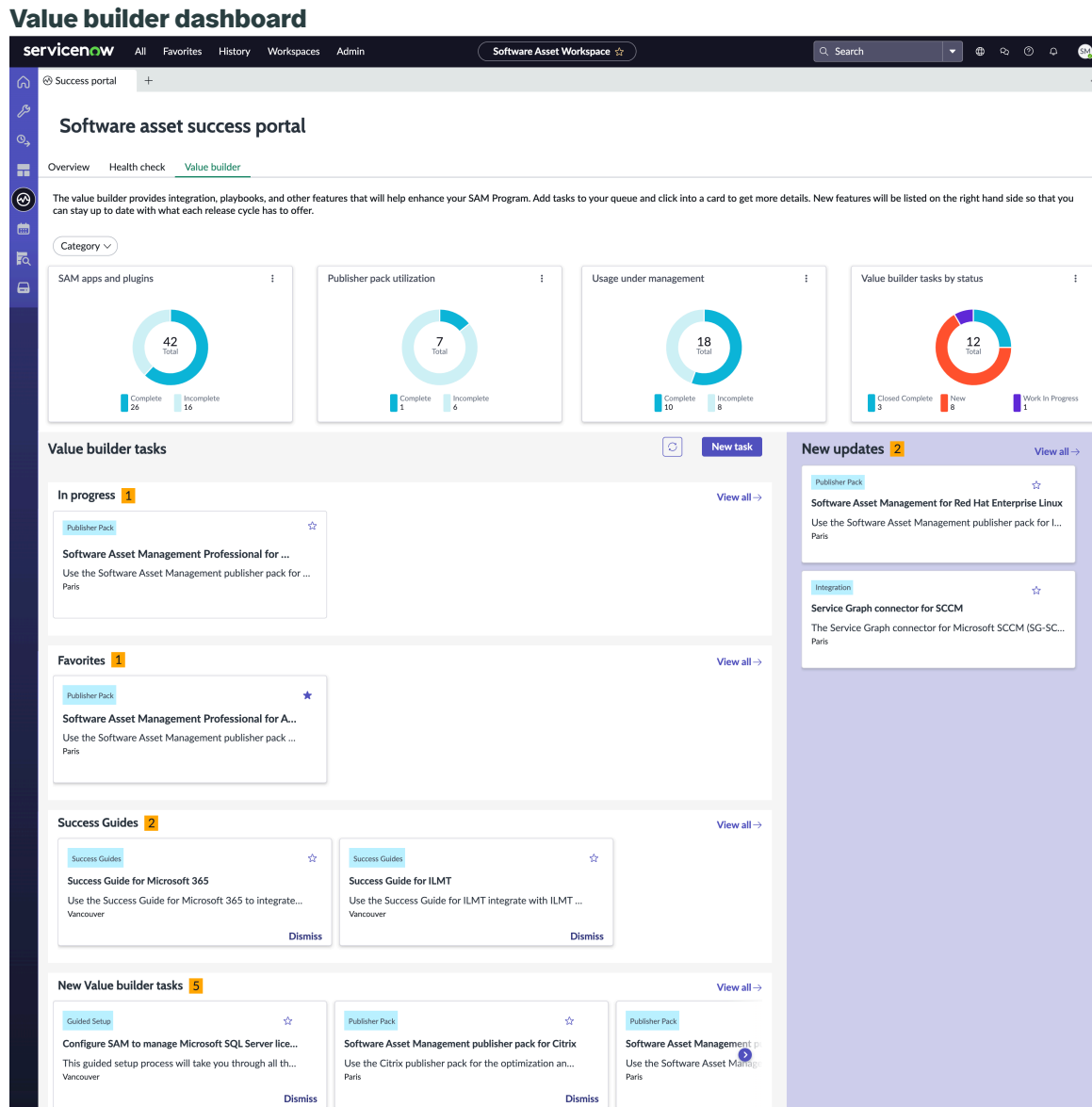
The sam\_user role can identify and prioritize functionalities that haven't yet been implemented or aren't being used.

The Value builder functionality enables you to perform the following actions:

- Learn how close your instance is to maximizing the value of your Software Asset Management application.
- Track Value builder tasks that are automatically generated when publisher packs aren't fully used and are identified as incomplete. You can also manually create Value builder tasks. For details see [Create a Value builder task](#).

- Filter the data by domain or category or you can filter by both domain and category. The filter applies to the entire dashboard, and when selected, displays only the data that matches the specific filter.
- Prioritize or increase visibility of certain tasks by marking tasks as favorites.
- Stay up to date and get a glimpse of the new features available in the upcoming release.

You can view a maximum of 15 tasks in the Value builder section. To see additional tasks, click **View all**.



## Use case for Value builder

The Value builder displays four donut chart widgets to the sam\_user role. Each widget shows you how far your instance is from fully using the Software Asset Management capabilities.

For example, the Publisher pack utilization widget shows five publisher packs but only four are being used in your instance. A Value builder task automatically gets created for the additional publisher pack that is not being used and appears in the New Value builder tasks section. You can prioritize this task and click the star icon to add this task to your Favorites list. If you decide

not to work on this task, you can click **Dismiss** to remove it from the New Value builder tasks section.

### Value builder widgets

Select a donut chart widget to take you to the list view of records. For example, if you want to view the incomplete publisher pack records, select the incomplete part in the donut chart widget.

All the widgets get refreshed and the value builder tasks are created after the following two scheduled jobs run:

- *SAM- Update value builder usage*
- *SAM- Value builder content handler*

Widget	Source	Description
SAM apps and plugins	sam apps and plugins [samp_sp_apps_and_plugins]	<p>All Software Asset Management plugins and store applications that are available to use and how many haven't been installed on your instance.</p> <p><b>Complete</b> indicates the store applications and plugins that are installed. <b>Incomplete</b> indicates the store applications and plugins that haven't yet been installed.</p>
Publisher pack utilization	SAM Publisher Pack Utilization [samp_sp_publisher_pack_utilization]	<p>All publisher packs that are available for use and how many are actually being used.</p> <p><b>Complete</b> indicates the publisher packs that are fully used. <b>Incomplete</b> indicates the publisher packs that aren't fully used.</p> <p>Utilization of a publisher pack depends on a criteria. If the value is true for all three details in the <b>Usage details</b> section of a publisher pack record, namely <b>Plugin enabled?</b>, <b>Usage found?</b>, and <b>Entitlements created?</b>, then the publisher pack is considered to be fully used and is set to be complete. If the value for even one of the three entities is false, then the publisher pack is considered to be not fully used and is</p>

Widget	Source	Description
		<p>set to be incomplete. Value builder tasks are automatically created for incomplete publisher packs.</p> <p>The criteria for <b>Usage found?</b> differs for each publisher pack. For details on the specific <b>Usage found?</b> criteria for each publisher pack, see <a href="#">Usage criteria for publisher packs</a>.</p>
Usage under management	SAM usage under management [samp_usage_under_management]	<p>Usage of all licensable products.</p> <p>Usage of licensable products depends on a criteria. If the value is true for both <b>Usage found?</b> and <b>Entitlement created?</b>, the product is considered to be used.</p> <p>The criteria for <b>Usage found?</b> differs for each product. For <b>Usage Found?</b> to be considered complete, any one of the following entities should be detected in your instance for a product.</p> <ul style="list-style-type: none"> <li>• Discovery model</li> <li>• Client access record</li> <li>• Subscription</li> </ul>
Value builder tasks by status	SAM Value Builder Task [samp_sp_vb_task]	<p>All value builder tasks that are in the following states:</p> <ul style="list-style-type: none"> <li>• <b>New</b></li> <li>• <b>In progress</b></li> <li>• <b>Pending review</b></li> <li>• <b>Closed complete</b></li> </ul> <p><b>Note:</b> Value builder tasks that are in the <b>Closed Skipped</b> state aren't displayed.</p>
Value builder tasks (In Progress)	SAM Value Builder Task [samp_sp_vb_task]	Value builder tasks that are currently in progress.
Value builder tasks (Favorites)	SAM Value Builder Task [samp_sp_vb_task]	Value builder tasks that are marked as favorites.

Widget	Source	Description
		Click the star icon in front of a value builder task, in the Value builder task section to mark it as a favorite.
Value builder tasks (Success Guides)	SAM Value Builder Task [samp_sp_vb_task]	Value builder tasks that would enable you in accessing the Success Guides.
New Value builder tasks	SAM Value Builder Task [samp_sp_vb_task]	All value builder tasks that are still in the <b>New</b> state and aren't favorites.
New Updates	SAM Value Builder Task [samp_sp_vb_task]	Preview of the features in the upcoming release.

### Create a Value builder task

Manually create a Value builder task for publisher packs not being fully utilized in your instance.

#### Before you begin

Role required: sam\_admin

#### About this task

Value builder tasks are automatically created for all publisher packs indicated as incomplete in the Publisher pack utilization widget. However you can also manually create Value builder tasks.

#### Procedure

1. Navigate to **Software Asset Workspace > Software asset success portal > Value builder**.
2. Click **New task**.  
The Create New SAM Value Builder Task page appears.
3. On the form, fill in the fields.

Field	Description
<b>Short description</b>	Short description of the task.
<b>Description</b>	Detailed description of the task.
<b>Instructions</b>	Any specific instructions related to the task.
<b>Number</b>	Number assigned to the task.
<b>Category</b>	The category that this task belongs to.
<b>Success Goal</b>	The success goal that you want this task to align to.
<b>State</b>	The current state of the task. By default, the state is <b>New</b> .
<b>Assigned to</b>	Name of the user the task is assigned to.
<b>Assignment Group</b>	The assignment group that the assigned to user belongs to.

Field	Description
<b>Work notes</b>	Any additional notes pertaining to the task.

**4. Click Save.**

The Value builder task is created and the state defaults to **New**.

**5. Click Start.**

The state of the task changes to **Work In Progress**.

**Usage criteria for publisher packs**

Description of usage criteria that indicates whether a publisher pack is being utilized or not in your instance.

This table describes the criteria used for the *Usage found* entity for each publisher pack to be identified as fully utilized. The criteria differ for each publisher pack.

**Criteria for Usage found entity for publisher packs**

Publisher Pack	Usage criteria	Source tables
Red Hat Enterprise Linux	Software installations	cmdb_sam_sw_install
Adobe	<ul style="list-style-type: none"> <li>• Software installations</li> <li>• Subscriptions</li> </ul>	<ul style="list-style-type: none"> <li>• cmdb_sam_sw_install</li> <li>• samp_sw_subscription</li> </ul>
Citrix	<ul style="list-style-type: none"> <li>• Software installations</li> <li>• Client access</li> </ul>	<ul style="list-style-type: none"> <li>• cmdb_sam_sw_install</li> <li>• samp_sw_client_access</li> </ul>
Microsoft	<ul style="list-style-type: none"> <li>• Software installations</li> <li>• Subscriptions</li> </ul>	<ul style="list-style-type: none"> <li>• cmdb_sam_sw_install</li> <li>• samp_sw_subscription</li> </ul>
IBM	Software installations	cmdb_sam_sw_install
Oracle	Software installations	cmdb_sam_sw_install
SAP	<ul style="list-style-type: none"> <li>• SAP user</li> <li>• Client access</li> </ul>	<ul style="list-style-type: none"> <li>• samp_sap_system_user</li> <li>• samp_sap_sw_client_access</li> </ul>
VMware	Software installations	cmdb_sam_sw_install

**Success Guides**

Use Success Guides, which are part of Value builder tasks, to easily find information about the tasks involved in various set ups and integrations.

The instructions in the Success Guides help you do the following:

- Track subscription licenses and proactively identify savings opportunities for Microsoft 365. For more information, see [Microsoft 365 SaaS License Management success guide](#).
- Track and license IBM usage by enabling you to configure the connection between the ServiceNow AI Platform and IBM License Metric Tool (ILMT) or BigFix Inventory. For more information, see [IBM ILMT setup success guide](#).

### Microsoft 365 SaaS License Management success guide

Track Microsoft 365 SaaS subscription licenses in the ServiceNow Software Asset Management application and proactively identify saving opportunities for Microsoft 365.

- i Note:** Microsoft Dynamics 365 and Power Apps haven't been covered in this guide. For details, see [Integrating with Microsoft Dynamics 365 and Power Apps](#).

Microsoft 365 is a subscription-based product and offers various features and functionalities. For more information, see [Microsoft 365 FAQs](#).

### Microsoft 365 licensing

Microsoft 365 is a hybrid Software as a Service (SaaS) application. Licensing of Microsoft 365 depends on subscription information from the cloud and from installations on endpoint devices, such as laptops, workstations, or virtual systems.

You must gather the following information and reconcile for licensing:

- Microsoft 365 subscription users from the Microsoft Cloud.
- Local installation information from relevant endpoint devices with enough detail for correctly aligning installations to user subscriptions in the Microsoft Cloud.

### Microsoft 365 saving opportunities

You can collect and analyze data from multiple sources for identifying Microsoft 365 saving opportunities. The Software Asset Management application automates this process with the base system integrations to the cloud and on-premise inventory tools. This installation data is normalized with the subscription profiles, which helps in importing Microsoft 365 or Office 365 entitlements easily.

Reconciliation automatically produces license compliance positions based on attributes and calculations included in the Software Asset Management publisher pack for Microsoft. For more information, see [Identify savings opportunities](#).

Track subscription licenses and identify saving opportunities for Microsoft 365 by following these steps:

1. [Create a Microsoft 365 integration](#)
2. [Validate subscription, installation, and usage data](#)
3. [Import Microsoft 365 subscription entitlements](#)
4. [Identify savings opportunities](#)
5. [Microsoft 365 license optimization](#)

### Create a Microsoft 365 integration

Compare Microsoft 365 user subscriptions with installation usage data for a complete license compliance position.

### Before you begin





Role required: Navigate to the linked topics in each step for the required roles.

Enable the following plugins:

- Software Asset Management Professional for Microsoft (com.snc.samp.microsoft)
- Software Asset Management - SaaS License Management (sn\_sam\_saas\_int)
- 

Complete the steps in the [Request Software Asset Management](#) topic.

### Procedure

1. Integrate with Microsoft 365 in the cloud for user subscription data.  
For more information, see [Create a Microsoft 365 integration profile](#).
2. Configure Microsoft Power BI for gaining access to Power BI service content and APIs.  
Power BI service content and APIs help optimize your Microsoft 365 subscriptions, such as by downgrading subscriptions from Office 365 E5 to Office 365 E3. For more information, see [Enable service principal authentication for Power BI read-only APIs](#).
3. Integrate with an inventory tool for installation usage data.
  - For integrating with Microsoft SCCM, complete the steps in the [Service Graph Connector for Microsoft SCCM](#)  topic and all subtopics.
  - For integrating with ServiceNow Agent Client Collector (ACC), complete the steps in the [Agent Client Collector installation](#)  topic and all subtopics.
    -  **Note:** ServiceNow Agent Client Collector (ACC) is a separately licensed IT Operations Management (ITOM) product. For details, contact your ServiceNow account executive.
  - For integrating with Jamf for MAC OS devices, complete the steps in the [Service Graph Connector for Jamf](#)  topic and all subtopics.
  - To integrate with a third-party inventory tool, complete the steps in the [Software asset connections](#) topic and all subtopics.

### What to do next

[Validate subscription, installation, and usage data](#)

#### Validate subscription, installation, and usage data

Validate subscription, installation, and usage data before running a reconciliation for completeness and accuracy of your reports.

### Before you begin

Role required: sam\_admin, sam\_user

### Procedure

1. Validate user subscription data from the Microsoft cloud integration.
  - a. Log in to your ServiceNow instance.

Interface	Action
Core UI	Navigate to <b>All &gt; Software Asset &gt; Discovery &gt; Software Subscriptions</b> .

Interface	Action
Software Asset Workspace	Navigate to <b>Software Asset Workspace &gt; License operations &gt; User subscription &gt; User subscription.</b>

**b.** Review the data in the User Subscription table by verifying the number of Microsoft 365 subscription records.

For more information about personalizing and filtering data, see [Configure user experiences](#).

- If the number of Microsoft 365 subscriptions records isn't accurate, verify that the *SAM - Import M365 User Subscriptions* scheduled job in the SAMP job log [samp\_job\_log] has completed successfully to pull the subscriptions.
  - Confirm that the existing integrations are working properly.
  - Determine if additional integrations are required for other Microsoft environments.
- If the Microsoft 365 records appear accurately, verify the values in the **Display name, User principal name, Software model, and Subscription identifier** fields.

**i Note:** Subscription identifiers uniquely identify SaaS applications. Each identifier is associated with a discovery map and a software model, which normalizes software installations to Microsoft 365 subscriptions from the cloud.

- Check if the software model is resolved correctly as per the subscription product definition.
- Check if the **User** field on the subscription records is resolved. If it is not resolved, check the email of the user, which must match with the user principal name. You can also match the user name from the user principal with the user\_name on the sys\_user record.
- If subscription identifiers are incorrect or empty, manage and resolve the subscription identifiers. For more information, see [Subscription identifiers for SaaS and SSO applications](#).

**2.** Validate installation and usage data from inventory tools.

**i Note:**

Establish a validation scope, as a proxy for full inventory validation, with a sample set of devices known to have Microsoft 365 product installations. The sample size must be no larger than necessary to validate installation data from the integration. If there are multiple integrations, compile separate sample sets for each integration.

**a.** Navigate to the Software Installations [cmdb\_sam\_sw\_install] table, which lists the Microsoft 365 installations.

Interface	Action
Core UI	In the application filter navigator, search and select <b>cmdb_sam_sw_install.list</b> .

Interface	Action
Software Asset Workspace	<ul style="list-style-type: none"> <li data-bbox="831 176 1362 275">i. Navigate to <b>Software Asset Workspace &gt; License operations &gt; Discovery &gt; Discovery models.</b></li> <li data-bbox="831 296 1257 323">ii. Select a discovery model name.</li> <li data-bbox="831 344 1331 371">iii. Select the <b>Software Installations</b> tab.</li> </ul>

**b.** Locate the **Installed on** column field and filter to one or more devices that are part of the validation scope.

- i.** Filter the list further to see all the Microsoft 365 product installations for devices.

  - If the number of Microsoft 365 records is lower than expected, do the following:

    - Confirm that the existing discovery or inventory tools are working properly.
    - Determine if additional inventory tool integrations are required.
  - If the number of Microsoft 365 records is higher than expected, confirm that the existing discovery or inventory tools are working properly. If the inventory tool integrations are working properly, then the high number of records might indicate potential savings chances.
- ii.** Verify computer records for devices within the validation scope.

  1. Select the hyper-linked device name in the **Installed on** column field.
  2. Review the data values such as **Name, Assigned to, and Operating System.**
    - If the number of computer device records is lower than expected, do the following:

      - Confirm that the existing discovery or inventory tools are working properly.
      - Determine if additional inventory tool integrations are required for missing data.
    - If the number of computer device records is higher than expected, confirm that the existing discovery or inventory tools are working properly. If the inventory tool integrations are working properly, then the high number of records might indicate potential savings chances.

**What to do next**

[Import Microsoft 365 subscription entitlements](#)

**Import Microsoft 365 subscription entitlements**

Import Microsoft 365 subscription entitlements into the ServiceNow Software Asset Management application.

**Before you begin**

Role required: sam\_admin or sam\_user

**Procedure**

1. Gather as many Microsoft 365 subscription entitlements as possible.
2. Fill out the entitlement template and import into the ServiceNow Software Asset Management application.

a. Open the **Import Software Entitlements** page.

Interface	Action
Core UI	<ul style="list-style-type: none"> <li>i. Navigate to <b>All &gt; Software Asset &gt; Licensing &gt; Import Entitlements</b>.</li> <li>ii. Select <b>Download Template File (.xlsx)</b>.</li> </ul>
Software Asset Workspace	<ul style="list-style-type: none"> <li>i. Navigate to <b>Software Asset Workspace &gt; License operations</b>.</li> <li>ii. Select <b>Create entitlement</b>.</li> <li>iii. In the Create new entitlement dialog box, select <b>Import multiple entitlements</b> from an Excel file.</li> <li>iv. Select <b>Next</b>.</li> <li>v. In the Create New Entitlement Import page, select <b>Download template</b> to download a spreadsheet template (.xlsx).</li> </ul>

b. Open the import template and review the **Directions** tab.

c. Populate the import template with data from your gathered entitlements.  
 For more information about the additional details on the import template, see [ServiceNow SAM Entitlement Import User Guide](#).

d. Use the following values on the template for Microsoft 365 entitlements:

- **Metric group:** Microsoft
- **License metric:** User Subscription

3. After the template is populated with entitlement data, import the template to the Software Asset Management application.

a. Import the template to the Software Asset Management application.

Interface	Action
Core UI	Navigate to <b>All &gt; Software Asset &gt; Licensing &gt; Import Entitlements</b> .
Software Asset Workspace	<ul style="list-style-type: none"> <li>i. Navigate to <b>Software Asset Workspace &gt; License operations</b>.</li> <li>ii. Select <b>Create entitlement</b>.</li> <li>iii. In the Create new entitlement dialog box, select <b>Import multiple entitlements</b> from an Excel file.</li> <li>iv. Select <b>Next</b>.</li> </ul>

- b. Import the completed template through **Browse files** or drag it.
  - c. Verify the imported software rights and resolve the import errors, if any.
4. Review the imported entitlements.
- a. Confirm that the software entitlements are linked to the correct software models.

Interface	Action
Core UI	Navigate to <b>All &gt; Software Asset &gt; Licensing &gt; Software Entitlements.</b>
Software Asset Workspace	Navigate to <b>Software Asset Workspace &gt; License operations &gt; Licensing &gt; Software entitlements.</b>

- b. Select the display name for a software entitlement record.
- c. On the Software Entitlements form, select the preview icon (🔍) next to the **Software model** field.
- d. Confirm that the discovery map and suite components match the values on the template for Microsoft 365 entitlements.

If the discovery map doesn't match, add or edit directly on the software model form and select **Update**.

🔍 **Tip:** After the entitlements are imported, you might need additional subscriptions purchases during the true-up process with Microsoft. For more information, see. [Creating reserve entitlements for Microsoft online services.](#)

**What to do next**

[Reconcile for compliance](#)

**Reconcile for compliance**

Run reconciliation to determine a license compliance position.

**Before you begin**

Role required: sam\_admin

**Procedure**

- 1. Run reconciliation for Microsoft 365.

Interface	Action
Core UI	Navigate to <b>All &gt; Software Asset &gt; Reconciliation.</b>
Software Asset Workspace	Navigate to <b>Software Asset Workspace &gt; Software asset overview.</b>

2. Select **Run Reconciliation**.
3. In the dialog box, select **Microsoft** in the **Publishers** field.
4. Select **Continue**.
5. Select **Run**.  
You're automatically navigated to the Reconciliation Results page.
6. Monitor the status and progress values to confirm completion.  
Refresh the Reconciliation Results page to view the updated values. If the **Assigned to** value is empty for computers with Microsoft 365 application installs, the reconciliation might not work. For information about validating installation and usage data, see [Validate subscription, installation, and usage data](#).

## What to do next

[Identify savings opportunities](#)

### Identify savings opportunities

Identify savings opportunities and save money with the ServiceNow Software Asset Management application.

### Before you begin

Role required: sam\_admin

### About this task

For enterprise subscriptions such as E1, E3, and E5, Microsoft may specify a commit level, which serves as a minimum or a floor to your license count, which means you can't reduce the enterprise subscription quantities below the commit level during the contract term. If your existing Microsoft contract has a commit level, you can realize potential savings opportunities at the end of the contract term.

## Procedure

1. Realize your saving opportunities from over-licensed amounts.
  - a. Navigate to the Microsoft 365 data.

Interface	Action
Core UI	Navigate to <b>All &gt; Software Asset &gt; Reconciliation &gt; License Workbench</b> .
Software Asset Workspace	Navigate to <b>Software Asset Workspace &gt; License usage</b> .

- b. Locate and select Microsoft 365.  
The license compliance data is populated for the Microsoft 365 subscription.
  - i. Locate the Rights available value, which is calculated by `Rights used - Rights owned`.
  - ii. Locate the Over-licensed amount, which is calculated by `Rights available * Software entitlement unit cost`. This amount presents the following potential savings opportunities:

- If new Microsoft 365 subscriptions aren't needed, you can remove the over-licensed amount during the next in-contract true-up without breaching the commit level.
- If the commit level prevents in-contract true-up, you can use the over-licensed amount to inform new contract negotiations, which would be a proactive cost saving approach.

**2. Realize your saving opportunities from software subscriptions last activity dates.**

**a. Navigate to the Software Subscriptions or User subscription page.**

Interface	Action
Core UI	Navigate to <b>All &gt; Software Asset &gt; Discovery &gt; Software Subscriptions.</b>
Software Asset Workspace	<p><b>i. Navigate to License operations &gt; User subscription &gt; User subscription.</b></p> <p><b>ii. Select a user display name.</b></p>

**b. Add the Last activity field and filter the list to view desired subscriptions.**

**Note:** The Last activity date is pulled from the published Microsoft 365 integration profile and inventory tools. If a subscription is a suite product, the Last activity date is the latest activity information from any of its suite components. Validate Last activity dates with Microsoft cloud administrators as needed.

**c. Right-click the Display name column header and select Bar Chart.**

**d. On the Create a report form, set Group by to Last activity and select Run.**

For more information, see [Create a report](#).

The report visualization automatically updates to display filtered software subscriptions grouped by last activity in bar chart form.

**e. Point to any bar in the chart to view additional details and select a bar to view the individual records that comprise it.**

For more information about using reports, see [Using reporting](#).

**3. Find Software Asset Management optimization recommendations for Microsoft 365 based on subscription details, usage, and potential savings based on recommendation type.**

For more information, see [Publisher optimizations for Microsoft](#).

**Result**

Microsoft 365 subscriptions that haven't registered user activity in over a few months are the potential reclamation candidates.

**What to do next**

Here are a few follow-up actions:

- Review the **User principal name** for any former employees. If found, reclaim subscriptions.
- For subscriptions tied to active employees, navigate to the Software Installations (cmdb\_sam\_sw\_install) table.

- Filter the Software Installations list for Microsoft 365 and add the **Last used** column. Create a report if wanted.
- Compare the Software installations report with the Software subscriptions report.

### Microsoft 365 license optimization

Find Software Asset Management optimization recommendations for Microsoft 365 based on usage.

#### Microsoft 365 available subscription details

*Enhanced visibility of user activity within **Microsoft 365** subscriptions*

Report	Description
Microsoft 365 subscription details	<p>Number of active, inactive, and unassigned user subscription details for Microsoft 365, Office 365, and Power BI products, which are grouped by software models.</p> <p>Select a data point to view more details about the user subscriptions for a software model.</p> <ul style="list-style-type: none"> <li>• Select the <b>Active subscriptions</b> bar to view the active user subscriptions, where the last activity date is equal to or less than 90 days.</li> <li>• Select the <b>Inactive subscriptions</b> bar to view the inactive subscriptions, where the last activity date is empty or was before 90 days.</li> <li>• Select the <b>Unassigned subscriptions</b> bar to view the number of available rights or user subscriptions that are unassigned.</li> </ul>

#### Microsoft 365 optimization recommendations for subscriptions based on usage

Report	Description
Microsoft 365 optimization recommendations	<p>Number of licenses per month that can be downgraded or reclaimed based on recommended downgrade, double licensed, and consolidate candidates. This report displays data for the last 12 months.</p> <p>Select any bar to view more details and act on the recommended downgrade or dual license candidates for a given month.</p> <ul style="list-style-type: none"> <li>• Select a bar that is marked as <b>Downgrades from Office 365 E5 to E3</b> to view the list of candidates that can be downgraded from Office 365 E5 to Office 365 E3. Select a candidate from the list to downgrade the related license.</li> </ul>

**Microsoft 365 optimization recommendations for subscriptions based on usage (continued)**

Report	Description
	<ul style="list-style-type: none"> <li>• Select a bar that is marked as <b>Downgrades from Office 365 E3 to E1</b> to view the list of candidates that can be downgraded from Office 365 E3 to Office 365 E1. Select a candidate from the list to downgrade the associated license.</li> <li>• Select a bar that is marked as <b>Downgrades from Microsoft 365 E5 to E3</b> to view the list of candidates that can be downgraded from Microsoft 365 E5 to Microsoft 365 E3.</li> <li>• Select a bar that is marked as <b>Downgrades from Microsoft 365 E3 to F3</b> to view the list of candidates that can be downgraded from Microsoft 365 E3 to Microsoft 365 F3.</li> <li>• Select a bar that is marked as <b>Consolidate</b> to view the list of consolidated Microsoft 365 optimization candidates.</li> </ul>

**Potential savings based on recommendation type**

Report	Description
<p>Potential savings by optimizing licenses</p>	<p>Potential cost savings for licenses on your physical hosts and clusters that are based on recommended license optimizations.</p> <p><b>Note:</b> This report is available only for Microsoft Windows Server licenses.</p> <p>Select the report to view details about the recommended license optimizations and associated cost savings for each host or cluster. License optimizations include the recommended license, recommended rights, and recommended spending.</p>
<p>Microsoft 365 potential savings by type</p>	<p>Potential monthly savings for Microsoft 365 and Office 365 licenses that are based on recommended downgrade, double license, and consolidate candidates. This report displays potential savings for the last 12 months.</p> <p>Select any bar to view more details about the recommended downgrade or dual license candidates for a given month.</p> <ul style="list-style-type: none"> <li>• Select a bar that is marked as <b>Downgrades</b> to view the list of candidates that can be downgraded to a previous version of Microsoft 365 and Office 365.</li> </ul>

**Potential savings based on recommendation type (continued)**

Report	Description
	<ul style="list-style-type: none"> <li>• Select a bar that is marked as <b>Double Licensed Users</b> to view the list of candidates with both Microsoft 365 and its applications (Office 365, Enterprise Mobility +Security (EMS), Windows) subscriptions.</li> <li>• Select a bar that is marked as <b>Consolidate</b> to view the list of Microsoft 365 consolidate subscriptions reclamation candidates.</li> </ul>
<p>Microsoft 365 portal available subscription details</p>	<p>Number of licenses that are available on the Microsoft portal per subscription.</p> <p>Select a bar to view details about the purchased subscription details, such as software model, product, purchased rights, assigned rights, available rights, and subscription profile.</p>

**IBM ILMT setup success guide**

This success guide provides information on the IBM License Metric Tool (ILMT) or IBM BigFix Inventory integration with the Software Asset Management application.

This integration supports license compliance for IBM products using the following IBM license metrics:

- Processor Value Unit (PVU)
- Resource Value Unit (RVU MAPC)

The integration imports only the IBM product usage data that is required for these license metrics.

**Note:** This integration doesn't import any discovery or usage data for IBM products that are licensed via other metrics.

For IBM license compliance to work with this integration, you must complete the following prerequisites:

- Set up and run ILMT or BigFix Inventory on your instance.
- Configure IBM ILMT agents to scan your instance in compliance with the IBM usage measurement guidelines.
- Enable ILMT or BigFix Inventory to discover the configurations of both virtual machines (VMs) and physical hosts as well as the relationships between them.
- Classify IBM components into IBM products through ILMT or BigFix Inventory.
- Bundle IBM components into IBM products through ILMT or BigFix Inventory.
- Install ILMT version 9.2.7 or later.

Complete the following steps for the [IBM License Metric Tool \(ILMT\) and BigFix Inventory integrations](#) with the Software Asset Management application:

1. [Create a connection to ILMT or BigFix Inventory](#)
2. [Validate your ILMT connection health](#)

## Alternative to ILMT or BigFix Inventory

You can track and manage IBM licenses in both VMware vSphere environments and IBM LPAR infrastructures by integrating the Software Asset Management publisher pack for IBM with Software Asset Management providers that are authorized to participate in the IBM Client Value Acceleration (CVA) Program. With these integrations, you can track and manage IBM licensing directly without having to integrate with the IBM License Metric Tool (ILMT) or BigFix Inventory. For more information, see [Authorized SAM Provider \(ASP\) integrations for IBM](#).

## Additional resources


- IBM license management by the Software Asset Management application
  - [Software Asset Management publisher pack for IBM](#)
  - [Supported IBM license types](#)
- [Fix invalid computer serial numbers](#) 

## View all maturity items for Software Asset Management

View the maturity of your Software Asset Management (SAM) program to analyze the status of each maturity stage, where each stage shows the number of maturity items completed.

### Before you begin

Role required: sam\_admin, sam\_user


-  **Note:** The sam\_user can only view the maturity items. The sam\_admin can view and change the state and success goal of the maturity item.

### About this task

The maturity of your SAM program is divided into three stages:

- Crawl
- Walk
- Run

For more information, see [Maturity stages of your Software Asset Management program](#).

-  **Note:** The maturity level can't be modified for a required maturity item.

## Procedure

1. Navigate to **Workspaces > Software Asset Workspace > Success portal**.
2. On the Overview page, select **View all maturity items**.  
The All maturity items page opens, which lists all the maturity items included in the stage your SAM program is in.
3. Select a maturity item to view its details.  
For a description of the field values, see [Maturity item details](#).
4. If you want to create a Value builder task for the maturity item, select the **Value builder tasks** tab.

For more information about creating a Value builder task, see [Create a Value builder task](#).

**5. Select Save.**

### Create success goals for Software Asset Management

Create success goals to track the success of the Software Asset Management application in your instance.

#### Before you begin

Role required: sam\_admin

#### Procedure

1. Navigate to **Software Asset Workspace > Success Portal**.
2. Select **Create success goal**.
3. On the form, fill in the details.  
For a description of the field values, see [SAM Success Goal Details](#).
4. Select **Save**.  
The success goal appears in the License operation view under the Success goals list. You can cancel or delete a success goal from the License operations view.

### Create success activities for Software Asset Management

Create success activities to track the success of your goals.

#### Before you begin

Role required: sam\_admin and sam\_user

#### Procedure

1. Navigate to **Software Asset Workspace > Success Portal**.
2. Select **Create success activity**.
3. On the form, fill in the fields.  
For a description of the field values, see [SAM Success Activity](#).
4. Select **Save**.

#### Result

The success activity appears in the License operation view under the Success activities list.

### Create a success goal category for software assets

Create a success goal category for adding the category to the Software Asset Management success goal.

#### Before you begin

Role required: sam\_admin

#### Procedure

1. Navigate to **Software Asset Workspace > License operations > Success goals > Categories**.
2. Select **New**.
3. On the Success Goal Category form, fill in the category that you want to add and select the **Software asset category** check box.

## Result

The category that you add gets listed as an option in the **Category** field while creating a success goal for Software Asset Management. For more information, see [Create success goals for Software Asset Management](#).

## Renewals calendar view

Use the Renewals calendar in the Software Asset Workspace to view the entitlements nearing their expiry date and contracts nearing their expiry date or are already expired.

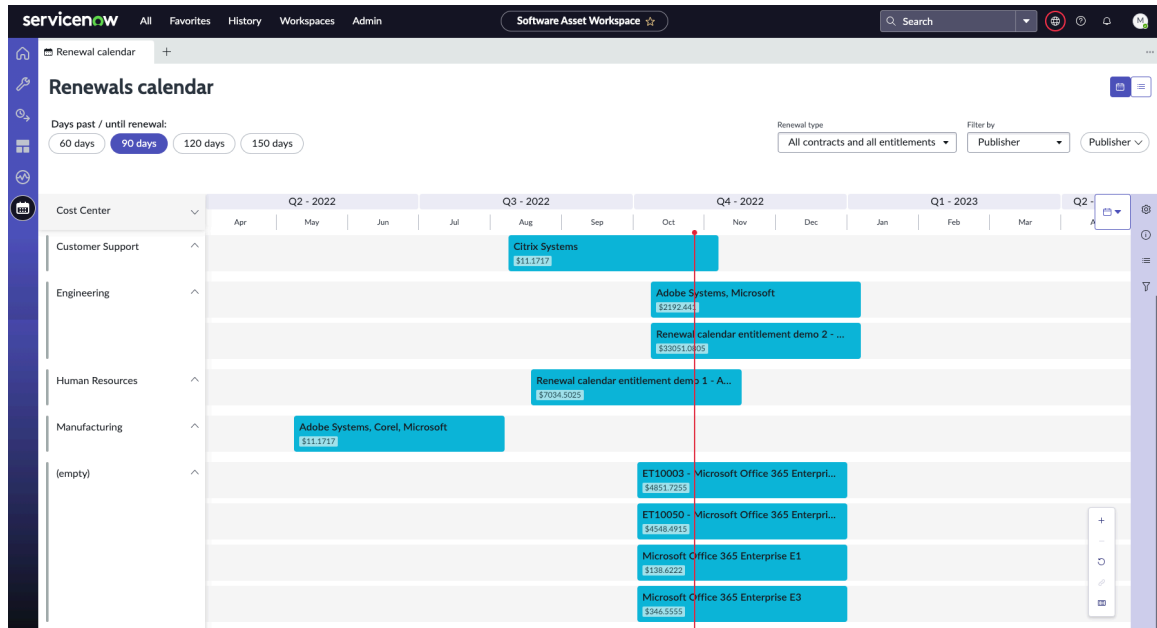
The sam\_user and sam\_admin roles can gain an understanding of the upcoming contract and entitlement renewals and expired contracts by navigating to **Software Asset Workspace > Renewals calendar**.

**Note:** Activate the Software Asset Workspace (com.sn\_sam\_workspace) plugin to view the Renewals calendar.

This view shows upcoming and expired renewals with the following conditions:

- The contract must be active.
- Contracts expiring in 90 days or fewer.
- The end date of the contract must not be empty.
- The state of the contract is active or expired.
- The substate of the contract is either Awaiting review or Renewal rejected.
- Contracts with contract model types such as Subscription, Software License, and Maintenance.
- Entitlements with only license types of Perpetual or Subscription.
- Entitlements without any associated contract.

### Renewals calendar view



The Renewals calendar lets you view:

- Calendar and list view of contracts and entitlements
- Details of contracts and entitlements in the calendar view

You can switch to the list view from the top-most right corner of the Renewals calendar page.

- Contracts
  - Contract name
  - Renewal start date for contracts nearing their end date
  - Renewal start date for expired contracts
  - Contract end date
  - Total cost
- Entitlements
  - Entitlement name
  - Start date
  - End date

**i Note:** The end date for perpetual entitlements is the maintenance expiration date.

- Total cost

**i Note:** The calendar view shows the Renewal start date, which is calculated by

End date - Days past/until renewal

. Select the Days past/until renewal value such as 60, 90, 120, or 150 days. You must open the contract and entitlement record to view the actual start date.

- Number of upcoming contracts and entitlements renewals grouped based on the cost center in the left pane
- Contract information form on selecting the contract bar

**i Note:** You can renew, adjust, or cancel a contract from this record form.

- Entitlement information form on selecting the entitlement bar

**i Note:** You must create or associate a contract to proceed with the contract renewal workflow.

- A red line showing the current date. The contract or entitlement bar on the calendar view displays the start date as six months before the current date and the end date as six months after the current date.

You can filter and narrow down your results by:

- Upcoming renewals based on the time scale in the calendar view
- Days past or until renewal such as for 60, 90, 120, or 150 days
- Renewal types such as All contracts, All entitlements, and All contracts and all entitlements
- Publisher, Product, Contract model, and Cost Center subfilter based on the renewal type

- Domain

**Note:** You must install the Domain Extension Installer [com.glide.domain.msp\_extensions.installer] and Domain Support [com.snc.pa.domain\_support] plugins to view the domain data on the Renewal calendar view.

### Overlapping usage view

Use the Overlapping usage view in Software Asset Workspace to get insights into the feature level usage and rationalize your SaaS and Single sign-on (SSO) applications.

The Overlapping usage view displays reports showing the spend on your applications based on application category - SaaS or spend detection. You can also view the list of applications grouped by categories based on the main function of the software application, such as video conferencing, project management, and email marketing. This list of applications includes the following details:

- Spend
- Usage
- Total number of subscriptions
- Reclamation candidates

Access the Overlapping usage view by navigating to **Workspaces** > *Software Asset Workspace* > **Overlapping usage**.

**Note:** Request the Software Asset Management - SaaS License Management Integrations application from the [ServiceNow Store](#) to view the Overlapping usage view.

**Note:** The Overlapping usage dashboard supports domain separation when Domain Extension Installer (com.glide.domain.msp\_extensions.installer) and Domain Support (com.snc.pa.domain\_support) plugins are activated. To filter the data, select a domain from the Domain drop-down list.

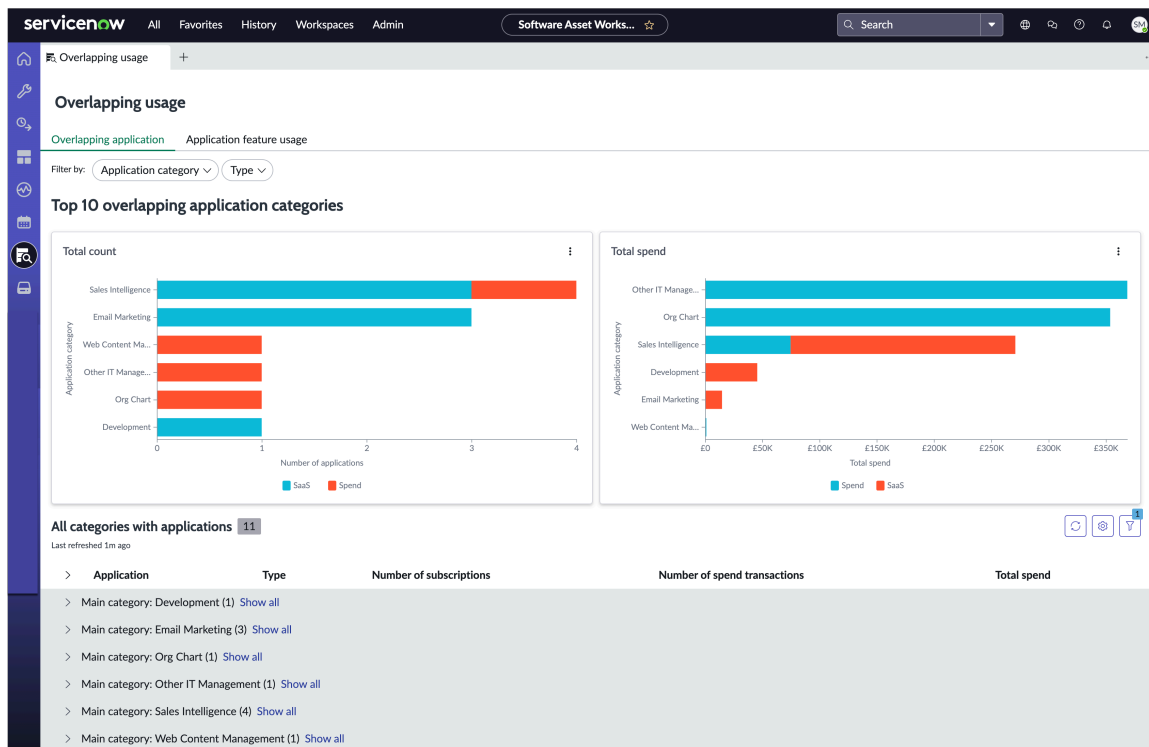
### End users and roles

End user	Required role	Goal
SAM Admin/SAM User	sam_admin/sam_user	View the Overlapping usage dashboard.  <b>Note:</b> A SAM Admin or a SAM user must have the it_demand_user role to create demand. You can create a demand from the Application feature usage page.

### Overlapping applications

By selecting the **Overlapping applications** tab, you can view the following information:

- **Total count:** Total number of overlapping software applications grouped by application category, such as spend detection or SaaS. Selecting any application category bar navigates you to the list of applications of that type with details on their relevant number of subscriptions, total spend, and overall usage.
- **Total spend:** Total spend on overlapping software applications grouped by application category, such as spend detection or SaaS. Selecting any application category bar navigates you to the list of applications of that type with details on their relevant number of subscriptions, total spend, and overall usage.
- **All categories with applications:** The list of overlapping software applications grouped by category based on the main function of the software application. The number next to each category indicates the number of applications in that category, such as development and email marketing.



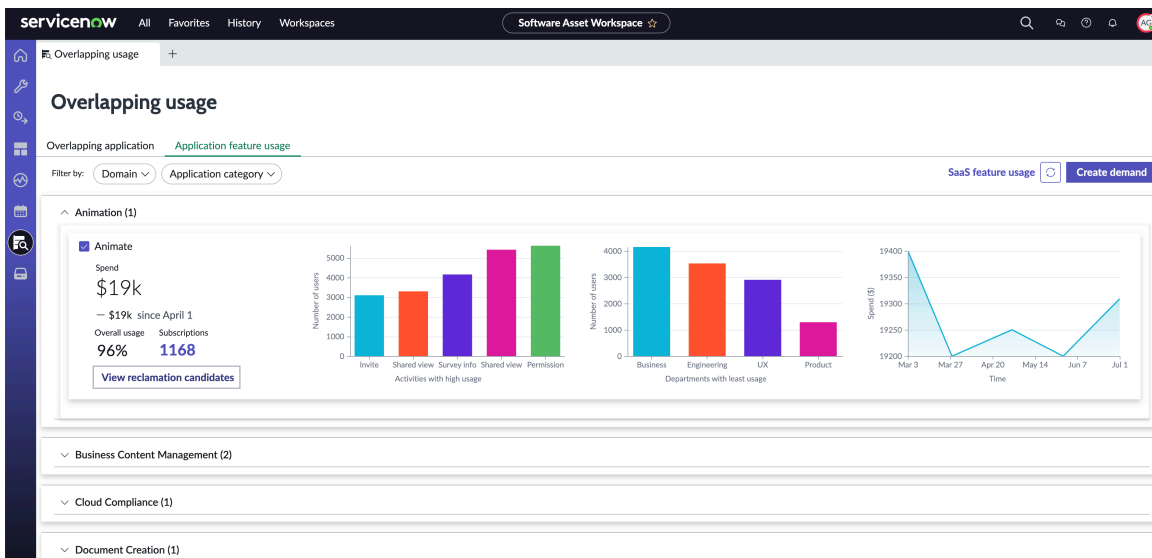
## Application feature usage

By selecting the **Application feature usage** tab, you can view the following information:

- A list view of the application categories.
- Detailed and descriptive feature usage information of an application. By expanding an application category, you can view the following data for each application within that category.

Attribute/Chart	Description
Spend	Total spend for the application.
Overall usage	The percentage of users who have performed at least one event in the application.
Subscriptions	Total number of subscriptions for the application.

Attribute/Chart	Description
View reclamation candidates	List of reclamation candidates for the application that aren't closed.
Activities with high usage	<p>Top five activities with the highest usage based on the number of users.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>This chart gets replaced by <b>Users with last login activity</b> for SSO applications and the SaaS applications for which only the last login activity is pulled.</li> <li>This chart displays data for all events that have normalized mappings available in the SaaS Event Mapping (samp_saas_event_mapping) table.</li> </ul>
Departments with least usage	<p>Five departments with least usage for the application in your organization. The usage is based on the number of users.</p> <p>This data helps IT administrators to determine if users within these departments need access and alternatively to help drive adoption for those users.</p> <p><b>Note:</b> This chart displays data only for users who are assigned to a specific department.</p>
Spend trend chart	Graphical representation of monthly spending trends on the application.



## SaaS feature usage

The SaaS feature usage page includes the event details for each integration, such as the event ID, event name, last activity, subscription, product, subscription profile, and publisher. Navigate to the SaaS feature usage page in the License operations view by selecting the **SaaS feature usage** link.

**Note:** The SaaS feature usage page displays event details for up to one year from the current date.

The screenshot shows the ServiceNow interface for the 'SaaS feature usage' page. The table contains the following data:

Event ID	Event name	Last activity	Subscription	Product	Subscription profile	Publisher
LOAD_SHEET	Loaded a sheet	2023-07-18		Smartsheet	smartsheet saas	Smartsheet
EXPORT_SHEET	Exported a sheet	2023-07-18		Smartsheet	smartsheet saas	Smartsheet
LOAD_REPORT	Loaded report	2023-07-18		Smartsheet	smartsheet saas	Smartsheet
UPDATE_SHEET	Updated a sheet	2023-07-18		Smartsheet	smartsheet saas	Smartsheet
LOAD_SHEET	Loaded a sheet	2023-07-18		Smartsheet	smartsheet saas	Smartsheet
LOAD_DASHBOARD	Loaded a dashboard	2023-07-18		Smartsheet	smartsheet saas	Smartsheet
LOAD_SHEET	Loaded a sheet	2023-07-18		Smartsheet	smartsheet saas	Smartsheet
LOAD_SHEET	Loaded a sheet	2023-07-18		Smartsheet	smartsheet saas	Smartsheet
LOAD_REPORT	Loaded report	2023-07-18		Smartsheet	smartsheet saas	Smartsheet

## Creating demand to rationalize software applications

Creating demands enables you to take meaningful action against any redundant software you discover. You can discontinue software, reduce software usage, migrate users to approved software, or take other actions.

**Note:** The PPM Standard plugin (com.snc.financial\_planning\_pmo) must be installed to create demands.

Select **Create demand** to rationalize software applications. For more information, see [Create demand to rationalize software applications](#).

### Create demand to rationalize software applications

Create demands to rationalize SaaS and SSO applications by discontinuing software subscriptions, reducing software usage, and migrating users to approved software.

### Before you begin

Role required: sam\_admin or sam\_user

**Note:** The sam\_admin and sam\_user roles must have the it\_demand\_user role to create demand.

The PPM Standard (com.snc.financial\_planning\_pmo) plugin must be installed to create demands.

The Software Asset Management application includes the following demand actions that are ready for you to use:

- Discontinue after expiration
- Migrate to approved product
- Discontinue immediately
- Reclaim licenses
- No action

**About this task**

Use the Overlapping usage view to drive SaaS and SSO application rationalization by viewing the feature level usage of each application. For more information, see [Overlapping usage view](#).

**Procedure**

1. Navigate to **Software Asset Workspace > Overlapping usage**.
2. Select the **Application feature usage** tab.
3. Select the application in a category for which you want to create a demand.
4. Select **Create demand**.  
The **Create demand** option is available only when you select an application that you want to create a demand for.
5. On the form, fill in the fields.

**Software Asset Demand**

Field	Description
Name	Name of the demand.
Number	Unique auto-generated identification number for the demand.
Submission status	Stage of the demand record. <ul style="list-style-type: none"> <li>○ Draft</li> <li>○ Submitted</li> <li>○ Screening</li> <li>○ Qualified</li> <li>○ Approved</li> </ul>
Start date	Start date for the demand.  The field name is replaced by <b>Planned start date</b> when the demand type is converted to a Project.  <b>Note:</b>  When you change the planned start date of a demand or project, the associated cost and resource plans also change.
Due date	Requested completion date for the demand.  The field name is replaced by <b>Planned end date</b> when the demand type is converted to a Project.
Category	Software category of the demand. <ul style="list-style-type: none"> <li>○ Strategic</li> <li>○ Operational</li> </ul>
Type	Type of demand.

Field	Description
	<ul style="list-style-type: none"> <li>○ Enhancement</li> <li>○ Project</li> <li>○ Change</li> <li>○ Defect</li> </ul> <p>The <b>Category</b> field selection determines the selections available in this field.</p>
Assessment required	<p>Option for enabling the assessments for the demand.</p> <p>By default, the field is selected. When clear, the assessment questionnaire isn't triggered for the demand.</p> <p>When this field is clear, and you reset the demand to <b>Draft</b>, the value for the <b>Assessment Required</b> field is retained as clear.</p>

**6. Optional:** Select the **Demand Requirements** tab to view the details of the already-created requirements.

You can also create a demand requirement. For more information, see [Create a demand requirement](#).

**7.** Select **Save**.

**Result**

The demand is created with the **Submission status** field set to **Submitted**.

**What to do next**

Use the ServiceNow® Demand Management application to approve and complete the demand.

For more information, see [Demand Management](#).

You can create a project for the demand by selecting the **Create Project** related link. A project enables you to track the status, percent complete, and duration of the work required to accomplish the demand. You can also create project tasks to define the work items that are required to complete the project. For more information, see [Project Management](#).

To view all Software Asset Management demands, navigate to **Software Asset > Software Asset Demand > Demands**.

To view all Software Asset Management demand requirements, navigate to **Software Asset > Software Asset Demand > Demand Requirements**.

**Create a demand requirement**

Create a demand requirement for rationalizing your SaaS and SSO applications.

**Before you begin**

Role required: sam\_admin or sam\_user

**Note:** The sam\_admin and sam\_user roles must have the it\_demand\_user role to create demand.

The PPM Standard (com.snc.financial\_planning\_pmo) plugin must be installed to create demands.

**Procedure**

1. Navigate to **Software Asset Workspace > Overlapping usage**.
2. Select the **Application feature usage** tab.
3. Select the application in a category for which you want to create a demand.
4. Select **Create demand**.  
The **Create demand** option is available only when you select an application that you want to create a demand for.
5. Select the **Demand Requirements** tab.
6. Select **New**.  
All the fields are auto-populated.
7. On the form, fill in the fields.

**Create New Demand Requirement**

Field	Description
Demand Requirement	
Number	Unique auto-generated identification number for the demand requirement.
Software asset demand	Software asset demand for which you're creating the requirement.
Product	Product or application for which the demand requirement is created.
Main category	Category of the application. For example, if you select <b>Zoom</b> in the <b>Product</b> field, the <b>Main category</b> field would be set to <b>Video Conferencing</b> .
Action	Action items identified for the demand. <ul style="list-style-type: none"> <li>○ Discontinue after expiration</li> <li>○ Migrate to approved product</li> <li>○ Discontinue immediately</li> <li>○ Reclaim licenses</li> <li>○ No action</li> </ul>
Description	Description of the demand requirement.
Notes	Additional notes for the demand requirement.
Spend Information	
Spend amount	Total spend on the application based on entitlements.

8. Select **Save**.

## Result

The demand requirement for the demand is created. You can view the created demand on the Software Asset Demand [samp\_demand] table.

## What to do next

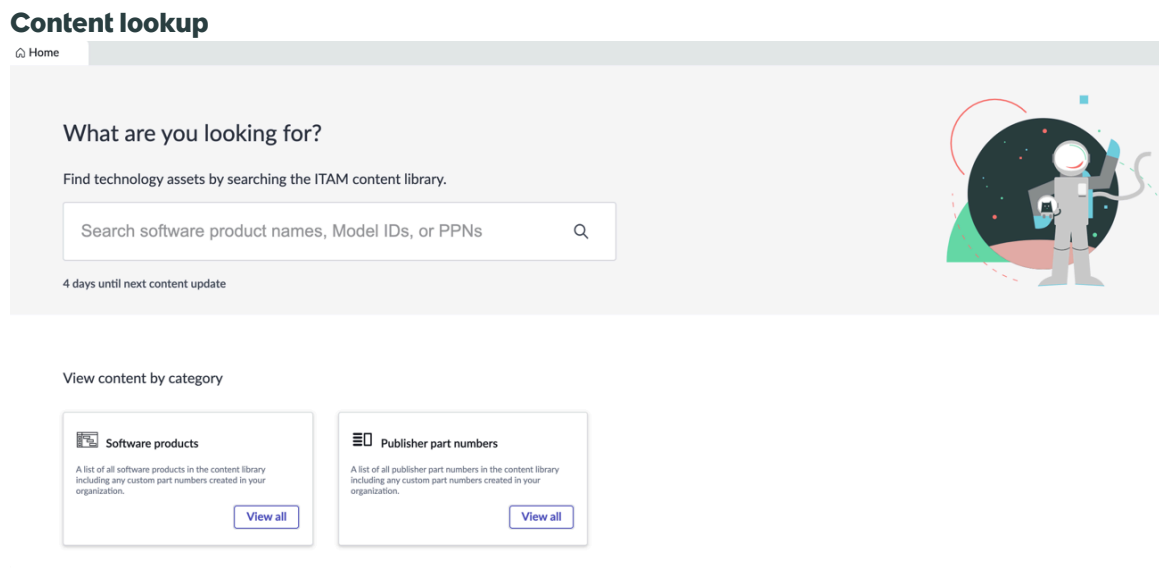
To view all Software Asset Management demand requirements, navigate to **Software Asset > Software Asset Demand > Demand Requirements**.

## Content lookup

The Content library portal gives you visibility into the data stored in the Software Asset Management Content Service via an intuitive user interface.

The Software Asset Management Content Service is a repository of software product names and all additional information such as software product lifecycle dates, discovery maps, model numbers, publisher part numbers (PPNs). This information is stored in different tables in the Content Service. For more details on the Content Service, see [Software Asset Management Content Service](#).

To access the Content library portal, navigate to the Software Asset Workspace and click the Content lookup view icon on the left hand side of the page.



The Content library portal application is available in the ServiceNow Store. Once you install the application, ensure that the AI Search (com.glide.ais) plugin is activated. For details on installing the Content library portal application, see [Install Content library portal for Software Asset Management](#).

The Content library portal uses the AI search functionality and helps you to:

- Search for specific software product, PPNs, or model IDs.
- View the entire list of software products, PPNs, and model IDs in the Content Service.
- View additional details related to software products such as software version, software product life cycles.
- View the days remaining for the next content update.

Once you enter your search criteria in the search bar, the search results are listed with the most relevant matches at the top. Filters on the left-hand side of the page assist you in further narrowing down your results.

Based on your search criteria the information in the Content Service is pulled from multiple tables, such as:

- Software Product [samp\_sw\_product]
- Discovery Map [samp\_sw\_entitlement\_definition]
- Publisher part numbers [samp\_sw\_product\_definition]

Click the search result that matches your criteria to display the product details page along with the related lists. The product details page opens in a read-only mode. For example, if you click the Microsoft SQL Server 2008 Enterprise product result, the Microsoft SQL Server 2008 Enterprise page appears with the related lists such as software version, software life cycle data, and PPN.

## Install Content library portal for Software Asset Management

Install the Content library portal store application to view the data stored in the Software Asset Management Content Service.

### Before you begin

- Ensure that the application and all of its associated ServiceNow Store applications have valid ServiceNow entitlements. For more information, see [Get entitlement for a ServiceNow product or application](#).
- The Content library portal application requires the following plugins. Ensure that these plugins are activated before you install the Content library portal application.

#### Required ServiceNow plugins

##### Activate all Software Asset Management Professional (com.sn\_samp\_master) plugin

Loads the following Software Asset Management Professional plugins in one step: Software Asset Management Professional (com.snc.samp) plugin, All publisher pack add-on plugins, and Software Asset Management UI Components (com.sn\_samp\_workbench). To enable SaaS License Management, you must request the Software Asset Management – SaaS License Management Integrations (sn\_sam\_saas\_int) plugin separately from the ServiceNow Store.

##### Software Asset Workspace (com.sn\_sam\_workspace) plugin

Required to use the Software Asset Workspace, the new user interface of the Software Asset Management application.

##### AI Search plugin (com.glide.ais)

Activates AI search functionality.

- Note:** If you have installed Software Asset Management Professional (com.sn\_samp\_master) plugin, you can view data stored in the Software Asset Management Content service. If you have installed both Software Asset Management Professional (com.sn\_samp\_master) and Hardware Asset Management Professional (com.sn\_hamp) plugins, you can view both Software Asset Management and Hardware Asset Management data stored in the Content service. For more information about installing Content lookup portal for Hardware Asset Management, see [Install Content lookup to view Hardware Asset Management data](#).

Role required: sam\_admin

## Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.
2. Find the Content library portal application using the filter criteria and search bar.

You can search for the application by its name or ID. If you cannot find the application, you might have to request it from the ServiceNow Store.

Visit the [ServiceNow Store](#) website to view all the available apps and for information about submitting requests to the store. For cumulative release notes information for all released apps, see the [ServiceNow Store version history release notes](#).

3. In the Application installation dialog box, review the application dependencies.

Dependent plugins and applications are listed if they will be installed, are currently installed, or need to be installed. If any plugins or applications need to be installed, you must install them before you can install the Content library portal application.

4. Select **Install**.

## Using Software Asset Management classic

Use the classic Software Asset Management framework to manage your licenses, compliance, and optimization.

### Create entitlements in Software Asset Management classic

Create entitlements in the Software Asset Management application classic to record your license details and allocate purchased software rights to users or devices.

#### Before you begin

Role required: sam\_user

#### About this task

These instructions are for manually creating software entitlements or maintenance entitlements one at a time. If you already have software entitlements recorded in a spreadsheet, you can [import](#) them.

To automate the process of creating a software entitlement, specify a publisher part number in the software entitlement form. Based on the publisher part number, the software model, metric group, agreement type, and software lifecycle data (if it exists) automatically appears in the form.

To better manage your existing entitlements, you can edit certain fields in entitlements. You can edit fields such as **Purchased rights**, **Software model**, **License type**, **Number of packs**, and **Publisher part number**. Entitlements that have related entitlements, upgrade history, entitlement history, or upgraded entitlement are not editable.


**Note:** Microsoft reserve entitlements and source entitlements are not editable.

If you installed SaaS License Management, a software model is generated automatically after you create an integration profile. Create an entitlement for the software model to track software used against software owned. For more information about tracking SaaS licenses and usage, see [Viewing your SaaS and SSO subscriptions](#).

If you installed the SAP publisher pack, see [Record software rights for SAP](#).

If you installed the Citrix publisher pack, see [Record software rights for Citrix](#)

## Procedure

1. Navigate to **All > Software Asset > Licensing > Software Entitlements**.
2. Select **New**.
3. On the form, fill in the fields to record your license information.  
For detailed descriptions of the fields, see [Software entitlement fields](#).
4. Right-click the form header and select **Save**.  
Saving the form instead of submitting keeps you on the entitlement record so you can perform additional configuration.
5. To specify users and devices that have software rights allocated to them, select the **User Allocations** or **Device Allocations** section.  
The **Device Allocations** section is not visible for the IBM Resource Value Unit (RVU) license metric. The Resource Value Unit (RVU) license metric is licensed at the product level and so rights are not used by individual devices. When you upgrade from a prior release, that had device allocations, to the Xanadu release, the existing device relocations are removed.
6. To track your software downgrade rights, select the [Downgrade Rights related list](#) and specify the version.  
Creating a new record allows you to set an entitlement to previous versions of software. For example, the purchase of Microsoft Office Professional Plus 2016 rights entitles you to Microsoft Office Professional Plus 2013 too).  
  
For more information, see [Downgrade Rights](#).
7. To track the cost of your software over its lifecycle, configure [expense lines](#) .
8. To manage license keys, select the [License Keys related list](#) and specify which licenses keys are allocated to entitlements.
9. To view the history of all maintenance entitlements that you have purchased, select the Entitlement History related list.  
For example, if you purchased two maintenance entitlements, M1 (which is now retired) and M2 (currently in use), the Entitlement History related link displays both M1 and M2.
10. To view the history of the newly upgraded software model related to your entitlement and the previous software model, select the Upgrade History related list.
11. Select **Update**.  
The entitlement is created and added to the entitlement list view.

## Related topics

[Software entitlement fields](#)

[Software models and Software entitlements](#)

[Software license metrics](#)

## Create maintenance entitlements in Software Asset Management classic

Define license details, for all publishers other than Microsoft, to manage all your software license maintenance needs such as start and end dates of your contracts and software upgrades.

## Before you begin

Role required: admin

## Procedure

1. Navigate to **All > Software Asset > Licensing > Software Entitlements**.
2. Click **New**.

3. On the Software Entitlement form, fill in the mandatory fields and select **Maintenance** in the **License type** field.

For a detailed description of all the fields, refer to [Software entitlement fields](#).

If the **Next Version** field is populated in the software model that the maintenance entitlement is associated with and the metric group selected in the maintenance entitlement is **Common**, then the maintenance entitlement is updated with the next version of the software model. Next version is applicable only for the **Common** metric group.

4. Right-click the form header and select **Save**.

**i Note:** If you purchase a perpetual entitlement and associate only some of the rights of that entitlement with a maintenance entitlement, your perpetual entitlement is automatically split into two entitlements. For example, you purchased a perpetual entitlement with 50 active rights (E1). You associate 20 of these rights with 20 rights of a maintenance entitlement. Your E1 perpetual entitlement is now automatically split into two entitlements: one perpetual entitlement (E1) with 20 active rights (and 50 purchase rights) associated with 20 rights of the maintenance entitlement (M1) and another perpetual entitlement (E2) with 30 active rights without any maintenance association and no purchased rights.

5. Perform additional configurations on your new maintenance entitlement record.

For a detailed description, see [Software entitlement fields](#).

You can't add user or device allocations for maintenance entitlements.

- a. Enter information pertaining to finance such as the vendor from which the asset was purchased, the invoice number, in the **Financial** tab.
- b. Enter information relating to contracts such as the lease contracts, the expiration date of the warranty in the **Contracts** tab.
- c. Link related perpetual entitlements to your maintenance entitlement from the **Related Entitlements** tab.
  - i. Select the **Related Entitlements** tab.
  - ii. In the **Related Entitlement** field of the Related Entitlements list, double-click **Insert a new row...**
  - iii. When prompted, search for and select the related perpetual entitlement that you want to link and then click the Save (✔) icon.
  - iv. Double-click the corresponding **Active rights** field.
  - v. When prompted, enter the number of rights that you want to grant to the related perpetual entitlement and then click the Save (✔) icon.
  - vi. Click **Save** on the Software Entitlement form header.

To remove the relationship between the perpetual and maintenance entitlement, remove the entitlement from the Related Entitlements list.

If the entitlement has split and you've deleted the maintenance entitlement, the perpetual entitlement is not removed.

- d. View the downgrade rights for the software model associated with the maintenance entitlement in the **Downgrade Rights** related list.
- e. To manage license keys, and specify which licenses keys are allocated to entitlements, click the **License Keys** related list
- f. To track the cost of your software over its lifecycle, click the **Expense Lines** related list.
- g. To view the history of all maintenance entitlements that you have purchased, click the **Entitlement History** related list.  
For example, if you purchased two maintenance entitlements, M1 (which is now retired) and M2 (currently in use), the Entitlement History related link displays both M1 and M2.
- h. To view the history of the newly upgraded software model related to your entitlement and the previous software model, click the **Upgrade History** related list.

## 6. Click **Update**.

### Create entitlements for Microsoft Software Assurance in Software Asset Management classic

Define license details for Microsoft Software Assurance (SA) to manage your contracts start and end dates, software upgrades, and related software entitlements.

#### Before you begin

Role required: sam\_user or sam\_admin

#### Procedure

1. Navigate to **All > Software Asset > Licensing > Software Entitlements**.
2. Click **New**.
3. On the Software Entitlement form, fill in the details about the software publisher rights that you've purchased and select **Maintenance** in the **License type** field.

**Note:** Make sure that you enter the number of rights to be granted for the SA entitlement in the **Active rights** field. You can't add user or device allocations for SA entitlements.

For a detailed description of the fields related to all entitlements, see [Create entitlements in Software Asset Management classic](#).

4. Right-click the form header and select **Save**.  
An entitlement appears in the Software Entitlement list.

**Note:** If you purchase a perpetual entitlement and associate only some of the rights of that entitlement with a SA entitlement, your perpetual entitlement is automatically split into two entitlements. For example, you purchased a perpetual entitlement with 50 active rights (E1). You associate 20 of these rights with 20 rights of a SA entitlement. Your E1 perpetual entitlement is now automatically split into two entitlements: one perpetual entitlement (E1) with 20 active rights (and 50 purchase rights) associated with 20 rights of the SA entitlement (M1) and another perpetual entitlement (E2) with 30 active rights without any SA association and no purchased rights.

5. To perform additional configuration, select your new software entitlement record from the Software Entitlements list.

- a. To link related perpetual and SA entitlements, use the following steps:
  - i. On the Software Entitlement form, select the **Related Entitlements** tab.
  - ii. In the **Related Entitlement** field of the Related Entitlements list, double-click **Insert a new row...**
  - iii. When prompted, search for and select the related perpetual or SA entitlement that you want to link and then click the Save (✔) icon.
  - iv. Double-click the corresponding **Active rights** field.
  - v. When prompted, enter the number of rights that you want to grant to the related perpetual or SA entitlement and then click the Save (✔) icon.
  - vi. Click **Save** on the Software Entitlement form header.

To remove the relationship between the perpetual and SA entitlement, remove the entitlement from the Related Entitlements list.

If you delete either the perpetual or SA entitlement that is linked, the other entitlement isn't deleted.

If the entitlement has split and you've deleted the SA entitlement, the perpetual entitlement is not removed.

- b. To link your software to a newer version as part of your maintenance contract, click the Upgraded Entitlements related list.

**Note:** This related list is only available if you selected **Step-up** as the entitlement license type.

If the **Next Version** field is populated on the software model, entitlements with active SA are updated to the new version of the software model.

After you've linked your related entitlements, if there aren't enough SA rights to cover the perpetual entitlement rights, an error message displays.

- c. To view all previously related entitlements that are linked, click the Entitlement History related list.

**Note:** Validation is run against the active rights of all related entitlements automatically. If there's an error with the calculation, a message with additional information on how to resolve the problem is displayed.

## 6. Click **Update**.

### **Result**

After you've created an entitlement, you can begin [viewing license usage](#).

### **Example: Record software rights for Microsoft Software Assurance**

You have purchased 100 rights of Microsoft SQL Server 2016.

Software Entitlement  
Microsoft SQL Server 2016 Standard Core

Update Delete

Display name: Microsoft SQL Server 2016 Standard Core

Asset tag: [ ]

Publisher part number: [ ]

\* Software model: Microsoft SQL Server 2016 Standard Core

Agreement type: Generic

\* License type: Perpetual

Metric group: Microsoft

\* License metric: Per Core

\* Rights per license pack: 8

Number of packs: 20

Purchased rights: 160

Active rights: 160

Allocations available: 160

Unit cost: \$ 687.79

Total cost: \$110,046.40

General Financial Contracts Device Allocations Activities

Serial number: [ ]

Owned by: [ ]

State: In use

Substate: -- None --

Maintenance:

Company: [ ]

Location: [ ]

Department: [ ]

Update Delete

You have also purchased SA for your Microsoft SQL Server 2016 licenses.

Software Entitlement  
Microsoft SQL Server 2016 Standard Core

Update Delete

Display name: Microsoft SQL Server 2016 Standard Core

Asset tag: [ ]

Publisher part number: [ ]

\* Software model: Microsoft SQL Server 2016 Standard Core

Agreement type: Generic

\* License type: Software Assurance

\* Start date: 2019-06-02

\* End date: 2021-06-02

Metric group: Microsoft

\* License metric: Per Core

\* Rights per license pack: 8

Number of packs: 20

Purchased rights: 160

Active rights: 160

Allocations available: 160

Unit cost: \$ 9.30

Total cost: \$1,488.00

General Financial Contracts Activities Related Entitlements

Serial number: [ ]

Owned by: [ ]

State: In use

Substate: -- None --

Maintenance:

Company: [ ]

Location: [ ]

Department: [ ]

Update Delete

To accurately track your licenses, associate your perpetual and SA entitlements.

Software Entitlement  
Microsoft SQL Server 2016 Standard Core

Display name: Microsoft SQL Server 2016 Standard Core

Asset tag: [Empty]

Publisher part number: [Empty]

\* Software model: Microsoft SQL Server 2016 Standard Core

Agreement type: Generic

License type: Software Assurance

\* Start date: 2019-06-02

\* End date: 2021-06-02

Metric group: Microsoft

\* License metric: Per Core

Purchased rights: 100

Active rights: 100

Allocations available: 100

Unit cost: \$ 9.30

Total cost: \$930.00

General | Financial | Contracts | Activities | Related Entitlements

Serial number: [Empty]

Owned by: [Empty]

State: In use

Substate: -- None --

Maintenance:

Company: [Empty]

Location: [Empty]

Department: [Empty]

Update | Delete

Expense Lines (1) | Entitlement Histories | Lincada Histories

While you are under active maintenance, Microsoft releases SQL Server 2016 datacenter. Step up from your current version to the new release by creating an entitlement for your upgraded software and link the related entitlements.

Software Entitlement  
Microsoft SQL Server 2016 Datacenter

Display name: Microsoft SQL Server 2016 Datacenter

Asset tag: [Empty]

Publisher part number: [Empty]

\* Software model: Microsoft SQL Server 2016 Datacenter

Agreement type: Generic

License type: Step-up

\* Start date: 2019-06-30

\* End date: 2021-06-30

Metric group: Microsoft

\* License metric: Per Core

\* Purchased rights: 100

Active rights: 100

Allocations available: 100

Unit cost: \$ 1,000.00

Total cost: \$100,000.00

General | Financial | Contracts | Device Allocations | Upgraded Entitlements | Activities

Upgrade Entitlements

Upgrade from	Number of rights
+ Insert a new row...	

Update | Delete

## Import bulk entitlements in Software Asset Management classic

You can import multiple entitlements together using a Microsoft Excel spreadsheet in Software Asset Management classic.

### Before you begin


Role required: sam\_user or sam\_admin

### About this task

The entitlement import records are stored in the Entitlement import [samp\_bulk\_import] table.

## Procedure

1. Navigate to **All > Software Asset > Entitlement Import**.
2. In the Entitlement imports page, select **New**.  
A new entitlement import record opens.
3. In the Entitlement import page, click **Download template** to download a spreadsheet template(.xlsx).

You can add software entitlement fields to the template to include additional fields in your import. Add each field as a new column in the template. The column name must match the field label exactly. You can include base system software entitlement fields as well as your custom software entitlement fields. To learn how to create a custom field, see [Add and customize a field in a table](#) .

By default, the **Unit cost** column in the spreadsheet takes into account the currency that your system is set to. However you can manually change the currency and the Software Asset Management application will honor the currency that you specify. To specify a currency, enter the currency code followed by a semicolon and the cost. For example, EUR ; 200. Valid currency codes are the ones listed in the Currency [fx\_currency] table and have the **Active** column set to true.

4. Enter the entitlement details in the template and select **Click to add** to select and upload the spreadsheet.  
Once the file is uploaded, the name of the file appears and the **Description** field is automatically populated.
5. Select **Import**.  
A confirmation message appears informing you that the import of entitlements is in progress. Once the process is completed, the fields on the page show the number of rows that were processed, successful, and with errors. Once you attach and import a spreadsheet, an import record is created that retains the history of the upload for you to view later.
6. Select the link on the confirmation message to view the status of the import record.  
The Entitlement Imports page appears listing all the entitlement import records.
7. Select the entitlement import record to display the Entitlement Import page.  
The Entitlement Import page contains two tabs:
  - **Entitlements**: lists all the entitlements that got successfully created.
  - **Relate entitlements**: lists entitlements, such as maintenance entitlements, that are in the build state and can be linked to the base entitlements.
8. If any errors occur, select **Review import errors** to open the Entitlement Import Errors page.  
Only records whose error status is **Needs review** are listed by default. You may need to reload the page to view **Review import errors**.
9. Select an import error record to view its errors.  
The Entitlement Import Errors page appears. For a detailed description of the entitlement import error fields, see [Entitlement import error fields](#).
10. Correct the errors and then select **Import**.  
The entitlement is successfully created. For more information on resolving errors, see [Entitlement import error actions](#).

## Create software models in Software Asset Management classic

Create a software model to add product details that are used to connect software rights you purchased with software installations discovered on your system.

## Before you begin

Role required: sam\_user or model\_manager

## About this task

You can manually create a software model. However, you can leverage the Software Asset Management Content Service Library to automate the creation of software models through their relationship to software entitlements. While creating or importing a software entitlement, specifying a publisher part number automatically creates a software model (if needed) or links to an existing software model. You need to manually create a software model if a publisher part number is not available, a publisher part number does not exist in the Content Service Library, or if you are creating a software model for a custom product.

**Note:** If you have the model\_manager role, you can navigate to **Product Catalog > Product Models > Software Models** but cannot administer all aspects of software models.

View and track life cycle information of your product versions (licensable, minor or build) via product life cycles. Product life cycles are associated to software models. Product life cycles are based on attributes such as publisher, product, edition, edition condition, version, and version condition. The life cycle information is maintained in the Product Lifecycle [sam\_sw\_product\_lifecycle] and Custom Product Lifecycle [sam\_custom\_sw\_product\_lifecycle] tables.

You can view a detailed product life cycle report in the Software Asset Analytics dashboard and drill-down to the software installations. You can also manually create product life cycles and view product life cycles associated to a software model in the [Software Product Lifecycle related list](#) in the Software Model form layout.

**Note:** Duplicate product life cycles can be created but in different domains.

You can view the life cycles for all the versions of the product on the software model form layout by clicking the **Show Product Lifecycles for all Versions** related link.

If you've installed the SAP publisher pack, see [Record publisher details for SAP](#).

## Procedure


1. Navigate to **Software Asset > Licensing > Software Models**.
2. Select **New**.
3. On the Software Model form, [fill in the details](#) about the software publisher.
4. Right-click the form header and select **Save**.
5. Specify whether your software publisher is part of a suite.
  - To designate your software model as a suite parent, select the [Suite Parents related list](#) and add all software included with the suite.
  - To designate your software model as a suite component, select the [Suite Components related list](#) and add the parent suite.

**Note:** If you've added a discovery map to your product details, predefined suites are used and suite components are created automatically for known suite parent.

6. To enable self-service capabilities for the software that is associated with your software model, publish the software model to your service catalog.

- a. Select the **Publish to Software Catalog** related link.

The Publish *<software - model>* to Software Catalog dialog box opens.

- b. On the dialog box, set the **Category** field to **Software**.
- c. Select **OK**.
7. To see discovery maps that have the match the software publisher and product fields of the software model, select the **Show Matching Discovery Models** related link.
8. To view all the product lifecycles associated with your software model, select the [Software Product Lifecycles](#).  
Select **New** to create a custom product life-cycle.
9. To set the attribute value, select the [Metric Attributes related list](#) and complete the form.  
When you add an attribute value, entitlements with this publisher information associated with them automatically have the **Metric Group** field populated. Based on the metric group, only license metrics related to the publisher are available.
10. To associate your software model with a vendor, select the [Vendor Catalog Item related list](#)  and complete the form.
11. To specify the number of devices or users that are accessing the software, select the [Client Access related list](#) and complete the form.
12. To create a new record for the software downgrade rights, select the [Downgrade Rights related list](#) and complete the form.

**i Note:** If your software model has a discovery map associated with it and the discovery map has downgrade rights, the downgrade rights are populated automatically. Downgraded versions of the software appear in a hierarchical list. For more information, see [Downgrade Rights](#).

13. Select **Update**.

### Related topics

- [Supported software publisher licenses](#)
- [Software models and Software entitlements](#)
- [Software model fields](#)

### View normalization suggestions

View normalization suggestion records that are created for discovery models. You can accept or reject these suggestions.

### Before you begin

Role required:

- **sam\_admin:** accepts or rejects the normalization suggestions.
- **sam\_user:** views normalization suggestions.

The records are contained in the Normalization Suggestions [samp\_normalization\_suggestions] table.

## Procedure

1. Navigate to **All > Software Asset > Discovery > Normalization Suggestions** For details on the normalization suggestion fields, see [Normalization suggestions for discovery models](#).

**Note:** Suggested field values that differ from actual field values are indicated by a blue dot.

2. Select **Accept** to make the suggested changes to the discovery model, or click **Reject** to keep the existing settings.

**Note:** Only the sam\_admin role can accept or reject the normalization suggestions. For more details on accepting or rejecting suggestions, see [Normalization suggestions for discovery models](#).

## View a software job result

You can view the results of Software Asset Management jobs that have run to verify completion.

### Before you begin

Role required: sam\_admin

### About this task

Job results include:

- Discovery Model Normalization
- Identify Restricted Installs
- Identify New Reclamation Candidates
- Software Usage Import
- Update Existing Reclamation Candidates
- Software Asset Management Content Service Upload/Download

All Software Asset Management scheduled jobs are listed in the **System Definition > Scheduled Jobs** navigation area. Software Asset Management scheduled job names begin with the product name (SAM).

**Note:** The default date, time, and order of Software Asset Management scheduled jobs are configured for optimal performance. Changing a scheduled job from the default run setting may not be optimal for performance or data availability.

## Procedure

1. Navigate to **Software Asset > Administration > Job Results**.

2. Open a record to view the job results.

### Software Asset Job Result form

Field	Description
Number	Number of the job result that is generated when the job is run.
Name	Name of the job.
Status	Status of the job.

Field	Description
Created	Date and time job was created.
Updated	Date and time job was updated.

### Manually normalize a software discovery model

You can edit a software discovery model to manually normalize discovered software that has not been fully normalized (partially normalized, publisher normalized, or match not found) on the Software Discovery Models form so that it can be reconciled.

#### Before you begin

Role required: sam\_user

#### About this task

If the information automatically added to the software discovery model is incomplete, you can add the missing fields to manually normalize the software discovery model.

#### Procedure

1. Navigate to **All > Software Asset > Discovery > Discovery models** and open a discovery model record that has a normalization status of Partially Normalized, Publisher Normalized, or Match Not Found.
2. Fill in the **Publisher**, **Product**, and **Version** fields, as appropriate.  
You can create a [custom product](#) from the Product lookup list, if desired.
3. Select **Save**.  
The normalization status is set to Manually Normalized.
4. **Optional:** To revert normalization, select **Revert Normalization**.

**Note:** Discovery models with a status of Normalized, Partially Normalized, or Publisher Normalized revert to the status of Match Not Found. Discovery models with a status of Manually Normalized and discovery models that have been normalized using pattern rules cannot be reverted.

Fields are reset to their original values, and any rules associated with the software discovery model are deactivated.

### Manually override edition value in classic

When the edition of a software install is not automatically discovered, you can specify the edition on the Software Installation form with the correct value (if known) so the software can be successfully reconciled.

#### Before you begin

Role required: sam\_admin

#### About this task

For reconciliation to run successfully, the publisher, product, version, and edition fields of the software must be set. When the edition is not discovered automatically (edition value is not included as part of the **Display name** field) but you know the edition, you can manually set it to the correct value (Enterprise, for example).

Once the edition value is set, the discovery model for the software install is automatically reset. If the appropriate discovery model does not exist, a new one is created.

**Note:** Not all software products consist of an edition. Of the software products consisting of an edition, not all edition values are automatically discoverable.

## Procedure

1. Navigate to **All > Software Asset > Discovery > Software Installations** and open the software installation record for which to set the edition value.
2. Fill in the **Edition override** field, as appropriate.

**Note:** The **Edition override** field is a free-form field (no lookup list) therefore, since this field is used as a key, the value entered must be exact.

3. Select **Update**.

The software installation is associated to different discovery model containing the edition value as part of the primary key. If the appropriate discovery model does not exist, a new one is created.

## Discovered engineering licenses

View a list of all the discovered and normalized software for your engineering applications.

Navigate to **Software Asset > Discovery > Discovered Engineering Licenses**

You can view a list of all the normalized publishers and products for your engineering applications. Additional information such as the version, quantity of licenses, and the type of license is also displayed.

## Software license usage

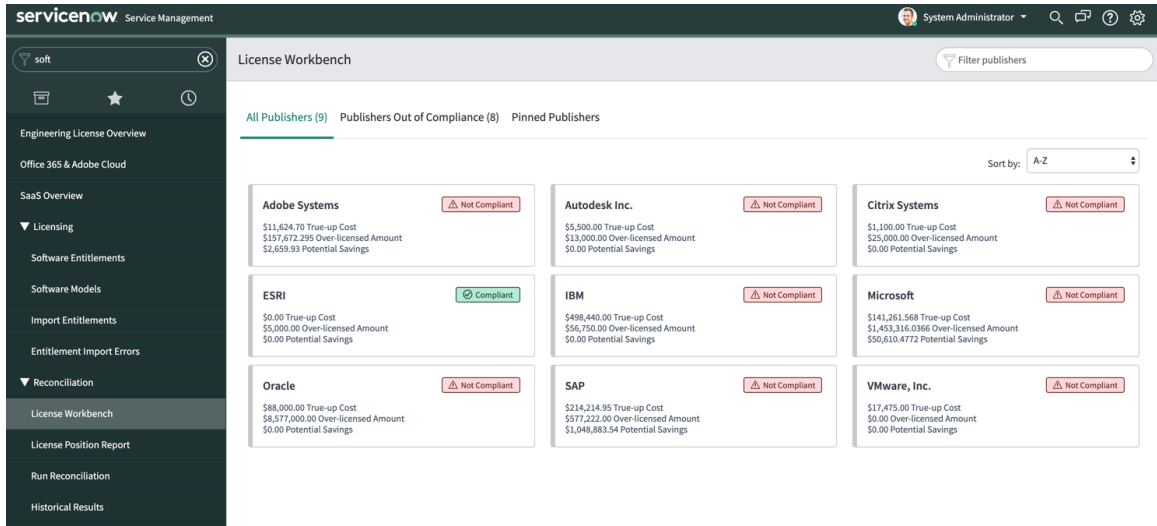
Review reconciliation results in a simplified workbench view.

The License Workbench lets you forecast the needs of your organization by trending the number of rights consumed against the number of active rights purchased. You can stay in compliance by purchasing additional rights before software consumption surpasses the number of rights owned.

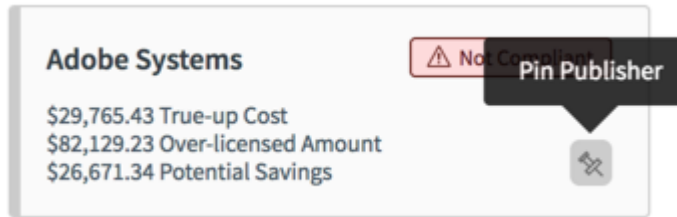
Workbench features include:

- Color-coded compliance banner
- Financial calculations on card
- Publisher pinning functionality (user specific, saved)
- Sort card functionality
- Active filtering
- Card drill down to Product Results list
- Keyboard control
- Group and subgroup reconciliation information, if applicable

## License workbench



Pinned publishers are listed in the **Pinned Publishers** tab. The list of pinned publishers is saved



on a per-user basis.

### License Workbench tabs

Tab	Description
All Publishers	List of all publishers.
Publishers Out of Compliance	List of all publishers where status is not compliant.
Pinned Publishers	User-specific saved list of publishers that have been grouped.

### Publisher workbench navigation tree

Drill down on a specific publisher, product, software model, or license metric in the workbench navigation tree to view the calculation and compliance information from the latest reconciliation results.

The navigation tree features are:

- Filter products (active filtering, including collapsed items)
- Compliance toggle switch
- Expand and collapse tree links
- Software model compliance icons

The screenshot shows the Microsoft License Workbench interface. On the left is a navigation tree with categories like 'Age of Empires', 'Exchange Server', 'Office', 'Office 365', 'Project', 'SQL Server', 'Visio', and 'Windows Server'. The main area displays a summary for Microsoft, including 'Total Spend' of \$5,237,544.49, 'True-up Cost' of \$56,451.592, 'Over-licensed Amount' of \$782,302.7607, and 'Potential Savings' of \$30,432.7472. Below this is a 'Product Results (8)' table with columns for Number, Product, Status, True-up cost, Over-licensed amount, and Potential savings.

Number	Product	Status	True-up cost	Over-licensed amount	Potential savings
PR0001020	Exchange Server	Compliant	\$0.00	\$207,796.44	\$0.00
PR0001021	Office	Compliant	\$0.00	\$115,375.10	\$0.00
PR0001022	Office 365	Not Compliant	\$15,960.00	\$10,320.00	\$0.00
PR0001023	Project	Not Compliant	\$40,391.592	\$17,731.69	\$23,328.9072
PR0001024	SQL Server	Compliant	\$0.00	\$157,230.2678	\$0.00
PR0001025	Visio	Not Compliant	\$100.00	\$80,806.18	\$7,103.84
PR0001026	Windows Server	Compliant	\$0.00	\$193,043.0829	\$0.00
PR0001027	Age of Empires	Not Compliant	\$0.00	\$0.00	\$0.00

By default, the navigation tree on the publisher license overview page is collapsed. When expanded, it's grouped by publisher.

Publisher: Product Results related lists:

- [Software Model Results](#)
- Licensed Installs
- Unlicensed Installs (SAP: Unlicensed Users or Unlicensed Engines)
- Unlicensed Subscriptions (Subscription-based software)
- Removal Candidates

Software Model Results related lists:

- License Metric Results
- Remediation Options: The **Rights Needed By** tab is not visible for the Resource Value Unit (RVU) IBM license metric. Rights are not used by individual devices, as the Resource Value Unit (RVU) license metric is licensed at the product level.

**Note:** For more details on the remediation options, see [View software model results](#).

- Licensed Installs
- Unlicensed Installs (SAP: Unlicensed Users)
- Unlicensed Subscriptions (Subscription-based software)
- Unlicensed Consumptions (Consumption-based software models)
- Unlicensed Options (Oracle only)
- Removal Candidates
- Purchase Orders (only when the Procurement (com.snc.procurement) plugin is active)

License Metric Results related list:

- Rights Used By: Not visible for the Resource Value Unit (RVU) IBM license metric. The Resource Value Unit (RVU) license metric is licensed at the product level; it is calculated based on the total consumption of the product in your enterprise.




**Note:** Four additional fields are visible in the Rights Used By related list if you have cloud installations.

- Licensed Installs
- Installs Used (SAP: System Users)
- Downgrades/Upgrades
- Licensed Subscriptions
- Cloud Special Rights: This tab is available only if you have cloud installations on cloud platforms such as AWS or Azure. This tab is a subset of the Rights Used By tab and displays fields pertaining to cloud installations. For detailed descriptions on the Cloud Special Rights fields, refer to the Rights Used By tab.






### Report calculations

Report	Description
Publisher, product, software model	
Total Spend	Total cost of rights owned.
True-up Cost	Estimated cost of remediating unlicensed installations based on the lowest number of rights needed (rights needed multiplied by average price per right from entitlements).  The lowest cost from Purchase Rights remediation options.
Over-licensed Amount	Estimated cost of rights not being used. The sum of the Over Licensed amount from the True-up value costs.
Potential Savings	Cost saved if removal candidates are reclaimed.
Agreement Type	Software license type.
License Metric results	
Display name	Name of the license metric that the software license is counted against when reconciliation runs.
Rights owned	Sum of all active rights from entitlements that share a license metric.
Rights used	Sum of rights that are used during reconciliation (allocated plus not allocated and installed).
Rights available	Sum of rights that are not used during reconciliation (rights owned minus rights used).

**Report calculations (continued)**

Report	Description
<p>Legacy license</p> <p><b>i Note:</b> This field appears only if your environment has dedicated hosts on AWS or on Azure.</p>	<p>Indicates licenses purchased before 1 Oct 2019.</p> <p><b>i Note:</b> Microsoft has updated licensing rules for dedicated hosts based on the purchase date.</p>
<p>Over-licensed amount</p>	<p>Estimated cost of unused rights.</p>
<p>Right allocations</p>	<ul style="list-style-type: none"> <li>• Allocated in use</li> <li>• Not allocated in use</li> <li>• Allocated not in use</li> <li>• Not allocated</li> <li>• Allocations needed</li> </ul> <p><b>i Note:</b> For Microsoft Per Core and Microsoft Per Core with (CAL), you can have non-transferable rights. Non-transferable rights are any remaining rights from a core pack that cannot be used to license any additional devices.</p>
<p>Rights needed</p> <p><b>i Note:</b> This field is hidden by default. Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Number of rights that are required to cover unlicensed installations.</p>
<p>Unlicensed installs</p> <p><b>i Note:</b> This field is hidden by default. Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Number of unlicensed software installations that are not covered by any entitlements.</p>
<p>Unlicensed SAP users (SAP only)</p> <p><b>i Note:</b> This field is hidden by default. Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Number of unlicensed SAP users that are not covered by any entitlements.</p>
<p>Unlicensed options (Oracle only)</p>	<p>Number of unlicensed Oracle database options that are not covered by any entitlements.</p>

**Report calculations (continued)**

Report	Description
<p><b>i Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	
<p>Unlicensed subscriptions</p> <p><b>i Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Number of unlicensed software subscriptions that are not covered by any entitlements.</p>
<p>True-up cost</p> <p><b>i Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Estimated cost of remediating unlicensed installations that are based on the lowest number of rights needed.</p>
<p>Potential savings</p> <p><b>i Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Estimated cost saved by reclaiming removal candidates.</p>
<p>Downgrade rights</p> <p><b>i Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Previous software versions that you can license using software entitlements for the latest software version.</p>

**Rights Used By**

Field	Description
Used by	User or device using the rights.
Rights used	Sum of rights used during reconciliation (allocated + not allocated and installed).
Cloud Provider	<p>Name of the cloud provider.</p> <p><b>i Note:</b> This field appears only if you have cloud installations on AWS or Azure.</p>
Dual Use Rights Applied	Indicates if the concurrent rights provided by Microsoft Azure that allows simultaneous usage of rights on-premise and on cloud is applied or not.

Field	Description
	<p><b>Note:</b> This field appears only if you have cloud installations on AWS or Azure.</p>
Host Type	<p>Type of host on the cloud: shared or dedicated.</p> <p><b>Note:</b> This field appears only if you have cloud installations on AWS or Azure.</p>
Edition Flexibility Applied	<p>Indicates if the edition flexibility benefits provided by Microsoft Azure for Windows Server and SQL Server is applied or not.</p> <p><b>Note:</b> For details on the edition flexibility benefits, refer to <a href="#">Licensing rules for BYOL and BYOS</a>.</p> <p>This field appears only if you have cloud installations on AWS or Azure.</p>
Allocated in use	<p>Rights that are allocated and are used to license installations.</p>
Not allocated in use	<p>Number of rights that are used to license installations, but not allocated.</p> <p>When this value is greater than 0, two remediation options (Create Allocations and Remove Unallocated Installs) are automatically created for each unique license metric in the software model that meets this requirement, except User CAL and Device CAL.</p>
Allocated not in use	<p>Rights that are allocated but are not being used to license any installations.</p> <p><b>Note:</b> <b>Allocated not in use</b> reflects rights that are wasted because the user or device for which these rights have been allocated do not have the software installed.</p> <p>When this value is greater than 0, a Remove Allocations remediation option is automatically created for each unique license metric in the software model that meets this requirement.</p>
Allocations needed	<p>Number of allocations needed for compliance. Only used for Per Named User and Per Named Device license metrics.</p>

### Run software reconciliation

Reconciliation is run as a scheduled job (default is weekly), but you can also run reconciliation manually to reconcile software products in your environment on demand.

#### Before you begin

Role required: sam\_admin

#### About this task

Reconciliation is run for products that have software entitlements or software installs. Grouping and subgrouping are supported so you can narrow the compliance results.

When running reconciliation manually, allow enough time for the process to complete. For faster results, narrow the scope by selecting specific publishers.

## Procedure

1. Navigate to **All > Software Asset > Reconciliation > Run Reconciliation** and select the publishers for which compliance should be calculated, or select all publishers.
2. To narrow results further, select **Group** and **Subgroup**, if desired.  
Available group and subgroup values include None, Country, Department, Company, Region, and Cost Center.
3. Select **Continue**.  
The reconciliation process may take an extended amount of time to complete. Once reconciliation is complete, the reconciliation results are shown.

## View software model results

View compliance information for software model results from the Product Results list after reconciliation is run.

## Before you begin


Role required: sam\_user

## About this task

You can view License Metric Results, Remediation Options, Licensed Installs, Unlicensed Installs, and Removal Candidates related lists for a software model result from a Product Result record. When the [Procurement](#) application (com.snc.procurement) is active, you can also create and view purchase orders directly from the Remediation Options form. More remediation options include automatically create and remove allocations, remove unallocated installs, and remove unlicensed installs.

For example, if the status of a product result shows that it isn't compliant, you can drill down on the product result to view software model details. These details can include the number of unlicensed installs and the true-up cost to become compliant. Further, you can drill down on the software model result to view the license metric result, which is based on the entitlements for the product.


License metric result information includes rights owned and rights used as well as the license allocation breakdown so you can determine your options to become compliant. The Remediation Options related list shows the number of rights needed and calculates the cost of those rights for you, based on the license metric.

You can use the dashboard field action () icon on the Software Model Results form to view the Rights Owned vs Rights Used chart to forecast when additional licenses are needed.


## Procedure

1. Navigate to **All > Software Asset > Reconciliation > Historical Results** and select a reconciliation result.
2. On the Reconciliation Result form, select a Product Results record to view the product result details.
3. In the Software Model Results related list, open a record to view the software model result details.

**Software Model Results form**



Field	Description
Software model	<p>Software model associated with the product. Drill down on the software model to see the software model result.</p> <p>The dashboard field action (  ) icon shows the Rights Owned vs Rights Used chart for the software model.</p>
Product result	Unique product result number generated during the reconciliation process.
Group	Group specified on which to run reconciliation. Values include None, Country, Department, Company, Region, and Cost Center.
Subgroup	Subgroup specified on which to run reconciliation. Values include None, Country, Department, Company, Region, and Cost Center.
Latest	Indicates whether this software model result is from the most recent reconciliation run.
Status	<p>Status of the software model.</p> <ul style="list-style-type: none"> <li>○ Compliant</li> <li>○ Not Compliant</li> </ul>
Agreement type	<p>Agreement type is set on the software entitlement.</p> <ul style="list-style-type: none"> <li>○ Common: Generic, Enterprise License Agreement (ELA)</li> <li>○ IBM: Generic, Enterprise License Agreement (ELA), International Program License Agreement (IPLA), IBM Customer Agreement (ICA), Unlimited Level Agreement (ULA)</li> <li>○ Microsoft: Generic, Enterprise License Agreement (ELA)</li> <li>○ Oracle: Generic, Unlimited Level Agreement (ULA)</li> <li>○ VMware: Generic, Enterprise License Agreement (ELA), Enterprise Purchasing Program (EPP), Volume Purchasing Program (VPP)</li> </ul>

Field	Description
	<p><b>Note:</b> If the agreement type is Enterprise Level Agreement or Unlimited Level Agreement, the <b>Status</b> is Compliant even if there are unlicensed installations or unlicensed subscriptions.</p>
Unlicensed installs	Number of unlicensed software installations that aren't covered by any entitlements.
True-up cost	Estimated cost of remediating unlicensed installations based on the lowest number of rights needed (rights needed * average price per right from entitlements). The lowest cost from Purchase Rights remediation options.
Over-licensed amount	Estimated cost of rights not being used. The sum of the Over Licensed amount from the True-up value costs.
Potential savings	The cost that can be saved by acting on underutilized or incorrect consumption of licenses in related removal candidates.
License Metric Results	
Display name	<p>Name of the license metric that the software license is counted against when reconciliation runs.</p> <p>Select the <b>Display name</b> to open the corresponding License Metric Results record, where you can view more in-depth information about the license metric result. See <a href="#">Software model results license metric results fields</a> for more details.</p>
Rights owned	Sum of all active rights from entitlements that share a license metric.
Rights used	Sum of rights used during reconciliation (allocated plus not allocated and installed).
Rights available	Sum of rights not used during reconciliation (rights owned minus rights used).
Over-licensed amount	Estimated cost of unused rights.
Legacy license	<p>Indicates licenses purchased before 1 Oct 2019. This field appears only when the environment has dedicated hosts on AWS or on Azure.</p> <p><b>Note:</b> Microsoft has updated licensing rules for dedicated hosts based on the purchase date.</p>

Field	Description
Allocated in use	Rights that are allocated and are used to license installations.
Not allocated in use	<p>Number of rights that are used to license installations, but not allocated.</p> <p>When this value is greater than 0, two remediation options (Create Allocations and Remove Unallocated Installs) are automatically created for each unique license metric in the software model that meets this requirement, except User CAL and Device CAL.</p>
Allocated not in use	<p>Rights that are allocated but aren't being used to license any installations.</p> <p><b>Note:</b> <b>Allocated not in use</b> reflects rights that are wasted because the user or device for which these rights have been allocated don't have the software installed.</p> <p>When this value is greater than 0, a Remove Allocations remediation option is automatically created for each unique license metric in the software model that meets this requirement.</p>
Nontransferable rights	Remaining rights from a core pack that can't be used to license any additional devices. Nontransferable rights are available only for Microsoft Per Core and Microsoft Per Core with (CAL).
Not allocated	Number of rights that haven't been allocated (rights owned minus allocated regardless of whether installed or not).
Allocations needed	Number of allocations needed for compliance. Only used for Per Named User and Per Named Device license metrics.
Rights needed	Number of rights that are required to cover unlicensed installations.
	<p><b>Note:</b> This field is hidden by default. Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>
Unlicensed installs	Number of unlicensed software installations that aren't covered by any entitlements.

Field	Description
<p><b>Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	
<p>Unlicensed SAP users (SAP only)</p> <p><b>Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Number of unlicensed SAP users that aren't covered by any entitlements.</p>
<p>Unlicensed options (Oracle only)</p> <p><b>Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Number of unlicensed Oracle database options that aren't covered by any entitlements.</p>
<p>Unlicensed subscriptions</p> <p><b>Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Number of unlicensed software subscriptions that aren't covered by any entitlements.</p>
<p>True-up cost</p> <p><b>Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Estimated cost of remediating unlicensed installations that are based on the lowest number of rights needed.</p>
<p>Potential savings</p> <p><b>Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Estimated cost saved by reclaiming removal candidates.</p>
<p>Downgrade rights</p> <p><b>Note:</b> This field is hidden by default.</p> <p>Select the personalize list icon  to modify the fields that appear in the License Metric Results.</p>	<p>Previous software versions that you can license using software entitlements for the latest software version.</p>
<p>Remediation Options</p>	
<p>Remediation action</p>	<p>Action to take to for compliance.</p> <ul style="list-style-type: none"> <li>○ Purchase Rights</li> <li>○ Remove Allocations</li> <li>○ Create Allocations</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>Remove Unallocated Installs (Not available for Oracle database options)</li> <li>Remove Unlicensed Installs (Not available for Oracle database options)</li> <li>Remove Unlicensed Installs - Cloud (available only if you have cloud installations).</li> <li>If the actionable rights value is 0, the <b>Remediation action</b> button will not appear.</li> </ul>
Affects compliance	Specifies whether the remediation options affect compliance.
License metric	Specific license metric of the software model result.
Software model result	Specific software model result pertaining to the remediation option.
Status	<p>Status of the remediation option.</p> <ul style="list-style-type: none"> <li>New (blue)</li> <li>Complete (green)</li> <li>Completed with Errors (yellow)</li> <li>Void (red)</li> <li>In Progress (yellow)</li> </ul> <p>In Progress state indicates that the remediation action is in progress. If removal candidates are being created, the status changes to <b>completed</b> once the removal candidates are created.</p>
Rights not in use Rights not allocated Rights needed Reclaimable rights Unlicensed rights (Field shown is based on Remediation action type)	<ul style="list-style-type: none"> <li><b>Remove Allocations</b> action shows <b>Rights not in use</b> field.</li> <li><b>Create Allocations</b> action shows <b>Rights not allocated</b> field.</li> <li><b>Purchase Rights</b> shows <b>Rights needed</b> field.</li> <li><b>Remove Unallocated Installs</b> action shows <b>Reclaimable rights</b> field.</li> <li><b>Remove Unlicensed Installs</b> action shows <b>Unlicensed rights</b> field.</li> </ul>
Actionable rights	Total rights affected by the action.
Purchase order	Purchase order number associated with the remediation option, if a purchase order was created.
True-up cost	Estimated cost of remediating unlicensed installations based on the lowest number of rights needed.

Field	Description
Unlicensed Subscriptions  <b>Note:</b> This related list is shown only for subscription-based software products.	
Display name	Name of the unlicensed software subscription that is not covered by any entitlements.
User principal name	Name of the user that is associated with the unlicensed software subscription.
Software model	Software model that the unlicensed software subscription is associated with.
Subscription profile	Integration profile that the unlicensed software subscription is associated with.
Subscription type	Type of subscription.
Unlicensed Consumptions  <b>Note:</b> This related list is shown only for consumption-based software models.	
Software model	Software model that has unlicensed software consumptions.
Subscription profile	Integration profile that has unlicensed software consumptions.
Units consumed	Number of software units that your users have consumed.
Contract start	Start date of your licensing contract.
Contract end	End date of your licensing contract.
Actual monthly consumption	Actual number of software units that your users consume per month.
Expected monthly consumption	Number of software units that you expect your users to consume per month.
Cost Center	Business unit that has unlicensed software consumptions.
Department	Department that has unlicensed software consumptions.
Location	Geographic location in which there are unlicensed software consumptions.
Company	Name of the company that has unlicensed software consumptions.

The Licensed Installs related list contains the [software installations](#) that are licensed. To view more information about a licensed software installation, open the corresponding Software Installation record by selecting the **Display name**. Refer to [Software installation fields](#) for detailed descriptions of each field in the Software Installation record.

The Unlicensed Installs related list contains the [software installations](#) that are unlicensed. To view more information about an unlicensed software installation, open the corresponding

Software Installation record by selecting the **Display name**. Refer to [Software installation fields](#) for detailed descriptions of each field in the Software Installation record.

The Unlicensed Users related list contains the [SAP system users](#) that are unlicensed.

**Note:** This related list is shown only for the SAP publisher.

The Removal Candidates related list contains removal candidates related to software installations. For more information, see [Removal candidates](#).

- Execute remediation options for specific remediation actions by selecting an option from the Remediation Options related list and then selecting the applicable action.

**Remediation option action buttons**

Remediation option action	Action button	Result
Remove Unlicensed Installs	<b>Create All Removal Candidates</b>	When removal candidates are created for unlicensed installs, the status is set to Awaiting Revocation.
Remove Unallocated Installs	<b>Create All Removal Candidates</b>	When removal candidates are created for unallocated installs, the status is set to Ready.
Remove Allocations	<b>Remove All Allocations</b>	When allocations are removed, the number of allocations is adjusted.  When you select this button, a message is displayed on the screen indicating that the action is in progress.
Create Allocations	<b>Create All Allocations</b>	When allocations are created, the status of Remove Unallocated Installs remediation options (for the same license metric of the same software model result) are then set to Void.  When you select this button, a message is displayed on the screen indicating that the action is in progress.
Purchase Rights	<b>Create Purchase Order</b>	When a purchase order is created, the status of any Purchase Rights remediation

Remediation option action	Action button	Result
	<p><b>Note:</b> The <b>Create Purchase Order</b> button creates a <a href="#">purchase order</a> but is only shown when rights needed is greater than 0, and Procurement is active.</p> <p>The <b>Create Purchase Order</b> button remains active until the purchase order has finished processing. Therefore, to avoid the creating a duplicate purchase order for the same item, wait to run reconciliation again until after the purchase order has finished processing.</p>	<p>options for the same software model result are then set to Void.</p> <p>Purchase order fields <b>Part number</b>, <b>Metric group</b>, <b>License metric</b>, and <b>Ordered quantity</b> are automatically populated with the content from the remediation option.</p> <p><b>Metric group</b> and <b>License metric</b> fields are added to the purchase order form so the entitlement can be automatically created when the order is complete.</p> <p>A notification is shown if at least one active purchase order line item exists for the software model.</p> <p>Once a purchase order is created, the <b>Purchase order</b> field, containing the purchase order reference, is added to the remediation option.</p>

A confirmation message is shown and all applicable [removal candidates](#) are added to the Removal Candidates related list.

### Add a software removal candidate

Removal candidates reclaim software resources in your environment. They are created from reclamation rules, or can be created manually.

### Before you begin

Role required: sam\_user

### About this task

Software reclamation is integrated with Workflow and Client Software Distribution to automate the process of uninstalling software from devices and reclaiming software rights. However, you can also create a removal candidate manually.

### Procedure

1. Navigate to **All > Software Asset > Removal Candidates**
2. Select **New**.
3. On the form, fill in the fields.

**Removal Candidate form**

Field	Description
Number	Unique removal candidate number that is automatically generated.
Assignment group	Automatically set to the software managers group authorized to respond to removal candidates.
Assigned to	Person primarily responsible for working this task.
Name	Removal candidate name that is automatically generated. Contains the software installation display name.
Description	Description of why the task exists, and what the user must do, if they receive an approval.
State	<p><b>Current state</b> of the removal candidate.</p> <ul style="list-style-type: none"> <li>○ Attention Required</li> <li>○ Ready</li> <li>○ Awaiting User</li> <li>○ Awaiting Approval</li> <li>○ Awaiting Revocation</li> <li>○ Closed Complete</li> <li>○ Closed Skipped</li> <li>○ Closed Canceled</li> </ul>
Opened	Date the task was opened.
Closed	Date the task was closed.
Justification	<p>Justification for becoming a removal candidate.</p> <ul style="list-style-type: none"> <li>○ Low Usage (default)</li> <li>○ Unallocated</li> <li>○ Unlicensed</li> <li>○ Restricted Software</li> </ul>
<b>Removal Candidate</b>	
Applies to	<p>Item type to which the reclamation rule applies.</p> <ul style="list-style-type: none"> <li>○ Installed Software</li> <li>○ Subscription Software</li> <li>○ Engineering App License</li> </ul>
Software installation	The software installation being reclaimed.
Engineering App License	The Engineering application license that you want to reclaim.

Field	Description
<p><b>Note:</b> Only appears if <b>Engineering App License</b> is selected in the <b>Applies to</b> list.</p>	
User	<p>Name of the user assigned to the software installation.</p> <p>This value can be changed so that another user receives the notification of software being uninstalled.</p> <p>If the <b>Bulk Reclamation</b> check box is selected, this becomes a mandatory field.</p>
Bulk Reclamation	<p>Select this check box to reclaim multiple software installations.</p> <p>Once you select this check box, the <b>Software installation</b> field is no longer visible. To add software installations, refer to sub steps mentioned in step 4.</p>
Reclamation rule	The reclamation rule that created the removal candidate.
<p>Rights to reclaim</p> <p><b>Note:</b> Only shown if <b>Engineering App License</b> is selected in the <b>Applies to</b> list.</p>	The number of rights that you want to reclaim. For example, you have 100 rights installed on a license server but you want to reclaim only 40 rights.
Potential savings	Estimated cost of savings if all removal candidates are in Closed Complete state, meaning the software was uninstalled and the rights were harvested (unused rights * average price per right from entitlements).
Notify user	Check box for notifying the user assigned to the hardware on which the software is installed requesting permission via email to remove the software.
Configuration item	The device on which the software is installed.
Activity	
Work notes	Used to track the actions that have been performed on this task.

**4. Select Save.**

The removal candidate record is created. If you selected the **Bulk Reclamation** check box, perform the following sub steps to add software installations, before proceeding to the next step. If you didn't select the **Bulk Reclamation** check box, proceed to the next step.

- a. Select **Edit** in the Software Installation related list.
- b. In the Edit Members page, move the software installations from the Collection box to the Software Installation List box.  
Only the software installations that are assigned to the specified user appear in the Collection box.
- c. Select **Save**.  
The software installation you added appears in the Software Installations related list. The state of the removal candidate moves from **Attention Required** to **Ready** and a name is generated in the **Name** field. Continue to select **Edit** to add more software installations. If you decide to remove all software installations, then the state reverts back to **Attention Required** and the name no longer appears in the **Name** field. For the name to be generated and for the removal candidate to be in **Ready** state, at least one software installation must be selected in the removal candidate form.

**5. Select Reclaim.**

Once your software installation is reclaimed and removed from your system, the Software Installation column becomes empty. You can refer to the following fields on the Software installation related list to give you insights into the history of the reclaimed software installation.

- Display name
- Product
- Publisher
- Software model

You may select any action button on the form to further configure the removal candidate. Action buttons are dependent on the removal candidate's justification and state.

**Action buttons**

Action	Description
Update	Update the removal candidate.
Close Complete	Reclaim rights and close the removal candidate.
Close Skipped	Close the removal candidate without reclaiming rights.
Delete	Delete removal candidate.

**Reconciliation and product results**

Field descriptions for the reconciliation results, product results, and software product results.

**Reconciliation results**

Reconciliation results are listed in the navigation path **Software Asset > Reconciliation > Historical Results**

### Reconciliation Results form

Field	Description
Number	Unique identifying number that is generated during the reconciliation process.
Last reconciled	Date of last reconciliation run.
Ran for	All publishers, or specific publishers.
Publishers	Only shown if publishers were specified on which to run reconciliation.
Group	Group specified on which to run reconciliation. Values include None, Country, Department, Company, Region, and Cost Center.
Subgroup	Subgroup specified on which to run reconciliation. Values include None, Country, Department, Company, Region, and Cost Center.
Status	Status of the reconciliation. <ul style="list-style-type: none"> <li>• Completed</li> <li>• In Progress</li> <li>• Failed</li> </ul>
Progress	Percent complete and progress bar for the reconciliation run.
Progress summary	Specific step within the reconciliation process. <p><b>Note:</b> This list column is not shown by default. You can personalize your list column settings to add it, if desired.</p>

### Software product results

You can access Software Models, Unlicensed Installs, and Removal candidates related lists from a product result record.

A product result for a licensable product is generated after reconciliation even if there are no software models defined for the product.

**Note:** A Software Model Results record is only created when a software model or entitlement exists for the product.

For licensable products, a software model is automatically created for any unlicensed installs, subscriptions, or options in the Product Results list that do not have an entitlement by default. See [properties](#) to change the `com.snc.samp.automaticsmrcreation` property setting. You can also set the `com.snc.samp.automaticsmcreation` property to have a software model created automatically for not-licensable products, if desired.

To view more information about a specific software product result, select an entry from the Product Results list. Refer to the following table for field descriptions.

### Product Results form

Field	Description
Number	Unique product result number that is generated during the reconciliation process.

**Product Results form (continued)**

Field	Description
Publisher	Publisher of the software.
Product	Name of software product.
Group	Group to which the product result belongs.
Subgroup	Subgroup to which the product result belongs.
Latest	Indicates whether this product result is from the most recent reconciliation run.
Reconciliation result	Unique reconciliation result number that is generated during the reconciliation process.
Status	Status of the product. <ul style="list-style-type: none"> <li>• Compliant</li> <li>• Not Compliant</li> </ul>
True-up cost	Estimated cost of remediating non-compliance based on the lowest number of rights needed.
Over-licensed amount	Estimated cost of rights not being used. The sum of all Over Licensed amount values from every software model result.
Potential savings	Estimated cost of savings if software installations are reclaimed. The sum of all potential savings from all removal candidates.
Licensed installs	Total number of installations that are licensed for the product.
Unlicensed installs	Total number of installations that are unlicensed for the product.
<b>Software Model Results</b>	
Status	Status of the software model.
Software model	Name of the software model.
Unlicensed installs	Total number of installations that are unlicensed for the associated software product.
True-up cost	Estimated cost of remediating non-compliance based on the lowest number of rights needed.
Over-licensed amount	Estimated cost of rights not being used.
Potential savings	Estimated cost saved if reclamation candidates are reclaimed.
<b>Licensed Installs</b>	
Display name	Name of the licensed software installation.
Publisher	Publisher of the software product.
Version	Version of the software product.

**Product Results form (continued)**

Field	Description
Discovery model	Software discovery model that represents the installed software product.
Installed on	Device on which the product is installed.
Assigned to	User to which the product is assigned.
Unlicensed Installs	
Display name	Name of the unlicensed software installation.
Publisher	Publisher of the software product.
Version	Version of the software product.
Installed on	Device on which the product is installed.
Assigned to	User to which the product is assigned.
Unlicensed Subscriptions	
<p><b>Note:</b> This related list is only shown if the software product is a subscription.</p>	
Publisher	Publisher of the software product associated with the unlicensed subscription.
Product	Name of the software product associated with the unlicensed software subscription.
User	Name of the user associated with the unlicensed software subscription.
User principal name	Email address of the associated user.
Software model	Software model associated with the unlicensed software subscription.
Subscription profile	Integration profile associated with the unlicensed software subscription.
Unlicensed Users	
<p><b>Note:</b> This related list contains SAP system users and is only shown for SAP publisher.</p>	
Display name	Unique display name.
User	User in the SAP system.
SAP user id	SAP ID of the user with access to an SAP system.
Email	SAP user email.
Names	First and last names of the SAP user.
User type	The type of user in the SAP system. <ul style="list-style-type: none"> <li>• Dialog</li> <li>• System</li> </ul>

**Product Results form (continued)**

Field	Description
License type	The named user type value assigned to the user in the specified SAP system.
Named user type	Normalized named user type assigned to the user in the specified SAP system.
SAP client	SAP client from which the user information was pulled.
<b>Removal Candidates</b>	
Number	Removal candidate number.
Name	Name of the removal candidate.
Justification	Justification for becoming a removal candidate. <ul style="list-style-type: none"> <li>• Low Usage (default)</li> <li>• Unallocated</li> <li>• Unlicensed</li> <li>• Restricted Software</li> </ul>
Product	Name of the product.
Publisher	Name of the publisher.
State	State of the removal candidate. <ul style="list-style-type: none"> <li>• Attention Required</li> <li>• Ready</li> <li>• Awaiting User</li> <li>• Awaiting Approval</li> <li>• Approval</li> <li>• Awaiting Revocation</li> <li>• Closed Complete</li> <li>• Closed Skipped</li> </ul>
Potential savings	Savings to be gained from reclaiming unused software installations.

**View or create software usage in Software Asset Management classic**

View software usage records to track the usage of software products that you've created reclamation rules for in the Software Asset Management classic application. You can also create software usage records manually from third party integrations or Microsoft SCCM integrations.

**About this task**

The Software Usage [samp\_sw\_usage] table tracks usage down to the product level and not to the version or edition level.

### Before you begin

Role required: sam\_admin or sam\_user

### About this task

Use the following steps to create software usage records manually.

### Procedure

1. Navigate to **All > Software Asset > Discovery > Software Usage** and then select **New**.
2. On the Software Usage form, fill in the fields.

#### Software Usage form

Field	Description
Publisher	Publisher of the software product.
Product	Name of the software product.
Reclamation type	Type of reclamation used on the software installation. The options are <b>Total Usage Time</b> and <b>Last Used Date</b> .  <b>Note:</b> If you select <b>Total Usage Time</b> , the Usage Metering Data form section appears. If you select <b>Last Used Date</b> , the Last Used Data form section appears.
Configuration Item	Configuration item (CI) that the software product is associated with.  <b>Note:</b> If the CI <b>Status</b> or <b>Hardware Status</b> field changes to Retired or Stolen, installations that are related to the CI are deleted.
User	Name of the user who is using the software product.
Discovery source	Discovery source of your software usage data.  If the appropriate discovery source is not displayed on the <b>Discovery source</b> list, you can display it by right-clicking the <b>Discovery source</b> field name and then selecting <b>Configure Choices</b> . When prompted, use one of the following options to display the discovery source: <ul style="list-style-type: none"> <li>○ If the discovery source already exists on your ServiceNow instance, it appears in the Available list. Move the discovery source to the Selected list so that it displays on the <b>Discovery source</b> list. Select <b>Save</b> to return to the Create New Software Usage form,</li> </ul>

Field	Description
	<p>where you can view the updated <b>Discovery source</b> list.</p> <ul style="list-style-type: none"> <li>○ If the discovery source does not already exist on your ServiceNow instance, enter the name of the discovery source in the <b>Enter new item</b> field and then select <b>Add</b>. Move the new discovery source from the Available list to the Selected list so that it displays on the <b>Discovery source</b> list. Select <b>Save</b> to return to the Create New Software Usage form, where you can view the updated <b>Discovery source</b> list.</li> </ul>
Usage Metering Data	
<p><b>Note:</b> This form section appears only if the <b>Reclamation type</b> is set to <b>Total Usage Time</b>.</p>	
Month	Month that the software product was used.
Year	Year that the software product was used.
Usage count	Number of times that the software product was accessed.
Total seconds used	Amount of time (in seconds) that the software product was used.
Last Used Data	
<p><b>Note:</b> This form section appears only if the <b>Reclamation type</b> is set to <b>Last Used Date</b>.</p>	
Last used time	Date and time that the software product was last used.

**3. Select **Submit**.**

### Create averages for product life cycles in Software Asset Management classic

Create averages to calculate software End of Life (EOL) and End of Support (EOS) life cycles in the Software Asset Management classic application.

#### Before you begin

Role required: model\_manager

#### About this task

You can create averages that can be used globally for all products and publishers or you can create averages specific to a product or a publisher. These averages are used to create calculated life cycles for products. For details on calculated life cycles, see [End of Life \(EOL\) and End of Support \(EOS\) life cycles](#).

#### Procedure

1. Navigate to **Software asset > Software lifecycle averages**.
2. Select **New** to open the Software lifecycle averages page.

3. On the form, fill in the fields.

Field	Description
Type	The type of option you select for creating life cycles. Choose from the following options: <ul style="list-style-type: none"> <li>○ <b>Custom industry average:</b> Refers to the industry averages based on the GA dates.</li> <li>○ <b>Product:</b> Refers to a specific product. This includes custom products too.</li> <li>○ <b>Publisher:</b> Refers to a specific publisher. This includes custom publishers too.</li> </ul>
Display name	A unique name for this life cycle average record.
Product	This field appears only if you select the value <b>Product</b> in the <b>Type</b> field
Publisher	This field is automatically populated once you select a product. If you selected the value <b>Publisher</b> in the <b>Type</b> field, then you select a publisher.
Domain	Indicates the domain in which your instance is located.
Average end of life period (months)	Specify the number of months for the EOL life cycle.
Average end of support period (months)	Specify the number of months for the EOS life cycle.
Active	Indicates that the life cycle average record will be used for creating software life cycles.

4. Select **Submit**.

The record is created and appears in the Software lifecycle averages list view.

### Add a software client access record in Software Asset Management classic

Add a client access record to track and manage the users or devices that are accessing a particular version of your server software using a client access license (CAL).

#### Before you begin

Role required: sam\_admin

**i Note:** You can also use the sam\_user role to view and read client access records. However, you cannot use this role to create client access records.

#### About this task

Software Asset Management uses client access records to reconcile server software based on the following license metrics:

Metric group	License metric
Citrix	<ul style="list-style-type: none"> <li>• Per User</li> <li>• Per User/Device</li> </ul>
Common	<ul style="list-style-type: none"> <li>• User CAL</li> <li>• Device CAL</li> <li>• User/Device CAL</li> </ul>
IBM	<ul style="list-style-type: none"> <li>• Authorized User</li> <li>• Authorized User Value Unit</li> <li>• Employee User Value Unit</li> <li>• External User Value Unit</li> </ul>
Microsoft	<ul style="list-style-type: none"> <li>• User CAL</li> <li>• Device CAL</li> <li>• Per Core (with CAL)</li> </ul>
Oracle	Named User Plus
CrowdStrike	<ul style="list-style-type: none"> <li>• Reserved Hourly Average Sensor</li> <li>• Sensor Subscription</li> </ul> <p><b>Note:</b> These license metrics are available with Xanadu Patch 6 and Software Asset Management - SaaS License Management (sn_sam_saas_int) 14.0.7 version onwards. If you are on any version for Xanadu below Patch 6, refer <a href="#">KB1801232</a>.</p>

License metrics are set on the [software entitlement](#) form and can be accessed from the **Metric Attributes** related list on the [software model](#) form.

**Important:** You can enable the Software Asset Management application to automatically create client access records for Oracle Database Server using the **Auto-generate client access for allocations** option on the corresponding software model. To use this option, you must request the Data Collection for Oracle Global Licensing and Advisory Services application from the ServiceNow Store. See [Software model fields](#) for more details on the **Auto-generate client access for allocations** option. See [Request Data Collection for Oracle Global Licensing and Advisory Services \(GLAS\)](#) for more details on the Data Collection for Oracle Global Licensing and Advisory Services application.

**Procedure**

1. Navigate to **All > Software Asset > Administration > Client Access** and then select **New**.
2. On the Client Access form, fill in the fields.

**Client Access form**

Field	Description
Name	Name of the client access record.
Software model	Software model of the server that you are granting users or devices access to.
Type	<p>Type of CAL that is associated with the client access record. Select one of the following options:</p> <ul style="list-style-type: none"> <li>○ <b>User CAL:</b> Licenses each user that accesses the associated server, regardless of the number of devices that each user is using to access the server.                     <p>For example, if two users are accessing Microsoft Windows Server, the corresponding software entitlement must include two User CALs.</p> <p>If you select this option, you can assign the associated User CALs to specific users. See <a href="#">step 3</a> for more details.</p> </li> <li>○ <b>Device CAL:</b> Licenses each device that accesses the specified server, regardless of the number of users that are using each device to access the server.                     <p>For example, if two devices are accessing Microsoft Windows Server, the corresponding software entitlement must include two Device CALs.</p> <p>If you select this option, you can assign the associated Device CALs to specific devices. See <a href="#">step 3</a> for more details.</p> </li> <li>○ <b>User/Device CAL:</b> Licenses each user or device that accesses the associated server.</li> </ul> <p><b>Note:</b> If you are using a Citrix software model, the User/Device CAL type is based on the user/device licenses that are assigned to your users or shared devices.</p>

Field	Description
	<p>For example, if two users and two devices are accessing Microsoft Windows Server, the corresponding software entitlement must include two User CALs and two Device CALs.</p> <p>If you select this option, you can assign the associated User and Device CALs to specific users and devices. See <a href="#">step 3</a> for more details.</p> <ul style="list-style-type: none"> <li>○ <b>Authorized User:</b> Licenses each user who accesses an IBM software product. <ul style="list-style-type: none"> <li>● <b>Note:</b> This CAL type is applicable to IBM software only.</li> </ul> </li> <li>○ <b>Authorized User Value Unit:</b> Licenses the number of select users who access an IBM software product. <ul style="list-style-type: none"> <li>● <b>Note:</b> This CAL type is applicable to IBM software only.</li> </ul> </li> <li>○ <b>Employee User Value Unit:</b> Licenses the total number of users within your organization who access an IBM software product. <ul style="list-style-type: none"> <li>● <b>Note:</b> This CAL type is applicable to IBM software only.</li> </ul> </li> <li>○ <b>External User Value Unit:</b> Licenses the total number of users outside your organization who access an IBM software product. <ul style="list-style-type: none"> <li>● <b>Note:</b> This CAL type is applicable to IBM software only.</li> </ul> </li> </ul>
<p>WebLogic application</p> <p>● <b>Note:</b> This field appears only if you select an Oracle WebLogic Server software model.</p>	<p>Oracle WebLogic Server application to which your users or devices are granted access.</p>
<p>Database instance</p> <p>● <b>Note:</b> This field appears only if you select an Oracle Database Server software model.</p>	<p>Oracle database instance that accesses and manages the data in your Oracle database.</p>

Field	Description
<p>Source</p> <p><b>Note:</b> This field appears only if you select an Oracle Database Server software model.</p>	<p>Source of your Oracle data. This field is automatically set to one of the following options:</p> <ul style="list-style-type: none"> <li><b>ServiceNow:</b> Indicates that the client access record data was generated automatically through the SAM - Sync Auto-generated Client Access with DB Server Users scheduled job, which runs daily or on-demand.</li> <li><b>Internal:</b> Indicates that the client access record data was added manually.</li> </ul>
<p>Count</p>	<p>Number of unique users or devices that are granted access to the associated server.</p> <p>On automatically generated client access records for Oracle Database Server or Oracle WebLogic Server, this field populates automatically based on the number of users or devices that are currently added to the record. See <a href="#">step 3</a> for more information on how to add users or devices to the client access record.</p> <p><b>Note:</b> If you are using a Citrix software model and User/Device CAL type, the <b>Count</b> field is based on the number of user/device licenses that are assigned to your users or shared devices.</p>
<p>PaaS</p> <p><b>Note:</b> This field appears only if you select an Oracle Database Server software model.</p>	<p>Option to indicate whether your Oracle database instance is managed by the Amazon Relational Database Service (RDS) on Amazon Web Services (AWS).</p>
<p>Cost Center</p>	<p>Cost center of the users or devices that are granted access to the associated server.</p>
<p>Department</p>	<p>Business department of the users or devices that are granted access to the associated server.</p>
<p>Location</p>	<p>Geographic location of the users or devices that are granted access to the associated server.</p>
<p>Company</p>	<p>Company of the users or devices that are granted access to the associated server.</p>

**3.** To assign the associated CALs to specific users or devices, add those users or devices to your client access record based on the CAL type that you selected in the **Type** field. By assigning CALs to specific users or devices, you can prevent those users or devices from being counted multiple times across different client access records during reconciliation.

- If you set the **Type** field to **User CAL**, **User/Device CAL**, **Authorized User**, **Authorized User Value Unit**, **Employee User Value Unit**, or **External User Value Unit**, add the users that you want to assign your user-based CALs to.

**Note:** If you are using a Citrix software model and User/Device CAL type, add the users that you want to assign a user/device license to.

a. Select the **Users** tab.

b. In the **User** field of the Client Access User Breakdowns list, double-click **Insert a new row...**

**Note:** If you are using an Oracle Database Server software model, double-click **Insert a new row...** in the **Database user** field of the Client Access User Breakdowns list instead.

c. When prompted, search for and select a user that you want to assign a user-based CAL to.

d. Select the Save icon (✓).

The **Device**, **Active**, **User Type**, and **Source** fields populate automatically for the specified user. However, you can modify the **Device**, **Active**, and **User type** fields as needed.

e. Repeat steps b-d for each user that you want to assign a user-based CAL to.

- If you set the **Type** field to **Device CAL** or **User/Device CAL**, add the devices that you want to assign your device CALs to.

**Note:** If you are using a Citrix software model and User/Device CAL type, add the devices that you want to assign a user/device license to.

a. Select the **Devices** tab.

b. In the **Device** field of the Client Access Device Breakdowns list, double-click **Insert a new row...**

c. When prompted, search for and select a device that you want to assign a device CAL to.

d. Select the Save icon (✓).

The **Active** and **Source** fields populate automatically for the specified device. However, you can modify the **Active** field as needed.

e. Repeat steps b-d for each device that you want to assign a device CAL to.

4. To track and license the configuration items (CIs) that the associated server is installed on, add them to the client access record.

**Important:** This step is not applicable if your client access record is associated with an Oracle WebLogic Server software model or you have enabled the **License all installs accessed by clients** option on the associated software model. If this option is enabled, CIs are licensed based on conditions that you specify on the software model, such as software install conditions. See [Software model fields](#) for more details on this option.

For Windows Server, each server installation requires Per Core (with CAL) rights that are licensed separately from the User and Device CAL rights in associated client access records. Other products like Oracle Java do not require rights to be licensed separately for server installations. For example, if you use CALs to license the users and devices that are

accessing Oracle Java, you can enable Software Asset Management to automatically mark the corresponding Oracle Java installations as licensed. In this scenario, Software Asset Management licenses the Oracle Java installations as part of CAL licensing.

To enable this capability, you must add all CIs that a given server is installed on to the associated client access record. By specifying these CIs, you can enable Software Asset Management to determine which server installations your users and devices are connected to. After all users and devices on the client access record are licensed, all server installations on the specified CIs are marked as licensed. No additional licenses are consumed for these installations.

- a. Select the **Devices with Installations** tab.
- b. In the **Device** field of the Client Access Installed Devices list, double-click **Insert a new row...**
- c. When prompted, search for and select a CI that the associated server is installed on.
- d. Select the Save icon (✓).  
The **Active** field populates automatically for the specified CI. However, you can modify this field as needed.
- e. Repeat steps b-d for each CI that the associated server is installed on.

## 5. Select **Update**.

### What to do next

After you create a client access record, reconciliation runs on the associated server software as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#). Use these results to determine your license compliance position and to remediate any non-compliance.

You can remediate non-compliance for your server software using the following remediation options:

- **Purchase Rights:** Generates a purchase order when the number of rights needed is greater than the number of rights owned across all client access records for the specified server software.
- **Create Allocations:** Allocates rights to unlicensed users or devices that have been added to the client access records for the specified server software.
- **Remove Allocations:** Removes rights from licensed users or devices when sufficient rights are unavailable.

## Add a custom software product in Software Asset Management classic

If a software product does not exist in the Software Library, you can add a custom product. Custom products enable you to normalize and account for homegrown software, or software that is not yet part of the Software Library.

### Before you begin

Role required: sam\_admin

### About this task

The product and publisher combination is used during discovery model normalization. If the custom product exists, a message is shown.

## Procedure

Navigate to **All > Software Asset > Administration > Custom Products** and create a new record (see table for field descriptions).

### Custom Software Product form

Field	Description
Publisher	Publisher of the custom software product. If it does not exist, a new one can be created on the Publisher field Companies lookup list.
Product	Name of the custom software product.
Subscription software	Option that indicates that the software has a subscription.
Product type	Product type of the custom software product. <ul style="list-style-type: none"> <li>• Child: A subcomponent of main software (not licensable).</li> <li>• Driver: A software product that controls a device.</li> <li>• Licensable: A software product that is licensable.</li> <li>• Not Licensable: A software product that is not licensable.</li> <li>• Patch: A software product designed to update, fix, or improve an existing computer program.</li> <li>• Unknown: A software product that is unknown.</li> </ul>
Product classification	Official UNSPSC classification.
Exclude from content service	Option that excludes the custom product details from being shared with <a href="#">Software Asset Management Content Service</a> if opted in.
Active	Option that indicates the rule is active.

## View publisher part number (PPN) suggestions in Software Asset Management classic

View content service suggestions for your custom PPNs and DMAPS in the Software Asset Management classic application.

### Before you begin

PPN suggestions are available only if a corresponding match is found for your custom PPN in the Content Service. The PPN suggestion records are stored in the Part number suggestions [samp\_sw\_part\_number\_suggestion] table.


Role required: sam\_admin

## Procedure

1. Navigate to **All > Software Asset > Administration > Part number suggestions**.
2. Open a suggestion record to view the Part number suggestion page.  
You can view the custom PPN details in the top part of the Part number suggestion page. The second half of the page contains the suggested part number details. All the entitlements where the custom PPN is used appear in the **Impacted entitlements** tab. All the software models where the custom DMAP is used appear in the **Impacted software models** tab. If no impacted software models exist, then this tab doesn't appear.
3. Select **Accept** or **Reject**.
  - **Accept:** The Content Service PPN and DMAP replace the custom PPN and DMAP. In the impacted entitlement, the content service PPN is replaced. Similarly, the content service DMAP is replaced on the software model.
  - **Reject:** The status of this record changes to rejected and you continue to use the custom PPN.

## Subscriptions for Software Asset Management

The ServiceNow platform uses a licensing method where your organization is charged for using the IT Asset Management applications- ServiceNow Software Asset Management.

Software Asset Management licensing enables you to pay for resource categories that you use. To calculate the cost, Software Asset Management uses Subscription Units. A Subscription Unit is a unit of measure used to Managed IT Resources using defined ratios. The customer value of managing different types of IT resources varies. Subscription Units allows for a single unit price to be applied via ratios to those different IT resource type to reflect that varying customer value. To know more about managed IT resources and Subscription Unit ratios, see the Subscription Unit Overview on the <https://www.servicenow.com/products/entitlements-packages.html> .

### Managed IT Resource types

There are five IT Resource categories in ServiceNow Software Asset Management - Server, End User Computing Device, SaaS Subscription User, PaaS Resources, and IaaS Storage.

- Server is any physical or virtual server that is represented as a configuration item (CI) in the CMDB tables listed in the following license resource categories and managed by the Software Asset Management application.
- End User Computing Device is any physical or virtual non-server CI in the CMDB tables listed in the following license resource categories and managed by the Software Asset Management application.
- SaaS Subscription User is any unique User Principal name in the SaaS Subscription User table listed in the following license resource categories and managed by the Software Asset Management application.
- PaaS Resources are cloud-based platform services that are represented as a CI in the CMDB tables listed in the following license resource categories and managed by the Software Asset Management application.
- IaaS Storage is any cloud-based infrastructure service represented as a CI in a CMDB table listed in the following license resource categories and managed by the Software Asset Management application.

Servers and End User Computing Devices are managed by the Software Asset Management application when the installed software on the Managed IT Resources is represented in the Software Installation [cmdb\_sam\_sw\_install] table.

### Software Asset Management License Resource Categories

Resource category	Subscription unit ratio	Model category
Server	1:1	<ul style="list-style-type: none"> <li>• cmdb_ci_server</li> <li>• cmdb_ci_win_server</li> <li>• cmdb_ci_linux_server</li> <li>• cmdb_ci_aix_server</li> <li>• cmdb_ci_esx_server</li> <li>• cmdb_ci_solaris_server</li> <li>• cmdb_ci_hyper_v_server</li> <li>• cmdb_ci_hpux_server</li> </ul> <p>Any CMDB classes derived from the above listed classes or cmdb_ci_hardware and not defined as another Managed IT Resource type.</p>
End user computing device	1:4	<ul style="list-style-type: none"> <li>• cmdb_ci_computer</li> <li>• cmdb_ci_handheld_computing</li> <li>• cmdb_ci_pc_hardware</li> </ul> <p>Any CMDB classes derived from cmdb_ci_pc_hardware.</p>
SaaS subscription user	1:15	samp_sw_subscription
PaaS resources	1:3	<ul style="list-style-type: none"> <li>• cmdb_ci_database</li> <li>• cmdb_ci_cloud_database</li> </ul> <p>Any child classes of the above listed classes.</p>
IaaS storage	1:3	<p>cmdb_ci_storage_volume</p> <p>Any child classes of the above listed classes.</p>

### View license report for the IT Asset Management application

Resources that the IT Asset Management applications discover, monitor, and provision are configuration items (CIs) stored in the CMDB. The ITAM licensing module combines this information on CIs with the information on subscriptions your organization purchased to produce statistics on subscription use by IT Asset Management applications.

#### Before you begin

The process of collecting and aggregating information for licensing purposes consists of the following interactions. As a result, you can view the statistics on how your organization uses purchased subscription units.

1. The IT Asset Management applications count CIs and assign them to CI categories daily.
2. The IT Asset Management applications daily report CI count by CI category to the IT Asset Management licensing module. If features of the same application report the same CIs as their resources, the CI count is manipulated to remove the duplication.
3. The licensing module correlates the daily average CI counts for IT Asset Management applications with the licensing information from the customer contract to produce license statistics.

Role required:

- admin
- usage\_admin

## Procedure

1. Navigate to **All > ITAM Licensing > ITAM License Report**.
2. Select an application to view the subscription for a particular CI category.

Application	Resource Category	Resource Total Count	Subscription Unit Ratio	Total Subscription Units Consumed
<b>Application: Hardware Asset Management (2)</b>				
Hardware Asset Management	Servers	4	1:1	
Hardware Asset Management	End User Computers	27	4:1	
Hardware Asset Management	Network Gear	5	5:1	
				Sum
<b>Application: Software Asset Management (3)</b>				
Software Asset Management	Subscription Users	30	15:1	
Software Asset Management	Servers	1	1:1	
Software Asset Management	End User Computers	18	4:1	
				Sum
				Sum

You can view the following information on CI count and subscriptions purchased for each IT Operations Management application separately (a la carte):

- **Resource Category:** CI categories for IT Asset Management applications.
- **Resource Total Count:** CI count for CIs organized by CI categories, for each IT Asset Management application.
- **Subscription Unit Ratio:** Ratios define how many CIs of a certain CI category require a subscription. The Software Asset Management application has pre-defined values for End User Computers (4:1), for Servers (1:1), for Storage Volumes (3:1), for Databases (3:1), and for Subscription Users (15:1).
- **Total Subscription Units Consumed:** The number of subscriptions per CI category for each IT Asset Management application that your organization consumed. The licensing module calculates this number by applying the subscriptions ratio to the CI count number for each application's CI category.

For licensing purposes, the Software Asset Management application only considers CIs with software installs discovered within the last 90 days or those where the last discovered as empty. Additionally, all CIs are excluded that have a column added to the `cmdb_ci_hardware` table and that column name is referenced in the property labeled *Enter the name of the true/false field added to cmdb\_ci\_hardware table to exclude software installed on selected devices from Software Asset Management*. For more information on excluding CIs, see [Exclude software assets on CIs](#).

## Platform Analytics Solution for Software Asset Management classic

This Platform Analytics Solution contains preconfigured dashboards. These dashboards contain actionable data visualizations that help you improve your business processes and practices.

### Enabling the Performance Analytics Solution

Use the Performance Analytics widgets on the dashboard to visualize data over time, analyze your business processes, and identify areas of improvement. With solutions, you can get value from Performance Analytics for your application with minimal setup.

**Note:** Solutions include some dashboards that are inactive by default. You can activate these dashboards to make them visible to end users according to your business needs.

For unlimited access to all features of this Platform Analytics Solution, purchase a Performance Analytics subscription. For more information, see [Activating your Performance Analytics subscription](#).

The Performance Analytics - Content Pack - Software Asset Management classic is enabled automatically when ServiceNow activates Software Asset Professional on your instance.

### Domain separation and 'Run As' user

In some solutions, System Administrator is the **Run As** user for data collection jobs in the Platform Analytics Solutions. In other solutions, the **Run As** user for data collection jobs is left blank. Verify that the **Run As** user exists on the instance, and that this user has the appropriate level of access. An inappropriate **Run As** user can cause errors or limit the data that is collected. This setting only has an effect if domain separation is enabled.

### Related topics

[Platform Analytics Solutions](#)

[Activate your Performance Analytics subscription](#)

### Software Asset Analytics dashboard

View true-up costs and license, compliance, and removal summaries trend charts on the Software Asset Analytics dashboard integrated with Performance Analytics.

**Note:** The Software Asset Analytics dashboard is no longer available for new Xanadu users who have activated the Software Asset Management Professional (com.snc.samp) plugin or upgraded to Xanadu without activating the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu. If you activated the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu but didn't activate the Workspace plugin (com.sn\_sam\_workspace), you have access to this dashboard. If you activated the workspace plugin (before or after upgrading to Xanadu, you won't be able to access this dashboard from the **Software Asset** navigation menu in your instance. You can however access this dashboard from the **Dashboards** navigation menu.

The Software Asset Analytics dashboard tab is accessed by navigating to **Software Asset > Overview**. Select an element within a report to see more information, or add and move widgets as needed.

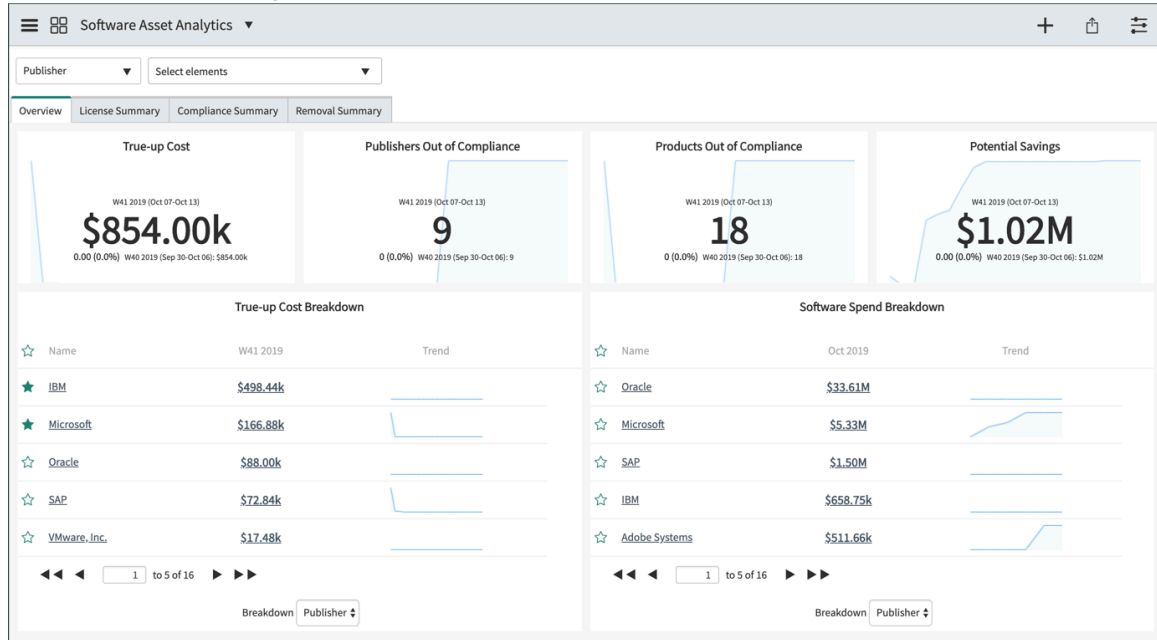
The Overview, License Summary, and Compliance Summary tabs are updated whenever a new reconciliation result is available. Results are updated daily for the **Removal Summary** tab. You can save charts in PNG or JPG formats.

The graphs show important statistics about the software that is being tracked. In the **Overview** and **Optimization**, you can filter by publisher and product to narrow the results.

**Note:** If you are not seeing data in the Overview dashboard, verify the `glide.cms.enable.responsive_grid_layout` system property is set to true.

## Overview

### Software Asset Analytics dashboard



### Overview tab

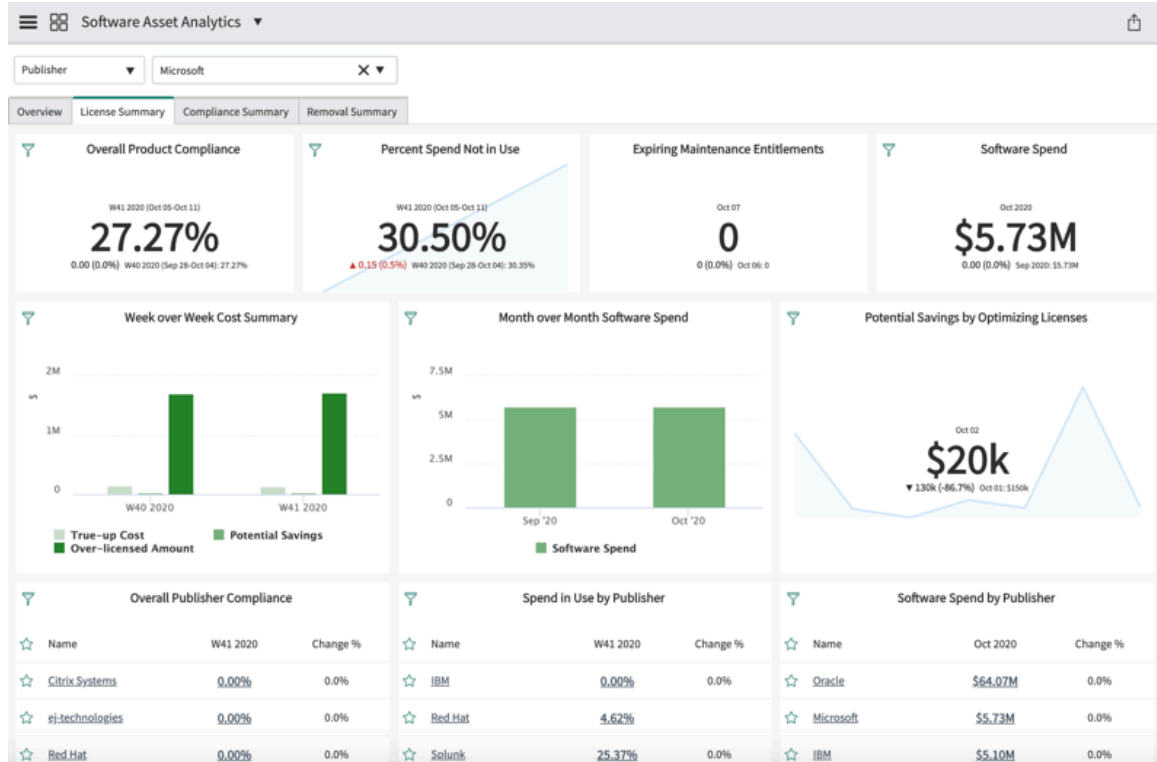
Report	Source list	Description
True-up Cost	Product Results	Cost to be compliant based on the average prices in entitlements for the rights.
Publishers out of Compliance	Product Results	Number of publishers that have at least one software model out of compliance.  Select the report to view the results in the <a href="#">Software license usage</a> .
Products out of Compliance	Product Results	Number of products that have at least one software model out of compliance.  Select the report to view the results in the <a href="#">Software license usage</a> .
Potential Savings	Product Results	Cost saved if removal candidates are reclaimed.
True-up Cost Breakdown	Product Results	Cost to be compliant based on the average prices in

Overview tab (continued)

Report	Source list	Description
		entitlements for the rights by publisher.
Software Spend Breakdown	License Metric Results	Total software cost of all entitlements not retired by publisher.
End of Life Products	Product Lifecycle [sam_sw_product_lifecycle]	Heat map of software product lifecycles that are reaching their end of life cycle. Select to drill-down to the software installations.

License Summary

License Summary tab



License Summary tab

Report	Source table	Description
Overall Product Compliance	Product Result [samp_product_result]	Total percent of compliant products.
Percent Spend Not in Use	Product Result and License Metric Results [samp_product_result] and [samp_license_metric_result]	Percent of software spend that is not in use (over-licensed amount and potential savings).

License Summary tab (continued)

Report	Source table	Description
Expiring Maintenance Entitlements	Software Entitlement [alm_license]	<p>End date of the total sum of all entitlements that are going to expire within 6 months.</p> <p>The total sum of entitlements includes:</p> <ul style="list-style-type: none"> <li>• Perpetual</li> <li>• Maintenance</li> <li>• Perpetual + Maintenance</li> <li>• Upgrade</li> <li>• SA</li> <li>• Perpetual +SA</li> <li>• Step-up</li> </ul> <p>Select the report to view details about the specific entitlements that are going to expire.</p> <p><b>i Note:</b> Maintenance and SA entitlements are not displayed as the Perpetual entitlements associated with them are displayed.</p>
Software Spend	License Metric Results [samp_license_metric_result]	Total software cost of all entitlements that are not retired.
Week over Week Cost Summary	Product Result and License Metric Results [samp_product_result] and [samp_license_metric_result]	True-up cost, potential savings, and over-licensed amount for a series of weeks.
Month Over Month Software Spend	License Metric Results [samp_license_metric_result]	Total software spend in a series of months.
Potential Savings by Optimizing Licenses	Potential Savings by Optimizing Licenses [samp_license_optimization_summary]	Potential cost savings for licenses on your physical hosts and clusters that are based on recommended license optimizations.

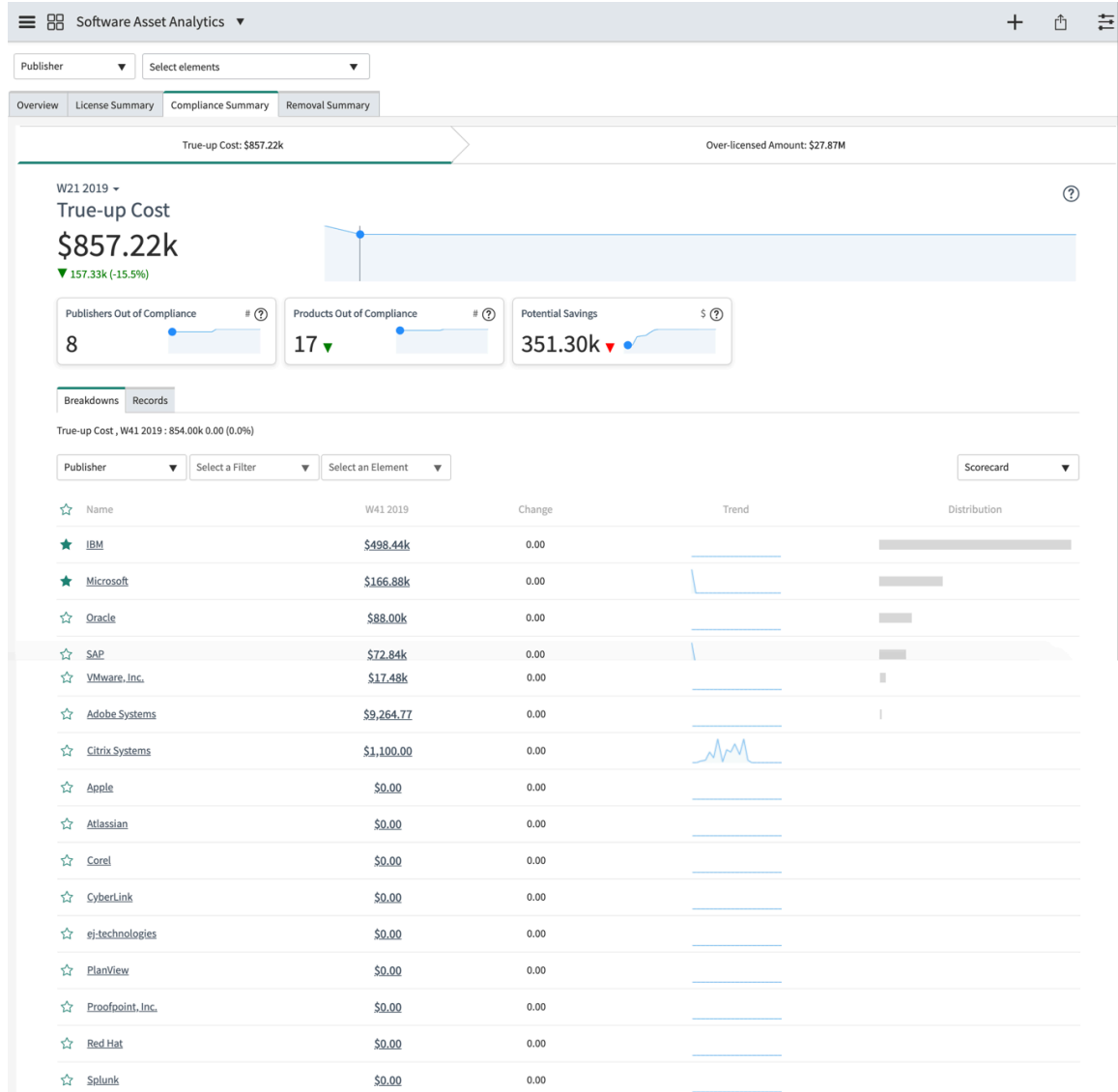
**License Summary tab (continued)**

Report	Source table	Description
		<p><b>i Note:</b> This report is available only for Microsoft Windows Server and on-premise Red Hat Enterprise Linux (RHEL) licenses.</p> <p>Select the report to view details about the recommended license optimizations and associated cost savings for each host or cluster. License optimizations include the recommended license, recommended rights, and recommended spend.</p>
Overall Publisher Compliance	Product Result [samp_product_result]	Percentage of products that are compliant by publisher.
Spend In Use by Publisher	Product Result and License Metric Results [samp_product_result] and [samp_license_metric_result]	Spend in use by publisher = $[[\text{Total spend}] - [\text{Over-licensed amount}] - [\text{Potential savings}]] / \text{Total spend}$ .
Software Spend by Publisher	License Metric Results [samp_license_metric_result]	Total software spend by publisher.

**Compliance Summary**

Compliance summary consists of time-series data using Performance Analytics to show the compliance trends over time. The source for compliance analysis data is the Product Result [samp\_product\_result] table.

### Compliance Summary tab



### Compliance trend: True-up Cost

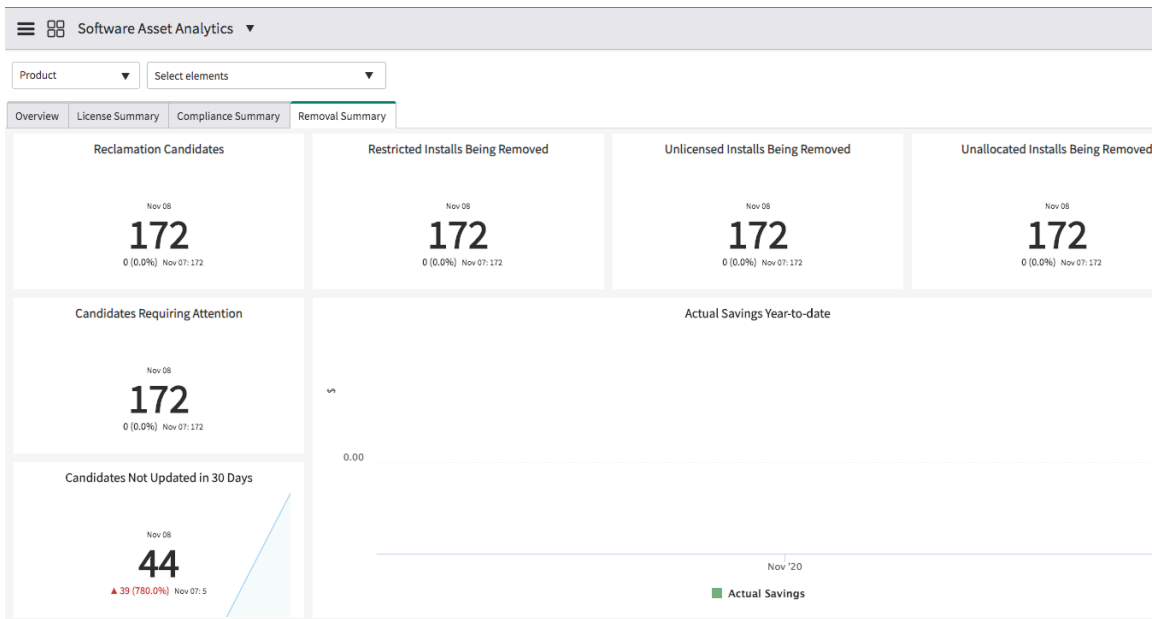
Report	Description
True-up Cost	Cost to be compliant based on the average prices for entitlements for the rights.
Publishers out of compliance	Number of publishers that have at least one software model out of compliance.
Products out of compliance	Number of products that have at least one software model out of compliance.
Potential savings	Cost saved if removal candidates are reclaimed.
Breakdowns	Shows the detailed list of results based on the widget selected. Breakdowns include Publisher, Product, and Scorecard.
Records	Shows the detailed list of product results based on the widget selected.

### Compliance trend: Over-licensed amount

Report	Description
Over-licensed amount	Cost of licenses owned but not being used.
Publishers over-licensed	Number of publishers that have at least one software right not being used.
Products over-licensed	Number of products that have at least one software right not being used.
Breakdowns	Shows the detailed list of results based on the widget selected. Breakdowns include Publisher, Product, and Scorecard.
Records	Shows the detailed list of product results based on the widget selected.

### Removal Summary

The source for removal summary data is the Reclamation Candidate [samp\_sw\_reclamation\_candidate] table.



### Removal Summary tab

Report	Description
Reclamation Candidates	Total number of active removal candidates with a low usage justification.  Select the report to show the filtered list of records.
Restricted Installs Being Removed	Total number of active removal candidates with a restricted software justification.  Select the report to show the filtered list of records.

**Removal Summary tab (continued)**

Report	Description
Unlicensed Installs Being Removed	Total number of active removal candidates with an unlicensed justification.  Select the report to show the filtered list of records.
Unallocated Installs Being Removed	Total number of active removal candidates with an unallocated justification.  Select the report to show the filtered list of records.
Candidates Requiring Attention	Number of removal candidates in the attention required state.  Select the report to show the filtered list of records.
Candidates Not Updated in 30 Days	Number of removal candidates that have an updated date value older than 30 days.  Select the report to show the filtered list of records.
Actual Savings Year-to-date	Sum of potential savings in a given month of closed complete removal candidates.
Removal Candidates Breakdown	Active removal candidates in various breakdowns (State, Publisher, Product, Justification, and Last Updated).

**Software Asset Management dashboard**

View true-up costs, optimization results, and compliance trend charts on the Software Asset Management dashboard.

**i Note:** The Software Asset Management dashboard is no longer available for new Xanadu users who have activated the Software Asset Management Professional (com.snc.samp) plugin or upgraded to Xanadu without activating the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu. If you activated the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu but didn't activate the Workspace plugin (com.sn\_sam\_workspace), you have access to this dashboard. If you activated the workspace plugin (before or after upgrading to Xanadu, you won't be able to access this dashboard from the **Software Asset** navigation menu in your instance. You can however access this dashboard from the **Dashboards** navigation menu.

The Software Asset Management dashboard tab is accessed by navigating to **Software Asset > Overview** and selecting **Software Asset Management** from the dashboard list. Select an element within a report to see more information, or add and move widgets as needed.

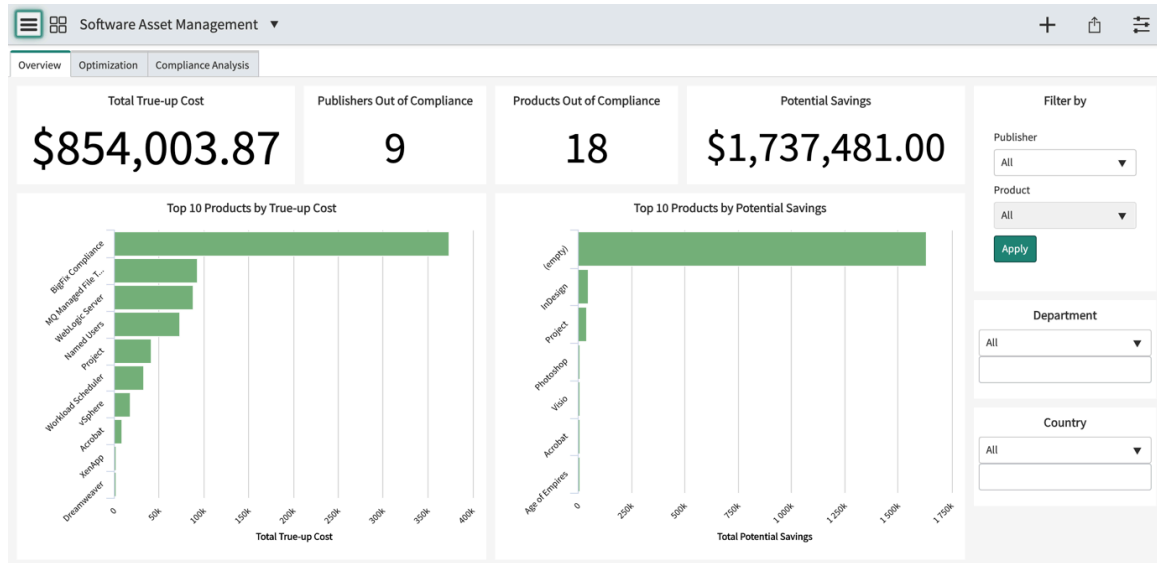
Results are updated daily, or whenever a new reconciliation result is available, and can be refreshed by selecting the **Refresh** icon for each result. You can also save charts in PNG or JPG formats.

The graphs show important statistics about the software being tracked. In the Overview and Optimization tabs, you can filter by publisher, product, department, and country to narrow the results.

## Overview

The source for overview data is the Product Result [samp\_product\_result] table.

### Overview tab



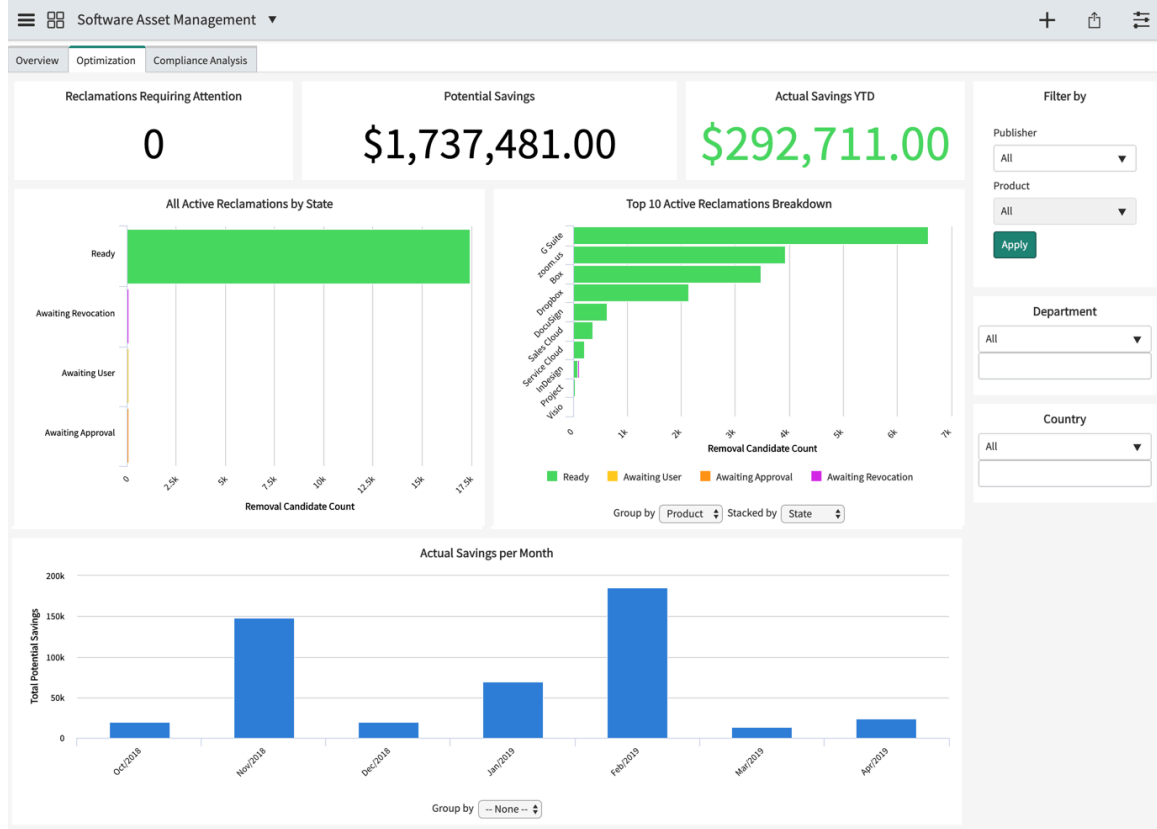
### Overview tab

Report	Description
Total True-up Cost	Cost to be compliant based on the average prices in entitlements for the rights.
Publishers out of Compliance	Number of publishers that have at least one software model out of compliance.  Select the report to show the filtered list of records.
Products out of Compliance	Number of products that have at least one software model out of compliance.  Select the report to show the filtered list of records.
Potential Savings	Cost saved if removal candidates are reclaimed.
Top 10 Products by True-up Cost	Top 10 products graphed in order of true-up cost.
Top 10 Products by Potential Savings	Top 10 products graphed in order of potential savings.

## Optimization

The source for optimization data is the Reclamation Candidate [samp\_sw\_reclamation\_candidate] table.

### Optimization tab



### Optimization tab

Report	Description
Reclamations Requiring Attention	State is Attention Required
Potential Savings	<ul style="list-style-type: none"> <li>Created on This Year OR Active is true</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Closed on This Year AND Opened on Last Year</li> </ul>
Actual Savings YTD	Closed on This Year AND State is Closed Complete
All Active Reclamations by State	Active is true
Top 10 Active Reclamations Breakdown	Active is true
Actual Savings per Month	State is Closed Complete AND Closed in Last 12 Months

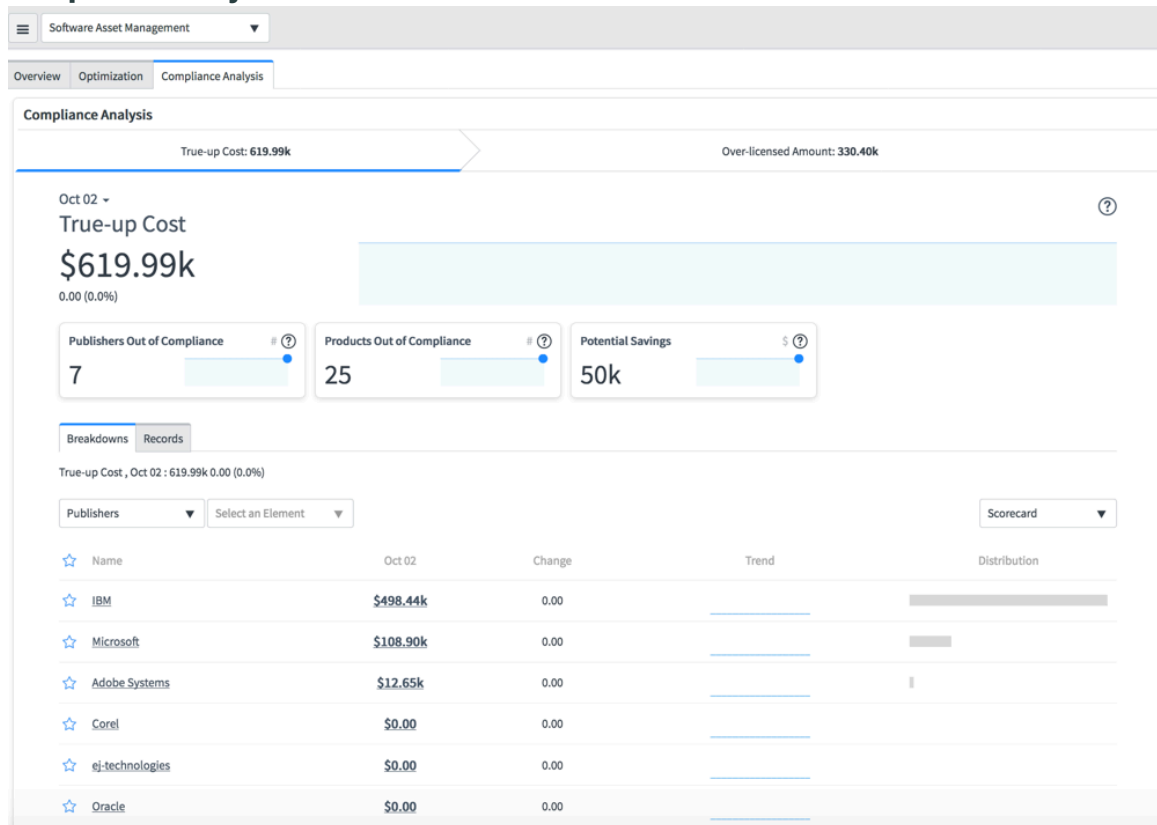
Removal candidate state color key:

Color	State
Red	Attention Required
Green	Ready
Yellow	Awaiting Use
Orange	Awaiting Approval
Purple	Awaiting Revocation
Blue	Closed Complete

## Compliance Analysis

Compliance analysis consists of time-series data using Performance Analytics to show the compliance trends over time. The for compliance analysis data is the Product Result [samp\_product\_result] table.

### Compliance Analysis tab



### Compliance Analysis: True-up Cost

Report	Description
True-up Cost	Cost to be compliant based on the average prices for entitlements for the rights.
Publishers out of compliance	Number of publishers that have at least one software model out of compliance.
Products out of compliance	Number of products that have at least one software model out of compliance.

### Compliance Analysis: True-up Cost (continued)

Report	Description
Potential savings	Cost saved if removal candidates are reclaimed.
Breakdowns	Shows the detailed list of results based on the widget selected.
Records	Shows the detailed list of product results based on the widget selected.

### Compliance Analysis: Over-licensed amount

Report	Description
Over-licensed amount	Cost of licenses owned but not being used.
Publishers over-licensed	Number of publishers that have at least one software right not being used.
Products over-licensed	Number of products that have at least one software right not being used.
Breakdowns	Shows the detailed list of results based on the widget selected.
Records	Shows the detailed list of product results based on the widget selected.

## Normalization and Content Service dashboard

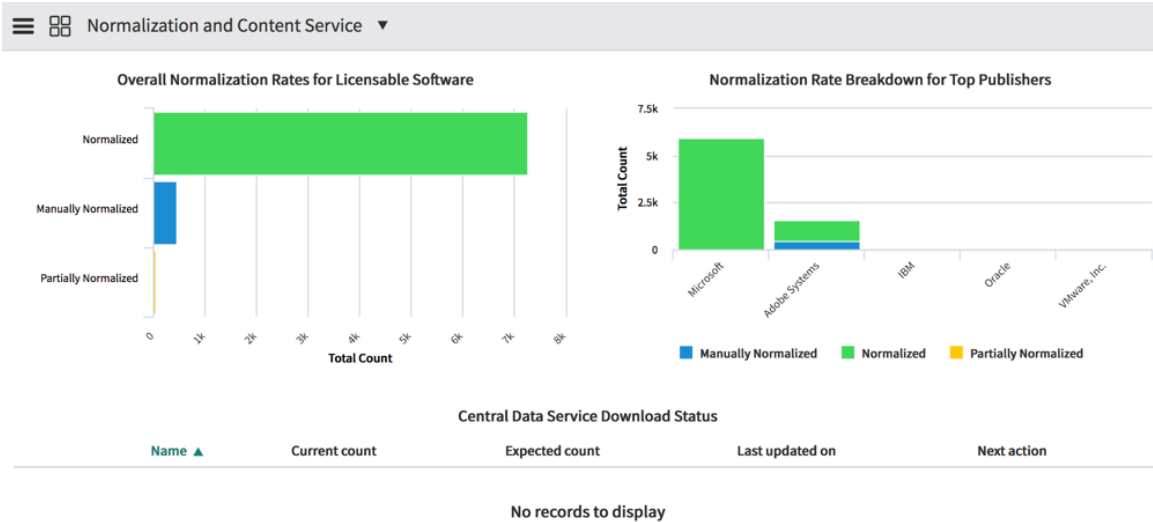
View normalization trend charts on the Normalization and Content Service dashboard integrated with Performance Analytics.

**Note:** The Normalization and Content Service dashboard is no longer available for new Xanadu users who have activated the Software Asset Management Professional (com.snc.samp) plugin or upgraded to Xanadu without activating the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu. If you activated the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu but didn't activate the Workspace plugin (com.sn\_sam\_workspace), you have access to this dashboard. If you activated the workspace plugin (before or after upgrading to Xanadu, you won't be able to access this dashboard from the **Software Asset** navigation menu in your instance. You can however access this dashboard from the **Dashboards** navigation menu.

The Normalization and Content Service dashboard tab is accessed by navigating to **Software Asset > Overview** and selecting **Normalization and Content Service** from the dashboard list. You can also access it from the dashboard list of another Software Asset Management dashboard. Select an element within a report to see more information, or add and move widgets as needed.

Normalization chart results are updated daily when the **SAM – Discovery Model Normalization** job is run. You can save charts in PNG or JPG formats.

## Normalization and Content Service dashboard



Report	Source list	Description
Overall Normalization Rates for Licensable Software	Software Installs Normalization Rates	Overall normalization status count for all licensable products.
Normalization Rate Breakdown for Top Publishers	Software Install Normalization Rates for Top Publishers	Licensable normalization status count per top publisher for Microsoft, Oracle, IBM, VMware, Citrix, SAP, and Adobe.

### Central Data Service Download Status related list

The Central Data Service Download Status related list is updated daily when the **SAM – Central Data Service Download Status** job is run.

#### Central Data Service Download Status related list

Central Data Service Download Status

Name ▼	Current count	Expected count	Last updated on	Next action
<a href="#">Software publisher</a>	10,496	11,737	2018-09-28 18:54:03	2018-10-12 18:53:58
<a href="#">Software product process</a>	2,121	2,279	2018-09-28 20:54:02	2018-10-12 20:53:58
<a href="#">Software Product Definition</a>	4,925	6,315	2018-09-28 20:44:00	2018-10-12 20:43:58
<a href="#">Software Product</a>	56	111	2018-09-28 18:59:00	2018-10-12 18:58:58
<a href="#">Software Package</a>	6,441	8,643	2018-09-28 19:09:03	2018-10-12 19:08:58

Field	Description
Name	Table name from which content is pulled.
Current count	Number of records in the table.
Expected count	Expected number of records in the table.

Field	Description
Last updated on	Last date and time the data was pulled.
Next action	Next scheduled date and time to pull data.

## Engineering License Overview dashboard

Monitor and gain insights into your engineering applications license position and usage by viewing product usage reports in the Engineering License Overview dashboard.

**Note:** The Engineering License Overview dashboard is no longer available for new Xanadu users who have activated the Software Asset Management Professional (com.snc.samp) plugin or upgraded to Xanadu without activating the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu. If you activated the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu but didn't activate the Workspace plugin (com.sn\_sam\_workspace), you have access to this dashboard. If you activated the workspace plugin (before or after upgrading to Xanadu, you won't be able to access this dashboard from the **Software Asset** navigation menu in your instance. You can however access this dashboard from the **Dashboards** navigation menu.

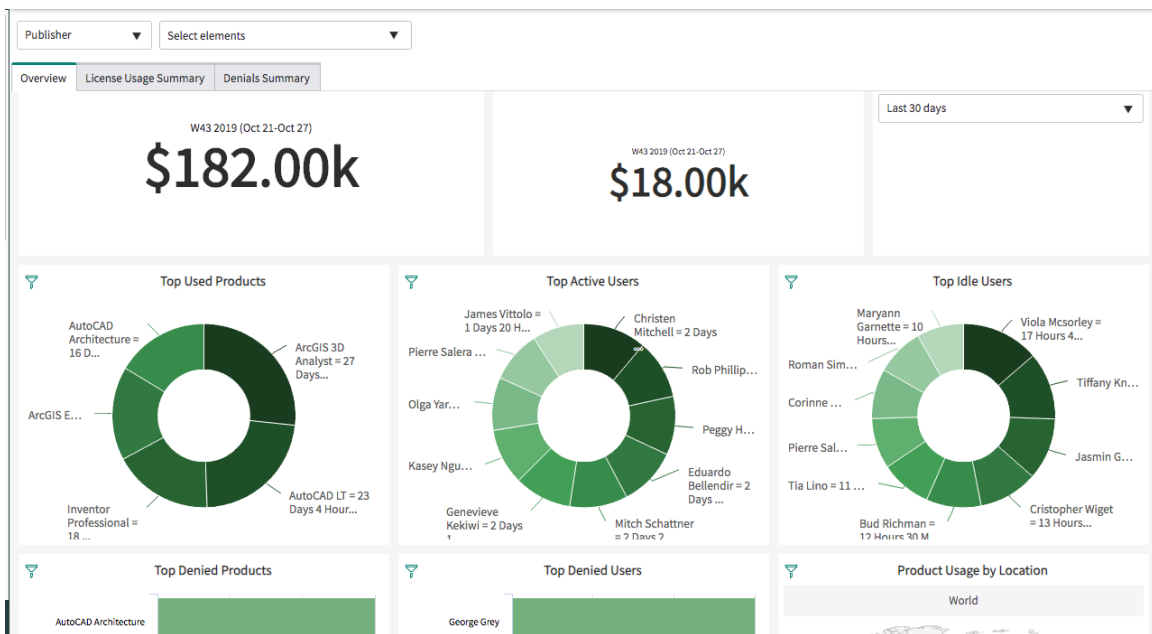
The Engineering License Overview dashboard displays reports on normalized products and publishers that belong to engineering applications such as AutoCAD, GIS.

Access the Engineering License Overview Dashboard by navigating to **Software Asset > Engineering License Overview**.

To narrow your results based on products or publishers across all tabs, use the filter in the left-hand corner of the dashboard. Only products and publishers that belong to engineering applications and are listed in the Engineering Application License [samp\_eng\_app\_license] table appear in the filter. If no product or publisher is selected, the tabs display the cumulative data for all products and publishers that belong to engineering applications.

The **Overview**, **License Usage Summary**, and **Denial Summary** tabs are updated daily or whenever a new reconciliation result is available. You can save charts in PNG or JPG formats for viewing them locally and for sharing.

### Overview tab



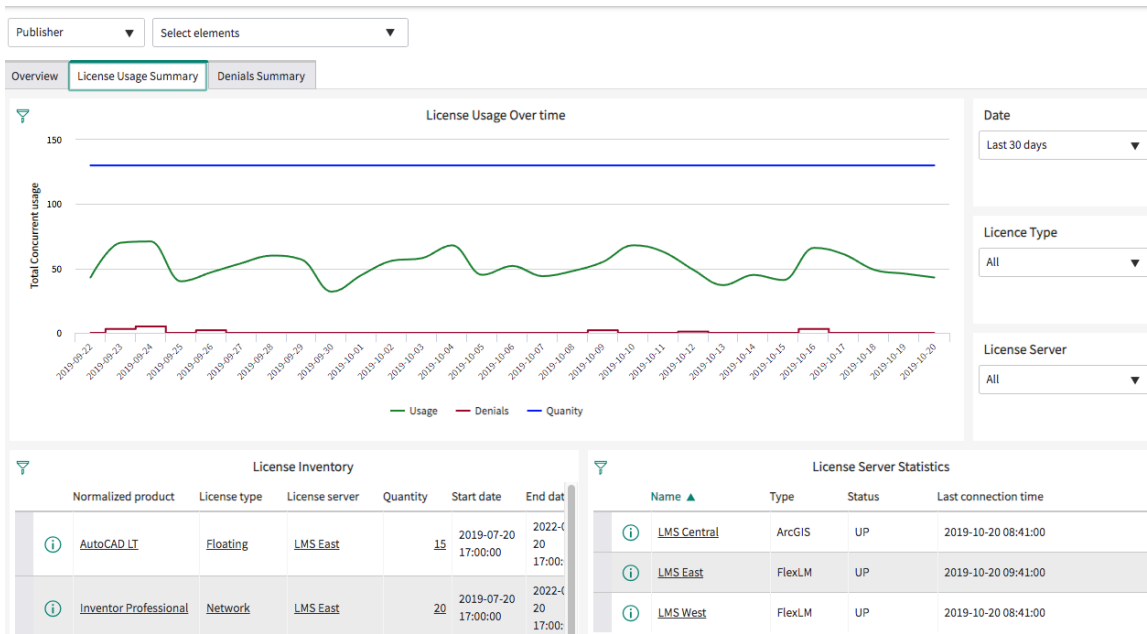
This tab gives an overview of the high-level metrics of all engineering applications. You can filter the results in this tab by various date options.

**Note:** The Date filter is not applicable to **Current Spend** and **Potential Savings**.

**Overview tab**

Report	Source table	Description
Current Spend	Product Result [samp_product_result]	Total cost of all entitlements for all products.
Potential Savings	License Dashboard Inventory [license_dashboard_inventory]	Cost saved if licenses are not being utilized to their potential or are under-utilized. To optimize your costs, you can reallocate those licenses or return the licenses and save the cost.
Top Used Products	Engineering Application Usage [samp_eng_app_usage]	Top products that are being currently used. The number of days and hours being used per product also appears.
Top Active Users	Engineering Application Usage [samp_eng_app_usage]	Top users who are currently using the product. The number of days and hours being used per user also appears.
Top Idle Users	Engineering Application Usage [samp_eng_app_usage]	Top users who have requested a license but are not using the license. The number of days and hours of inactivity per user also appears.
Top Denied Products	Engineering Application Denial [samp_eng_app_denial]	Top products that are denied to users as these products have reached their peak concurrent usage.
Top Denied Users	Engineering Application Denial [samp_eng_app_denial]	Top users that are denied licenses to products.
Product Usage by Location	Engineering Application Usage [samp_eng_app_usage]	Based on the count of users using products by location.

## License Usage Summary tab

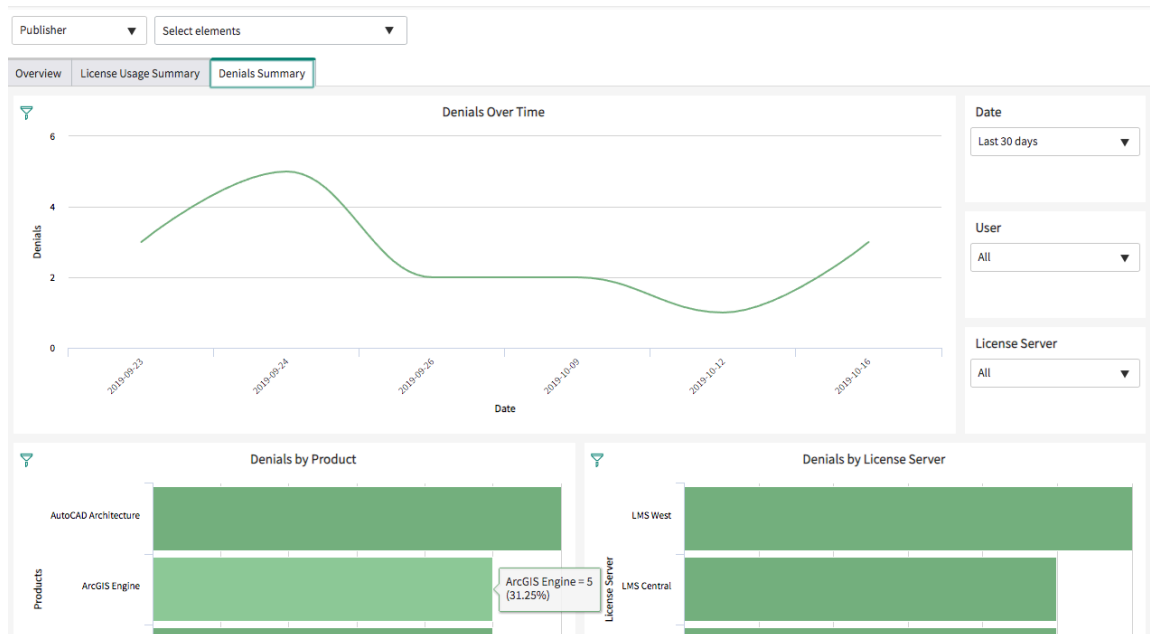


This tab lets you view data based on a license type (floating, network, or token). You can filter the data in this tab by date, license type, and license management server.

### License Usage Summary tab

Report	Source table	Description
License Usage overtime	Engineering Application License [samp_eng_app_license] Engineering Application Concurrent Usage [samp_eng_app_concurrent_usage] Engineering Application Denial [samp_eng_app_denial]	The total number or quantity of all available licenses; not just the active products but all the products.  <ul style="list-style-type: none"> <li>The blue line represents the total number of licenses allocated to a product or a publisher</li> <li>The green line indicates the concurrent usage of the licenses.</li> <li>The red line indicates denials or if and when the concurrent usage peaks.</li> </ul>
License Inventory	Engineering Application License [samp_eng_app_license]	All available licenses for a product or publisher.
License Server Statistics	Engineering Application License Server [samp_end_app_license_server]	All the license management servers that OpenLM or OpenIT connect with.

## Denials Summary tab



You can filter the data in this tab by date, user, or user group.

### Denials Summary tab

Report	Source table	Description
Denials Over Time	Engineering Application Denial [samp_eng_app_denial]	Denials for a product over a period of time.
Denials by Product	Engineering Application Denial [samp_eng_app_denial]	The products that have been denied to users the most.
Denials by License Server	Engineering Application Denial [samp_eng_app_denial]	The license servers that have been denied licenses to products the most.

## Supported software publisher licenses

With Software Asset Management, there are several publisher packs that can be used to extend functionality between the ServiceNow AI Platform and your third-party software applications.

The following Software Asset Management publisher pack plugins can be requested from ServiceNow personnel for activation. See [Request Software Asset Management](#) for more information on how to request these plugins.

- Adobe
- Citrix
- IBM (includes both IBM and Red Hat Enterprise Linux)
- Microsoft
- Oracle

- SAP
- VMware

Each publisher has a set of [license metrics](#) specific to that metric group. License metrics are set in software entitlements and used for reconciliation (metric group, license metric, and software model combination).

### Publisher pack plugins

Plugin	Description
Software Asset Management Professional for Adobe (com.sn_samp_adobe)	Provides additional capabilities to reconcile Adobe subscription software.
Software Asset Management Professional for Citrix (com.sn_samp_citrix)	Provides additional capabilities to reconcile Citrix software, such as Virtual Applications and Virtual Desktop.
Software Asset Management Professional for IBM (com.sn_samp_ibm)	Provides additional capabilities to reconcile IBM products using PVU and RVU license metrics.  This plugin also provides additional capabilities to reconcile Red Hat Enterprise Linux software, such as Red Hat Enterprise Linux Server and Red Hat Enterprise Linux for Virtual Datacenters.
Software Asset Management Professional for Microsoft (com.snc.samp.microsoft)	Provides additional capabilities to reconcile Microsoft software, such as Microsoft SQL Server.
Software Asset Management Professional for Oracle (com.snc.samp.oracle)	Provides additional capabilities to reconcile Oracle software, such as Oracle DB Server.
Software Asset Management Professional for SAP (com.sn_samp_sap)	Provides additional capabilities to reconcile SAP named user compliance and optimization.
Software Asset Management Professional for VMware (com.sn_samp_vmware)	Provides additional capabilities to reconcile VMware software, such as vCenter and vSphere.

### Publisher pack dashboards

View compliance analysis results for the following publishers on the Software Publisher Analytics dashboards.

- [Adobe](#)
- [Citrix](#)
- [IBM](#)
- [Microsoft](#)
- [Oracle](#)
- [SAP](#)
- [VMware](#)

**Note:** You must have one of the publisher pack add-ons (other than Adobe) activated to see the Software Publisher Overviews dashboard navigation module. In addition, the corresponding publisher pack must be activated to see the compliance analysis results tab for that publisher.

View compliance analysis results for Microsoft Office 365 and Adobe Cloud on the [Office 365 and Adobe dashboard](#).

**Note:** The Software Asset Management Professional for Adobe publisher pack add-on must be activated to see the Office 365 and Adobe Cloud dashboard.

### Software Asset Management publisher pack for Adobe

Use the Software Asset Management publisher pack for Adobe to track compliance using Adobe - specific licensing metrics and integrate with Adobe Cloud.

### Adobe licensing options

The Adobe publisher pack (com.sn\_samp\_adobe) adds Adobe - specific licensing options for software entitlements.

Field	Options
Agreement type	<ul style="list-style-type: none"> <li>• Generic</li> <li>• Enterprise Term License Agreement (ETLA)</li> <li>• Cumulative Licensing Program (CLP)</li> <li>• Transactional Licensing Program (TLP)</li> <li>• Value Incentive Plan (VIP)</li> </ul>
License Metric	<ul style="list-style-type: none"> <li>• Per Device</li> <li>• Per User</li> <li>• User Subscription</li> </ul>

To use the Adobe - specific licensing options, select the Adobe metric group for the software entitlement.

### Adobe Cloud integration

Create an Adobe Cloud integration profile to compare subscriptions with software installations for compliance reporting.

**Note:** Installation discovery sources include ServiceNow Discovery, Microsoft SCCM, and other third-party discovery sources that can integrate as a data source in the ServiceNow CMDB.

For instructions on how to create an Adobe Cloud integration profile, see [Integrating with Adobe Cloud](#).

## Adobe Cloud reporting

Adobe Cloud reports can be accessed by navigating to **Reports > View/Run** and searching all reports for Adobe.

- Adobe Cloud Users without Installations
- Underused Adobe Cloud Installations

You can view Adobe subscriptions, compliance, and cost using the [Office 365 & Adobe Cloud dashboard in Software Asset Management classic](#) or [Publisher overview for Adobe Systems in the Software Asset Workspace](#).

## Integrating with Adobe Cloud

Integrate your Software Asset Management application with Adobe Cloud services to track your software subscriptions and to determine your license compliance.

The Adobe Cloud integration supports the following Adobe Cloud services:

- Adobe Creative Cloud
- Adobe Experience Cloud
- Adobe Document Cloud

**Note:** You can create an Adobe Cloud integration only if you're using the Adobe Creative Cloud for Enterprise subscription plan. If you're using any other subscription plan, such as Adobe Creative Cloud for Teams, Education, or Individuals, you can't create an integration.

Integrate your Adobe subscriptions with Software Asset Management for compliance reporting using Adobe authentication. For more information about Adobe authentication integrations and certificates, see the [Adobe Authentication Guide](#).

You can integrate your ServiceNow<sup>®</sup> instance with Adobe Cloud services using either of the following authentication methods:

- [Service Account \(JWT\) credential](#)
- [OAuth Server to Server credential](#)

**Note:** All new Adobe Cloud integrations must be created using the OAuth authentication type. Adobe is migrating from Service Account (JWT) credential to OAuth Server-to-Server credential. For more details, see [Adobe Migration Guide](#).

**Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

### Minimal user permissions

Process	Required user role in the Adobe Cloud application	Authentication scopes
Download subscriptions	System administrator	None

## Integrate Adobe Cloud using Service Account (JWT) credentials

Integrate your ServiceNow® instance with Adobe Cloud services by using Service Account (JWT) credentials.

### Create a project and add APIs using Service Account (JWT)

Create a project in the Adobe Developer Console for accessing Adobe APIs and add APIs to your project using a Adobe Service Account (JWT).

#### Before you begin

Role required: Adobe Cloud admin

#### Procedure

1. Create a project in the Adobe Developer Console to access the Adobe APIs.  
For more information, see [Projects Overview](#).
2. Add an API to your project using a Adobe Service Account (JWT).  
For more information, see [Add API to project using Service Account \(JWT\)](#).

Keep the following points in mind when adding an API to your project:

- For the Adobe service that you want to integrate with, select **User Management API**. This service enables you to access the Adobe user management API.
- When you're creating a Service Account (JWT) credential, which enables you to access the API within the selected Adobe service, select the option to generate a key pair. With this option, the Adobe Developer Console generates both a public key pair and a private key pair that can be used to authenticate your Service Account (JWT). The private key is automatically downloaded to your device.

After you successfully add the API to your project, you're redirected to the API overview page.

3. Copy the values in the **CLIENT ID**, **TECHNICAL ACCOUNT ID**, and **ORGANIZATION ID** fields in the Service Account (JWT) section of the Overview page.
4. Select **Retrieve client secret** to view and copy the value in the **CLIENT SECRET** field.  
Save this information in a safe location for later use.
5. Use the following openssl command to convert the key from the KEY format to the PKS format: `openssl pkcs12 -export -out test1-certificate.pfx -inkey private.key -nocerts`

The key was automatically downloaded to your device in the previous step. The key must be in the PKS format for you to create a corresponding ServiceNow X.509 certificate for the Adobe Cloud integration.

You must create a password to convert a key. Use this password in the Key store password and Certificate password fields when creating the ServiceNow integration profile and X.509 certificate in the proceeding steps.

**Note:** This password must be at least six characters in length.

### Create an Adobe Cloud integration profile using JWT

Create an Adobe Cloud integration profile on your ServiceNow instance by using Service Account (JWT) credentials to track your software subscriptions and to determine your license compliance.


#### Before you begin

Role required:

One of the following roles in combination can create Adobe Cloud integration profile using JWT credentials:



- admin and sam\_admin
- admin and sam\_integrator

Activate the following plugins:

- Software Asset Management Professional for Adobe (com.sn\_samp\_adobe)
- Software Asset Management - SaaS License Management (sn\_sam\_saas\_int) from [ServiceNow Store](#) 

### About this task

If you're using Software Asset Workspace, the option to create the Adobe Cloud integration profile in Core UI is inactive.

-  **Note:** All new Adobe integrations must be created using the OAuth authentication type. For more information, see [Integrate Adobe Cloud using OAuth Server-to-Server credentials](#). Adobe is migrating from Service Account (JWT) credential to OAuth Server-to-Server credential. For more information about the migration, see [Adobe Migration Guide](#) .

### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<p>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</p> <p>b. Select <b>New</b>.</p> <p>c. Select <b>Adobe Cloud Integration Profile</b>.</p>
Software Asset Workspace	<p>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</p> <p>b. Select <b>New</b>.</p> <p>c. Select <b>Adobe Cloud</b> from the drop-down list.</p> <p>d. Select <b>Continue</b>.</p>

2. On the form, fill in the fields.

#### Integration Profile form

Field	Description
Display name	Name of the Adobe integration profile.
Authentication type	Type of authentication to access Adobe Cloud APIs. <ul style="list-style-type: none"> <li>○ OAuth 2.0</li> <li>○ JWT</li> </ul>

Field	Description
	<p><b>Note:</b></p> <ul style="list-style-type: none"> <li>For the existing Adobe Cloud integration profiles before upgrade to Software Asset Management - SaaS License Management 13.1.0 version or later, this field is automatically set to <b>JWT</b>.</li> <li>For all the new Adobe Cloud integration profiles, this field is automatically set to <b>OAuth 2.0</b>. For more information, see <a href="#">Integrate Adobe Cloud using OAuth Server-to-Server credentials</a>.</li> </ul>
Client Id	Client ID that is assigned to your Adobe Service Account (JWT) while <a href="#">creating a project and adding APIs</a> .
Organization Id	Adobe Organization ID that is assigned to your Adobe Service Account (JWT) while <a href="#">creating a project and adding APIs</a> .
Technical account Id	Adobe Technical Account ID that is assigned to your Adobe Service Account (JWT) while <a href="#">creating a project and adding APIs</a> .
Profile type	Type of integration profile. This field is automatically set to <b>Adobe subscription</b> .
Client secret	Client secret that is assigned to your Adobe Service Account (JWT) while <a href="#">creating a project and adding APIs</a> .
Certificate	ServiceNow X.509 certificate for the Adobe Cloud integration.
Certificate password	Certificate password that you create when converting your key from the KEY format to the PKS format.

**3. Add an X.509 certificate to your integration profile.**

This certificate is based on the key from your Adobe Service Account (JWT) credential.

**a. Navigate to the X.509 Certificate form.**

- For Core UI:
  - i. On the Integration Profile form, select the search icon (🔍) next to the **Certificate** field.
  - ii. In the X.509 Certificates dialog box, select **New**.
- For Software Asset Workspace:
  - i. Navigate to **System Definitions > Certificates**.
  - ii. Select **New**.

**b. On the form, fill in the fields.**

**X.509 Certificate form**

Field	Description
Name	Certificate name.
Expiration notification	Option to send a notification when the certificate is about to expire.
Notify on expiration	Users that you want to notify when the certificate expires.  This field is available only when <b>Expiration notification</b> is selected.
Warn in days to expire	Number of days prior to certificate expiration that you want to send a notification.  This field is available only when <b>Expiration notification</b> is selected.
Active	Option to indicate if the certificate is active.
Short description	A brief description of the certificate.
PEM Certificate	Base-64 encoded PEM-formatted text containing the DER certificate. The instance decodes the certificate to populate the <b>Valid from</b> , <b>Expires</b> , <b>Expires in days</b> , <b>Issuer</b> , and <b>Subject</b> fields.
Format	Format of the certificate.
Type	Certificate type. Set this field to <b>PKCS12 Key Store</b> .
Expires in days	Number of days remaining until the certificate expires. This field populates automatically.
Key store password	Certificate password that you created when converting your key from the KEY format to the PKS format in Step 3.

**c.** Upload your key (PKS file) by selecting the manage attachments icon (📎) on the X.509 Certificate form header.

**d.** In the Attachments dialog box, select **Choose file** to locate and select your key.

The dialog box closes, and you return to the X.509 Certificate form.

**e.** Validate the certificate by selecting the **Validate Stores/Certificates** related link.

**f.** After the certificate is validated, select **Submit**.

**4.** Right-click the Integration Profile form header and then select **Save**.

**5.** After the form reloads, select the **Validate Adobe Credential** related link to complete the connection.

**Result**

Adobe subscription data is pulled into Software Asset Management when the *SAM - Import Adobe User Subscriptions* scheduled job runs. When the subscription data is pulled, the *SAM - Optimize Adobe Subscriptions* scheduled job runs monthly to optimize the Adobe Creative Cloud subscriptions.

This job completion results in the following:

- An optimization candidate that consolidates three (configurable) or more Single App or individual product subscriptions and recommends Adobe Creative Cloud All Apps when it isn't installed.
- A reclamation candidate that reclaims Single App or individual product subscriptions with dual licenses when Adobe Creative Cloud All Apps is installed.

Let's say, A user is subscribed to Adobe Creative Cloud All Apps and also consumes licenses for Single App or individual products such as Adobe Acrobat and Adobe Photoshop. In this dual license scenario, Software Asset Management recommends reclaiming the licenses for Single App or individual product subscriptions.

- A reclamation candidate that reclaims three (configurable) or more Single App or individual product subscriptions that are actively used and an optimization candidate that recommends assigning Adobe Creative Cloud All Apps.

Let's say, A user is subscribed to Adobe Acrobat, Adobe Illustrator, and Adobe Photoshop and uses all these products actively. In this scenario, Software Asset Management recommends reclaiming the licenses for these individual product subscriptions and recommends using Adobe Creative Cloud All Apps.

- A reclamation candidate that reclaims Adobe Creative Cloud All Apps when less than three (configurable) individual products are actively used and an optimization candidate that recommends assigning Single App or individual product subscriptions that are actively used.

Let's say, A user is subscribed to Adobe Creative Cloud All Apps but is using less than three individual Creative Cloud products actively. In this scenario, Software Asset Management reclaims the Adobe Creative Cloud All Apps license and recommends assigning these individual product subscriptions that are actively used.

**What to do next**

View the subscription data by navigating to **All > SaaS License > All User Subscriptions**. You can check the status of the *SAM - Import Adobe User Subscriptions* job by navigating to **All > Software Asset > Administration > Job Results**.

You can also view information about your Adobe subscriptions, compliance, and costs on the [Office 365 & Adobe Cloud dashboard in Software Asset Management classic](#).

**Related topics**

[Publisher optimizations for Adobe](#)

**Integrate Adobe Cloud using OAuth Server-to-Server credentials**

Integrate your ServiceNow® instance with Adobe Cloud services by using OAuth Server-to-Server credentials.



**Create a project and add APIs using OAuth**

Create a project in the Adobe Developer Console for accessing Adobe APIs and add APIs to your project using OAuth.

## Before you begin

Role required: Adobe Cloud admin

## Procedure

1. Create a project in the Adobe Developer Console to access the Adobe APIs by selecting **Create new project**.  
For more information, see [Projects Overview](#) .
2. Add an API to your project by selecting **Add API**.  
For more information, see [Add API to project using OAuth](#) .
3. Select **User Management API** for the Adobe service that you want to integrate with.  
This service enables you to access the Adobe user management API. After you successfully add the API to your project, you're redirected to the API overview page.
4. Select **Next**.
5. On the Configure API form, expand **Credentials**.
6. Select the **OAuth Server-to-Server** authentication.
7. Provide a name in the **Credential name** field to find the correct API credential easily on the **Admin Console > Users > API Credentials**.  
You can also modify the name later in your project on the OAuth Server-to-Server credential overview page.

**8. Select Save configured API.**

The following values are displayed on the credential overview page:

- CLIENT ID
- CLIENT SECRET
- SCOPES
- CREDENTIAL NAME
- TECHNICAL ACCOUNT ID
- TECHNICAL ACCOUNT EMAIL
- ORGANIZATION ID

** Note:**

Copy the CLIENT ID and ORGANIZATION ID and also retrieve the CLIENT SECRET to use them later.

9. Get the Connection URL (Instance) URL from the Adobe Developer Console to create and get an OAuth token for Adobe Cloud.
  - a. In the Generate access token section, select **View cURL command**.
  - b. Copy the Connection URL.

**Note:**

Copy only the required URL from the entire command.

For example, here the Connection URL is the highlighted part.

## Generate access token

Generate an access token for quick experimentation, or view the cURL command to learn how to generate access tokens programmatically. [Learn more](#)



cURL command to generate the access token programmatically. Copy

```
curl -X POST 'https://ims-na1.adobelogin.com/ims/token/v3' -H 'Content-Type: application/x-www-form-urlencoded' -d 'grant_type=client_credentials&client_id=d7787e5d268f4727a72a22286c19c89e&client_secret=pl8-M-38LL18E7r5K2fw48P3FEGLM6by5r2j&scope=creative_cloud,AdobeID,openid,gnsv,read_organizations,additional_info.projectedProductContext,additional_info.roles,additional_info.company,additional_info.ownerOrg,org.read'
```

### Create an Adobe Cloud integration profile using OAuth

Create an Adobe Cloud integration profile on your ServiceNow instance by using OAuth credentials to track your software subscriptions and to determine your license compliance.

#### Before you begin

Role required: sam\_admin, sam\_integrator

Activate the following plugins:

- Software Asset Management Professional for Adobe (com.sn\_samp\_adobe)
- Software Asset Management - SaaS License Management (sn\_sam\_saas\_int) from [ServiceNow Store](#)

#### About this task

If you're using Software Asset Workspace, the option to create the Adobe Cloud integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ul style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles.</b></li> <li>b. Select <b>New.</b></li> <li>c. Select <b>Adobe Cloud Integration Profile.</b></li> </ul>
Software Asset Workspace	<ul style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User subscription &gt; Direct integration profiles.</b></li> <li>b. Select <b>New.</b></li> <li>c. Select <b>Adobe Cloud</b> from the drop-down list.</li> <li>d. Select <b>Continue.</b></li> </ul>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Display name	Name of the Adobe Cloud integration profile.
Authentication type	<p>Type of authentication to access Adobe Cloud APIs.</p> <ul style="list-style-type: none"> <li>○ OAuth 2.0</li> <li>○ JWT</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>○ For the existing Adobe Cloud integration profiles before upgrade to Software Asset Management - SaaS License Management 13.1.0 version or later, this field is automatically set to <b>JWT</b>. For more information, see <a href="#">Integrate Adobe Cloud using Service Account (JWT) credentials.</a></li> <li>○ For all the new Adobe Cloud integration profiles, this field is automatically set to <b>OAuth 2.0</b>.</li> </ul>
Connection & Credential	Connection and credential alias for the Adobe Cloud spoke. This field is automatically set to <b>Adobe OAuth</b> .
Profile type	Type of integration profile. This field is automatically set to Adobe subscription.

3. Select **Submit**.

The **Connection & Credential** field appears on the form and is automatically set to **sn\_sam\_saas\_int.Adobe\_OAuth**.

4. Select the preview icon (i) beside the Connection & Credential field to open the Connection & Credential Aliases record.
5. Select the **Create New Connection & Credential** related link.
6. On the form, fill in the fields.

**Create a Connection and Credential form**

Field	Description
Connection Name	Name of the Adobe Cloud connection.
Connection URL (Instance URL)	URL for the connection. This field is automatically set to <code>https://&lt;Instance Name&gt;.adobelogin.com</code> . For more information about the steps to get the URL, see Step 9 in <a href="#">Create a project and add APIs using OAuth</a> .
OAuth Client ID	Client ID that you generated while <a href="#">creating an Adobe Cloud OAuth credential</a> .
OAuth Client Secret	Client Secret that you retrieved while <a href="#">creating an Adobe Cloud OAuth credential</a> .
OAuth Redirect URL	<code>https://&lt;instance_name&gt;/oauth_redirect.do</code> , where the instance name is the name of your ServiceNow instance.
Organization ID	Adobe Cloud Organization ID that you find while <a href="#">creating an Adobe Cloud OAuth credential</a> .

7. Select **Create and Get OAuth Token**.  
The OAuth token flow is completed successfully.

**Result**

Adobe subscription data is pulled into Software Asset Management when the *SAM - Import Adobe User Subscriptions* scheduled job runs. When the subscription data is pulled, the *SAM - Optimize Adobe Subscriptions* scheduled job runs monthly to optimize the Adobe Creative Cloud subscriptions.

This job completion results in the following:

- An optimization candidate that consolidates three (configurable) or more Single App or individual product subscriptions and recommends Adobe Creative Cloud All Apps when it isn't installed.
- A reclamation candidate that reclaims Single App or individual product subscriptions with dual licenses when Adobe Creative Cloud All Apps is installed.

Let's say, A user is subscribed to Adobe Creative Cloud All Apps and also consumes licenses for Single App or individual products such as Adobe Acrobat and Adobe Photoshop. In this dual license scenario, Software Asset Management recommends reclaiming the licenses for Single App or individual product subscriptions.

- A reclamation candidate that reclaims three (configurable) or more Single App or individual product subscriptions that are actively used and an optimization candidate that recommends assigning Adobe Creative Cloud All Apps.

Let's say, A user is subscribed to Adobe Acrobat, Adobe Illustrator, and Adobe Photoshop and uses all these products actively. In this scenario, Software Asset Management recommends reclaiming the licenses for these individual product subscriptions and recommends using Adobe Creative Cloud All Apps.

- A reclamation candidate that reclaims Adobe Creative Cloud All Apps when less than three (configurable) individual products are actively used and an optimization candidate that recommends assigning Single App or individual product subscriptions that are actively used.

Let's say, A user is subscribed to Adobe Creative Cloud All Apps but is using less than three individual Creative Cloud products actively. In this scenario, Software Asset Management reclaims the Adobe Creative Cloud All Apps license and recommends assigning these individual product subscriptions that are actively used.

## What to do next

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

View the subscription data by navigating to **All > SaaS License > All User Subscriptions**. You can check the status of the *SAM - Import Adobe User Subscriptions* job by navigating to **All > Software Asset > Administration > Job Results**.

You can also view information about your Adobe subscriptions, compliance, and costs on the [Office 365 & Adobe Cloud dashboard in Software Asset Management classic](#).

## Related topics

[Publisher optimizations for Adobe](#)

## Office 365 & Adobe Cloud dashboard in Software Asset Management classic

View compliance analysis results related to Microsoft Office 365 and Adobe Cloud License Management in Software Asset Management classic.

- **Note:** The Office 365 & Adobe Cloud dashboard is no longer available for new Xanadu users who have activated the Software Asset Management Professional (com.snc.samp) plugin or upgraded to Xanadu without activating the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu. If you activated the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu but didn't activate the Workspace plugin (com.sn\_sam\_workspace), you have access to this dashboard. If you activated the workspace plugin (before or after upgrading to Xanadu, you won't be able to access this dashboard from the **Software Asset** navigation menu in your instance. You can however access this dashboard from the **Dashboards** navigation menu.

Access the dashboard by navigating to **All > Software Asset > Office 365 & Adobe Cloud**.

You can filter by **Subscription Software Models** or **Subscription Publisher** using filter lists.

- **Note:** The Subscription Publisher filter list always includes Microsoft and Adobe even when only one subscription publisher pack is active.

The dashboard is updated whenever a new reconciliation result is available. You can save charts in PNG or JPG format.

## Adobe

You can manage Adobe subscription information with Adobe I/O authentication integration.

**Note:** The add-on Adobe publisher pack (com.sn\_samp\_adobe) plugin must be installed to view Adobe subscription reporting.

Only Adobe software products that are recognized as subscription software are shown. Adobe integration must be set up to view compliance information.

- List of Active Subscriptions with no Active Adobe Software installs

If a user has an active subscription but does not have any respective Adobe suite of products deployed.

User Name | Email ID | Subscription Name | List of devices assigned to users.

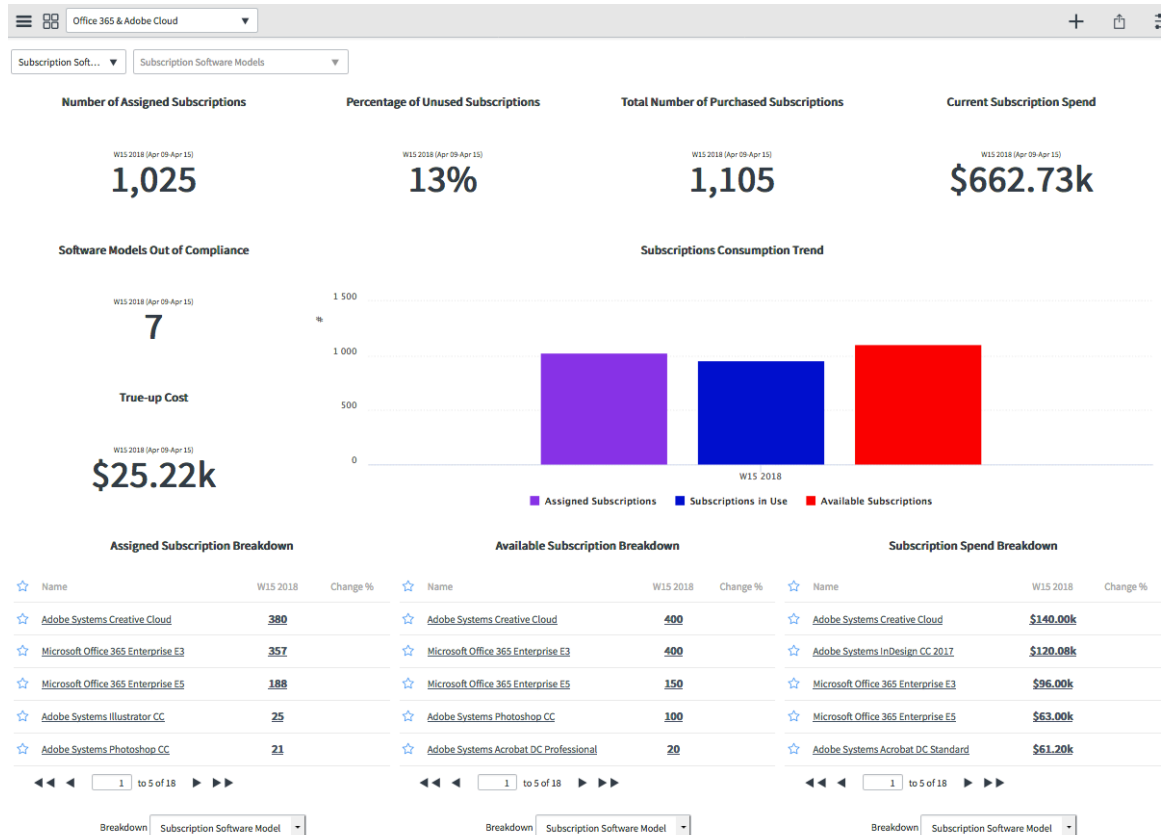
- Optimization of Adobe install using SCCM metering data

If user is underutilizing Adobe subscriptions

User Name | Email ID | Subscription Name | Subscription Cost | List of devices assigned to users | List of Adobe suite of products | Last Access Time

## SaaS subscription reports

### Office 365 and Adobe Cloud

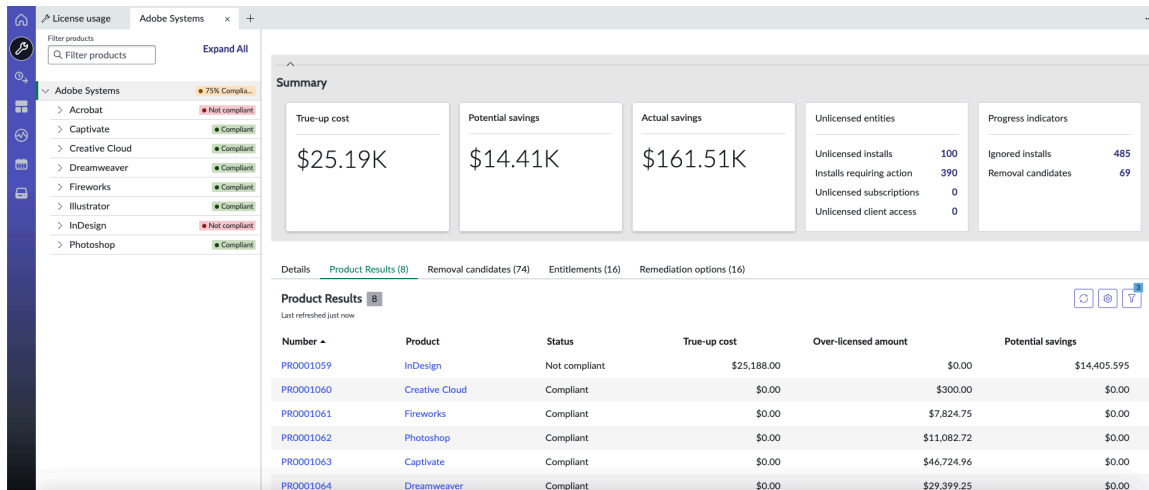


## Publisher overview for Adobe Systems in the Software Asset Workspace

View license usage information related to Adobe in the publisher overview for Adobe Systems in the Software Asset Workspace.

From the Software Asset Workspace, access the Adobe Systems publisher overview by navigating to **License usage > Publishers** and then selecting **Adobe Systems** from the list of available software publishers.

Results are updated whenever a new reconciliation result is available.



You can view a summary of your license usage information in the Summary section of the Adobe Systems publisher overview.

### Adobe Systems Summary

Report	Description
True-up cost	Cost to be compliant based on the average price of rights in your Adobe software entitlements.
Potential savings	Potential cost savings for your Adobe licenses.
Actual savings	Actual cost savings for your Adobe licenses.
Unlicensed entities	<p>Summary of your unlicensed entities.</p> <p>This summary includes the following information:</p> <ul style="list-style-type: none"> <li><b>Unlicensed installs:</b> Total number of unlicensed Adobe software installations. Select the number to view the complete list of unlicensed Adobe software installations.</li> <li><b>Installs requiring action:</b> Total number of Adobe software installations that you must take action on. Select the number to view the complete list of these Adobe software installations.</li> <li><b>Unlicensed subscriptions:</b> Total number of unlicensed Adobe subscriptions. Select the number to view the complete list of unlicensed Adobe subscriptions.</li> <li><b>Unlicensed client access:</b> Total number of unlicensed Adobe client access records. Select the number to view the complete list of unlicensed Adobe client access records.</li> </ul>
Progress indicators	<p>Summary of your license compliance progress.</p> <p>This summary includes the following indicators:</p>

## Adobe Systems Summary (continued)

Report	Description
	<ul style="list-style-type: none"> <li>• <b>Ignored installs:</b> Total number of Adobe software installations that were ignored during reclamation. Select the number to view the complete list of ignored Adobe software installations.</li> <li>• <b>Removal candidates:</b> Total number of Adobe removal candidates. Select the number to view the list of all software removal candidates.</li> </ul>

For more details on the license usage information that is provided in the publisher overview, see [License usage publisher fields in workspace](#).

## Software Asset Management publisher pack for Citrix

Use the Citrix publisher pack for the optimization and reconciliation of your Citrix products. You can track licensing positions for your Citrix users and devices so that you can determine your license compliance.

To use the Citrix publisher pack, activate the Software Asset Management Professional for Citrix plugin (com.sn\_samp\_citrix). For details, see [Request Software Asset Management](#).

The Citrix publisher pack supports Virtual Applications products (formerly XenApp) and Virtual Desktop products (formerly XenDesktop). Using this publisher pack, you can manage licenses and determine the license compliance for your Citrix products. You can gain visibility into the third-party applications that are delivered through your virtual applications and desktops. You can also gain visibility into the users that may potentially access those applications.

Use the ServiceNow<sup>®</sup> Discovery application to collect data from Citrix. The license consumption data for your Citrix products is collected from the Citrix License Server.

Discovery uses OData APIs to identify the third-party applications that are delivered through your Citrix farm from the Citrix Delivery Controller. Use this information to create software installation records and track license usage for these applications. To identify these applications, admins must create a [Discovery schedule](#) to run on the Citrix discovery pattern. See [Citrix License Server and Delivery Controller discovery](#) for more details on the Citrix discovery pattern and tables.

## Citrix licensing models

The Citrix publisher pack supports the following Citrix licensing models:

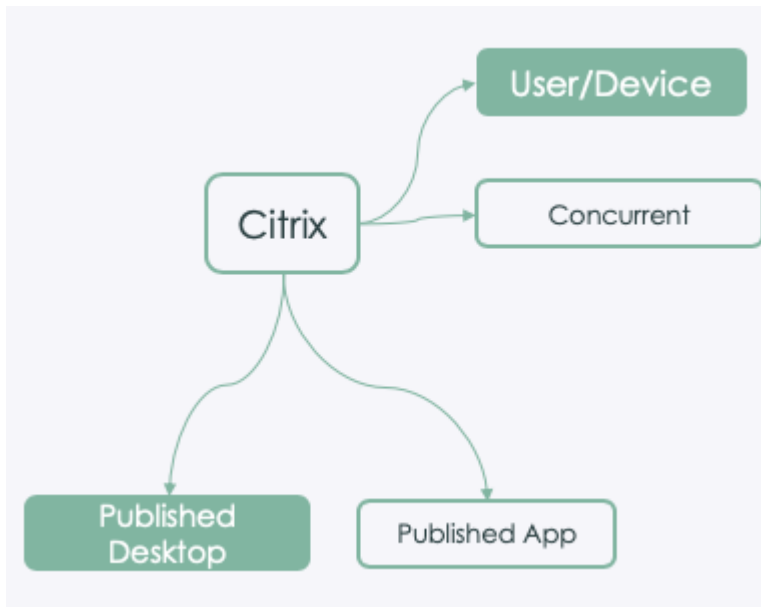
### Concurrent licensing model

Concurrent licenses are used only during active sessions. When a user begins a session, the application or desktop checks out a license for the device that is running the session. When the session disconnects or ends, the application or desktop checks the license back in to make the license available to other users and devices. Concurrent licenses enable either one connection to a virtual desktop or unlimited applications for any user or device. License consumption is based on the number of licenses being used.

### User/Device licensing model

User/Device licensing model: User/Device licenses are assigned to either a user or shared device. If the Citrix License Server assigns a license to a user, that user can make unlimited connections from unlimited devices. If the Citrix License Server assigns a license to a device, unlimited users can make unlimited connections from that device. License consumption is based on the user or device using the license.

The architecture for Citrix licenses is shown in the following figure:



Licensing for third-party applications that are delivered through Citrix virtualization technologies is based on potential access. Any user or device can consume a license as long as they have the potential to access an application or desktop deployed in a virtual Citrix environment. You can control access to these applications and desktops by using Delivery Groups and Application Groups:

**Delivery Groups**

Delivery Groups are collections of devices on which you can use Citrix applications or desktops. Each Delivery Group specifies the users that have access to those devices. In addition, Delivery Groups specify the applications or desktops that are available to those users.

**Application Groups**

Application Groups are collections of applications that are shared across Delivery Groups or subsets of Delivery Group users. Each Application Group specifies the users or Active Directory (AD) groups that have access to those applications.

Refer to the [Citrix product documentation](#) for more information on Citrix deployment guidelines and recommendations. Use this information to determine whether you should map your users at the Delivery Group level or at the Application Group level. If you map users at both levels, Software Asset Management considers mappings at only the Application Group level.

You can view your Citrix license usage data from the [Software Publisher Analytics dashboard for Citrix](#). Use this data to optimize your license position by reclaiming any unused or unauthorized licenses.

**Create entitlements for Citrix**

Software entitlements enable you to define license details that are matched to software models. You can add an entitlement individually or import a list from a spreadsheet.

**Before you begin**

Role required: sam\_user or sam\_admin. The sam\_admin role is required to import entitlements.

**i Important:** You can create and import entitlements in both the Software Asset Management classic application and the Software Asset Workspace. The following steps provide details on how to create entitlements in the Software Asset Management classic application. For details on how to create entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#). For details on how to import entitlements in the Software Asset Workspace, see [Import bulk entitlements in workspace](#).

Before you can create a software entitlement, [create a software model](#).

**About this task**

Manage available software and tie software installations (software being used) with entitlements (software owned) using software models. Create software models for all software to be monitored.

**i Note:** Users with the model\_manager role can navigate to **Product Catalog > Product Model > Software Models** but can't administer all aspects of software models.

**Procedure**

1. Navigate to **All > Asset > Portfolios > Software Entitlement** and select **New**.

For a detailed description of the fields related to all entitlements, see [Create entitlements in Software Asset Management classic](#).

**Software Entitlement form**

Field	Description
License Metric	License metric for the license group that the software license is counted against when reconciliation is run. For detailed of the license metrics, see <a href="#">Software license metrics</a> .

2. To set upgrade or downgrade entitlements, select the new software entitlement record from the Software Entitlements list.

For a detailed description on how to complete additional configurations for software entitlements, see [Create entitlements in Software Asset Management classic](#).

3. Select **Submit**.

Your entitlement is added to the software entitlements list.

**What to do next**


[Run software reconciliation](#) on your licenses.

**Software Publisher Analytics dashboard for Citrix in Software Asset Management classic**

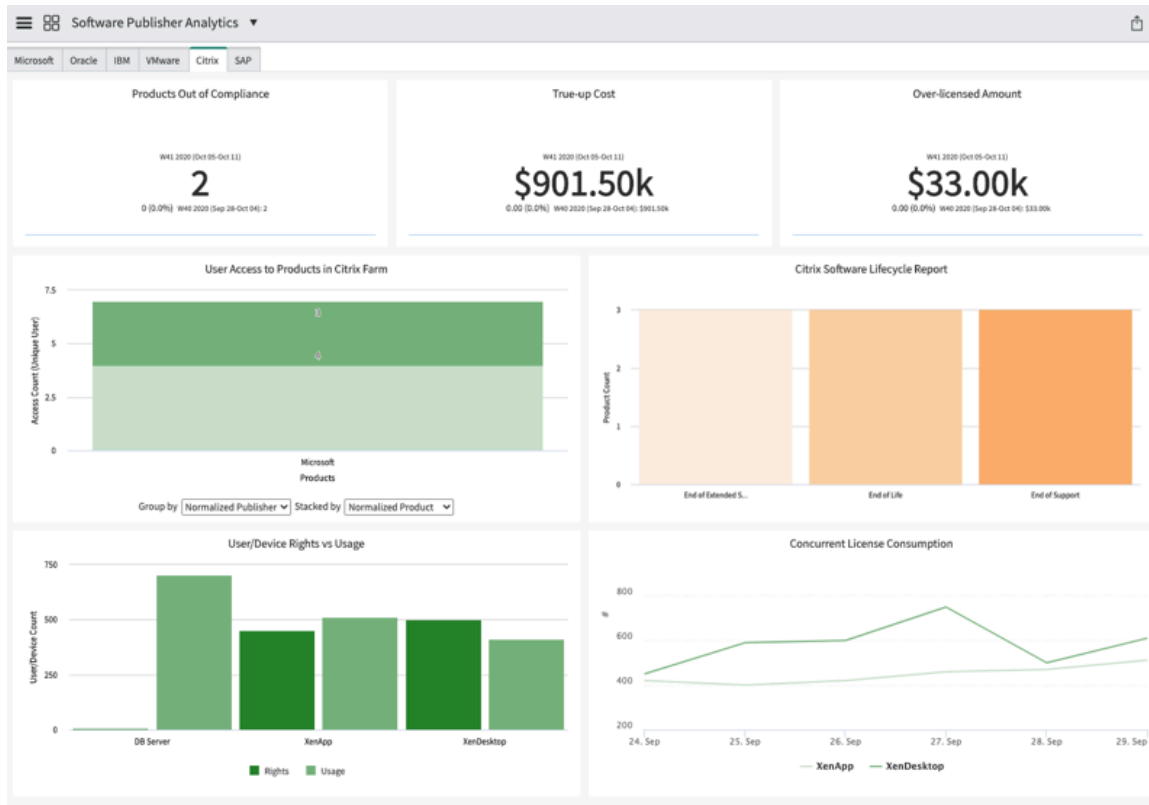
View compliance analysis results for Citrix on the Software Publisher Analytics dashboard in the Software Asset Management classic application.

Access the Software Publisher Analytics dashboard by navigating to **All > Software Asset > Publisher Overview**.

**i Note:** The add-on Citrix publisher pack (com.sn\_samp\_citrix) [plugin](#) must be installed to view the Citrix dashboard tab.

A discovery process is required for Citrix data to be collected. For ServiceNow Discovery, a user with the admin role must create a [Discovery schedule](#)  to run on the Citrix Delivery Controller for communication with the Citrix License Server.

The dashboard is updated whenever a new reconciliation result is available. You can save charts in PNG or JPG format.



### Citrix tab

Report	Source list	Description
True-up Cost	Product Results	Cost to be compliant based on the average prices for entitlements for the rights.
Products out of Compliance	Product Results	Number of products that have at least one software model out of compliance.  Select the report to view the results in the <a href="#">License Workbench</a> .
Over-Licensed Amount	Product Results	Cost of licenses owned but not being used.
User Access to Products in Citrix Farm	Software Installations	Number of users with access to the Citrix farms.
Citrix Software Lifecycle Report	Software Lifecycle Report	Number of products in each software lifecycle phase, including End of Extended Support, End of Life, and End of Support.
User/Device Rights vs Usage Software Installs in Citrix Farm	Software Installations	Number of User/Device rights owned versus the number of rights being consumed.

**Citrix tab (continued)**

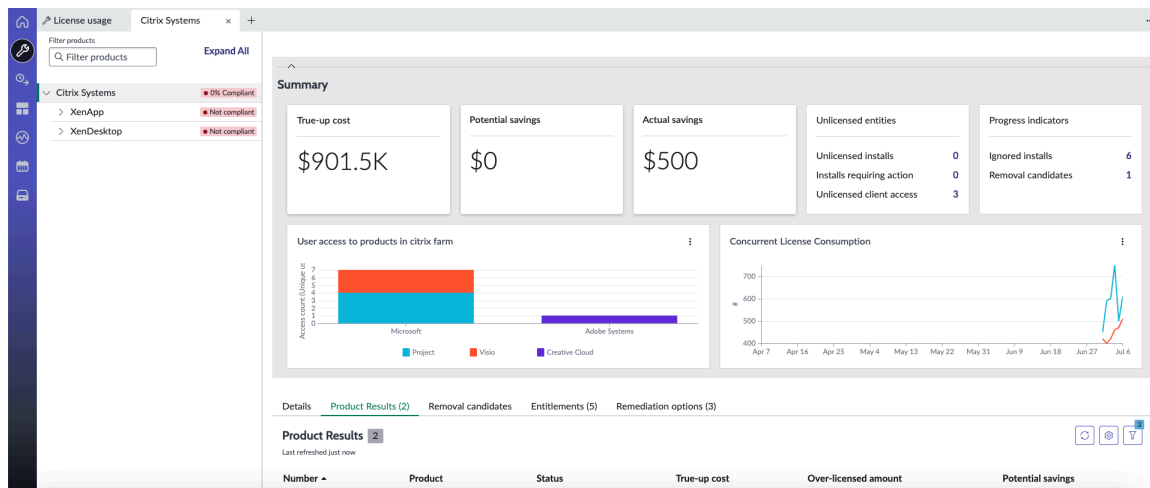
Report	Source list	Description
Concurrent License Consumption Trend	License Consumption History	<p>License consumption trends for your Citrix software products. Each data point represents the maximum in-use license count per day.</p> <p>Select a data point to view additional license consumption data for a specific Citrix software product.</p>

**Publisher overview for Citrix Systems in the Software Asset Workspace**

View license usage information related to Citrix in the publisher overview for Citrix Systems in the Software Asset Workspace.

From the Software Asset Workspace, access the Citrix Systems publisher overview by navigating to **License usage > Publishers** and then selecting **Citrix Systems** from the list of available software publishers.

Results are updated whenever a new reconciliation result is available.



You can view a summary of your license usage information in the Summary section of the Citrix Systems publisher overview.

**Citrix Systems Summary**

Report	Description
True-up cost	Cost to be compliant based on the average price of rights in your Citrix software entitlements.
Potential savings	Potential cost savings for your Citrix licenses.
Actual savings	Actual cost savings for your Citrix licenses.

### Citrix Systems Summary (continued)

Report	Description
Unlicensed entities	<p>Summary of your unlicensed entities.</p> <p>This summary includes the following information:</p> <ul style="list-style-type: none"> <li>• <b>Unlicensed installs:</b> Total number of unlicensed Citrix software installations. Select the number to view the complete list of unlicensed Citrix software installations.</li> <li>• <b>Installs requiring action:</b> Total number of Citrix software installations that you must take action on. Select the number to view the complete list of these Citrix software installations.</li> <li>• <b>Unlicensed client access:</b> Total number of unlicensed Citrix client access records. Select the number to view the complete list of unlicensed Citrix client access records.</li> </ul>
Progress indicators	<p>Summary of your license compliance progress.</p> <p>This summary includes the following indicators:</p> <ul style="list-style-type: none"> <li>• <b>Ignored installs:</b> Total number of Citrix software installations that were ignored during reclamation. Select the number to view the complete list of ignored Citrix software installations.</li> <li>• <b>Removal candidates:</b> Total number of Citrix removal candidates. Select the number to view the list of all software removal candidates.</li> </ul>
User access to products in citrix farm	<p>Number of users that have access to specific software products within your Citrix farm. Select a bar to view the complete list of users that have access to the specified software product.</p>
Concurrent License Consumption	<p>License consumption trends for your Citrix software products. Each data point represents the maximum in-use license count per day.</p> <p>Select a data point to view additional license consumption data for a specific Citrix software product.</p>

For more details on the license usage information that is provided in the publisher overview, see [License usage publisher fields in workspace](#).

### Software Asset Management publisher pack for IBM

Use the Software Asset Management publisher pack for IBM to track and optimize licensing for your IBM software products. You can also use the publisher pack to track and optimize licensing for the Red Hat Enterprise Linux Server and Red Hat Enterprise Linux for Virtual Datacenters products.

To use the IBM publisher pack, activate the Software Asset Management Professional for IBM (com.sn\_samp\_ibm) [plugin](#).

The IBM publisher pack supports the following license metrics:

- Authorized User
- Authorized User Value Unit
- Employee User Value Unit
- External User Value Unit

- Per Device
- Per Named User
- Per Processor
- Per User
- Processor Value Unit (PVU)
- Resource Value Unit (RVU)
- Virtual Processor Core (VPC)

**i Important:** The PVU, RVU, and VPC license metrics are supported only if you integrate the IBM publisher pack with the IBM License Metric Tool (ILMT), BigFix Inventory, or a Software Asset Management provider that is authorized to participate in the IBM Client Value Acceleration (CVA) Program. For more information on ILMT and BigFix Inventory integrations, see [IBM License Metric Tool \(ILMT\) and BigFix Inventory integrations](#). For more information on Authorized SAM Provider (ASP) integrations, see [Authorized SAM Provider \(ASP\) integrations for IBM](#).

For more information on the supported IBM license metrics, see [Software license metrics](#).

**i Important:** The IBM publisher pack is available as part of the Software Asset Management Professional (com.snc.samp) plugin. The publisher pack includes all capabilities that are required for tracking and managing both full capacity and sub-capacity PVU and RVU licenses for your IBM products. It does not require the legacy IBM PVU Process Pack to track and manage IBM PVU licenses. See [iBM PVU Process Pack](#) for more information on the legacy process pack.

When you run a discovery using a discovery tool such as the ServiceNow Discovery application, the discovery tool locates the IBM software installations in your environment and then imports the associated data into your ServiceNow instance. The Software Asset Management application compares this data against your IBM software entitlements to automatically reconcile your IBM software products, including products in complex server licensing scenarios.

**i Important:** You must use different discovery tools based on the license metric that you are using for reconciliation, and if applicable, the type of IBM integration that you are using with the publisher pack:

#### PVU and RVU license metrics

To reconcile your IBM software products using the PVU or RVU license metrics, you must use one of the following discovery tools:

- If you are integrating with the ILMT or BigFix Inventory, you must connect to these discovery tools using either version 1 or version 2 of the integration APIs.
- If you are integrating with a Software Asset Management provider that is authorized to participate in the IBM CVA Program, you must use the ServiceNow Discovery application in conjunction with the IBM License Compliance for Software Asset Management application.

#### VPC license metric

To reconcile your IBM software products using the VPC license metric, you must use one of the following discovery tools:

- If you are integrating with the ILMT or BigFix Inventory, you must connect to these discovery tools using version 2 of the integration APIs.
- If you are integrating with a Software Asset Management provider that is authorized to participate in the IBM CVA Program, you must use the ServiceNow Discovery application in conjunction with the IBM License Compliance for Software Asset Management application.

#### All other supported license metrics

To reconcile your IBM software products using any other supported license metric, including user-based license metrics like Authorized User and External User Value Unit, you can use any other discovery tool.

### Supported IBM license types

The Software Asset Management publisher pack for IBM adds license metrics for various IBM license types.

#### IBM processor value unit (PVU) and resource value unit (RVU) licenses

If you integrate the Software Asset Management publisher pack for IBM with Software Asset Management providers that are authorized to participate in the IBM Client Value Acceleration (CVA) Program, you can track and manage IBM PVU and RVU licenses. Alternatively, you can track and manage these licenses when you integrate with the IBM License Metric Tool (ILMT) or BigFix Inventory using version 1 or 2 of the integration APIs.

With these integrations, the publisher pack adds the Processor Value Unit (PVU) and Resource Value Unit (RVU) license metrics for IBM so that you can calculate licensing for these license types. For more details on Authorized SAM Provider (ASP) integrations, see [Authorized SAM Provider \(ASP\) integrations for IBM](#). For more details on ILMT and BigFix Inventory integrations, see [IBM License Metric Tool \(ILMT\) and BigFix Inventory integrations](#).

**i Note:** IBM PVU and RVU licensing is supported in both physical and virtualized environments.

## Processor value unit (PVU) licensing

A processor value unit (PVU) is a unit of measure that enables you to determine the licensing requirements for an IBM software product based on the processor technology that is used in your physical hardware environment. Each processor technology is assigned a PVUs per Core value based on the processor vendor, processor name, and model number. You can determine the number of rights that are required for a PVU license by multiplying the appropriate PVUs per Core value by the number of activated processor cores in the physical hardware environment that is available to or managed by your IBM software product.

The IBM publisher pack supports both full capacity and sub-capacity PVU licensing. If you are using a full capacity PVU license, you must account for all activated processor cores in the physical hardware environment that is available to or managed by the IBM software product. If you are using a sub-capacity PVU license, you must account for only the specific activated processor cores that are available to or managed by the IBM software product, as defined in [Virtualization Capacity License Counting Rules](#).

You can gain visibility into how your PVU licenses are applied to your devices by using the **Usage Type** field in the [license workbench](#). Use this information to determine whether your PVU licenses are applied to the full capacity or sub-capacity of each device. Depending on the type of IBM integration that you are using, specify how a PVU license is applied to a device using one of the following options:

- If you are integrating the IBM publisher pack with the IBM License Metric Tool (ILMT) or BigFix Inventory, navigate to **Integration - ILMT/BigFix Inventory > Import Set Data > IBM License Metric Peak Usage** to modify the value of the corresponding **Usage Type** field in the IBM Peak Consumption [samp\_ilmt\_sw\_install] table. By default, the **Usage Type** field for devices on the IBM Peak Consumption [samp\_ilmt\_sw\_install] table is automatically set to **Sub-capacity**. However, the **Usage Type** field for devices with allocations in your full capacity PVU entitlements is automatically set to **Full capacity** instead.

For more details on ILMT and BigFix Inventory, see [IBM License Metric Tool \(ILMT\) and BigFix Inventory integrations](#).

- If you are integrating the IBM publisher pack with an Authorized SAM Provider (ASP), navigate to **Workspaces > Software Asset Workspace**. When the Software Asset Workspace launches, open the License operations view. From the left navigation menu of the License operations view, navigate to **IBM ASP Integration > Device Settings** to modify the value of the corresponding **Usage Type** field. By default, the **Usage Type** field is automatically set to **Sub-capacity**. However, the **Usage Type** field for devices with allocations in your full capacity PVU entitlements is automatically set to **Full capacity** instead.

For more details on the available device settings, see [Verify the meta data for your IBM hosts](#).

For more details on ASPs, see [Authorized SAM Provider \(ASP\) integrations for IBM](#).

Refer to [Processor Value Units \(PVU\)](#) for more information on IBM PVU licensing, including the complete list of supported processor technologies and corresponding PVUs per Core values.

## Resource value unit (RVU) licensing

A resource value unit (RVU) is a unit of measure that enables you to determine the licensing requirements for an IBM software product based on the number of activated processor cores that are available to or managed by that product. The number of activated processor cores corresponds directly with an RVU tier number and factor value.

### RVU tiers and factors

Number of Activated Processor Cores	Tier	Factor
0 to 2,500	1	1.00
2,501 to 10,000	2	0.80
10,001 to 50,000	3	0.60
50,001 to 150,000	4	0.40
150,001 and above	5	0.20

You can determine the number of rights that are required for an RVU license by using a step function based on these RVU tiers. First, you must divide the total number of activated processor cores into tiers based on the [RVU tiers and factors table](#). Since RVU licensing is calculated at the product level and not the individual device level, you must account for all devices that the product is installed on when determining the total number of activated processor cores that must be licensed. Then, you must multiply the number of activated processor cores within each tier by the corresponding factor values. Finally, you must add the resulting numbers together to determine the total number of rights that are required for the RVU license.

**i Important:** If you do not have enough rights to license all activated processor cores across all devices, none of the devices are licensed and the product is marked as Not Compliant.

For example, a product has access to a total of 150,000 activated processor cores across 100 devices. The total number of rights that are required for the RVU license is 72,500, based on the following calculations:

Tier	Number of Activated Processor Cores within the Tier	Factor	Number of Rights Required
1 (0 to 2,500 activated processor cores)	2,500	1.00	$2,500 \times 1.00 = 2,500$
2 (2,501 to 10,000 activated processor cores)	7,500	0.80	$7,500 \times 0.80 = 6,000$
3 (10,001 to 50,000 activated processor cores)	40,000	0.60	$40,000 \times 0.60 = 24,000$
4 (50,001 to 150,000 activated processor cores)	100,000	0.40	$100,000 \times 0.40 = 40,000$
n/a	150,000 total	n/a	$2,500 + 6,000 + 24,000 + 40,000 = 72,500$ total

- Note:** The number of rights that are consumed for RVU licenses is reported differently from the number of rights that are consumed for PVU licenses. For PVU licenses, this number is reported at the individual device level. For RVU licenses, this number is reported at the product level.

Refer to [Resource value unit \(RVU MAPC\)](#) for more information on IBM RVU tiers.

The IBM publisher pack supports both full capacity and sub-capacity RVU licensing. If you are using a full capacity RVU license, you must account for all activated processor cores in the physical hardware environment that is available to or managed by the IBM software product. If you are using a sub-capacity RVU license, which is available only in virtualized environments, you must account for only the activated processor cores that are used by the virtual machines (VMs) on which the IBM software product is installed.

You can gain visibility into how your RVU licenses are applied to your devices by using the **Usage Type** field in the [license workbench](#). Use this information to determine whether your RVU licenses are applied to the full capacity or sub-capacity of each device. Depending on the type of IBM integration that you are using, specify how an RVU license is applied to a device using one of the following options:

- If you are integrating the IBM publisher pack with the IBM License Metric Tool (ILMT) or BigFix Inventory, navigate to **Integration - ILMT/BigFix Inventory > Import Set Data > IBM License Metric Peak Usage** to modify the value of the corresponding **Usage Type** field in the IBM Peak Consumption [samp\_ilmt\_sw\_install] table. By default, the **Usage Type** field for devices on the IBM Peak Consumption [samp\_ilmt\_sw\_install] table is automatically set to **Sub-capacity**.

For more details on ILMT and BigFix Inventory, see [IBM License Metric Tool \(ILMT\) and BigFix Inventory integrations](#).

- If you are integrating the IBM publisher pack with an Authorized SAM Provider (ASP), such as Anglepoint, navigate to **Workspaces > Software Asset Workspace**. When the Software Asset Workspace launches, open the License operations view. From the left navigation menu of the License operations view, navigate to **IBM ASP Integration > Device settings** to modify the value of the corresponding **Usage Type** field. By default, the **Usage Type** field is automatically set to **Sub-capacity**.

For more details on the available device settings, see [Verify the meta data for your IBM hosts](#).

For more details on ASPs, see [Authorized SAM Provider \(ASP\) integrations for IBM](#).

### IBM user-based licenses

You can use the Software Asset Management publisher pack for IBM to track and manage your IBM user-based licenses, including authorized user licenses and user value unit (UVU)-based licenses.

Supported UVU-based licenses include authorized UVU, employee UVU, and external UVU. The publisher pack adds license metrics that are specific to IBM so that you can calculate licensing for these license types.

IBM user-based licensing enables you to license the users who require access to your IBM software products. You can track and optimize the compliance of your IBM user-based licenses by reconciling the associated IBM software products through client access records. With a client access record, you can specify the total number of users who are granted access to a particular version of an IBM software product. For more granular control, you can also identify the specific users who are granted access to that product. The Software Asset Management application can then compare this information against the software rights and allocations that are defined in the

corresponding software entitlements to determine if the associated user-based licenses are compliant.

For more information on client access records in the Software Asset Workspace, see [Create a software client access record in workspace](#). For more information on client access records in the Software Asset Management classic application, see [Add a software client access record in Software Asset Management classic](#).

### Authorized user licensing

Authorized user licensing enables you to license each unique user who requires access to an IBM software product.

With this licensing type, you can install a given IBM software product on an unlimited number of configuration items (CIs), such as servers and computers. Each user can then access an unlimited number of installations for that software product on any of the CIs that the software product is installed on.

### Authorized user value unit (AUVU) licensing

Authorized user value unit (AUVU) licensing enables you to license the total number of unique users who require access to an IBM software product.

With this licensing type, you can install a given IBM software product on an unlimited number of configuration items (CIs), such as servers and computers. Each user can then access an unlimited number of installations for that software product on any of the CIs that the software product is installed on.

With AUVU licensing, the number of users who require access to an IBM software product corresponds directly with an AUVU tier number and factor value.

#### AUVU tiers and factors

Number of Users	Tier	Factor
1 to 20	1	1.00
21 to 50	2	0.83
51 or more	3	0.80

You can determine the number of rights that are required for an AUVU license by using a step function based on these AUVU tiers. First, divide the total number of users into tiers based on the [AUVU tiers and factors table](#). Then, multiply the number of users within each tier by the corresponding factor values. Finally, add the resulting numbers together to determine the total number of rights that are required for the AUVU license.

**Important:** If you do not have enough rights to license all users, none of the users are licensed and the product is marked as Not Compliant.

For example, a company wants to grant 150 employees and contractors access to an IBM software product so that they can collaborate on an upcoming project. The total number of rights that are required for the corresponding AUVU license is 125, based on the following calculations:

Tier	Number of Users within the Tier	Factor	Number of Rights Required
1	20	1.00	20 x 1.00 = 20

Tier	Number of Users within the Tier	Factor	Number of Rights Required
(1 to 20 users)			
2 (21 to 50 users)	30	0.83	$30 \times 0.83 = 24.9$
3 (51 or more users)	100	0.80	$100 \times 0.8 = 80$
—	150 total	—	$20 + 24.9 + 80 = 124.9$ total (rounded up to 125 total)

### Employee user value unit (EUVU) licensing

Employee user value unit (EUVU) licensing enables you to license the total number of users within your organization who require access to an IBM software product. These users can include both employees and contractors.

With EUVU licensing, the number of users who require access to an IBM software product corresponds directly with an EUVU tier number and factor value.

#### EUVU tiers and factors

Number of Users	Tier	Factor
1000 to 2,500	1	1.000
2,501 to 5,000	2	0.800
5,001 to 10,000	3	0.700
10,001 to 30,000	4	0.650
30,001 to 50,000	5	0.550
50,001 to 100,000	6	0.500
100,001 to 300,000	7	0.465
300,001 to 500,000	8	0.400
500,001 to 1,000,000	9	0.360
1,000,001 to 100,000,000	10	0.320

You can determine the number of rights that are required for an EUVU license by using a step function based on these EUVU tiers. First, divide the total number of users into tiers based on the [EUVU tiers and factors table](#). Then, multiply the number of users within each tier by the corresponding factor values. Finally, add the resulting numbers together to determine the total number of rights that are required for the EUVU license.

**i Important:** If you do not have enough rights to license all users, none of the users are licensed and the product is marked as Not Compliant.

For example, a company wants to grant 11,000 employees access to an IBM software product. The total number of rights that are required for the corresponding EUVU license is 8,650, based on the following calculations:

Tier	Number of Users within the Tier	Factor	Number of Rights Required
1 (1,000 to 2,500 users)	2,500	1.000	$2,500 \times 1.000 = 2,500$
2 (2,501 to 5,000 users)	2,500	0.800	$2,500 \times 0.800 = 2,000$
3 (5,001 to 10,000 users)	5,000	0.700	$5,000 \times 0.700 = 3,500$
4 (10,001 to 30,000 users)	1,000	0.650	$1,000 \times 0.650 = 650$
—	11,000 total	—	$2,500 + 2,000 + 3,500 + 650 = 8,650$ total

### External user value unit (XUVU) licensing

External user value unit (XUVU) licensing enables you to license the total number of users outside your organization who require access to an IBM software product. These users can include third-party partners, suppliers, and contractors.

With XUVU licensing, the number of users who require access to an IBM software product corresponds directly with an XUVU tier number and factor value.

#### XUVU tiers and factors

Number of Users	Tier	Factor
1000 to 10,000	1	1.00000
10,001 to 50,000	2	0.87500
50,001 to 100,000	3	0.60000
100,001 to 500,000	4	0.43750
500,001 to 1,000,000	5	0.30000
1,000,001 to 25,000,000	6	0.24375
25,000,001 to 50,000,000	7	0.15000
50,000,001 to 250,000,000	8	0.13750
250,000,001 to 500,000,000	9	0.05000

**XUVU tiers and factors (continued)**

Number of Users	Tier	Factor
500,000,001 to 100,000,000,000	10	0.05000

You can determine the number of rights that are required for an XUVU license by using a step function based on these XUVU tiers. First, divide the total number of users into tiers based on the [XUVU tiers and factors table](#). Then, multiply the number of users within each tier by the corresponding factor values. Finally, add the resulting numbers together to determine the total number of rights that are required for the XUVU license.

**i Important:** If you do not have enough rights to license all users, none of the users are licensed and the product is marked as Not Compliant.

For example, a company wants to grant 15,000 third-party partners access to an IBM software product. The total number of rights that are required for the corresponding XUVU license is 14,375, based on the following calculations:

Tier	Number of Users within the Tier	Factor	Number of Rights Required
1 (1,000 to 10,000 users)	10,000	1.00000	10,000 x 1.00000 = 10,000
2 (10,001 to 50,000 users)	5,000	0.87500	5,000 x 0.87500 = 4,375
—	15,000 total	—	10,000 + 4,375 = 14,375 total

**IBM virtual processor core (VPC) licenses**

If you integrate the Software Asset Management publisher pack for IBM with Software Asset Management providers that are authorized to participate in the IBM Client Value Acceleration (CVA) Program, you can track and manage IBM VPC licenses. Alternatively, you can track and manage these licenses when you integrate with the IBM License Metric Tool (ILMT) or BigFix Inventory using version 2 of the integration APIs.

With these integrations, the publisher pack adds the Virtual Processor Core (VPC) license metric for IBM so that you can calculate licensing for this license type. For more details on Authorized SAM Provider (ASP) integrations, see [Authorized SAM Provider \(ASP\) integrations for IBM](#). For more details on ILMT and BigFix Inventory integrations, see [IBM License Metric Tool \(ILMT\) and BigFix Inventory integrations](#).

A virtual processor core (VPC) is a unit of measure that enables you to determine the licensing requirements for an IBM software product based on the number of cores that are available to or managed by that product. If you are licensing a virtual machine (VM), VPC is based on the number of virtual cores that are assigned to the VM. If you are licensing a physical host that is not partitioned for VMs, VPC is based on the number of processor cores on the host. Each VPC license requires one right for every core that is available to or managed by the associated IBM software product.

If you are integrating the IBM publisher pack with an ASP, the publisher pack supports both full capacity and sub-capacity VPC licensing. If you are integrating with ILMT or BigFix Inventory,

the publisher pack supports only sub-capacity VPC licensing. With a full capacity VPC license, you must account for all processor cores on the physical host that is available to or managed by the IBM software product. With a sub-capacity VPC license, which is available only in virtual environments, you must account for only the virtual cores that are assigned to the VMs on which the IBM software product is installed and running.

You can gain visibility into how your VPC licenses are applied to your devices by using the **Usage Type** field in the [license workbench](#). Use this information to determine whether your VPC licenses are applied to the full capacity or sub-capacity of each device. If you are integrating with an ASP, you can specify how a VPC license is applied to a device by navigating to **Workspaces > Software Asset Workspace**. When the Software Asset Workspace launches, open the License operations view. From the left navigation menu of the License operations view, navigate to **IBM ASP Integration > Device Settings** to modify the value of the corresponding **Usage Type** field. By default, the **Usage Type** field is automatically set to **Sub-capacity**.

For more details on the available device settings, see [Verify the meta data for your IBM hosts](#).

### IBM License Metric Tool (ILMT) and BigFix Inventory integrations

You can use an IBM License Metric Tool (ILMT) or BigFix Inventory integration to create a connection between your IBM servers and the ServiceNow AI Platform. Use this connection to import data into your ServiceNow instance so that you can track and optimize licensing for your IBM software products.

You can integrate with ILMT or BigFix Inventory using either version 1 or version 2 of the ILMT and BigFix Inventory integration APIs. The Software Asset Management application uses these APIs to retrieve data, such as software installation data and peak usage data, from the ILMT or BigFix Inventory. For more information on integrating with ILMT or BigFix Inventory using version 1 of the APIs, see [Integrating with the IBM License Metric Tool \(ILMT\) or BigFix Inventory using v1 APIs](#). For more information on integrating with ILMT or BigFix Inventory using version 2 of the APIs, see [Integrating with the IBM License Metric Tool \(ILMT\) or BigFix Inventory using v2 APIs](#).

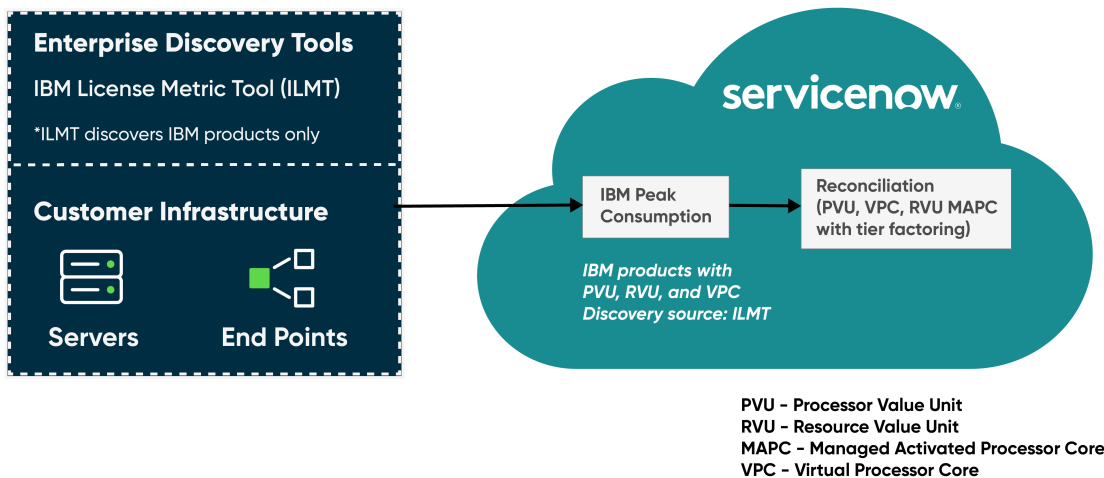
**i Important:** Version 1 of the ILMT and BigFix Inventory integration APIs have been deprecated by IBM. However, the Software Asset Management application continues to support integrations that are using this version of the APIs. If you are setting up an ILMT or BigFix Inventory integration for the first time, use version 2 of the APIs instead. For more information on the deprecation of these APIs, see [Deprecated REST APIs](#).

### Integrating with the IBM License Metric Tool (ILMT) or BigFix Inventory using v2 APIs

You can use version 2 of the IBM License Metric Tool (ILMT) and BigFix Inventory integration APIs to create a connection between your IBM servers and the ServiceNow AI Platform.

This connection enables you to import usage data into your ServiceNow instance so that you can track and optimize full capacity and sub-capacity processor value unit (PVU) and resource value unit (RVU) licensing as well as sub-capacity virtual processor core (VPC) licensing for your IBM software products.

See [REST API resources and HTTP methods](#) for more information on the ILMT and BigFix Inventory integration APIs.



The ILMT and BigFix Inventory integration enables you to create connections between one or more IBM servers and the ServiceNow AI Platform using HTTP or HTTPS. When you initiate the integration, you receive an IBM Server connection alias that you can use to set up your IBM server connections. If a connection is successful, the Software Asset Management application retrieves peak usage data within the aggregated period that you defined in ILMT or BigFix Inventory.

## Prerequisites

To track your IBM full capacity and sub-capacity PVU, RVU, and VPC licenses using this integration, you must complete the following prerequisites:

- Install, set up, and run ILMT or BigFix Inventory on a physical host or virtual machine (VM).

**i Important:** When you are setting up ILMT, ensure that all required configuration item (CI) data, including serial numbers, names, and IP addresses, is configured correctly so that your ServiceNow instance can accurately create corresponding CI records in the Configuration Management Database (CMDB). Refer to [KB0691430](#) for more details.

- Install ILMT version 9.2.24 or later.
- **i Note:** If you are using ILMT version 9.2.23 or earlier, you can import usage data only against your discovered IBM software products and not against the hosts that are running those products.
- Configure your IBM ILMT agents to scan your physical hosts or VMs in compliance with IBM usage measurement guidelines.
- **i Note:** Refer to [Measuring License Use](#) for more information on IBM usage measurement guidelines.
- Enable ILMT or BigFix Inventory to discover the configurations of both physical hosts and VMs as well as the relationships between them.
- Classify and bundle IBM components into IBM products through ILMT or BigFix Inventory.
- Request and install the IBM License Compliance for Software Asset Management application from the ServiceNow® Store. See [Request the IBM License Compliance for Software Asset](#)

Management application for IBM License Metric Tool (ILMT) and BigFix Inventory integrations for detailed instructions.

- Set the **Connect to ILMT using** (*sn\_samp\_ibm\_lic\_ilmt\_api\_version*) Software Asset Management property to **v2 API's**. For more details on this property, see [Software Asset Management properties](#).

**Request the IBM License Compliance for Software Asset Management application for IBM License Metric Tool (ILMT) and BigFix Inventory integrations**

If you are using version 2 of the IBM License Metric Tool (ILMT) and BigFix Inventory integration APIs to integrate with ILMT or BigFix Inventory, request the IBM License Compliance for Software Asset Management application from the ServiceNow® Store. Use the integration to track and manage your IBM licenses.

**Before you begin**

Role required: admin

**Procedure**

1. From a web browser, go to the [ServiceNow Store](#).
2. Log in using your HI credentials.
3. In the search bar, enter **IBM License Compliance for Software Asset Management** and then select **Search**.
4. Select the result called **IBM License Compliance for Software Asset Management**.
5. On the IBM License Compliance for Software Asset Management page, select **Request Install**. The ServiceNow Request for App Installation - IBM License Compliance for Software Asset Management dialog box opens.
6. In the dialog box, fill in the fields.

**ServiceNow Request for App Installation - IBM License Compliance for Software Asset Management dialog box**

Field	Description
Instance Name	Name of the instance on which you want to install the application. After you enter the instance name, select <b>Validate Instance</b> to verify that the instance exists.
Reason for request	Reason for requesting the application.

7. Select **Request**.
8. Select **Close**.

**Result**

If your request is approved, you will receive an email with detailed instructions on how to install the application.

**What to do next**

Install the application according to the instructions in the email.

## IBM License Metric Tool (ILMT) and BigFix Inventory transform map for v2 APIs

When you import data from the IBM License Metric Tool (ILMT) or BigFix Inventory using version 2 of the ILMT and BigFix Inventory integration APIs, your ServiceNow instance uses a default transform map to process this data into ServiceNow tables.

### Default ILMT and BigFix Inventory transform map

By default, the ServiceNow AI Platform provides the ILMT Software License Usage transform map to process the IBM license usage data that you import using version 2 of the ILMT and BigFix Inventory integration APIs. When you import this data into your ServiceNow instance, it is added to the source ILMT Product Usage Staging [ilmt\_v2\_product\_usage\_staging] and ILMT Device Usage Staging [ilmt\_v2\_device\_usage\_staging] tables. The ILMT Software License Usage transform map then uses the following table mappings to map the data from these source tables to the corresponding target tables:

#### ILMT Software License Usage transform map table mappings

Source Table	Target Table
ILMT Product Usage Staging [ilmt_v2_product_usage_staging] <b>Note:</b> Data that is imported into this table is reported against your discovered IBM software products.	ILMT Product Usage [ilmt_v2_product_usage]
ILMT Device Usage Staging [ilmt_v2_device_usage_staging] <b>Note:</b> Data that is imported into this table is reported against the hosts that are running your IBM software products. <b>Note:</b> You can import data into this table only if you are using ILMT version 9.2.24 or later. You cannot import data into this table if you are using ILMT version 9.2.23 or earlier or if you are using BigFix Inventory.	ILMT Product Usage Per Server [ilmt_v2_usage_per_server] ILMT Discovered Computer [ilmt_discovered_computer]

After the data is successfully mapped, it is updated in the corresponding target table records. You can then use the updated target table data to reconcile your IBM software products and verify compliance.

### ILMT and BigFix Inventory data processing

The ILMT Software License Usage transform map processes data by using the onStart transform map script. The onStart transform map script is an event script that processes at the beginning of an import. For more information on this transform map script, see [Map with transformation event scripts](#).

#### View the peak usage of your IBM software products

If you are integrating with the IBM License Metric Tool (ILMT) or BigFix Inventory using version 2 of the ILMT and BigFix Inventory integration APIs, view the highest full capacity and sub-capacity Processor Value Unit (PVU), Resource Value Unit (RVU), and Virtual Processor Core (VPC) usage for your IBM software products within an aggregated time period of up to 90 days.

#### Before you begin

Role required: sam\_admin or sam\_user

## Procedure

1. Navigate to **Workspaces > Software Asset Workspace**.
2. Open the License operations view.
3. From the left navigation menu of the License operations view, navigate to **IBM ILMT V2 Integration > Peak Consumption By Product**.
4. View the highest full capacity and sub-capacity PVU, RVU, and VPC usage for your IBM software products.  
The Software Asset Management application displays the highest usage within an aggregated time period of up to 90 days. You can define this aggregated time period in ILMT or BigFix Inventory.

### View the peak usage of your IBM software products by device

If you are integrating with the IBM License Metric Tool (ILMT) or BigFix Inventory using version 2 of the ILMT and BigFix Inventory integration APIs, view the highest full capacity and sub-capacity Processor Value Unit (PVU), Resource Value Unit (RVU), and Virtual Processor Core (VPC) usage for your IBM software products by physical host or virtual machine (VM).

### Before you begin

Role required: sam\_admin or sam\_user

## Procedure

1. Navigate to **Workspaces > Software Asset Workspace**.
2. Open the License operations view.
3. From the left navigation menu of the License operations view, navigate to **IBM ILMT V2 Integration > Peak Consumption Breakdown By Device**.
4. View the highest full capacity and sub-capacity PVU, RVU, and VPC usage for your IBM software products by physical host or VM.  
The Software Asset Management application displays the highest usage within an aggregated time period of up to 90 days. You can define this aggregated time period in ILMT or BigFix Inventory.

### View the devices that are running your IBM software products

If you are integrating with the IBM License Metric Tool (ILMT) or BigFix Inventory using version 2 of the ILMT and BigFix Inventory integration APIs, view the complete list of physical hosts and virtual machines (VMs) that are running your IBM software products.

### Before you begin

Role required: sam\_admin or sam\_user

## Procedure

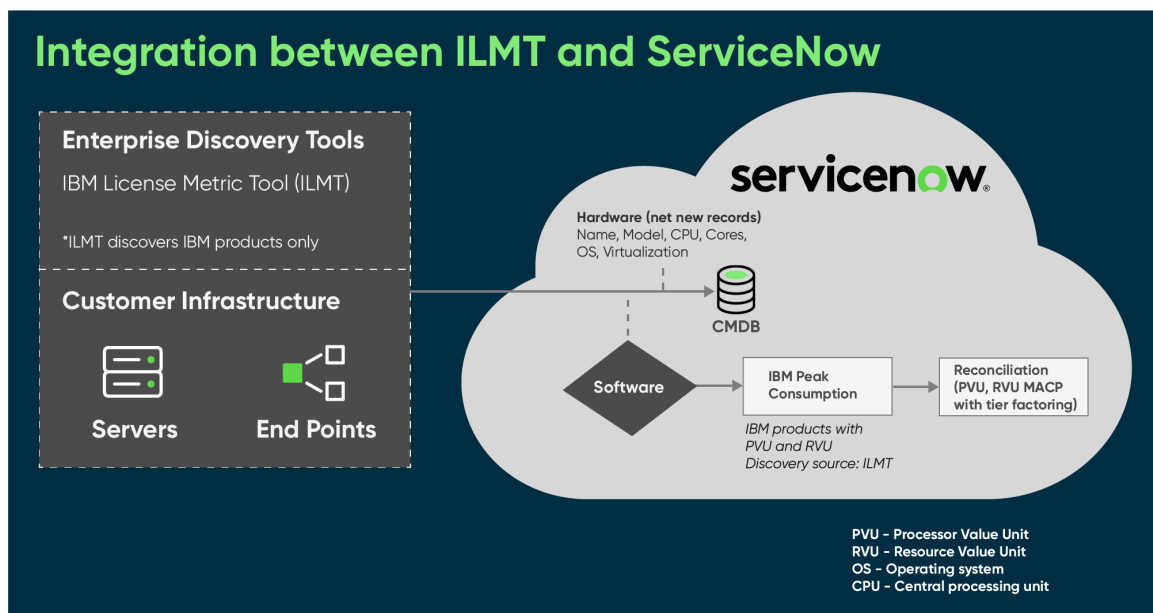
1. Navigate to **Workspaces > Software Asset Workspace**.
2. Open the License operations view.
3. From the left navigation menu of the License operations view, navigate to **IBM ILMT V2 Integration > ILMT Discovered Computer**.
4. View the list of physical hosts and VMs that are running your IBM software products.  
You can also view detailed information about each host or VM, including the hardware model, the hardware serial number, and the corresponding configuration item (CI) in the Configuration Management Database (CMDB).

## Integrating with the IBM License Metric Tool (ILMT) or BigFix Inventory using v1 APIs

You can use version 1 of the IBM License Metric Tool (ILMT) and BigFix Inventory integration APIs to create a connection between your IBM servers and the ServiceNow AI Platform.

This connection enables you to import software installation data into your ServiceNow instance so that you can track and optimize full capacity and sub-capacity processor value unit (PVU) and resource value unit (RVU) licensing for your IBM software products.

**i Important:** Version 1 of the ILMT and BigFix Inventory integration APIs have been deprecated by IBM. However, the Software Asset Management application continues to support integrations that are using this version of the APIs. If you are setting up an ILMT or BigFix Inventory integration for the first time, use version 2 of the APIs instead. For more information on setting up the integration using version 2 of the APIs, see [Integrating with the IBM License Metric Tool \(ILMT\) or BigFix Inventory using v2 APIs](#). For more information on the deprecation of these APIs, see [Deprecated REST APIs](#).



The ILMT and BigFix Inventory integration enables you to create connections between one or more IBM servers and the ServiceNow AI Platform using HTTP or HTTPS. Upon activating the Software Asset Management Professional for IBM (com.sn\_samp\_ibm) plugin, you receive an IBM Server connection alias that you can then use to set up your IBM server connections. If a connection is successful, the Software Asset Management application retrieves historical software installation data within the aggregated period that you defined in ILMT or BigFix Inventory. This data includes products, components, editions, hosts, virtual machines, and license usage.

**i Note:** License usage is based on product use and not component use.

## Prerequisites

To track your IBM full capacity and sub-capacity PVU and RVU licenses using this integration, you must complete the following prerequisites:

- Install, set up, and run ILMT or BigFix Inventory on a physical host or virtual machine (VM).

**i Important:** When you are setting up ILMT, ensure that all required configuration item (CI) data, including serial numbers, names, and IP addresses, is configured correctly so that your ServiceNow instance can accurately create corresponding CI records in the Configuration Management Database (CMDB). Refer to [KB0691430](#) for more details.

- Install ILMT version 9.2.7 or later.
- Configure your IBM ILMT agents to scan your physical hosts or VMs in compliance with IBM usage measurement guidelines.

**Note:** Refer to [Measuring License Use](#) for more information on IBM usage measurement guidelines.

- Enable ILMT or BigFix Inventory to discover the configurations of both physical hosts and VMs as well as the relationships between them.
- Classify and bundle IBM components into IBM products through ILMT or BigFix Inventory.
- Set the **Connect to ILMT using** (*sn\_samp\_ibm\_lic.ilm\_t\_api\_version*) Software Asset Management property to **v1 API's**. For more details on this property, see [Software Asset Management properties](#).

### IBM License Metric Tool (ILMT) and BigFix Inventory transform maps for v1 APIs

When you import data from the IBM License Metric Tool (ILMT) or BigFix Inventory using version 1 of the ILMT and BigFix Inventory integration APIs, your ServiceNow instance uses transform maps to process this data into ServiceNow tables.

### Default ILMT and BigFix Inventory transform maps

By default, ServiceNow provides the following transform maps for ILMT and BigFix Inventory data when you are using version 1 of the ILMT and BigFix Inventory APIs:

#### Default ILMT and BigFix Inventory transform maps

Transform Map	Source Table	Target Table	Description
ILMT Computer Identity V1	Computer [imp_samp_ilm_t_computer_system]	Computer [cmdb_ci_computer]	Processes identification data for your virtual machines (VMs) and hosts.  The ILMT Computer Identity V1 transform map uses the CMDB IRE API to create a configuration item (CI) record for each VM or host in the Computer [cmdb_ci_computer] table. If a VM uses the same hardware serial number as its host, the transform map creates a CI record for only the host. For more information on the CMDB IRE API, see <a href="#">Identification and Reconciliation engine (IRE)</a> .

**Default ILMT and BigFix Inventory transform maps (continued)**

Transform Map	Source Table	Target Table	Description
			<p><b>Note:</b> ServiceNow does not support hardware serial numbers containing periods (.).</p>
<p>ILMT Software Instance</p>	<p>ILMT Software Instance [imp_samp_ilm_t_sw_instance]</p>	<p>Global [global]</p>	<p>Processes installation data for each IBM software component and product on your VMs and hosts.</p> <p>Software components are the independent units of software that you install or run on a VM. You can identify but not license software components individually. Software products are the units of software packaging on a host that can comprise of a collection of software components. You can license the software product as a whole. For more information on software components and products, refer to the <a href="#">IBM Knowledge Center</a>.</p> <p>The ILMT Software Instance transform map creates a record for each IBM software component and product installation in the IBM Peak Consumption [samp_ilm_t_sw_install] table.</p>

Default ILMT and BigFix Inventory transform maps (continued)

Transform Map	Source Table	Target Table	Description
			<p><b>i Note:</b> Although software products are not actual software installations, the transform map treats them as installations so that you can update and track license usage against each software product for reconciliation and compliance purposes.</p>
<p>ILMT Software License Usage</p>	<p>License Consumption [imp_samp_ilmt_license_usage]</p>	<p>Global [global]</p>	<p>Processes license usage data for your IBM software products. You can use this data to reconcile your IBM software products and verify compliance.</p> <p><b>i Note:</b> License usage data is reported against physical hosts only, as IBM software products are licensed based on physical host usage and not virtual machine (VM) usage.</p> <p>The ILMT Software License Usage transform map updates license usage data on corresponding records in the IBM Peak Consumption [samp_ilmt_sw_install] table. If a corresponding record does not exist, the transform map creates a record for your license usage data with</p>

**Default ILMT and BigFix Inventory transform maps (continued)**

Transform Map	Source Table	Target Table	Description
			the version set to Not reported.

**ILMT and BigFix Inventory data processing**

Each ILMT and BigFix Inventory transform map processes data using field maps or transform map scripts.

**ILMT Computer Identity V1 transform map**

The ILMT Computer Identity V1 transform map processes data from the source Computer [imp\_samp\_ilmt\_computer\_system] table to the target Computer [cmdb\_ci\_computer] table using both field maps and a transform map script.

By default, the ILMT Computer Identity V1 transform map includes the following field maps:

**Default field maps**

Source Field	Target Field	Description
u_ip_address	ip_address	IP address of the host or virtual machine.
u_dns_name	dns_domain	Domain name of the host or virtual machine.
u_server_processors	cpu_count	Number of CPUs or virtual CPUs (vCPUs) on the host or virtual machine.
u_host_name	name	Name of the host or virtual machine.
u_processor_brand_string	cpu_name	Brand name of the CPU or vCPU on the host or virtual machine (for example, IBM).
u_server_cores	cpu_core_count	Number of CPU or vCPU cores on the host or virtual machine.
[Script]	discovery_source	Discovery source that pulls in IBM software installation data. Possible values are ILMT or BigFix Inventory.
[Script]	virtual	Option indicating whether a machine is virtual.
u_processor_brand	cpu_type	Type of CPU or vCPU on the host or virtual machine (for example, dual core CPU).
u_hardware_serial_number	serial_number	Serial number that identifies the host.

In addition to using field maps, the transform map processes data using the onAfter transform map script, which is an event script that processes at the end of each row transformation. For more information on this transform map script, see [Map with transformation event scripts](#).

### ILMT Software Instance transform map

The ILMT Software Instance transform map processes data from the source ILMT Software Instance [imp\_samp\_ilm\_t\_sw\_instance] table to the target IBM Peak Consumption [samp\_ilm\_t\_sw\_install] table using the onComplete transform map script. The onComplete transform map script is an event script that processes at the end of an import. For more information on this transform map script, see [Map with transformation event scripts](#).

### ILMT Software License Usage transform map

The ILMT Software License Usage transform map processes data from the source License Consumption [imp\_samp\_ilm\_t\_license\_usage] table to the target IBM Peak Consumption [samp\_ilm\_t\_sw\_install] table using the onStart transform map script. The onStart transform map script is an event script that processes at the beginning of an import. For more information on this transform map script, see [Map with transformation event scripts](#).

## Setting up an IBM License Metric Tool (ILMT) or BigFix Inventory integration for HTTPS

You can set up an IBM License Metric Tool (ILMT) or BigFix Inventory integration for IBM compliance reporting.

If you're using an HTTPS connection, you can use any of the following connection types:

- HTTPS with the MID Server
- HTTPS without the MID Server

### HTTPS with the MID Server

Set up IBM License Metric Tool (ILMT) and BigFix Inventory integration for IBM compliance reporting using an HTTPS connection with the MID Server.

#### Before you begin

Role required: sys\_admin

#### Procedure

1. Download the certificate by logging in to the ILMT or BigFix Inventory server and navigating to **Management > Server Settings**.
2. [Import a certificate for the MID Server](#).

#### What to do next

After you've finished uploading your certificates, [create a connection to ILMT/BigFix Inventory](#).

### HTTPS without the MID Server

Set up IBM License Metric Tool (ILMT) and BigFix Inventory integration for IBM compliance reporting using an HTTPS connection without the MID Server.

#### Before you begin

Role required: sys\_admin

### About this task

- Note:** The firewall port must be opened for connectivity to your ServiceNow instance IP address.

### Procedure

1. Download the certificate by logging in to the ILMT or BigFix Inventory server and navigating to **Management > Server Settings**.
2. From your ServiceNow instance, navigate to **System Definition > Certificates** and create a [certificate](#) (Trust Store Cert, PEM format).
3. Paste the full downloaded ILMT or BigFix Inventory server certificate content into the **PEM Certificate** field (including banners).
4. Select the **Validate Stores/Certificates** related link.
5. To create the Java Key Store file using the IBM certificate file, open the command prompt on your computer and navigate to the folder that contains the JRE keytool.
6. Execute the following commands:

```
keytool -import -trustcacerts -alias <Certificate alias>
-file <Certificate file path> -keystore IBM_Server.keystore
-storetype jks
keytool -list -v -keystore IBM_Server.keystore
```

These commands generate the `IBM_Server.keystore` file.

7. Return to the ServiceNow AI Platform, navigate to **System Definition > Certificates** and create a certificate (Java Key Store).
8. Upload the `IBM_Server.keystore` file that you generated as an attachment to the certificate record.
9. Select the **Validate Stores/Certificates** related link.
10. Navigate to **System Security > Protocol Profiles** and create a new protocol profile using the Java Key Store certificate that you created.

- Note:** You need to select the protocol profile that you create when you create a connection to ILMT/BigFix Inventory.

### What to do next

After you've finished uploading your certificates, [create a connection to ILMT/BigFix Inventory](#).

### Create a connection to ILMT or BigFix Inventory

If you're using an HTTP connection or you've finished the initial configuration for HTTPS, establish a connection between your IBM server and the ServiceNow AI Platform.

### Before you begin

Role required: `sam_admin`

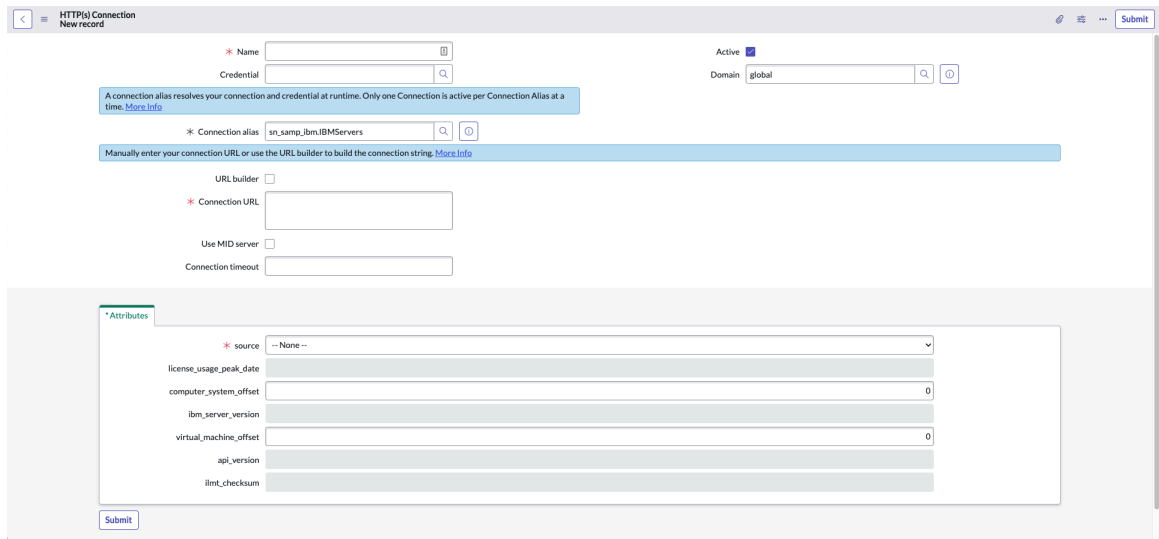
### About this task

- Note:** If you're using an HTTP or HTTPS connection without the MID Server, the firewall port must be opened for connectivity to your ServiceNow instance IP address.

### Procedure

1. Navigate to **All > Integration – ILMT / BigFix Inventory > Setup**.
2. On the **Connections** related tab of the Connection & Credential Aliases form, select **New**.

The HTTP(s) Connection form opens.



3. On the form, fill in the fields.

### HTTP(s) Connection form

Field	Description
Name	Unique name of the connection.
Credential	Credentials that are used to establish the connection. You can use either basic authentication credentials, such as a username and password, or API key credentials.  <b>Note:</b> Select the same credentials that you use to access the ILMT server.
Connection alias	Connection alias with which the connection can be referred. This connection alias resolves your connection and credentials at runtime.  This field is automatically set to the <b>sn_samp_ibm.IBMServers</b> alias.
Active	Option indicating that the connection is active.
Domain	Domain to which the connection belongs.

4. Specify the URL for the connection.

Depending on whether you are using an HTTP or HTTPS connection, use one of the following options to specify the connection URL:

- **HTTP connection:** Specify the HTTP connection URL using the **Connection URL** field.

In the **Connection URL** field, enter a URL in the `http://<host-ip-address|dns-hostname>:<port>` format.

URL builder

\* Connection URL



Use MID server

Connection timeout

**Note:** You cannot modify the **Connection URL** field if you select the **URL builder** check box.

- **HTTPS connection:** Specify the HTTPS connection URL using either the URL builder or an SSL certificate.

HTTPS Connection URL Option	Procedure
URL builder	<p><b>a.</b> To enable your ServiceNow instance to build a connection URL using the URL builder, select the <b>URL builder</b> check box.</p> <p>The <b>Mutual authentication, Protocol, Host, Override default port, and Base path</b> fields appear on the form.</p> <div data-bbox="518 1318 1093 1501" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>URL builder <input checked="" type="checkbox"/></p> <p>Connection URL <input type="text"/></p> <p>Mutual authentication <input type="checkbox"/></p> <p>* Protocol <input type="text" value="https"/></p> <p>Use MID server <input type="checkbox"/></p> <p>Connection timeout <input type="text"/></p> <p>* Host <input type="text"/></p> <p>Override default port <input type="text"/></p> <p>Base path <input type="text"/></p> </div> <p><b>b.</b> In the <b>Protocol</b> field, specify the underlying protocol that is used by the connection.</p> <p>This field is automatically set to <b>https</b>.</p> <p><b>c.</b> In the <b>Host</b> field, enter the URL of the target host that is used by the connection.</p> <p>You must enter a URL in the <code>https://&lt;host-ip-address dns-hostname&gt;:&lt;port&gt;</code> format.</p>

HTTPS Connection URL Option	Procedure
	<p><b>d.</b> (Optional) In the <b>Override default port</b> field, enter the port number of the target port that is used by the connection.</p> <p>You must enter the same port number that you used for your ILMT or BigFix Inventory setup.</p> <p><b>e.</b> (Optional) In the <b>Base path</b> field, enter the base path for the connection.</p>
SSL certificate	<p><b>a.</b> Retrieve an SSL certificate from your IBM server.</p> <p><b>b.</b> Depending on whether you are using an HTTPS connection with or without the MID Server, use one of the following options to apply the certificate to your ServiceNow instance:</p> <ul style="list-style-type: none"> <li>▪ Without the MID Server:           <ul style="list-style-type: none"> <li><b>i.</b> In a new tab or window, upload the certificate to your ServiceNow instance.</li> <li>Refer to <a href="#">HTTPS without the MID Server</a> for detailed instructions.</li> <li><b>ii.</b> Return to the HTTP(s) Connection form.</li> <li><b>iii.</b> Enable your ServiceNow instance to build a connection URL by selecting the <b>URL builder</b> check box.</li> </ul> </li> </ul> <p>The <b>Mutual authentication, Protocol, Host, Override default port, and Base path</b> fields appear on the form.</p>  <p><b>iv.</b> Enable mutual authentication for the connection by selecting the <b>Mutual authentication</b> check box.</p> <p>The <b>Protocol</b> field is replaced by the <b>Protocol profile</b> field.</p> 

**HTTPS Connection URL Option Procedure**

v. In the **Protocol profile** field, select the search icon (🔍) to locate and select the HTTPS protocol profile that specifies the certificate used for mutual authentication.

You must select the same protocol profile that you created in [HTTPS without the MID Server](#).

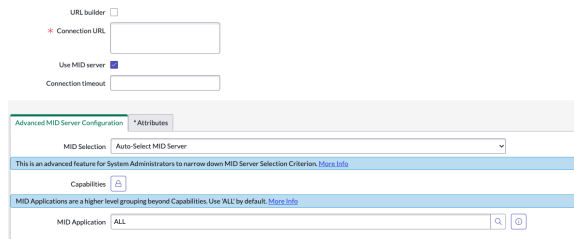
▪ With the MID Server:

i. In a new tab or window, upload the certificate to your ServiceNow instance.

Refer to [HTTPS with the MID Server](#) for detailed instructions.

ii. Return to the HTTP(s) Connection form and then select the **Use MID server** check box.

The **Advanced MID Server Configuration** tab appears.



iii. In the **MID Selection** field of the **Advanced MID Server Configuration** tab, specify how you want to select a MID Server for the connection.

Select one of the following options:

▪ **Auto-select MID Server:** Automatically selects a MID Server from the list of MID Servers that are configured for the connection. This option is selected by default.

If you select this option, the **Advanced MID Server Configuration** tab displays the **Capabilities** and **MID Application** fields. You can use these fields to filter the list of available MID Servers based on supported MID Server capabilities and applications.

▪ To filter this list based on MID Server capabilities, select the Unlock Capabilities icon (🔓) in the **Capabilities** field. After you unlock the field, select the Lookup using list icon (🔍) to search for and select the desired capabilities.

▪ To filter this list based on MID Server applications, select the Lookup using list icon (🔍) in the **MID Application** field to search for and select the desired applications.

HTTPS Connection URL Option	Procedure
	<p>See <a href="#">MID Server selection</a> for more information on MID Server capabilities and applications.</p> <ul style="list-style-type: none"> <li>▪ <b>Specific MID Server:</b> Enables you to select a specific MID Server for the connection.</li> </ul> <p>If you select this option, the <b>Advanced MID Server Configuration</b> tab displays the <b>MID Server</b> field. Select the Lookup using list icon (🔍) in the <b>MID Server</b> field to search for and select the MID Server that you want to use for the connection.</p> <div style="background-color: #e1f5fe; padding: 10px; border: 1px solid #ccc;"> <p><b>Important:</b> To select a specific MID Server for the connection, you must deselect the <b>Included in application ALL</b> check box for any applications that are configured to use the specified MID Server. For more information on this check box, refer to the Select applications to include in the definition of ALL for a MID Server section of <a href="#">Configure a default MID Server for each application</a>.</p> </div> <ul style="list-style-type: none"> <li>▪ <b>Specific MID Cluster:</b> Enables you to select a specific MID Server cluster for the connection.</li> </ul> <p>If you select this option, the <b>Advanced MID Server Configuration</b> tab displays the <b>MID Cluster</b> field. Select the Lookup using list icon (🔍) in the <b>MID Cluster</b> field to search for and select the MID Server cluster that you want to use for the connection.</p>

**5. Set up the connection timeout.**

Use one of the following options to set up the connection timeout:

- **glide.http.outbound.max\_timeout.enabled system property:** The ServiceNow AI Platform *glide.http.outbound.max\_timeout.enabled* system property enables you to specify the number of seconds that RESTMessageV2 and SOAPMessageV2 APIs wait for a response from a synchronous call. You can configure this system property by opening a new tab or window and then navigating to **System Properties > All Properties > glide.http.outbound.max\_timeout.enabled**. If this system property is set to **true** or is not available on your ServiceNow instance, your instance uses a default timeout value of 30 seconds. If this system property is set to **false**, your ServiceNow instance uses a default timeout value 600 seconds. See [Available system properties](#) for more information on this system property.
- **Connection timeout field:** The **Connection timeout** field on the HTTP(s) Connection form enables you to specify the number of seconds that your ServiceNow instance waits to establish the given connection.

**Important:** This option is applicable only in the San Diego and later releases. In the Rome and earlier releases, you must set up the connection timeout using only the *glide.http.outbound.max\_timeout.enabled* system property.

Application of the **Connection timeout** field is dependent on your *glide.http.outbound.max\_timeout.enabled* system property configuration.

If the system property is set to **false**, your ServiceNow instance honors the value that is specified in the **Connection timeout** field.

**Note:** If the **Connection timeout** field is empty, your ServiceNow instance uses a default connection timeout value of 300 seconds.

If the system property is set to **true** or is not available on your ServiceNow instance, your instance ignores the value that is specified in the **Connection timeout** field. Instead, your instance uses a default connection timeout value of 30 seconds.

**6. Configure additional attributes for the connection.**

Select the **Attributes** tab and then fill in the fields.

**Attributes tab**

Field	Description
source	Source of your IBM software installation data. The options are <b>ILMT</b> and <b>BigFix Inventory</b> .
computer_system_offset	Offset value that prevents your ServiceNow instance from re-importing computer records from ILMT or BigFix Inventory. Each time you run an import, the offset value updates automatically based on the computer records that are included in the import. Every subsequent import then retrieves only new computer records starting from the specified offset value.  If you are establishing a new connection, verify that the offset value is set to <b>0</b> . If you want to re-import all computer records for an existing connection, reset the offset value to <b>0</b> .
virtual_machine_offset	Offset value that prevents your ServiceNow instance from re-importing virtual machine (VM) records from ILMT or BigFix Inventory. Each time you run an import, the offset value updates automatically based on the VM records that are included in the import. Every subsequent import then retrieves only new VM records starting from the specified offset value.  If you are establishing a new connection, verify that the offset value is set to <b>0</b> . If you want to re-import all VM records for an existing connection, reset the offset value to <b>0</b> .

**7. Select Submit.**

The active connection information displays.

**8. Optional:** If you are using version 1 of the ILMT and BigFix Inventory APIs, import ILMT or BigFix Inventory scheduled data manually.

a. Navigate to **Integration - ILMT / BigFix Inventory > Scheduled Import** and then select **Execute Now**.

b. Verify that the import has completed successfully.

- To verify that both the import and transformation have completed successfully, navigate to **Integration - ILMT / BigFix Inventory > Transform History**.

**i Note:** Every record in the Transform Histories table displays an **Inserts** value of 0.

- To view all data that was imported into the License Consumption [samp\_ilmt\_sw\_install] table, navigate to **Integration - ILMT / BigFix Inventory > Import Set Data > License Consumption**.
- To view all data that was imported into the Computer [cmdb\_ci\_computer] table, navigate to **Integration - ILMT / BigFix Inventory > Import Set Data > Computers**.

### Validate your ILMT connection health

Validate the health of your ILMT connections to help improve the success of each connection. Use the results to evaluate how you can resolve unsuccessful connections, such as adjusting the connection response time or fixing errors related to invalid hardware serial numbers.

### Before you begin

Role required: admin

### Procedure

**1.** Navigate to **All > Software Asset > Integration - ILMT/BigFix Inventory > Connection Health**.

**2.** Select **Validate**.

The Connection Healths list reloads with the latest status of each ILMT connection.

**3.** Verify the status of each connection using the **Status** field.

If the **Status** field is set to **Failed**, refer to the corresponding **Information** field for more details about why that connection has failed and what actions you can take to help it establish successfully.

For example, if a connection has failed due to a timeout issue, the **Information** field indicates that the connection has timed out. The **Information** field also suggests a recommended timeout value to help prevent the connection from failing again.

### Authorized SAM Provider (ASP) integrations for IBM

You can track and manage IBM licenses in both VMware vSphere environments and IBM LPAR infrastructures by integrating the Software Asset Management publisher pack for IBM with Software Asset Management providers that are authorized to participate in the IBM Client Value Acceleration (CVA) Program. With these integrations, you can track and manage IBM licensing directly without having to integrate with the IBM License Metric Tool (ILMT) or BigFix Inventory.

The CVA Program is an invitation-only license verification program that allows clients who contract with Authorized SAM Providers (ASPs) to report on their IBM license usage independently. For more information on the CVA Program, see [CVA Program Verification](#).

**i Important:** As of January 1, 2025, IBM has withdrawn its IBM Authorized SAM Provider (IASP) Program and replaced it with the CVA Program. If you are an existing IASP Program user, contact your IBM representative to upgrade to the new CVA agreement and migrate to the CVA Program.

The IBM publisher pack supports integrations with the following ASPs:

- Anglepoint (through the Anglepoint Elevate platform)
- Deloitte
- EY
- KPMG

To integrate with an ASP, you must request and install the IBM License Compliance for Software Asset Management application from the ServiceNow® Store. This application provides the core functionality and license metrics that are required for tracking and managing IBM licensing directly. If you are integrating with Anglepoint, you must also request and install Anglepoint's IBM Licensing for Software Asset Management application from the ServiceNow® Store. This application enables you to store IBM software information from Anglepoint.



After you install the necessary applications, you must retrieve the IBM software discovery catalog from the ASP that you are integrating with. This catalog, which is maintained separately by each ASP, is a centralized repository of IBM software information that discovery tools, such as the ServiceNow® Discovery application, can use to identify the IBM software that is discovered in your environment. After you retrieve the catalog, you must upload it to your ServiceNow instance.

On successful upload, you can use the ServiceNow Discovery application to run a discovery for your IBM software. The Discovery application uses the uploaded catalog to identify any IBM software that is discovered in your environment. It then sends this data to the ASP for comprehensive software classification and bundling.

After your discovered IBM software is properly classified and bundled, the ASP sends this data back to your ServiceNow® instance. The Software Asset Management application can then use the processor value unit (PVU), resource value unit (RVU), and virtual processor core (VPC) license metrics to reconcile this data so that you can track your IBM software usage and optimize your licensing costs. For more information on the PVU and RVU license metrics, see [IBM processor value unit \(PVU\) and resource value unit \(RVU\) licenses](#). For more information on the VPC license metric, see [IBM virtual processor core \(VPC\) licenses](#).

## Prerequisites

Before you can integrate the IBM publisher pack with an ASP, you must complete the following prerequisites:

- Complete all prerequisites for participating in the CVA Program. For more information on these prerequisites, refer to the How it works section of [CVA Program Verification](#) .
- Request and install the IBM License Compliance for Software Asset Management application from the ServiceNow® Store. See [Request the IBM License Compliance for Software Asset Management application for authorized Software Asset Management provider integrations](#) for detailed instructions.
- Enable the **Use ServiceNow Software Asset Management and Discovery for IBM license compliance** (*com.snc.samp.ibm.use\_samp\_ibm\_licensing*) Software Asset Management property. See [Software Asset Management properties](#) for more information on this property.
- Activate the Discovery (com.snc.discovery) plugin on your ServiceNow instance. See [Request Discovery](#)  for detailed instructions.

- Activate the File-based Discovery (com.snc.discovery.file\_based\_discovery) plugin on your ServiceNow instance. See [File-based Discovery](#) for more information on file-based Discovery.
- Request and install the Discovery and Service Mapping Patterns application from the [ServiceNow Store](#). See [Discovery patterns used by ITOM Visibility](#) for more information on Discovery and Service Mapping patterns.
- If you want to use domain separation for the integration, activate the Domain Support - Domain Extensions Installer (com.glide.domain.msp\_extensions.installer) plugin on your ServiceNow instance. See [Domain separation plugin](#) for detailed instructions.
- Download the IBM software discovery catalog from the ASP.
- If you want to track and manage IBM licensing in public cloud environments, configure one or more for the following services to automatically scan for and update the CMDB with cloud infrastructure changes every 30 minutes:
  - For public clouds hosted by AWS, configure the AWS Config service. See [Configure the AWS Config service to send event notifications to the ServiceNow instance](#) for detailed instructions.
  - For public clouds hosted by Microsoft Azure, configure the Microsoft Azure Alert service. See [Configure the Microsoft Azure Alert service to auto-update the CMDB](#) for detailed instructions.
  - For public clouds hosted by Google Cloud Platform (GCP), configure the Google Cloud Logging service. See [Configure the Google Cloud Logging service to auto-update the CMDB](#) for detailed instructions.

If you are integrating the IBM publisher pack with Anglepoint, you must also complete these additional prerequisites:

- Request and install Anglepoint's IBM Licensing for Software Asset Management application from the ServiceNow® Store. See [Request Anglepoint's IBM Licensing for Software Asset Management application](#) for detailed instructions.
- Set up the Anglepoint Elevate platform.

## Virtualization technologies and public cloud platforms supported by IBM Authorized SAM Provider (IASP) integrations

IBM Authorized SAM Provider (IASP) integrations support IBM licensing in VMware vSphere environments and IBM LPAR infrastructures. These integrations also support IBM licensing in public cloud environments that are owned and managed by AWS, Microsoft Azure, and Google Cloud Platform (GCP).

### IBM licensing in VMware vSphere environments

When you integrate the Software Asset Management publisher pack for IBM with Software Asset Management providers that are authorized to participate in the IBM Authorized SAM Provider (IASP) Program, the Software Asset Management application supports IBM licensing rules for VMware vSphere.

VMware vSphere is a virtualization platform through which you can install and run IBM software products on virtual machines (VMs). The Software Asset Management application supports both full capacity and sub-capacity processor value unit (PVU), resource value unit (RVU), and virtual processor core (VPC) licensing for IBM software products in VMware vSphere environments.

### IBM licensing models on VMware vSphere

Licensing capacity	Licensing model
<p>Full capacity</p>	<p>When you install and run an IBM software product on a VM, you must license each processor core on the underlying physical ESXi host that is running the VM. If the physical ESXi host is running multiple VMs simultaneously, you must still license each processor core on the host regardless of how many VMs you install and run the IBM software product on.</p> <p>Use the total number of processor cores on the underlying physical ESXi host to determine the number of rights that are required for your license, based on the license type. To determine the number of rights that are required for a PVU or RVU license, see <a href="#">IBM processor value unit (PVU) and resource value unit (RVU) licenses</a>. To determine the number of rights that are required for a VPC license, see <a href="#">IBM virtual processor core (VPC) licenses</a>.</p>
<p>Sub-capacity</p> <p><b>i Note:</b> You can use sub-capacity licensing only if you configure and specify a VM manager for your VMs. For more information on VM managers, see <a href="#">Specify the virtual machine (VM) managers for which you are tracking IBM licenses</a>.</p>	<p>You must license only the virtual cores that are assigned to the VMs on which you install and run an IBM software product.</p> <p>Use the sum of virtual cores that must be licensed across your VMs to determine the number of rights that are required for your license, based on the license type. To determine the number of rights that are required for a PVU or RVU license, see <a href="#">IBM processor value unit (PVU) and resource value unit (RVU) licenses</a>. To determine the number of rights that are required for a VPC license, see <a href="#">IBM virtual processor core (VPC) licenses</a>.</p> <p><b>i Note:</b> By default, the number of required rights is calculated using the sum of virtual cores. If the sum of virtual cores exceeds the total number of processor cores on the underlying physical ESXi hosts that are running the VMs, the number of required rights is calculated using the total number of processor cores on the hosts instead.</p> <p><b>i Note:</b> If you install and run an IBM software product on both a VM and the underlying physical ESXi host that is running the VM, you must also license the installation on the host.</p>

### IBM licensing in IBM LPAR infrastructures

When you integrate the Software Asset Management publisher pack for IBM with Software Asset Management providers that are authorized to participate in the IBM Authorized SAM Provider (IASP) Program, the Software Asset Management application supports IBM licensing rules for IBM logical partitions.

A logical partition (LPAR) is a defined subset of processor hardware that supports the operating system. An LPAR contains resources, such as processors, memory, and input or output devices,

that operate as an independent system. You can have multiple LPARs within each mainframe hardware system.

Discovering the LPARs and LPAR resources within your IBM LPAR infrastructure requires ServiceNow Discovery patterns for the IBM Hardware Management Console (HMC), which is the hardware appliance that enables you to manage and configure your LPARs. To access these discovery patterns, you must request and install the Discovery and Service Mapping Patterns application from the ServiceNow Store. For more information on how to configure a discovery on your LPARs, see [IBM Virtualization and Hardware Management Console discovery](#).

**Note:** The `lparstat` command pulls a report of LPAR-related information and usage. For more information, see the [IBM Knowledge Center](#).

When you run a discovery, your discovered LPAR data is populated and stored in the following Configuration Management Database (CMDB) tables on your ServiceNow instance:

- `cmdb_ci_ibm_frame`
- `cmdb_ci_aix_server`
- `cmdb_ci_lpar_instance`
- `cmdb_ci_lpar_resource`
- `cmdb_rel_ci`
- `cmdb_sam_sw_install`

To populate and store this data, you must request and install the CMDB CI Class Models application from the ServiceNow Store. This application adds or updates CMDB classes for the IBM HMC. For more information on IBM HMC CMDB classes, see [IBM Hardware Management Console \(HMC\) extension classes](#).

The Software Asset Management application supports both full capacity and sub-capacity processor value unit (PVU), resource value unit (RVU), and virtual processor core (VPC) licensing for IBM software products in IBM LPAR infrastructures.

## IBM licensing rules in IBM LPAR infrastructures

### Full capacity licensing

When you use full capacity licensing, you must license each processor core on the underlying hardware system that is running the LPARs on which you have installed and run an IBM software product.

Using the total number of processor cores on the underlying hardware system, you can determine the number of rights that are required for your license based on the license type. To determine the number of rights that are required for a PVU or RVU license, see [IBM processor value unit \(PVU\) and resource value unit \(RVU\) licenses](#). To determine the number of rights that are required for a VPC license, see [IBM virtual processor core \(VPC\) licenses](#).

### Sub-capacity licensing

When you use sub-capacity licensing, you must license only the processor cores that are assigned to the LPARs on which you install and run an IBM software product.

You can determine the number of rights that are required for a sub-capacity license based on the type of processor pool and license that you are using for your IBM software product.

IBM LPARs support both dedicated and shared processor pools. If you are using a dedicated processor pool, in which processor cores are assigned to only one dedicated LPAR, you must license each dedicated processor core that is assigned to the LPAR on which you install or run an IBM software product. If you are using a shared processor pool, in which processor cores are shared across micro-partitions, you must license the processor cores that are shared across the micro-partitions on which you install or run an IBM software product. You can determine the number of processor cores that must be licensed across your micro-partitions based on the LPAR type:

- **Capped LPAR:** A capped LPAR is a logical partition that is assigned a maximum entitled capacity, which is the number of CPU resources that the LPAR is entitled to receive. Capped LPARs cannot use more processor power than the assigned entitled capacity.
- **Uncapped LPAR:** An uncapped LPAR is a logical partition that can use more processor power than the assigned entitled capacity. Processor power usage is limited by the number of virtual processor cores that are assigned to the LPAR or by the maximum number of processor cores that are available to the shared processor pool.

For more details, see [Sub-capacity \(Virtualization\) License Counting Rules](#).

Using the sum of processor cores that must be licensed across your processor pools, you can determine the number of rights that are required for your license based on the license type. To determine the number of rights that are required for a PVU or RVU license, see [IBM processor value unit \(PVU\) and resource value unit \(RVU\) licenses](#). To determine the number of rights that are required for a VPC license, see [IBM virtual processor core \(VPC\) licenses](#).

### IBM licensing in public cloud environments

When you integrate the Software Asset Management publisher pack for IBM with Software Asset Management providers that are authorized to participate in the IBM Authorized SAM Provider (IASP) Program, the Software Asset Management application supports IBM licensing rules in public cloud environments.

A public cloud is a cloud computing model through which computing resources are owned and managed by a third-party cloud provider but shared by multiple clients via the Internet. Clients can access these shared computing resources through the virtual machines (VMs) that are running on virtual servers within each public cloud.

The Software Asset Management application supports sub-capacity processor value unit (PVU) and virtual processor core (VPC) licensing for IBM software products in public cloud environments. Supported public cloud providers include Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP).

With sub-capacity licensing in public cloud environments, you must license the virtual cores that are assigned to the cloud-based VMs on which you install and run an IBM software product. You can determine the total number of rights that are required for a license based on the sum of virtual cores that must be licensed across your cloud-based VMs. To determine the number of rights that are required for a PVU license, see [IBM processor value unit \(PVU\) and resource value unit \(RVU\) licenses](#). To determine the number of rights that are required for a VPC license, see [IBM virtual processor core \(VPC\) licenses](#).

**Important:** When determining the number of rights that are required for a PVU license used for VMs deployed in a public cloud environment, you must always use a standard PVUs per Core value of 70, regardless of which public cloud environment you choose.

## IBM reconciliation for IBM Authorized SAM Provider (IASP) integrations

IBM reconciliation keeps your IBM license positions accurate and up-to-date without requiring manual calculations. Reconciliation runs weekly or on-demand.

When the Software Asset Management application calculates the number of rights that are required for a processor value unit (PVU), resource value unit (RVU), or virtual processor core (VPC) license, it calculates two different numbers based on whether you are using the license to its full capacity or sub-capacity. The Software Asset Management application uses this information alongside the [daily aggregated peak usage of your IBM software product](#) and the usage type of your [PVU](#), [RVU](#), or [VPC](#) license to determine the high-water mark, or peak usage, of your IBM software product over a 90 day period.

**Note:** You can determine the high-water mark of your IBM software product per region, including the Americas, EMEA, and APAC.

The Software Asset Management application then uses the high-water mark value to reconcile your IBM software product so that you can determine if your license is in compliance.

## Setting up an IBM Authorized SAM Provider (IASP) integration

Before you can integrate the Software Asset Management publisher pack for IBM with an authorized Software Asset Management provider, complete the setup process.

To integrate with an authorized Software Asset Management provider, you must request and install the IBM License Compliance for Software Asset Management application from the ServiceNow® Store. If you are integrating with Anglepoint, you must also request and install Anglepoint's IBM Licensing for Software Asset Management application from the ServiceNow® Store. You must also upload the IBM software discovery catalog from the authorized Software Asset Management provider to your ServiceNow instance.


## Request the IBM License Compliance for Software Asset Management application for authorized Software Asset Management provider integrations

Request the IBM License Compliance for Software Asset Management application from the ServiceNow® Store so that you can integrate the Software Asset Management publisher pack for IBM with an authorized Software Asset Management provider. Use the integration to track and manage your IBM licenses.

### Before you begin

Role required: admin

### Procedure

1. From a web browser, go to the [ServiceNow Store](#) .
2. Log in using your HI credentials.
3. In the search bar, enter **IBM License Compliance for Software Asset Management** and then select **Search**.
4. Select the result called **IBM License Compliance for Software Asset Management**.
5. On the IBM License Compliance for Software Asset Management page, select **Request Install**. The ServiceNow Request for App Installation - IBM License Compliance for Software Asset Management dialog box opens.
6. In the dialog box, fill in the fields.

## ServiceNow Request for App Installation - IBM License Compliance for Software Asset Management dialog box

Field	Description
Instance Name	Name of the instance on which you want to install the application. After you enter the instance name, select <b>Validate Instance</b> to verify that the instance exists.
Reason for request	Reason for requesting the application.

7. Select **Request**.

8. Select **Close**.

### Result

If your request is approved, you will receive an email with detailed instructions on how to install the application.

### What to do next

Install the application according to the instructions in the email.

### License metrics added by the IBM License Compliance for Software Asset Management application

The IBM License Compliance for Software Asset Management application adds license metrics that enable you to classify your IBM software products.

These additional license metrics are available only if you have activated the Software Asset Management publisher pack for IBM and installed the IBM License Compliance for Software Asset Management application. They are not available if you have only activated the Software Asset Management publisher pack for IBM.

You can also use license metrics to reconcile the software products that are discovered in your environment. The Software Asset Management application automatically adds [default license metrics](#) for supported software publishers by using publisher-specific metric groups, such as the Adobe and Microsoft metric groups. These license metrics are then set in your corresponding software entitlements and used for reconciliation. Any additional license metric that is not included in an existing metric group must be added as a custom license metric in order to be used for reconciliation. Custom license metrics modify the reconciliation process by adding software license calculations that are not already included in the default list of supported license metrics.

By default, the IBM metric group includes the following license metrics for IBM reconciliation:

- Authorized User
- Authorized User Value Unit
- Employee User Value Unit
- External User Value Unit
- Per Device
- Per Named User
- Per Processor (CPU count)
- Per user
- Processor Value Unit (PVU)

- Resource Value Unit (RVU)
- Virtual Processor Core (VPC)

All other license metrics that are added by the IBM License Compliance for Software Asset Management application are not included in the IBM metric group. If you want to reconcile your IBM software products using any of these license metrics, you must create a corresponding custom license metric on your ServiceNow instance. See [Add a custom license metric](#) for more information on how to create a custom license metric.

### Request Anglepoint's IBM Licensing for Software Asset Management application

If you are integrating the Software Asset Management publisher pack for IBM with Anglepoint, request Anglepoint's IBM Licensing for Software Asset Management application from the ServiceNow® Store. This application extends the base Software Asset Management File Names [samp\_file\_name], File Maps [samp\_file\_map], and File Sets [samp\_file\_set] tables so that you can store IBM software information from Anglepoint.

#### Before you begin

Role required: admin


#### About this task

The IBM Licensing for Software Asset Management application contains table dictionaries that extend the base File Names [samp\_file\_name], File Maps [samp\_file\_map], and File Sets [samp\_file\_set] tables as follows:

Base table	Extended table
File Names [samp_file_name]	Anglepoint File Names [samp_anglepoint_file_name]
File Maps [samp_file_map]	Anglepoint File Maps [samp_anglepoint_file_map]
File Sets [samp_file_set]	Anglepoint File Sets [samp_anglepoint_file_set]

The extended tables store software information from the IBM software discovery catalog that is maintained by Anglepoint. You can add this software information to these tables by downloading the IBM software discovery catalog from the Anglepoint Elevate platform and then uploading it to your ServiceNow instance. Discovery tools, such as the ServiceNow® Discovery application, can then use this software information to identify the IBM software that is discovered in your environment. See [Upload the IBM software discovery catalog to your ServiceNow instance](#) for more information on the IBM software discovery catalog.

#### Procedure

1. From a web browser, go to the [ServiceNow Store](#) .
2. Log in using your HI credentials.
3. In the search bar, enter **IBM Licensing for Software Asset Management** and then select **Search**.
4. Select the result called **IBM Licensing for Software Asset Management**.
5. On the IBM Licensing for Software Asset Management page, select **Request Install**.  
The ServiceNow Request for App Installation - IBM Licensing for Software Asset Management dialog box opens.
6. In the dialog box, fill in the fields.

## ServiceNow Request for App Installation - IBM Licensing for Software Asset Management dialog box

Field	Description
Instance Name	Name of the instance on which you want to install the application. After you enter the instance name, select <b>Validate Instance</b> to verify that the instance exists.
Reason for request	Reason for requesting the application.

7. Select **Request**.

8. Select **Close**.

### Result

If your request is approved, you will receive an email with detailed instructions on how to install the application.

### What to do next

Install the application according to the instructions in the email.

### Upload the IBM software discovery catalog to your ServiceNow instance

Upload the IBM software discovery catalog to your ServiceNow instance so that discovery tools, such as the ServiceNow<sup>®</sup> Discovery application, can identify the IBM software that is discovered in your environment.

### Before you begin

Role required: sam\_admin

### About this task

The IBM software discovery catalog is a centralized repository of IBM software information that discovery tools can use to identify discovered IBM software. This catalog is maintained separately by each authorized Software Asset Management provider.

### Procedure

1. Download the IBM software discovery catalog from the authorized Software Asset Management provider that you are integrating with.
2. Upload the catalog to your ServiceNow instance.
  - a. From your ServiceNow instance, navigate to **All > Software Asset > Administration > Import IBM Content**.
  - b. On the Manage Software Library form, select **Attach Content File**.  
The Attachments dialog box opens.
  - c. In the dialog box, select **Choose file** to search for and select the IBM software discovery catalog that you downloaded from the Anglepoint Elevate platform.
  - d. Close the dialog box to return to the Manage Software Library form.
  - e. Select **Run Import**.

**Result**

If you are integrating with Anglepoint, all IBM software information that is included in the catalog is stored in the following Software Asset Management tables:

- Anglepoint File Names [samp\_anglepoint\_file\_name]
- Anglepoint File Maps [samp\_anglepoint\_file\_map]
- Anglepoint File Sets [samp\_anglepoint\_file\_set]

**Note:** These tables are extensions of the base File Names [samp\_file\_name], File Maps [samp\_file\_map], and File Sets [samp\_file\_set] tables. To extend the base tables, you must request and install Anglepoint's IBM Licensing for Software Asset Management application. See [Request Anglepoint's IBM Licensing for Software Asset Management application](#) for detailed instructions.

**Creating a connection for the Anglepoint integration**

If you are integrating the Software Asset Management publisher pack for IBM with Anglepoint, you can create a connection between your ServiceNow instance and the Anglepoint Elevate platform to transfer licensing data for your IBM software products.

**Create an API user for the Anglepoint integration**

Create a user who is permitted to access the APIs used by the Anglepoint integration. These APIs provide the given user access to the Anglepoint integration resources that are available on your ServiceNow instance.

**Before you begin**

Role required: admin

**About this task**

The Anglepoint integration uses the following APIs:

**Anglepoint integration APIs**

API	API path	Description
Transform (POST)	/api/sn_samp_ibm_lic/ibm_data/transform	Processes information for your installed IBM software.
Get Computer	/api/sn_samp_ibm_lic/ibm_data/computer	Retrieves information about the virtual machines (VMs) and hosts that your IBM software is installed on.
Get Entitlements	/api/sn_samp_ibm_lic/ibm_data/entitlement	Retrieves entitlement information for your installed IBM software.
Get Classification	/api/sn_samp_ibm_lic/ibm_data/classification	Retrieves classification information for your installed IBM software.
Post Classification	/api/sn_samp_ibm_lic/ibm_data/classification	Sends classification information for your installed IBM software.

**Procedure**

1. Navigate to **All > Organization > Users** and then select **New**.
2. On the form, fill in the fields.

**User form**

Field	Description
User ID	Unique identifier for the user.
First name	First name of the user.
Last name	Last name of the user.
Title	Job title or job description of the user.
Department	Department that the user belongs to.
Password needs reset	Option to require the user to change the assigned password during the first login.  <b>Note:</b> This option must be disabled.
Locked out	Option to lock the user out of the ServiceNow instance and terminate all active sessions.
Active	Option that indicates the user is active.  <b>Note:</b> This option must be enabled.
Web service access only	Option to designate the user as a non-interactive user. Non-interactive users can use only assigned credentials to authorize API connections, including JSON, SOAP, and WSDL. See <a href="#">Non-interactive sessions</a> for more information on non-interactive users.  <b>Note:</b> This option must be enabled.
Internal Integration User	Option to designate the user as an internal integration user. See <a href="#">Mark service accounts as internal integration users</a> for more information on internal integration users.
Email	Email address of the user.
Language	Language preference of the user.
Calendar integration	Calendar through which the user receives meeting invitations and notifications.
Time zone	Time zone that the user is located in.
Date format	Preferred date format for the user.
Business phone	Business phone number that is assigned to the user.
Mobile phone	Mobile phone number that is assigned to the user.
Photo	Photo of the user.

**3.** Right-click the form header and then select **Save**.

The form automatically reloads with additional form actions, related links, and related tabs.

**4.** Generate a password for the user.

**a. Select **Set Password**.**

The Set Password dialog box opens.

**b. In the dialog box, select **Generate**.**

Your ServiceNow instance automatically generates a password for the user.

**c. Copy the value in the **Password** field.**


Save it in a secure location for later use.

**d. Select **Save Password**.**

The dialog box closes and you automatically return to the User form.

**5. Assign roles to the user.****a. On the **Roles** related tab, select **Edit...******b. From the Collection list on the Edit Members form, search for and select the following roles:**



- snc\_platform\_rest\_api\_access
- oauth\_user
- sn\_samp\_ibm\_lic.sam\_ibm\_data\_integrator

**c. Select the Add button (  ) to move the selected roles from the Collection list to the Roles List.****d. Select **Save**.**

The Edit Members form closes and you automatically return to the User form.

**e. Verify that all selected roles appear on the **Roles** related tab.****Configuring the API authentication method for the Anglepoint integration**

You can configure the API authentication method that grants users access to the Anglepoint integration resources on your ServiceNow instance.

The APIs that are used by the Anglepoint integration support both basic authentication and OAuth 2.0 authentication. Basic authentication uses standard usernames and passwords to grant users access to the resources on your ServiceNow instance. OAuth 2.0 authentication uses OAuth tokens to grant users access to those resources. To configure basic authentication, refer to either [Configure a REST message with basic auth](#)  or [Enable basic authentication for outbound SOAP](#) . To configure OAuth 2.0 authentication, refer to [Configure OAuth 2.0 authentication for the Anglepoint integration](#).

**Configure OAuth 2.0 authentication for the Anglepoint integration**

Configure OAuth 2.0 authentication to enable users to access Anglepoint integration resources through APIs using OAuth tokens.

**Before you begin**

Role required: admin

## Procedure

1. From your ServiceNow instance, create an OAuth API endpoint.

The Anglepoint Elevate platform uses the OAuth API endpoint to request the OAuth tokens that authorize access to the Anglepoint integration resources on your ServiceNow instance.

Refer to [Create an endpoint for clients to access the instance](#)  for instructions on how to create an OAuth API endpoint.

**i Important:** After you successfully create an OAuth API endpoint, copy the values in the **Client ID** and **Client Secret** fields. Save them in a secure location for later use.

2. From the Anglepoint Elevate platform, create an API connection to your ServiceNow instance.

The API connection enables you to securely transfer data between the Anglepoint Elevate platform and your ServiceNow instance.

## Result

The Anglepoint Elevate platform sends the credential information that you specified for your API connection to `https://<servicenow-instance-url>.service-now.com/oauth_token.do` using an HTTP Post request. Your ServiceNow instance responds to the request by generating OAuth tokens and then sending them to the Anglepoint Elevate platform. The Anglepoint Elevate platform can then use these tokens to make API requests for accessing the Anglepoint integration resources on your ServiceNow instance.

### View the daily aggregated peak usage of your IBM software products

View the highest daily sub-capacity and full capacity Processor Value Unit (PVU), Resource Value Unit (RVU), and Virtual Processor Core (VPC) usage for your IBM software products based on the edition, license metric, and region of each product.

### Before you begin

Role required: sam\_admin or sam\_user

## Procedure

1. From your ServiceNow instance, navigate to **Workspaces > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.
2. Open the License operations view.
3. From the left navigation menu of the License operations view, navigate to **IBM ASP Integration > Daily aggregated peak usage**.
4. View additional usage details for a given IBM software product by selecting the value in the corresponding **Date** field.

### View devices with the highest daily usage of your IBM software products

View the breakdown for the highest daily usage of your IBM software products by physical host based on both the edition and license metric of each product.

### Before you begin

Role required: sam\_admin or sam\_user

## Procedure

1. From your ServiceNow instance, navigate to **Workspaces > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.

2. Open the License operations view.
3. From the left navigation menu of the License operations view, navigate to **IBM ASP Integration > Daily high water mark usage**.
4. View the list of physical hosts with the highest daily usage of your IBM software products.

**View product classifications for your IBM components**

View the product classifications for all IBM components that are installed in your environment. These product classifications enable you to track and manage licensing for your IBM components.

**Before you begin**

Role required: sam\_admin or sam\_user

**Procedure**

1. From your ServiceNow instance, navigate to **Workspaces > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.
2. Open the License operations view.
3. From the left navigation menu of the License operations view, navigate to **IBM ASP Integration > Product classification**.
4. View the product classifications for all IBM components that are installed in your environment. Each product classification includes the classified product, product edition, product version, and assigned license metric.

**Specify the virtual machine (VM) managers for which you are tracking IBM licenses**

Specify the virtual machine (VM) managers, such as VMware vCenter Servers and IBM Hardware Management Consoles (HMCs), for which you want to track IBM licenses. You can track licenses for IBM software that is discovered within these specified VM managers only.

**Before you begin**

Role required: sam\_admin or sam\_user

**Procedure**

1. From your ServiceNow instance, navigate to **Workspaces > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.
2. Open the License operations view.
3. From the left navigation menu of the License operations view, navigate to **IBM ASP Integration > Devices to scan**.
4. Select **New**.
5. On the IBM Licensing VM Manager form, fill in the fields.

**IBM Licensing VM Manager form**

Field	Description
VM Manager	VM manager for which you want to track IBM licenses.
Type	Type of VM manager. Select one of the following options: <ul style="list-style-type: none"> <li>○ <b>vCenter</b></li> <li>○ <b>ESX Server</b></li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>○ <b>HMC</b></li> <li>○ <b>All AIX Servers</b></li> </ul>

**6. Select Submit.**

**Deduplicating IBM software installations**

To track and manage your IBM licenses, you can integrate the IBM publisher pack with an authorized Software Asset Management provider, IBM License Metric Tool (ILMT), or BigFix Inventory. If you are switching between an authorized Software Asset Management provider integration and either an ILMT or BigFix Inventory integration, you can deduplicate software installations that have the same edition, version, and language but are discovered through different sources.

If you discover the same IBM software installation through multiple sources, such as Anglepoint and ILMT, the Software Asset Management application creates a separate software installation record for each discovery of that software installation. You can resolve these duplicate software installation records by running the *SAM - Deduplicate Install Table* scheduled job, which ensures that only one duplicate software installation record is marked as active and included in reconciliation. See [Duplicate software installations in the Software Asset Management application](#) for more information on deduplication.

By default, the Software Asset Management application prioritizes IBM software installations that are discovered through ILMT or BigFix Inventory. When you run the *SAM - Deduplicate Install Table* scheduled job, records for all IBM software installations that are discovered through ILMT or BigFix Inventory are marked as active, while records for the same software installations that are discovered through an authorized Software Asset Management provider are marked as inactive. If an IBM software installation is discovered through an authorized Software Asset Management provider only, the corresponding record is marked as active.

To prioritize IBM software installations that are discovered through authorized Software Asset Management providers instead, you can update the value of the **Use Servicenow Software Asset Management and Discovery for IBM license compliance** property (*com.snc.samp.ibm.use\_samp\_ibm\_licensing*) by navigating to **All > System Properties > All Properties**. From the list of available system properties, search for and select the *com.snc.samp.ibm.use\_samp\_ibm\_licensing* property. When the system property record opens, set the **Value** field to `true` and then select **Update**. Each time you subsequently run the *SAM - Deduplicate Install Table* scheduled job, records for all IBM software installations that are discovered through an authorized Software Asset Management provider are marked as active, while records for the same software installations that are discovered through ILMT or BigFix Inventory are marked as inactive. If an IBM software installation is discovered through ILMT or BigFix Inventory only, the corresponding record is marked as active.

**Note:** The **Use Servicenow Software Asset Management and Discovery for IBM license compliance** property supports domain separation.

**Enable IBM reconciliation for specific domains**

If you are using domain separation for the integration between the Software Asset Management publisher pack for IBM and an authorized Software Asset Management provider, enable IBM reconciliation only for specific domains.

**Before you begin**

Role required: asset or domain\_admin

## Procedure

1. Open the Domain Asset Process Settings [alm\_domain\_asset\_process\_setting] table by navigating to **All > alm\_domain\_asset\_process\_setting\_list.do**.
2. Double-click the **Run asset process** field for the domain that you want to enable reconciliation for.
3. When prompted, set the value to **true** and then select the Save icon (✓).
4. Repeat steps 2 and 3 for each domain that you want to enable reconciliation for.

**i Important:** If you have both parent and child domains, you can enable reconciliation for either the parent domain or child domain. You cannot enable reconciliation for both parent and child domains.

## Verify the meta data for your IBM hosts

To improve the accuracy of your IBM license calculations, verify the meta data for the physical hosts that your IBM software is installed on. Update any meta data that is incorrect or out of date.

## Before you begin

Role required: sam\_admin or sam\_user

## Procedure

1. From your ServiceNow instance, navigate to **Workspaces > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.
2. Open the License operations view.
3. From the left navigation menu of the License operations view, navigate to **IBM ASP Integration > Device settings**.
4. Verify the meta data for all available hosts.
5. If any of the following meta data is incorrect, update it.
  - IBM PVUs per core
  - Region

**i Note:** If the Region meta data is empty for any of your physical hosts, the **Default Region for IBM Devices** (*sn\_samp\_ibm\_lic.default\_region*) Software Asset Management property automatically associates those hosts with a default region. By default, this system property is set to **North America and South America**. However, you can also set this system property to **Europe and Africa** or **Asia and Australia**. License usage can be calculated only for physical hosts that are associated with a region. See [Software Asset Management properties](#) for more information on this property.

- Usage type

**i Note:** You cannot update the Device, PVU Comment, and IBM PVU mapping meta data.

**a.** Double-click the value in the incorrect meta data field.

**b.** When prompted, enter or select the correct value and then select the Save icon (✓). The meta data field updates with the correct value.

### Software Publisher Analytics dashboard for IBM in Software Asset Management classic

View compliance analysis results related to IBM on the Software Publisher Analytics dashboard in the Software Asset Management classic application.

Access the Software Publisher Analytics dashboard by navigating to **All > Software Asset > Publisher Overview**.

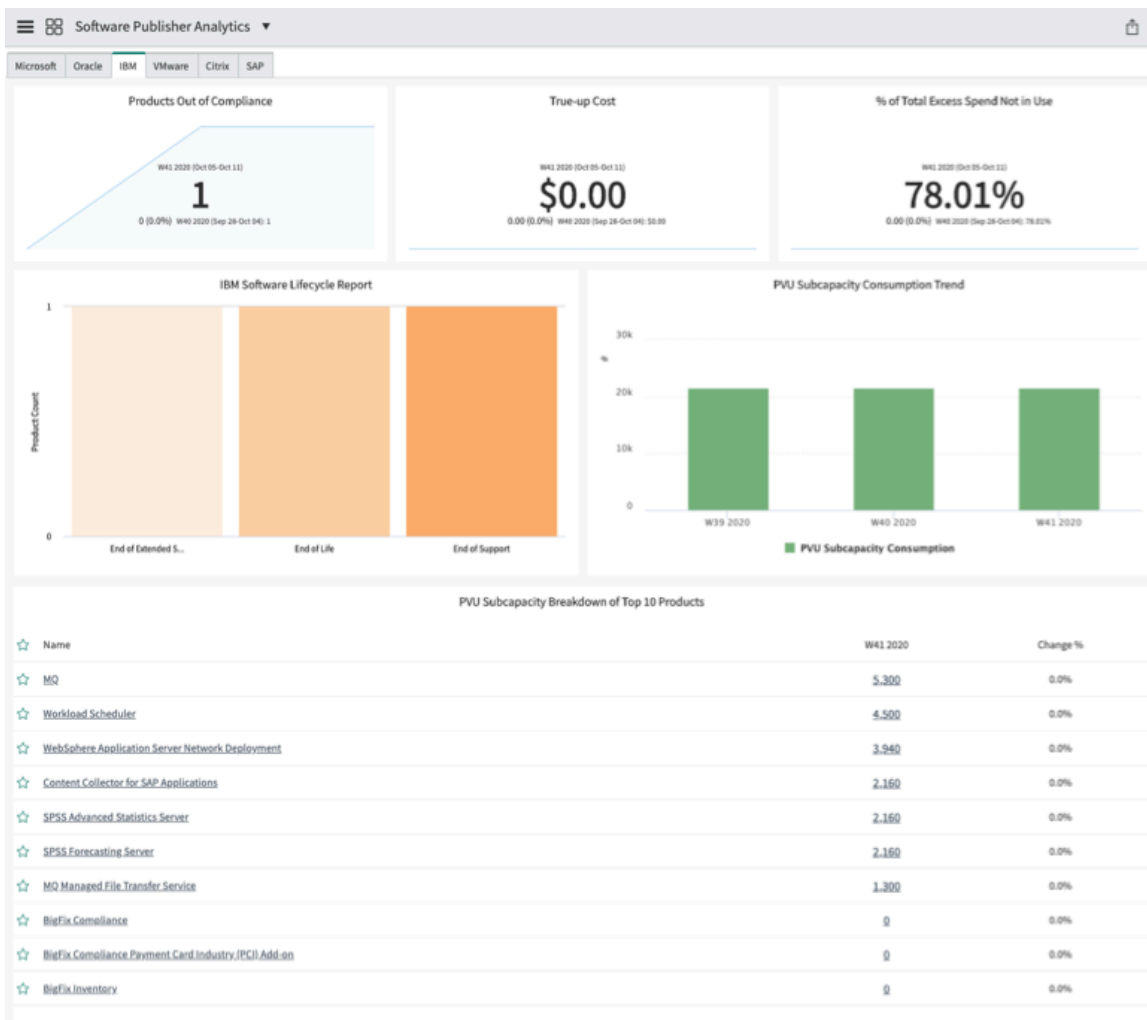
**Note:** The add-on IBM publisher pack (com.sn\_samp\_ibm) plugin must be installed to view the IBM dashboard tab.

**IBM License Metric Tool (ILMT) integration** must be set up to view compliance information.

Results are updated whenever a new reconciliation result is available. You can save charts in PNG or JPG format.

### IBM dashboard

You can manage IBM software using the IBM publisher pack.



### IBM tab

Report	Source list	Description
Products out of Compliance	Product Results [samp_product_result]	Number of products that have at least one software model out of compliance.

IBM tab (continued)

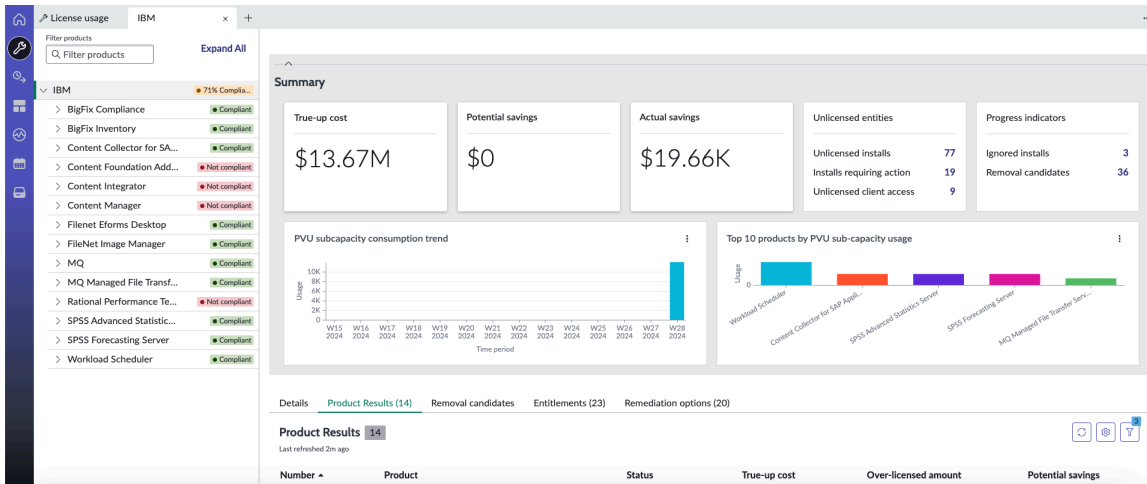
Report	Source list	Description
		Select the report to view the results in the <a href="#">License Workbench</a> .
True-up Cost	Product Results [samp_product_result]	Cost to be compliant based on the average prices for entitlements for the rights.
% of Total Excess Spend Not In Use	Software Entitlements [alm_license]	Sum of the over-licensed amount over the total of licensed amount.
PVU Subcapacity Consumption Trend	IBM Peak Consumption [samp_ilmt_sw_install]	Comparison of the aggregate peak consumption for all products over time.
IBM Software Lifecycle Report	Software Lifecycle Report [sam_sw_product_lifecycle_report]	Number of products in each software lifecycle phase, including End of Extended Support, End of Life, and End of Support.
PVU Subcapacity Breakdown of Top 10 Products	IBM Peak Consumption [samp_ilmt_sw_install]	Peak PVU utilization for the top 10 IBM products.

**Publisher overview for IBM in the Software Asset Workspace**

View license usage information related to IBM in the publisher overview for IBM in the Software Asset Workspace.

From the Software Asset Workspace, access the IBM publisher overview by navigating to **License usage > Publishers** and then selecting **IBM** from the list of available software publishers.

Results are updated whenever a new reconciliation result is available.



You can view a summary of your license usage information in the Summary section of the IBM publisher overview.

### IBM Summary

Report	Description
True-up cost	Cost to be compliant based on the average price of rights in your IBM software entitlements.
Potential savings	Potential cost savings for your IBM licenses.
Actual savings	Actual cost savings for your IBM licenses.
Unlicensed entities	<p>Summary of your unlicensed entities.</p> <p>This summary includes the following information:</p> <ul style="list-style-type: none"> <li>• <b>Unlicensed installs:</b> Total number of unlicensed IBM software installations. Select the number to view the complete list of unlicensed IBM software installations.</li> <li>• <b>Installs requiring action:</b> Total number of IBM software installations that you must take action on. Select the number to view the complete list of these IBM software installations.</li> <li>• <b>Unlicensed client access:</b> Total number of unlicensed IBM client access records. Select the number to view the complete list of unlicensed IBM client access records.</li> </ul>
Progress indicators	<p>Summary of your license compliance progress.</p> <p>This summary includes the following indicators:</p> <ul style="list-style-type: none"> <li>• <b>Ignored installs:</b> Total number of IBM software installations that were ignored during reclamation. Select the number to view the complete list of ignored IBM software installations.</li> <li>• <b>Removal candidates:</b> Total number of IBM removal candidates. Select the number to view the list of all software removal candidates.</li> </ul>
PVU subcapacity consumption trend	Comparison of the aggregate peak consumption for all IBM software products over time.
Top 10 products by PVU sub-capacity usage	Peak PVU utilization for your top 10 IBM software products.

For more details on the license usage information that is provided in the publisher overview, see [License usage publisher fields in workspace](#).

### Software Asset Management for Red Hat Enterprise Linux

Use the Software Asset Management publisher pack for IBM to track and optimize license positions for the Red Hat Enterprise Linux Server products.

### Required plugins and applications for Red Hat Enterprise Linux

To manage licenses for your Red Hat Enterprise Linux (RHEL) products, request and activate the Software Asset Management Professional for IBM plugin (com.sn\_samp\_ibm) from the Now Support service portal. See [Request Software Asset Management](#) for more information on how to request and activate this plugin.

You must also request and install the CMDB CI Class Models application from the ServiceNow Store. This application contains the tables that store RHEL data on your ServiceNow instance and is required for RHEL reconciliation.

The ServiceNow® Discovery application uses the Red Hat Virtualization (RHV) discovery pattern to locate RHV components. To enable the discovery of these resources, you must install the Discovery and Service Mapping Patterns application from the ServiceNow Store.

## Supported license types

The IBM publisher pack supports licensing for both Red Hat Enterprise Linux Server and Red Hat Enterprise Linux for Virtual Datacenters. The supported license metrics are socket-pair based and core based.

### Red Hat Enterprise Linux socket-pair based licensing

Use the RHEL Server licensing based on the number of socket-pairs or virtual machine (VM) pairs on a physical host to manage licenses for your RHEL products.

## Overview of the socket-pair based licensing model

### Red Hat Enterprise Linux Server

Red Hat Enterprise Linux Server enables Linux distributions in physical, virtual, and hybrid environments. Although you can use RHEL licenses in both low-density and high-density virtual environments, they're more cost efficient in low-density virtual environments.

To determine whether a virtual environment is low-density or high-density, divide the number of required RHEL licenses by the number of required RHEL for Virtual Datacenters licenses. Compare this value against the threshold value in the **Red Hat Enterprise Linux for Virtual Datacenters license cost optimization threshold** field that you defined in your [Software Asset Management properties](#). If your value is lower than the threshold value, then the virtual environment is considered low-density. If your value is equal to or higher than the threshold value, then the virtual environment is considered high density.

**Note:** The default value for the **Red Hat Enterprise Linux for Virtual Datacenters license cost optimization threshold** field is 3.2. This value is based on the ratio of the current RHEL Server subscription list price to the current RHEL for Virtual Datacenters subscription list price. If your entitlements contain different pricings for these products, then you can calculate this value by dividing your RHEL for Virtual Datacenters subscription price by your RHEL Server subscription price.

RHEL uses different licensing models depending on the environment in which you deploy a server.

### RHEL licensing models

Environment	Description	Licensing model	Cluster licensing model
Physical	Deployment of RHEL servers on physical hosts.	Licensing is based on the number of socket-pairs on the physical host. For example, a physical host with 10 sockets requires five RHEL Server licenses.	Licensing is based on the total number of socket-pairs on the physical hosts within a cluster. For example, if Cluster Host A has 10 sockets and Cluster

**RHEL licensing models (continued)**

Environment	Description	Licensing model	Cluster licensing model
		Single-socket hosts must be licensed individually.	Host B has 20 sockets, then you must use 15 RHEL Server licenses to license the entire cluster.
Virtual (low-density and high density)	Deployment of RHEL servers on the VMs that are running on physical hosts.	Licensing is based on the number of VM pairs that are running the server on a physical host. For example, a physical host with six VMs that are running a RHEL server requires three RHEL Server licenses.  Single VMs that are running a RHEL server must be licensed individually.	Licensing is based on the total number of VM pairs on the physical hosts within a cluster. For example, if Cluster Host A has 10 VMs and Cluster Host B has 20 VMs, you must use 15 RHEL Server licenses to license the entire cluster.
Hybrid	Deployment of RHEL servers on the physical hosts and on the VMs that are running on those hosts.	Licensing is based on the number of socket-pairs on the physical host and the number of VM pairs that are running the server on the same host. For example, you can run a RHEL server on a physical host with 10 sockets and also on the 20 VMs running on that host. In this example, the host requires a total of 15 RHEL Server licenses.	Licensing is based on the total number of socket-pairs and VM pairs on the physical hosts within a cluster. For example, if Cluster Host A has 10 sockets and 10 VMs while Cluster Host B has 20 sockets and 20 VMs, you must use 30 RHEL Server licenses to license the entire cluster.

**Red Hat Enterprise Linux for Virtual Datacenters**

Red Hat Enterprise Linux for Virtual Datacenters uses hypervisors, such as Red Hat Virtualization and VMware, to enable Linux distributions in both low-density and high-density virtual environments. RHEL for Virtual Datacenters licenses are more cost efficient in high-density virtual environments.

To determine whether a virtual environment is low-density or high-density, divide the number of required RHEL Server licenses by the number of required RHEL for Virtual Datacenters licenses. Compare this value against the threshold value in the **Red Hat Enterprise Linux for Virtual Datacenters license cost optimization threshold** field that you defined in your [Software Asset Management properties](#). If your value is lower than the threshold value, then the virtual environment is considered low-density. If your value is equal to or higher than the threshold value, then the virtual environment is considered high density.

**Note:** The default value for the **Red Hat Enterprise Linux for Virtual Datacenters license cost optimization threshold** field is 3.2. This value is based on the ratio of the current RHEL Server subscription list price to the current RHEL for Virtual Datacenters subscription list price. If your entitlements contain different pricings for these products, you can calculate this value by dividing your RHEL for Virtual Datacenters subscription price by your RHEL Server subscription price.

RHEL for Virtual Datacenters licensing is based on the number of socket-pairs on the physical hosts that are running your VMs. With this license type, you don't need to license the VMs that are running a RHEL for Virtual Datacenters server because you can access an unlimited number of VMs from your physical hosts. Single-socket hosts must be licensed individually.

If you deploy a RHEL for Virtual Datacenters server on VMs within a cluster, licensing is based on the total number of socket-pairs on all hosts that are running those VMs. Since you can access an unlimited number of VMs from your physical hosts, you don't need to license the cluster based on the total number of VMs that are running the server within the cluster. For example, if Cluster Host A has 10 sockets and 20 VMs while Cluster Host B has 20 sockets and 60 VMs, you must use 15 RHEL for Virtual Datacenters licenses to license the entire cluster.

## License consumption order

If you have both RHEL Server and RHEL for Virtual Datacenters licenses, consume them in the following order:

1. RHEL for Virtual Datacenters licenses on the physical hosts, VMs, or clusters that have allocated licenses.
2. RHEL Server licenses on the physical hosts, VMs, or clusters that have allocated licenses.
3. RHEL for Virtual Datacenters licenses on physical hosts, VMs, or clusters in high-density virtual environments.
4. RHEL Server licenses on physical hosts, VMs, or clusters in low-density virtual environments.
5. RHEL Server licenses on physical hosts, VMs, or clusters in high-density virtual environments. Use this license type only if you have run out of RHEL for Virtual Datacenters licenses in high-density virtual environments.
6. RHEL for Virtual Datacenters licenses on physical hosts, VMs, or clusters in low-density virtual environments. Use this license type only if you have run out of RHEL Server licenses in low-density virtual environments.

## Red Hat Enterprise Linux core-based licensing

Use the RHEL Per Core license metric to license core-based RHEL products on both physical and virtual environments.

## Overview of the Per Core licensing model

To license a software product under the Per Core licensing model, each server must be assigned an appropriate number of core licenses. The number of core licenses needed depends on whether you're licensing the physical server or an individual virtual operating system environment (OSE).

Licensing under the Per Core model offers the following benefits:

- Tracks core packs for Red Hat products.
- Imports entitlements with the number of rights per license pack and the number of packs for Red Hat core-based entitlements.
- Enables customers to enter the number of rights per license pack and the number of packs for any Red Hat core-based product.
- Calculates the purchased rights based on the number of rights per license pack multiplied by the number of packs.
- Creates and removes allocations based on reconciliation of Red Hat core-based products.

Allocations can be applied to virtual machines (VM) or only to hosts. This metric runs calculations for physical cores and virtual cores on each machine and presents the most optimal licensing model based on the number of rights used.

### Total license requirement calculation

Total license requirement is calculated at the physical host level. The following table includes examples of the various use cases for total license requirement:

#### Total license requirement calculations

Environment	Description	License requirement
Physical	Deployment of RHEL core-based products on physical machines.	<p>Licensing is based on the total number of physical cores on the machine. The total number can be found by multiplying the number of sockets by the number of cores per socket.</p> <p>For example, say that a physical machine has 2 sockets and 8 cores per socket. Multiplying 2 by 8 would mean that the total number of physical cores would be 16. <math>2 * 8 = 16</math> Thus, the total number of rights required is 16 cores.</p>
Virtual	Deployment of RHEL core-based products on the VMs that run on physical hosts.	<p>Licensing is based on the total number of cores assigned to the VMs that run the server on a physical host. This number is limited to the maximum capacity of the physical host.</p> <p>For example, say that a physical host has 2 sockets with 8 cores per socket and 6 VMs with 2 cores per VM. Each VM has installed a RHEL core-based product. In this case, the number of rights required equals the minimum value between the physical</p>

**Total license requirement calculations (continued)**

Environment	Description	License requirement
		<p>core capacity of the physical host and the number of non-hyperthreaded physical cores assigned to VMs. 2 sockets multiplied by 8 cores per socket equal 16 cores, and 6 VMs multiplied by 2 cores per VM equal 12 cores. The minimum value between the two is 12 cores. <math>\text{Min}(2 * 8 = 16, 2 * 6 = 12)</math> Thus, the total number of rights required is 12 cores.</p>
Hybrid	<p>Deployment of RHEL core-based products on the physical hosts and on the VMs that run on those physical hosts.</p>	<p>Licensing is based on the number of physical cores on which the RHEL core-based application is installed.</p> <p>For example, a physical host has 2 sockets with 8 cores per socket and 20 VMs with 2 cores per VM. A RHEL core-based product is installed on the physical host and all 20 VMs. In this case, the number of rights required is the minimum value between the physical core capacity of the physical host and the number of non-hyperthreaded physical cores assigned to VMs added to the number of physical hosts. 2 sockets multiplied by 8 cores per socket equal 16 cores. Then, 2 cores multiplied by 8 cores equal 16 cores, and 20 VMs multiplied by 2 cores per VM equal 40 cores. Add 16 cores to 40 cores, and it equals 56 cores. The minimum value between the two is 16 cores. <math>\text{Min}((2 * 8) = 16, (2 * 8 + 2 * 20) = 56)</math> Thus, the total number of rights required is 16 cores.</p>

**Red Hat Enterprise Linux entitlements**

Software entitlements define the license details for your Red Hat Enterprise Linux (RHEL) products. You can create individual entitlements or import a list of entitlements from a spreadsheet.

**i Important:** You can create and import entitlements in both the Software Asset Management classic application and the Software Asset Workspace. The following sections provide details on how to create and import entitlements in the Software Asset Management classic application. For details on how to create entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#). For details on how to import entitlements in the Software Asset Workspace, see [Import bulk entitlements in workspace](#).

### Create entitlements for Red Hat Enterprise Linux

Create individual software entitlements for your Red Hat Enterprise Linux (RHEL) products.

#### Before you begin

Role required: sam\_user or sam\_admin

**i Important:** You can create entitlements in both the Software Asset Management classic application and the Software Asset Workspace. The following steps provide details on how to create entitlements in the Software Asset Management classic application. For details on how to create entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).

#### Procedure

1. Navigate to **All > Asset > Portfolios > Software Entitlement**.
2. Select **New**.
3. On the form, fill in the fields.

#### Software Entitlement form

Field	Value
Display name	Name of the software entitlement. This field is automatically set based on the <b>Asset tag</b> and <b>Software model</b> fields.
Asset tag	Serial number and bar code that are used to identify and track the asset.
Publisher part number	Publisher part number (PPN) for the entitlement.
Software model	Software model that has the entitlement.
Agreement type	Type of license agreement. Possible values include the following: <ul style="list-style-type: none"> <li>○ Generic</li> <li>○ Enterprise License Agreement (ELA)</li> </ul>
License type	Type of license. Set this field to <b>Subscription</b> .
Subscription period	Length of time for which the subscription is valid. This field appears only when <b>Subscription</b> is selected from the <b>License type</b> field.
Start date	Date when the subscription begins. This field appears only when <b>Subscription</b> is selected from the <b>License type</b> field.
End date	Date when the subscription expires. Do not select a date if the subscription does not expire. This field appears only when <b>Subscription</b> is selected from the <b>License type</b> field.
Metric group	Software publisher or software bundle that predefined software calculations are assigned to. Select <b>Red Hat</b> .

Field	Value
License metric	Group of predefined software calculations that are assigned to a metric group. Software Asset Management uses license metrics to calculate the rights for a specific set of software products during reconciliation. License metric options are based on the software publisher or software bundle that you select from the Metric group list. Possible values include the following: <ul style="list-style-type: none"> <li>○ Per Socket-pair</li> <li>○ Per Core</li> </ul>
Rights per license pack	Total number of rights associated with each pack that you purchased for Red Hat. This field appears only when <b>Per Core</b> is selected from the <b>License metric</b> field.
Purchased rights	Total number of rights that you purchased.
Active rights	Total number of rights that you can allocate to your users or devices. This field is set automatically.
Allocations available	Number of active rights that you have not yet allocated to any user or device. This field is set automatically.
Unit cost	Cost of each software right.
Total cost	Total cost of your purchased rights. This field is automatically set based on the <b>Purchased rights</b> and <b>Unit cost</b> fields.

**4. Select Submit.**

**Import entitlements for Red Hat Enterprise Linux**

Import a list of Red Hat Enterprise Linux (RHEL) software entitlements from a spreadsheet.

**Before you begin**

Role required: sam\_admin

**i Important:** You can import software entitlements in both the Software Asset Management classic application and the Software Asset Workspace. The following steps provide details on how to import software entitlements in the Software Asset Management classic application. For details on how to import software entitlements in the Software Asset Workspace, see [Import bulk entitlements in workspace](#).

**Procedure**

- 1.** Download the spreadsheet template for the software entitlement import.
  - a.** On the page header of your ServiceNow® instance, select **All**.
  - b.** In the menu navigation filter, enter `samp_bulk_import_list.do`. The Entitlement Imports [samp\_bulk\_import] table opens.
  - c.** Select **New**.
  - d.** On the Entitlement Import form, select **Download template**.

2. Fill in the spreadsheet with all software entitlements that you want to import.
3. Import your software entitlements into your ServiceNow instance.
  - a. On the page header of your ServiceNow<sup>®</sup> instance, select **All**.
  - b. In the menu navigation filter, enter `samp_bulk_import_list.do`. The Entitlement Imports [samp\_bulk\_import] table opens.
  - c. Select **New**.
  - d. On the form, fill in the fields.

**Entitlement Import form**

Field	Description
Import type	Type of document that you are importing software entitlements from. The options are <b>Standard import document</b> and <b>Microsoft license statement (MLS)</b> . Set this field to <b>Standard import document</b> .
File	Spreadsheet of software entitlements that you want to import. Select <b>Click to add...</b> to search for and select the same spreadsheet that you filled out in <a href="#">step 2</a> .
Description	Brief description of the software entitlement import.

- e. Select **Import**.

**Result**

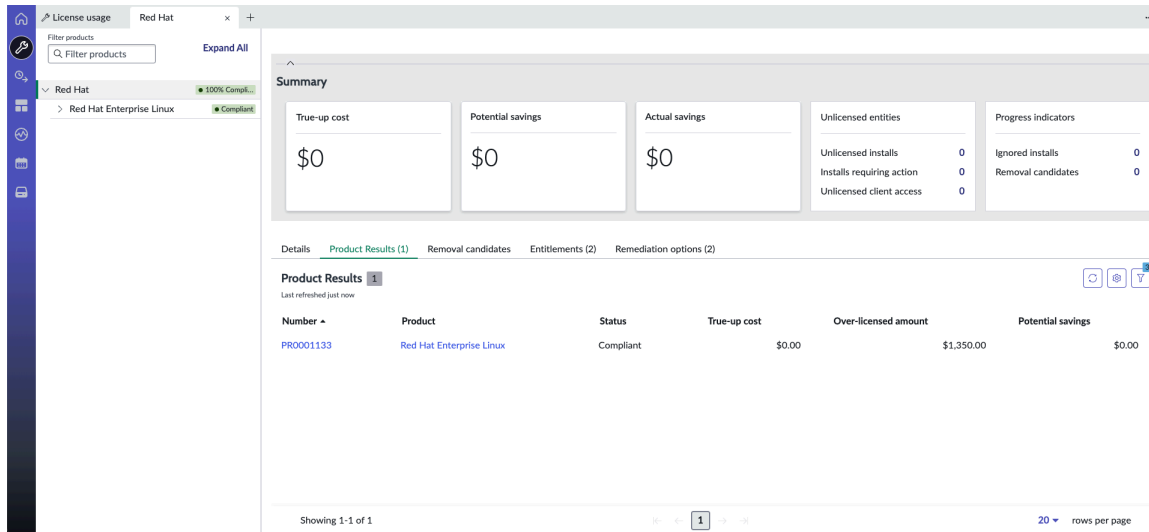
All software entitlements are imported into your ServiceNow instance.

**Publisher overview for Red Hat in the Software Asset Workspace**

View license usage information related to Red Hat Enterprise Linux (RHEL) in the publisher overview for Red Hat in the Software Asset Workspace.

From the Software Asset Workspace, access the Red Hat publisher overview by navigating to **License usage > Publishers** and then selecting **Red Hat** from the list of available software publishers.

Results are updated whenever a new reconciliation result is available.



You can view a summary of your license usage information in the Summary section of the Red Hat publisher overview.

### Red Hat Summary

Report	Description
True-up cost	Cost to be compliant based on the average price of rights in your RHEL software entitlements.
Potential savings	Potential cost savings for your RHEL licenses.
Actual savings	Actual cost savings for your RHEL licenses.
Unlicensed entities	<p>Summary of your unlicensed entities.</p> <p>This summary includes the following information:</p> <ul style="list-style-type: none"> <li><b>Unlicensed installs:</b> Total number of unlicensed RHEL software installations. Select the number to view the complete list of unlicensed RHEL software installations.</li> <li><b>Installs requiring action:</b> Total number of RHEL software installations that you must take action on. Select the number to view the complete list of these RHEL software installations.</li> <li><b>Unlicensed client access:</b> Total number of unlicensed RHEL client access records. Select the number to view the complete list of unlicensed RHEL client access records.</li> </ul>
Progress indicators	<p>Summary of your license compliance progress.</p> <p>This summary includes the following indicators:</p> <ul style="list-style-type: none"> <li><b>Ignored installs:</b> Total number of RHEL software installations that were ignored during reclamation. Select the number to view the complete list of ignored RHEL software installations.</li> <li><b>Removal candidates:</b> Total number of RHEL removal candidates. Select the number to view the list of all software removal candidates.</li> </ul>

For more details on the license usage information that is provided in the publisher overview, see [License usage publisher fields in workspace](#).

## Software Asset Management publisher pack for Microsoft

Use the Software Asset Management publisher pack for Microsoft to track your license compliance position using Microsoft licensing metrics.

**Note:** To use the publisher pack, activate the Software Asset Management Professional for Microsoft plugin (com.snc.samp.microsoft).

Microsoft offers a wide variety of products that span from database servers to subscription services. Each Microsoft product follows its own licensing model, which can make it hard to track your license compliance position. With the Software Asset Management publisher pack for Microsoft, you can accurately track your license compliance position for Microsoft products. Reconciliation identifies licenses that are out of compliance and provides a list of remediation options. For more information, see [Software reconciliation for compliance](#).

To learn more about Microsoft licensing models, see [Microsoft licensing](#).

Set up ServiceNow Discovery to identify Microsoft installations on your network. For more information, see [Data collected by ITOM Visibility](#).

The Software Asset Management publisher pack for Microsoft supports the following licensing models.

- Per user
- Per device
- Per core
- Per core (with CAL)
- User CAL
- Device CAL
- Server (per instance)
- Server (per server)
- Per processor
- User subscription
- Software Assurance

For more information, see [Supported Microsoft license types](#).

If a PPN with P+SA license type doesn't have a version assigned, a software model with the exact version is automatically set on a new entitlement and while importing entitlements from a Microsoft License Statement (MLS). This automatic action correctly applies Microsoft assurance benefits to an entitlement. For details on the upgrade history of an entitlement, navigate to **Workspaces > Software Asset Workspace > License operations > Software entitlements > Upgrade history**.

The *SAMP - Update generic PSA entitlements* fix script automatically updates the existing P+SA entitlements with version as anything, with the specific version, and applies the appropriate licensing terms.

### Microsoft 365 integration

Create an integration with Microsoft 365 to download subscription information that is compared with software installations for compliance.

Microsoft 365 is a suite of software products that includes a range of subscription software and services such as Microsoft Office 365, Windows, and Enterprise Mobility and Security (EMS). Microsoft 365 and EMS include many other products and services within them.

Microsoft 365 admin center includes many other products that you can purchase and activate. However, some of these products don't come with the Microsoft 365 subscription, such as Dynamics 365 and Visio Online.

The following are some of the products and services that are available with the Microsoft 365 subscription:

- Microsoft 365
- Microsoft Exchange Online
- Enterprise Mobility Suite
- Microsoft Office 365
- Microsoft SharePoint Online
- Microsoft Entra ID
- Microsoft Power BI
- Microsoft OneDrive
- Microsoft Teams
- Windows
- Microsoft Intune

SAM managers can use the Microsoft 365 integration to do the following:

- Get user subscription information for all the Microsoft 365 plans purchased on the Microsoft 365 admin center, such as Microsoft Office 365, Microsoft 365, and so on.
- Determine license compliance of Microsoft 365 subscriptions by reconciling user subscription, entitlement, and software installations.
- View active, inactive, and unassigned subscriptions by their last activity date.
- Get user activity for individual Microsoft Office 365 software products within Microsoft 365 subscriptions. For more information, see [Evaluating software usage activity for Microsoft 365 subscriptions](#).
- Get user activity with device-specific activation count details from the Microsoft 365 admin portal that helps in identifying users who have activated their Microsoft subscriptions on at least one device. The activation count also helps SAM managers accurately determine the total number of activations across both desktops and devices.
- Get automated optimization recommendations and workflows for Microsoft 365 subscriptions.
- Determine potential savings while acting on the recommendation.
- Find your available licenses from the subscription details for the Microsoft 365 portal in the Optimization and savings dashboard in the Software Asset Workspace. For more information, see [Optimization and savings dashboard in workspace](#).

Access the content related to software subscriptions by navigating to **SaaS License > Overview**.

- **Office 365 & Adobe Cloud** in the Software asset analytics view of [SaaS overview dashboard in workspace](#).
- **Software Models** lists software model records for subscription products.
- **All User Subscriptions** lists all subscription records for subscription products (also accessible through the **Software Asset > Discovery > Software Subscriptions** navigation menu).

- **Create New Profile** creates a Microsoft 365 subscription profile.
- **All Integration Profiles** lists Microsoft 365 subscription profile records.

Software Asset Management uses the subscription information to determine license compliance and perform optimization. View license compliance on the [License usage view](#) and optimization on the [Optimization and Savings dashboard](#).

The *SAM - Import M365 User Subscriptions* scheduled job runs once every week to obtain subscription information from Software Asset Management.

For setting up Microsoft 365 integration to determine license compliance and optimization, follow the steps in [Integrating with Microsoft 365](#).

**Note:** You must activate the add-on Microsoft content pack (com.snc.samp.microsoft) [plugin](#) to view Microsoft 365 compliance reporting on the [Office 365 & Adobe Cloud dashboard in Software Asset Management classic](#) and [SaaS overview dashboard in workspace](#).

### Integrating with Microsoft 365

Integrating your ServiceNow instance with the Microsoft 365 service enables you to track your software subscriptions and software usage to determine license compliance and act on optimization opportunities.

For more information about the Microsoft 365 services, see [Microsoft 365 plans](#).

**Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the Microsoft 365 application	Authentication scopes
Download subscriptions	Application developer	<ul style="list-style-type: none"> <li>• User.Read.All</li> <li>• Organization.Read.All</li> </ul>
Pull user activity	<ul style="list-style-type: none"> <li>• Power platform administrator</li> <li>• Application developer</li> </ul>	Reports.Read.All

### Register a Microsoft Azure AD application

Register an application through the Microsoft Azure portal.

#### Before you begin

Microsoft Azure AD Role required: Refer to the [Minimal user permissions](#) table.

#### Procedure

1. From a web browser, open the [App registrations page](#) of the Microsoft Azure portal.
2. Log in using your global administrator credentials.
3. On the App registrations page, select **New registration**.

4. In the Name section of the Register an application form, enter a name for the application.
5. In the Supported account types section, select **Accounts in any organizational directory (Any Microsoft Entra ID - Multitenant)**.
6. Select **Register**.  
The application is registered and you're automatically redirected to the Overview page for the new application.
7. On the Overview page, copy the values in the **Application (client) ID** and **Directory (tenant) ID** fields.  
Save them in a secure location for later use.
8. Generate a Client secret for your application.
  - a. From the side navigation menu, navigate to **Manage > Certificates & secrets**.  
The Certificates & secrets page opens.
  - b. In the Client secrets section, generate a client secret for the application by selecting **New client secret**.
  - c. In the dialog box, fill in the fields.

**Add a client secret dialog box**

Field	Description
Description	Description of the client secret.
Expires	Time period after which you want the client secret to expire. The options are: <ul style="list-style-type: none"> <li>▪ In 1 year</li> <li>▪ In 2 years</li> <li>▪ Never</li> </ul>

- d. Select **Add**.  
The dialog box closes and you return to the Certificates & secrets page.
  - e. In the Client secrets section, copy the value in the **VALUE** field for the newly generated client secret.  
Save this in a secure location for later use.
9. Specify the level of access that the application has to your protected resources.
    - a. From the side navigation menu, navigate to **Manage > API permissions**.
    - b. On the API permissions page, select **Add a permission**.
    - c. In the Request API permissions dialog box, select the **Microsoft APIs** tab.
    - d. From the list of available Microsoft APIs, select **Microsoft Graph**.
    - e. When prompted to select the types of permissions that the application requires, select **Application permissions**.

f. Under Select permissions, select the check boxes for the following permissions:

- Reports.Read.All
- User.Read.All
- Organization.Read.All

g. Select **Add permissions**.

The dialog box closes and you return to the API permissions page.

10. Grant admin consent for your application.

### What to do next

After you successfully register and set up your application, remain in the Microsoft Azure portal if you must enable your application to access Power BI service content and APIs.

### Enable service principal authentication for Power BI read-only APIs

Grant your application access to Power BI service content and APIs by enabling service principal authentication for Power BI read-only APIs. Power BI service content and APIs help optimize your Microsoft 365 subscriptions, such as by downgrading subscriptions from Office 365 E5 to Office 365 E3.

### Before you begin

Microsoft Azure AD Role required: global administrator

Power BI Role required: Power platform administrator

**Note:** This configuration enables the ServiceNow Software Asset Management application to get the usage information (Last usage time) for all Power BI Pro deployments across the Web and Desktop. The Software Asset Management application pulls the last activity date for Power BI deployments that are part of Microsoft 365 subscriptions.

### About this task

Service principal is an authentication method that enables your application to access secure Microsoft Azure AD resources, such as Power BI service content and APIs.

### Procedure

1. Create a security group for service principal authentication.
 

Security groups enable you to manage which users, devices, groups, and service principals can access shared resources. If you want to use an existing security group for service principal authentication, skip to [step 2](#).

  - a. On the page header of the Microsoft Azure portal, use the search bar to search for and select the **Microsoft Entra ID** service.
 

The Overview page for the Microsoft Azure AD service opens.
  - b. From the side navigation menu of the Microsoft Azure AD service, navigate to **Manage > Groups**.
 

The **Groups > All groups** page opens.
  - c. On the All groups page, select **New group**.
  - d. On the form, fill in the fields.

**New Group form**

Field	Description
Group type	Group type. Set this field to <b>Security</b> .
Group name	Name of the group.
Group email address	Email address that is shared between all group members.
Group description	Description of the group.
Membership type	Method in which members can be added to or removed from the group. Set this field to <b>Assigned</b> .

**e. Select **Create**.**

The security group is created and then you're redirected to the Overview page for the new group.

**2. Add the application that you created in [Register a Microsoft Azure AD application](#) as a member of your security group.**

- a.** If you didn't create a security group in [step 1](#) and are using an existing security group instead, open your existing security group.  
If you created a security group in [step 1](#), skip to [step b](#).

- i.** On the page header of the Microsoft Azure portal, use the search bar to search for and select the **Microsoft Entra ID** service.

The Overview page for the Microsoft Azure AD service opens.

- ii.** From the side navigation menu of the Microsoft Azure AD service, navigate to **Manage > Groups**.

The **Groups > All groups** page opens.

- iii.** From the list of available groups, locate and select your existing security group.

The Overview page for the security group opens.

- b.** From the side navigation menu of your security group, navigate to **Manage > Members**.  
The Members page opens.

- c.** On the Members page, select **Add members**.  
The Add members dialog box opens.

- d.** In the dialog box, search for and select the application that you created in [Register a Microsoft Azure AD application](#).

**i Important:** The application must not have any Power BI admin permissions set from the Microsoft Azure portal. You can verify your application permissions using the following steps:

- i. Log in to the Microsoft Azure portal using either your global administrator, application administrator, or cloud application administrator credentials.
- ii. On the page header of the Microsoft Azure portal, use the search bar to search for and select the **Microsoft Entra ID** service.

The Overview page for the Microsoft Azure AD service opens.

- iii. From the side navigation menu of the Microsoft Azure AD service, navigate to **Manage > Enterprise applications**.

The Enterprise applications page opens.

- iv. From the list of available enterprise applications, locate and select your application.
- v. Select **Permissions**.
- vi. Verify that no Power BI admin-consent-required permissions are set on the application.


- e. Select **Select**.

The application is added as a member of your security group.

### 3. Enable your security group to access read-only Power BI admin APIs.

- a. In a new tab or web browser, open [Power BI](#) .

- b. Log in using either your global administrator or Power BI administrator credentials.  
The Power BI portal opens.

- c. On the page header of the Power BI portal, select the Settings icon () and then select **Admin portal**.  
The Power BI Admin portal opens.

- d. From the side navigation menu of the Admin portal, select **Tenant settings**.

- e. In the Admin API settings section, expand the **Allow service principals to use read-only Power BI admin APIs** setting.

- f. Select the toggle button to enable the setting.

- g. When prompted, select the option to apply the setting to **Specific security groups**.

- h. In the corresponding text box, enter the name of your security group.

- i. Select **Apply**.

After you enable this setting through the Power BI Admin portal, any application permissions that you set from the Microsoft Azure portal are no longer effective. All application permissions must subsequently be set and managed through the Power BI Admin portal.

### Configure updates on Microsoft 365 Admin Center

Prevent anonymous user information in Microsoft 365 reports on activity to be imported to ServiceNow.

#### Before you begin

Role required: admin

#### Procedure

1. Log in to [Microsoft 365 admin center](#) by using your admin credentials.
2. Navigate to **Settings > Services > Org settings > Reports**.
3. Deselect the **Display concealed user, group, and site names in all reports** check box.  
For more information about the Microsoft 365 reports showing anonymous user information, see [Microsoft 365 reports show anonymous user names instead of actual user names](#).

### Create a Microsoft 365 integration profile

Create an integration profile to track software subscriptions and optimize stale licenses for the Microsoft 365 service.

#### Before you begin

ServiceNow Role required: sam\_integrator or admin

To integrate with Microsoft 365, activate the following plugins:

- Software Asset Management Professional for Microsoft plugin (com.snc.samp.microsoft)
- Software Asset Management - SaaS License Management (sn\_sam\_saas\_int) plugin from the [ServiceNow Store](#).

For more information, see [Request SaaS License Management](#).

#### About this task

If you're using Software Asset Workspace, the option to create the direct integration profile in Core UI is inactive.

#### Procedure

1. From a web browser, open your ServiceNow instance.

Interface	Action
Core UI	Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>Workspaces &gt; Software Asset Workspace &gt; License operations</b>.</li> <li>b. Under <b>User subscription</b>, select <b>Direct integration profiles</b>.</li> </ol>

2. Select **New**.
3. Select **Microsoft 365 Integration Profile**.
4. On the form, fill in the fields.

### Integration Profile form

Field	Description
Display name	Name of the integration profile. For example, <b>Microsoft 365 integration for &lt;your-company&gt;</b> .
Client Id	Client ID of the application that you registered in the Microsoft Azure portal. Enter the application (client) ID that you copied in <a href="#">Register a Microsoft Azure AD application</a> .
Client secret	Client secret of the application that you registered in the Microsoft Azure portal. Enter the client secret that you copied in <a href="#">Register a Microsoft Azure AD application</a> .
Tenant name or Id	Globally unique identifier (GUID) of the application that you registered in the Microsoft Azure portal. Enter the directory (tenant) ID that you copied in <a href="#">Register a Microsoft Azure AD application</a> .  <div style="background-color: #ffffcc; padding: 5px;"> <p><b>⚠ Warning:</b> When entering the directory (tenant) ID, do not add any additional extensions to the ID. Enter the ID exactly as it was copied in <a href="#">Register a Microsoft Azure AD application</a>.</p> </div>
REST message	Message that enables you to send requests to a REST web service endpoint.
Profile type	Type of integration profile. This field is automatically set to <b>Microsoft 365</b> .

5. Select **Submit**.

6. **Optional:** Check the status of the user subscription job by navigating to **Software Asset > Administration > Job Results**.

#### What to do next

When you create an integration profile, a reclamation rule is automatically created for the software. It's important that you review the reclamation rule to ensure that it meets your specifications. You can view all automatically generated reclamation rules for Office 365 by navigating to **Software Asset > Administration > Reclamation Rules**. Reclamation rules are applied based on the Microsoft System Center Configuration Management (SCCM) usage data that is pulled through the Microsoft SCCM usage integration. For more information on these reclamation rules, see [Create a reclamation rule to import Microsoft SCCM usage data](#).

**i Note:** ServiceNow automatically creates one default reclamation rule for Office 365. You can also update the Last activity threshold field under the Subscription Usage Condition tab.

#### Related topics

[Reclamation rules for Microsoft 365 integration](#)

## Determine and verify Microsoft 365 subscription information in your ServiceNow instance

Determine the exact software subscription information to be pulled from the Microsoft 365 admin center and verify if complete subscription information is pulled accurately to ServiceNow.

### Before you begin


Role required: sam\_admin


### Procedure

1. Filter with the Microsoft 365 integration profile you created to determine the exact software subscription information to be pulled from Microsoft 365 admin center to ServiceNow. This subscription includes all subscriptions available on the Microsoft 365 admin center.
2. Verify with the Microsoft 365 admin if complete subscription information is pulled accurately to ServiceNow.


#### Note:

Software Asset Management pulls the last activity date for Microsoft 365 products using a combination of Microsoft System Center Configuration Manager (SCCM) integration and Microsoft 365 integration.

3. If your Microsoft 365 subscription data isn't getting pulled into Software Asset Management, verify your integration setup:
  - a. On the Integration Profile form, open the REST message record by selecting the Preview icon () next to the **REST message** field and then selecting **Open Record** in the record preview.
  - b. On the Rest Message form, select the **Get OAuth Token** related link.

 **Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

- c. On the OAuth flow verification dialog box, view the status of the OAuth flow to determine whether your integration is set up correctly.
    - If the OAuth token flow completed successfully message appears, your integration is set up correctly.
    - If the OAuth flow failed message appears, your integration isn't set up correctly. Use the information in this message to identify the errors in your integration setup.
4. If your Power BI usage isn't getting pulled into Software Asset Management, verify the status of your Power BI API connection.
  - a. On the Integration Profile form, select and hold (or right-click) the form header.
  - b. Select **Show XML**.

 **Note:** If the **Show XML** option isn't visible in the default view, you can customize the view. Select and hold (or right-click) the form header and then select **View > custom integration**.

- c. Under **<xml>** > **<samp\_sw\_subscription\_profile>** > **<custom\_properties>**, view the *powerBIAPISatus* property to determine the status of your Power BI API connection.

- If the *powerBIAPIStatus* property is set to **success**, the Power BI API connection was successful.
- If the *powerBIAPIStatus* property is set to **failed**, the Power BI API connection wasn't successful. Verify that you've followed all the integration setup steps correctly. You can also check your logs for more information about any errors in your integration setup.

**5. Optional:** If the **User** field in the Software Subscription [samp\_sw\_subscription] table is empty, you can map the field with an associated user.

(Optional) For more information, see [Associate a user with subscription records](#).

### Upload the Microsoft 365 Copilot, Visio Online, and Project Online usage reports to your ServiceNow instance

Monitor the usage activity data for Microsoft 365 Copilot, Visio Online, and Project Online to identify reclamation candidates based on low usage.

#### Before you begin

Role required:

- Access the Microsoft 365 admin center: admin
- Add reports to the ServiceNow instance: sam\_admin

#### About this task

You can export the usage reports for Microsoft Copilot, Visio Online, and Project Online from the [Microsoft 365 admin center](#) and add the reports to your ServiceNow instance. These usage activity reports help in license optimization by identifying potential reclamation candidates based on low usage.

#### Procedure

1. Log in to [Microsoft 365 admin center](#) using your global administrator credentials.
2. Navigate to **Reports > Usage**.
3. Download the usage reports.
  - a. Select **Copilot for Microsoft 365** and download the CSV file by selecting **Export**.
  - b. Select **Project** and download the CSV file by selecting **Export**.
  - c. Select **Visio** and download the CSV file by selecting **Export**.

**Important:** You must not change the names of the downloaded files. You must upload the files as is to your ServiceNow instance.

4. From the navigation menu, select **Identity**.  
The Azure portal for the current tenant opens.
5. On the Overview page, copy the value in the **Tenant ID** field.  
Save the Tenant ID in a secure location for later use.
6. From a web browser, open your ServiceNow instance.


Interface	Action
<b>Core UI</b>	Open the Integration Profiles [samp_sw_subscription_profile] table.  Integration profiles open in the list view.

Interface	Action
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>Workspaces &gt; Software Asset Workspace &gt; License operations.</b></li> <li>Under <b>User subscription</b>, select <b>Direct integration profiles.</b></li> </ol> <p>Integration profiles open in the list view.</p>

7. Apply filters to open integration profiles for a specific Tenant id for which you want to upload the usage reports.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Select the Show/hide filter icon on the table header.</li> <li>Set the condition <b>[Tenant name or id] [is] [Tenant ID copied in step 5] AND [Profile type] [is] [Microsoft 365].</b></li> <li>Select <b>Run.</b></li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Select the filter icon and then select <b>Advanced view.</b></li> <li>Set the condition <b>[Tenant name or id] [is] [Tenant ID copied in step 5].</b></li> <li>Add a filter condition by selecting <b>+ New condition set.</b></li> <li>Set the condition <b>[Profile type] [is] [Microsoft 365].</b></li> <li>Select <b>Update.</b></li> </ol>

8. Add the usage reports to an integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Select an integration profile.</li> <li>Select the Manage Attachments  icon on the form header.</li> <li>In the Attachments dialog box, select <b>Choose file.</b></li> <li>Select all the CSV files that you downloaded in step 3 to add them to the integration profile.</li> <li>Close the dialog box to return to the Integration Profile form.</li> <li>The uploaded CSV files appear next to the Manage Attachments icon.</li> </ol>

Interface	Action
<p><b>Software Asset Workspace</b></p>	<ul style="list-style-type: none"> <li>a. Select an integration profile.</li> <li>b. Select the Attachment (📎) icon from the sidebar of the integration profile.</li> <li>c. In the Attachments window, select <b>Select file</b>.</li> <li>d. Select all the CSV files that you downloaded in step 3 to add them to the integration profile.</li> <li>e. The uploaded CSV files appear in the Attachment window.</li> </ul>

**What to do next**

The usage activity reports that you upload can be monitored for license optimization and generation of reclamation candidates. For details, see [Evaluating software usage activity for Microsoft 365 subscriptions](#).

**Evaluating software usage activity for Microsoft 365 subscriptions**

Evaluate software usage activity to discover active, inactive, and unassigned subscriptions among all subscriptions found on the Microsoft 365 portal.

Software usage activity is the usage of software products and you can monitor license usage by tracking the software usage activity. Monitoring the software usage activity also helps you optimize your existing software subscriptions.

The following table lists the sources for collecting the software usage activity, the associated platform support, and the supported Microsoft 365 products.

Sources of software usage activity collection	Platform support	Supported Microsoft Office 365 products
Microsoft Graph APIs	Desktop, Web, Mobile	Outlook, Word, PowerPoint, Excel, OneNote, Teams, Exchange Online, SharePoint Online, Power BI
Microsoft SCCM or ACC-V	Desktop	Microsoft Office 365 apps for Enterprise
Jamf for macOS devices	Desktop	Microsoft Office 365 apps for Enterprise
Manual upload of the usage reports on the ServiceNow instance from the Microsoft Office 365 admin center	Desktop, Web, Mobile	Microsoft 365 Copilot, Visio Online, and Project Online

**Note:** You can download the usage for Microsoft 365 Copilot, Visio Online, and Project Online from the Microsoft Office 365 admin center. For details, see [Upload the Microsoft 365 Copilot, Visio Online, and Project Online usage reports to your ServiceNow instance](#).

## Monitoring software usage activity for license optimization

Based on the software usage activity, Software Asset Management generates optimization recommendations for your software subscriptions that include the following:

- Downgrades from Microsoft 365 E5 to E3 and E3 to E1
- Consolidated Microsoft 365 subscriptions for multiple licenses. For example, if you have both Office 365 Enterprise E5 and Microsoft 365 Enterprise E3 subscriptions, a single license can be recommended to cover multiple products.
- Double licensed users with both Microsoft 365 and its applications (Office 365, Enterprise Mobility+Security (EMS), Windows) subscriptions
- Individual subscriptions for Microsoft Teams, Microsoft Exchange Online, Microsoft SharePoint Online, Microsoft OneDrive, and Power BI
- Unassigned user subscriptions

You can view the optimization recommendations on the [Optimization and savings dashboard in workspace](#).

After completing the Microsoft 365 integration, you can view the usage activity information using any of the following tables:

- Software Usages [samp\_sw\_usage]

View the usage data for individual software products within the subscription in the Software Usages table. This table stores total usage and last activity retrieved from Microsoft APIs and other discovery solutions such as SCCM, Jamf, and ACC-V. The `#SAM - Collect Microsoft 365 Usage` scheduled job collects the usage data daily and the `#SAM - Create New Reclamation Candidates for Office 365 Integration` generates the removal candidates weekly. For more details on software usage fields and their descriptions, see [View or create software usage in workspace](#).

The Software Usages table includes the date when the software was last used and the type of the activities performed on the Desktop, Web, Mobile, or cumulative across platforms. The last activity data helps you select an optimized plan for individual products within your Microsoft 365 subscriptions. Software Asset Management generates a removal candidate for the current subscription by showing an optimized recommendation on the License workbench.

- Microsoft 365 Apps Usage Reports [samp\_m365\_apps\_usage\_report]

View the last activity date for the Microsoft 365 products in the Microsoft 365 Apps Usage Reports table for each user. This table stores usage data for Microsoft 365 products in True or False retrieved from Microsoft APIs only. The last activity date helps you determine reclamation candidates more accurately for Microsoft 365 products, including Microsoft Outlook, Microsoft Word, Excel Microsoft PowerPoint, and OneNote. For more details on Microsoft 365 apps usage fields and their descriptions, see [Microsoft 365 Apps Usage Reports](#).

## License optimization for Microsoft subscriptions

Software usage activity helps you with license optimization by discovering reclamation candidates from both the individual Microsoft products and the Microsoft 365 suite subscriptions. You can determine the reclamation candidates using both APIs and discovery solutions.

- Downgrades from Microsoft 365 E5 to E3 and E3 to E1: Determine the number of licenses per month that can be downgraded or reclaimed based on generated downgrade candidates.

**Note:** You can also determine usage for Microsoft Access and Publisher from additional discovery solutions, such as Microsoft SCCM or ACC-V for E3 to E1 optimization.

- Consolidated Microsoft 365 subscriptions: Find Microsoft 365 consolidate subscriptions reclamation candidates.
- Double licensed users: Determine the number of licenses per month that can be downgraded or reclaimed based on recommended candidates with both Microsoft 365 and its applications (Office 365, Enterprise Mobility+Security (EMS), Windows) subscriptions.
- Individual subscriptions: Reclamation rules are automatically created for individual subscriptions when the *SAM - Import user subscription* scheduled job runs. These individual subscriptions include Microsoft Teams, Microsoft Exchange Online, Microsoft SharePoint Online, Microsoft OneDrive, and Power BI. You can review the reclamation rules for individual subscriptions to fit your requirements. For more details, see [Review a software reclamation rule](#).

Additionally, the subscription assignment date that is automatically populated from the Microsoft 365 portal helps in generating the reclamation candidates for individual subscriptions. Using the subscription assignment date instead of the record creation date on the ServiceNow AI Platform helps to create correct reclamation candidates based on the actual use from the Microsoft 365 portal.

### Related topics

[Reclamation rules for Microsoft 365 integration](#)

### Evaluate Microsoft 365 compliance and optimization results

Evaluate Microsoft 365 compliance and optimization results to find actual and potential cost savings and recommended licensing optimizations.

### Before you begin

Role required: sam\_admin or sam\_user

The discovery of Microsoft 365 must be complete to evaluate the software compliance. For more information about using Discovery and Microsoft SCCM together, see [Discovery and SCCM together](#).

The usage of Microsoft 365 plans must be available from both Microsoft certified APIs and Microsoft SCCM to evaluate the software optimization.

### Procedure

1. Navigate to **Software Asset Workspace > License operations**.
2. In the left pane, select **Licensing > Software entitlements**.
3. Select **New**.
4. Create entitlements for Microsoft 365 by selecting the correct Publisher Part Number (PPN) to verify compliance.  
For more information about creating entitlements, see [Create entitlements in workspace](#).

**Note:** Ensure that the License metric value is User Subscription.

5. Navigate to **License usage** in the left pane.

6. Select the **Reconciliation** tab.
7. Select **Run reconciliation**.
8. View compliance analysis results in [Office 365 & Adobe Cloud dashboard in Software Asset Management classic](#) and [SaaS overview dashboard in workspace](#).  
For more information about running software reconciliation, see [Run software reconciliation](#) and [Run Software Asset Management Foundation plugin software reconciliation in classic](#) .
9. View all optimized plans for Microsoft 365 subscription on the [Optimization and savings dashboard in workspace](#).

### Update REST and OAuth endpoints for Microsoft Office 365 Government plans

Change the endpoints of the REST message and OAuth application on your ServiceNow subscription profile so that you can use your subscriptions.

#### Before you begin


Role required: sam\_admin

#### About this task


The ServiceNow AI Platform<sup>®</sup> supports Microsoft Office 365 Government plans, which provide all the features and capabilities of Microsoft 365 services in a segmented government cloud community that enables organizations to meet U.S. compliance and security standards.

For more information on Microsoft Office 365 Government plans, see [Office 365 Government](#) .

**i Important:** The Software Asset Management application supports tracking last activity for license compliance, subscription management, and optimization recommendations for Microsoft products such as Exchange Online, Teams, Power BI, OneDrive, and so on. For more details, see [Evaluating software usage activity for Microsoft 365 subscriptions](#).


The detailed usage metrics for these Microsoft products (except Power BI) are only available through specific report APIs that aren't supported in government-regulated environments. For further details, refer to the [Microsoft national cloud deployments documentation](#) .

#### Procedure

1. From your ServiceNow instance, navigate to **All > Software Asset > SaaS License > Direct Integration Profiles**.
2. Select the Microsoft 365 integration profile that you want to update.
3. On the Integration Profile record, select the Preview this record icon () next to the **REST message** field.
4. On the record preview, select **Open Record**.  
The REST Message record opens.
5. Update the REST message endpoints on your Microsoft 365 integration profile.

REST message endpoints enable you to retrieve usage data from your Microsoft 365 applications and services.

- a. In the **HTTP Methods** related list, update the REST message endpoints based on your needs.

Microsoft provides various endpoints for Microsoft Office 365 Government plans. For more information on the available endpoints, see [Office 365 U.S. Government GCC High endpoints](#) .

**i Important:** You must change the `.com` to `.us` in the URL of each endpoint. For example, you must change `https://graph.microsoft.com/v1.0/reports` to `https://graph.microsoft.us/v1.0/reports`.

**b.** Select **Save**.

**c.** Update the OAuth entity scope for the **GET PowerBI Usage** endpoint.  
The OAuth entity scope specifies the level of access that users have to your protected resources.

**i.** Select the **GET PowerBI Usage** endpoint.

The HTTP Method record opens.

**ii.** In the Authentication section of the HTTP Method record, select the Preview this record icon (i) next to the **OAuth profile** field.

**iii.** On the record preview, select **Open Record**.

The OAuth Entity Profile record opens.

**iv.** In the OAuth Entity Profile Scopes list, update the **OAuth scope** field of the **PowerBIPermissions** OAuth entity scope with the backend API URL that you are using for Microsoft Power BI.

**i Note:** Microsoft supports various backend API URLs for Power BI. For more information on the available URLs, see [Power BI for US Government](#).

**v.** Select **Update**.

The OAuth Entity Profile record closes and you automatically return to the REST Message record.

**6.** Update the OAuth application endpoint on your Microsoft 365 integration profile.  
The OAuth application endpoint enables your ServiceNow instance to access your Microsoft 365 subscription data.

**a.** In the Authentication section of the REST Message record, select the Preview this record icon (i) next to the **OAuth profile** field.

**b.** On the record preview, select **Open Record**.

The OAuth Entity Profile record opens.

**c.** In the OAuth Entity Profile Scopes list, change the `.com` to `.us` in the URL that is listed in the **OAuth scope** field of the **Permissions** OAuth entity scope.

**d.** Select the Preview this record icon (i) next to the **OAuth provider** field.

**e.** On the record preview, select **Open Record**.

The Application Registries record opens.

**f.** Select the Edit URL icon (🔗) next to the **Token URL** field.

- g. In the URL, change the `.com` to `.us`.  
For example, change `https://login.microsoftonline.com` to `https://login.microsoftonline.us`.
- h. Select the Lock URL icon (🔒).
- i. Select **Update**.

### Associate a user with subscription records

If the User field in the Software Subscription [samp\_sw\_subscription] table is empty, map the field with an associated user.

### Before you begin

ServiceNow Role required: admin

### About this task

SaaS integrations create subscription records in the Subscriptions [samp\_sw\_subscription] table. The fields on this table are populated by automated jobs and integrations. The User field is resolved based on the User principal name column value and verified against the **email** and **user\_name** fields of the User [sys\_user] table by default.

### Procedure

To map the user data effectively, perform one of the following steps:

- Update the User field on subscriptions manually.

By default, the integration overwrites the **User** field even if you set a value.

- a. Update the **User** field of the subscription record manually to overwrite the User column value that is automatically set by the integration.

After you update the value, the integration doesn't reset the value.

- b. If you want to switch back to the user logic of the integration, clear the **User** field value.

After you clear the value, the next integration execution repopulates the **User** field automatically.

- Modify the user lookup logic for SaaS subscriptions.

If you have a different column for the user lookup, you might want to use it for lookup instead of the base system lookup.

- a. Open the Script include `SAMSaasIntegrationUtils`.
- b. Replace the `getSysUser` method call with the following script and your field name in the `sys_user` table to replace the `<replace_field_name>`.

```
getSysUser: function (upn) {
  if (upn) {
    var userGr = new GlideRecord('sys_user');
    userGr.addActiveQuery();
    userGr.addNotNullQuery('<replace_field_name>');
    userGr.addQuery('<replace_field_name>', upn);
    userGr.setLimit(1);
    userGr.query();
  }
}
```

```

        if (userGr.next()) {
            return userGr;
        }
    }
}

```

### Creating reserve entitlements for Microsoft online services

You can create reserve entitlements for Microsoft online services to add licenses to your existing Microsoft 365 subscriptions. You can pay for the new licenses during your true-up process.

### Overview of license reservation

A license reservation enables you to place a license reservation order for migrating on-premises assets to the cloud without requiring a purchase order. Only Microsoft online services are eligible for license reservation orders.

**Note:** You can create a reserve entitlement only from an existing Microsoft entitlement. The existing entitlement must meet the following criteria:

- **License type** is Subscription.
- **Metric group** is Microsoft.
- **License Metric** is User Subscription.
- **Publisher** is Microsoft for the product on the software model.
- **Subscription software** is selected for the product on the software model.

### Create a reserve entitlement for Microsoft online services in Software Asset Management classic

Create a reserve entitlement for all Microsoft online services in the Software Asset Management classic application so that you can add licenses to an existing Microsoft 365 subscription.

### Before you begin

Role required: sam\_user or sam\_admin

### Procedure

1. Navigate to **All > Asset > Portfolios > Software Entitlement** and then select a Microsoft Office 365 entitlement.
2. Select the **Create Reserve Entitlement** related link.
3. On the form, fill in the fields.

Field	Description
Start date	Start date for the new licenses.
End date	The earliest anniversary of the source entitlement end date. This field is calculated automatically.
Purchased rights	Number of new licenses.
Monthly unit cost	Unit cost of the source entitlement divided by the duration of the source entitlement (in months). This field is calculated automatically.
Software model	Software model for the existing entitlement. This field populates automatically.

Field	Description
Source entitlement	Existing entitlement used to create the reserve entitlement. This field populates automatically.

**4. Select Submit.**

The new reserve entitlement is added to the **Reserve Entitlements** related list in the source entitlement. The state of the reserve entitlement is In use and the **Reserve entitlement** check box is selected.

**What to do next**

Run a reconciliation to include the new reserve entitlement in the true-up cost calculation. Navigate to **Software Asset > Office 365 & Adobe Cloud** to view the [Office 365 & Adobe Cloud dashboard](#). The cost of the reserve entitlement is included in True-up Cost and is not included in Current Subscription Spend.

When you pass the end date of the reserve entitlement, the SAM - Subscription Maintenance scheduled job creates a new entitlement to replace it.

**Note:** The new entitlement is not added to the Reserve Entitlements related list in the original source entitlement.

**New entitlement record**

Field	Value
Reserve entitlement	Option that indicates whether the new entitlement is a reserve entitlement. This option is not selected.
Start date	Date that the new entitlement is created.
End date	End date of the original source entitlement.
Source entitlement	Original source entitlement.
Purchased rights	Same number of purchased rights as the reserve entitlement.
Active rights	Same number of active rights as the reserve entitlement.
Allocations available	Same number of allocations available as the reserve entitlement.
State	State of the entitlement. This field is set to <b>In use</b> .

The state of the reserve entitlement updates to **Retired**. On the Office 365 & Adobe Cloud dashboard, the cost of the retired reserve entitlement is removed from the True-up Cost. The cost of the new entitlement is included in Current Subscription Spend.

**Create a reserve entitlement for Microsoft online services in the Software Asset Workspace**

Create a reserve entitlement for Microsoft online services in the Software Asset Workspace so that you can add licenses to an existing Microsoft 365 subscription.

**Before you begin**

To create reserve entitlements for Microsoft online services in the Software Asset Workspace, you must request and activate the Software Asset Workspace (com.sn\_sam\_workspace) plugin. For details on requesting and activating the Software Asset Workspace (com.sn\_sam\_workspace) plugin, see [Request Software Asset Management](#).

Role required: sam\_user or sam\_admin

**Procedure**

1. From your ServiceNow instance, navigate to **Software Asset > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.
2. From the left navigation menu of the Software Asset Workspace, select **License operations**. The License operations view opens.
3. From the left navigation menu of the License operations view, navigate to **Licensing > Software entitlements**.
4. From the list of available software entitlements, select a Microsoft Office 365 entitlement. The software entitlement details page opens in a new tab.
5. Select **Create Reserve Entitlement**.
6. On the form, fill in the fields.

**Reserve Entitlement Record Producer form**

Field	Description
Start date	Start date for the new licenses.
End date	The earliest anniversary of the source entitlement end date. This field is calculated automatically.
Purchased rights	Number of new licenses.
Monthly unit cost	Unit cost of the source entitlement divided by the duration of the source entitlement (in months). This field is calculated automatically.
Software model	Software model for the existing entitlement. This field populates automatically.
Source entitlement	Existing entitlement that is used to create the reserve entitlement. This field populates automatically.

7. Select **Submit**.
8. After your request is successfully submitted, select **Close**.  
The new reserve entitlement is added to the **Reserve Entitlements** related list in the source entitlement. The state of the reserve entitlement is In use and the **Reserve entitlement** check box is selected.

**What to do next**

Run a reconciliation to include the new reserve entitlement in the true-up cost calculation. View your reconciliation results in the [Microsoft publisher overview](#). The cost of the reserve entitlement is included in the **True-up cost** report.

When you pass the end date of the reserve entitlement, the SAM - Subscription Maintenance scheduled job creates a new entitlement to replace it.

**Note:** The new entitlement isn't added to the **Reserve Entitlements** related list in the original source entitlement.

### New entitlement record

Field	Value
Reserve entitlement	Option that indicates whether the new entitlement is a reserve entitlement. This option isn't selected.
Start date	The date that the new entitlement is created.
End date	End date of the original source entitlement.
Source entitlement	Original source entitlement.
Purchased rights	Same number of purchased rights as the reserve entitlement.
Active rights	Same number of active rights as the reserve entitlement.
Allocations available	The same number of allocations available as the reserve entitlement.
State	State of the entitlement. This field is set to <b>In use</b> .

The state of the reserve entitlement updates to **Retired**. On the Microsoft publisher overview, the cost of the retired reserve entitlement is removed from the **True-up cost** report. The cost of the new entitlement is included in the Current Subscription Spend.

### Microsoft SQL Server licensing in container deployments

The Software Asset Management publisher pack for Microsoft supports licensing rules for Microsoft SQL Server products that are deployed across both on-premise and cloud environments using Docker containers.

Containers are executable software packages that bundle all the code and dependencies that are required for deploying and running a specific application. With a container, you can deploy and run the same application uniformly across any computing environment, such as a desktop computer or the cloud, without having to reconfigure the application. Each container also virtualizes an operating system (OS) so that you can quickly and easily deploy multiple isolated applications within the same computing environment.

The Software Asset Management application works in conjunction with the ServiceNow<sup>®</sup> Discovery application to identify the following information in both on-premise and cloud environments:

- The Docker containers through which your Microsoft SQL Server products are deployed.
- The corresponding Kubernetes clusters that enable each container to run.
- The OS of the underlying physical server that the container is running on.
- The Microsoft SQL Server version and edition that is deployed through each container.
- The number of virtual processor cores that are assigned to each container.

The Software Asset Management application uses the resulting data to create corresponding software installation records for each of your discovered containers. You can then reconcile these container-based software installations to track and optimize the license compliance of the Microsoft SQL Server products that are deployed through each container.

For more visibility into the Microsoft SQL Server products that are deployed through your Docker containers, view the [Licensable Software Products Deployed on Containers report](#).

For more information on Docker discovery, see [Docker virtualization](#) . For more information on Kubernetes discovery, see [Kubernetes discovery](#) .

## Supported licensing models

The Microsoft publisher pack supports the following licensing models for Microsoft SQL Server products that are deployed through containers:

**Note:** For more information on each licensing model, refer to [Supported Microsoft license types](#).

### Supported Microsoft SQL Server licensing models in container deployments

Licensing Model	Description
Per core	You must license each container as a standalone device. Licensing is based on the number of virtual CPUs (vCPUs) that are discovered on each container, with a minimum of four per core licenses per container.
Server/ CAL	<p>You must license each container using a server (per instance or per server) license. You must also license each user or device that is accessing the underlying physical server running these containers using a user or device CAL license.</p> <p>Server licenses enable you to license container-based software installations on your physical servers. To license only a certain number of installations on a physical server, use a server (per instance) license. To license all installations on a physical server, use a server (per server) license.</p> <p>CAL licenses are client access licenses that grant a set number of users or devices access to the underlying physical server on which your containers are running.</p> <ul style="list-style-type: none"> <li>• To grant a set number of users access to a physical server, regardless of how many devices those users are accessing the server through, use a user CAL license.</li> <li>• To grant a set number of devices access to a physical server, regardless of how many users are accessing the server through those devices, use a device CAL license.</li> </ul>

### Licensable Software Products Deployed on Containers report

You can use the Licensable Software Products Deployed on Containers report to gain visibility into the software products that are deployed across both on-premise and cloud environments using Docker containers.

**Note:** To view this report, activate the Software Asset Management Professional plugin (com.snc.samp) and the [Discovery and Service Mapping Patterns](#) application.

The Licensable Software Products Deployed on Containers report is available only in the Software Asset Workspace. To view this report, navigate to **All > Software Asset > Software Asset Workspace**. From the Software Asset Workspace, navigate to **License usage > Reports > Licensable Software Products Deployed on Containers**.

### Licensable Software Products Deployed on Containers report

Field	Description
Container Name	Docker container through which you are deploying a software product.
Environment	On-premise or cloud environment in which you are deploying a software product through the Docker container.
Container ID	Unique identifier for the Docker container.
Hosted On Server	Physical server on which the Docker container is running.
Kubernetes Cluster	Kubernetes cluster that enables the Docker container to run.
Virtual CPU	Number of virtual CPUs (vCPUs) that are assigned to the Docker container.
Software Installed	Software product that you are deploying through the Docker container.

### Manage licenses for Microsoft Visual Studio

Manage your Visual Studio subscriptions with the Software Asset Management publisher pack for Microsoft. Verify license compliance and detect unlicensed installations. Reduce licensing costs by identifying subscriptions that are allocated but aren't being used.

#### Before you begin

Set up ServiceNow [Discovery](#) to find Microsoft software installations on your network. By using Discovery, you can view license compliance information by comparing your purchased licenses with actual installations.

You must set up the environment on the Configuration Management Database (CMDB) before you begin. Setting up of development, production, or test environment helps Software Asset Management Professional to apply licenses correctly. You should use the #Environment field# on the configuration item (CI).

Role required: sam\_admin

#### About this task

Visual Studio subscriptions enable developers to download, install, configure, and use most Microsoft software products on any number of devices or virtual machines without having to purchase individual rights. Individual rights aren't required if the software is deployed only in development or test environments. Use the Microsoft Publisher Pack to manage Visual Studio licensing and reduce compliance risks.

To access the advantages of Visual Studio Standard subscriptions, you must maintain active Microsoft Software Assurance. These benefits enable you to use a range of Microsoft products, including SQL Server, Windows Server for development and testing purposes only.

First, set up software models and entitlements to track your Visual Studio subscriptions. Then, run reconciliation and view the License Workbench to manage license compliance.

## Procedure

1. [Import software entitlements](#) for your Visual Studio subscriptions.

**i Important:** Fill in the **Publisher part number** column on the entitlement import template to automatically create software models for Visual Studio and all included software (suite components). You can look up publisher part numbers in the Software Product Definition table [samp\_sw\_product\_definition]. If you fill in the **Publisher part number** field, **Publisher**, **Product**, **Version**, **Edition**, **Platform**, and **Language** aren't required because the publisher part number provides that information.

When the import is complete, software models and entitlements are automatically created for your Visual Studio subscriptions. The Visual Studio software models are automatically populated with Suite Components and Downgrade Rights.

You can also create software entitlements manually. For details, see [Create entitlements in workspace](#).

**i Important:** You can view your software models in both the Software Asset Management classic application and the Software Asset Workspace.

2. Add product install conditions to your Visual Studio software models that apply across all software models including downgrades and editions.


Install conditions define where the software can be installed. For Visual Studio, installing the software anywhere that is not a development or test environment is a violation of the Microsoft license agreement. Install conditions are used during reconciliation. When you run reconciliation, any Microsoft software installed on production, disaster recovery, or other environments aren't covered by your Visual Studio licenses. These products are considered unlicensed installations unless they're covered by another Microsoft license.

For details on adding product install conditions, see [Create product install conditions](#).

You can add filter conditions to the Product install condition field to limit installations to your development or test environments. For example, you could use the conditions `Installed on contains dev` or `Installed on contains test`.

3. Add user allocations to your Visual Studio entitlements.

You can import user allocations using an import set and transform map. Import into the User Allocation [alm\_entitlement\_user] table. In the transform map, map the **Assigned to** field to the User table [sys\_user]. Use the **Asset tag** field from the entitlement record to link the allocations to the correct entitlements. For the coalesced value, use a two-attribute coalesce on the entitlement and the user.

For more information, see [Import sets](#) .

Additionally, you can change the inference percent of the Visual Studio software models. The inference percent specifies what percentage of the components must be installed for the suite. It can be 0% in most cases. Also, verify that the Visual Studio community edition is free. For more details on adding inference percent and product licensability at the edition level, see [Create software models in workspace](#).

## What to do next

Run a reconciliation to view your Visual Studio license compliance. Reconciliation runs weekly or on demand. Reconciliation compares your purchased Visual Studio rights recorded in software entitlements with actual installations found by Discovery. To view reconciliation results in a simplified workbench view, navigate to **Software Asset > Reconciliation > License Workbench**. For more information, see [Software reconciliation for compliance](#).

## Cost-based licensing optimization for Microsoft

The cost-based licensing optimization for Microsoft helps you determine the most optimal way to license your Microsoft software products across hybrid infrastructures. With this optimization, you can automatically balance license compliance with cost effectiveness to maximize cost savings.

**Note:** This licensing optimization is automatically included in the Software Asset Management Professional (com.snc.samp) plugin, meaning that you do not have to optimize and manage allocations for your Microsoft software rights manually. However, you can choose to manage your allocations manually if the recommended licensing optimizations do not follow your organization's licensing strategy. See [Allocation Management on ServiceNow SAM Pro](#) for more details on manual allocation management.

This licensing optimization is supported by the following Microsoft license types:

- Per core licenses for Microsoft SQL Server and Microsoft BizTalk Server
- Per core (with CAL) licenses for Microsoft Windows Server, Microsoft Core Infrastructure Server, and Microsoft System Center

See [Supported Microsoft license types](#) for more information on per core and per core (with CAL) licenses.

## Licensing optimization benefits

This licensing optimization provides the following benefits:

- Helps you determine the cost savings that you have already achieved through your current software entitlement and infrastructure setup.
- Helps you determine if you can achieve further cost savings by following recommended licensing optimizations.
- Helps you gain insight into each of the recommended licensing optimizations so that you can understand the reasoning behind them and determine if you want to follow or ignore them.

## Understanding your licensing optimizations

You can view and gain insight into your recommended licensing optimizations by using the following tables and views:

- To view in-depth details about each of your recommended licensing optimizations, including the recommended license type and recommend license consumption layer, use the Microsoft Core License Optimization Reports [samp\_ms\_optimization\_report] table. See [View realized and potential cost-based licensing optimizations for Microsoft](#) for more details on this table.
- To view all recommended licensing optimizations for a specific Microsoft cluster, use the SAM Cluster 360° view. See [Understanding your cluster infrastructure](#) for more information on this view.
- To view the potential cost savings that you can achieve through your recommended licensing optimizations, use the On-Premises potential savings by optimizing licenses report in the Optimization and savings dashboard of the Software Asset Workspace. See [Optimization and savings dashboard in workspace](#) for more information on the dashboard. See [Publisher optimizations for Microsoft](#) for more information on the report.
- To view the actual cost savings that you have already achieved through your current software entitlement and infrastructure setup, use the On-Premise optimization realized savings report in the Optimization and savings dashboard of the Software Asset Workspace. See [Optimization and savings dashboard in workspace](#) for more information on the dashboard. See [Publisher optimizations for Microsoft](#) for more information on the report.

### Microsoft cost-based licensing optimization example

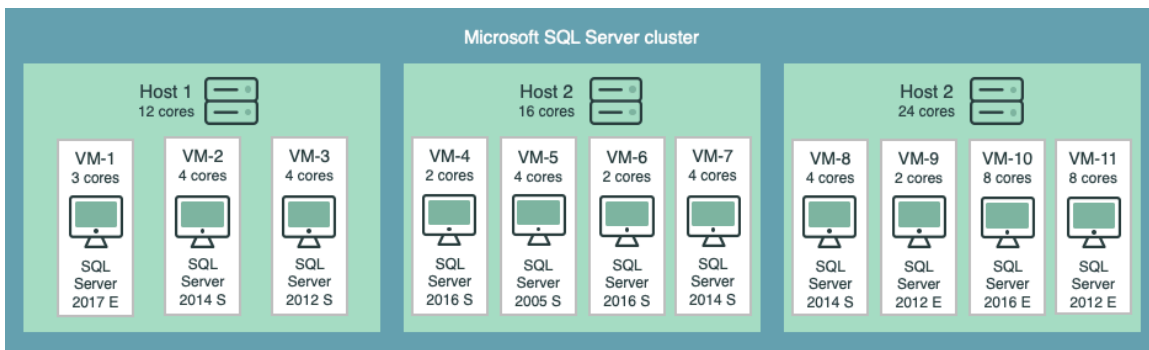
This example demonstrates how a software asset manager can optimize Microsoft SQL Server licensing in a cluster deployment.

In this example, a software asset manager is managing the following Microsoft SQL Server entitlements:

#### Microsoft SQL Server entitlements

Entitlement Name	License Type	Number of Purchased Rights	Cost Per Core
SQL Server Enterprise Licenses	SQL Server 2019 Enterprise Core with Software Assurance	1800	\$5000
SQL Server Standard Licenses	SQL Server 2019 Standard Core with Software Assurance	600	\$1300

The following infrastructure is a VMware cluster that consists of three physical hosts. Each physical host contains virtual machines (VMs) that are running various versions and editions of Microsoft SQL Server. These VMs may potentially be moving across all physical hosts within the cluster.



Based on the available entitlements and the cluster infrastructure, the software asset manager can license the cluster using one of the following options:

#### Licensing options

Option Number	License Type	Licensing Layer	Number of Rights Required on Each Host or VM	Total Number of Required Rights	Total Approximated Cost
1	SQL Server 2019 Enterprise Core with Software Assurance	Physical host layer	<ul style="list-style-type: none"> <li>Host 1: 12 rights</li> <li>Host 2: 16 rights</li> <li>Host 3: 24 rights</li> </ul>	12 rights (Host 1) + 16 rights (Host 2) + 24 rights (Host 3) = 52 rights total	52 rights X \$5000 = \$260,000

Licensing options (continued)

Option Number	License Type	Licensing Layer	Number of Rights Required on Each Host or VM	Total Number of Required Rights	Total Approximated Cost
2	SQL Server 2019 Enterprise Core with Software Assurance	Virtual layer	<ul style="list-style-type: none"> <li>• VM-1: 4 rights</li> <li>• VM-2: 4 rights</li> <li>• VM-3: 4 rights</li> <li>• VM-4: 4 rights</li> <li>• VM-5: 4 rights</li> <li>• VM-6: 4 rights</li> <li>• VM-7: 4 rights</li> <li>• VM-8: 4 rights</li> <li>• VM-9: 4 rights</li> <li>• VM-10: 8 rights</li> <li>• VM-11: 8 rights</li> </ul>	4 rights (VM-1) + 4 rights (VM-2) + 4 rights (VM-3) + 4 rights (VM-4) + 4 rights (VM-5) + 4 rights (VM-6) + 4 rights (VM-7) + 4 rights (VM-8) + 4 rights (VM-9) + 8 rights (VM-10) + 8 rights (VM-11) = 52 rights total	52 rights X \$5000 = \$260,000
3	Both SQL Server 2019 Enterprise Core with Software Assurance and SQL Server 2019 Standard Core with Software Assurance	Virtual layer	<ul style="list-style-type: none"> <li>• SQL Server 2019 Enterprise Core with Software Assurance:                             <ul style="list-style-type: none"> <li>○ VM-1: 4 rights</li> <li>○ VM-9: 4 rights</li> <li>○ VM-10: 8 rights</li> <li>○ VM-11: 8 rights</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• SQL Server 2019 Enterprise Core with Software Assurance:                             <ul style="list-style-type: none"> <li>4 rights (VM-1) + 4 rights (VM-9) + 8 rights (VM-10) + 8 rights (VM-11) = 24 rights total</li> </ul> </li> <li>• SQL Server 2019 Standard Core with Software Assurance:                             <ul style="list-style-type: none"> <li>4 rights (VM-2) + 4 rights (VM-3) + 4 rights (VM-4) + 4 rights (VM-5) + 4</li> </ul> </li> </ul>	(24 rights X \$5000) + (28 rights X \$1300) = \$156,400

Licensing options (continued)

Option Number	License Type	Licensing Layer	Number of Rights Required on Each Host or VM	Total Number of Required Rights	Total Approximated Cost
			<ul style="list-style-type: none"> <li>• SQL Server 2019 Standard Core with Software Assurance:                             <ul style="list-style-type: none"> <li>○ VM-2: 4 rights</li> <li>○ VM-3: 4 rights</li> <li>○ VM-4: 4 rights</li> <li>○ VM-5: 4 rights</li> <li>○ VM-6: 4 rights</li> <li>○ VM-7: 4 rights</li> <li>○ VM-8: 4 rights</li> </ul> </li> </ul>	rights (VM-6) + 4 rights (VM-7) + 4 rights (VM-8) = 28 rights total	

The software asset manager determines that option number 3 is the most cost-effective licensing solution for the cluster. By using this licensing option, the software asset manager can achieve a total cost savings of approximately \$103,600.

**View realized and potential cost-based licensing optimizations for Microsoft**

View the realized and potential cost-based licensing optimizations for your Microsoft software products. Gain an in-depth understanding of each licensing optimization so that you can maximize cost savings across your Microsoft deployments.

**Before you begin**

Role required: sam\_admin

**About this task**

The Software Asset Management publisher pack for Microsoft supports cost-based licensing optimizations for Microsoft. These licensing optimizations enable you to determine the most cost-effective licensing solutions for your Microsoft software products across hybrid infrastructures.

You can view in-depth details about your realized and potential licensing optimizations in the Microsoft Core License Optimization Reports [samp\_ms\_optimization\_report] table. This table can help you

- gain insight into the licensing optimizations that have already been implemented across your Microsoft deployments,
- gain insight into the recommended licensing optimizations that can potentially bring you additional savings,
- better understand your Microsoft license consumption,
- determine the cost savings that you have achieved by using the Software Asset Management application to track and manage your Microsoft licenses,
- and download optimization reports that you can share with other users in your organization.

For more information on cost-based licensing optimizations, see [Cost-based licensing optimization for Microsoft](#).

## Procedure

1. On the page header of your ServiceNow instance, select **All**.
2. In the menu navigation filter, enter `samp_ms_optimization_report_list.do`. The Microsoft Core License Optimization Reports [samp\_ms\_optimization\_report] table opens.
3. View your realized and potential cost-based licensing optimizations for Microsoft.

The Microsoft Core License Optimization Reports [samp\_ms\_optimization\_report] table provides detailed information about each realized and potential licensing optimization, including the recommended license type, the recommend license consumption layer, and the potential and realized cost savings. For a detailed description of each field in this table, see [Microsoft Core License Optimization Reports fields](#).

## Optimizing Microsoft SQL Server database and component license consumption

You can optimize the license consumption for your Microsoft SQL Server databases and components based on the component editions that are identified through ITOM Discovery.

- Note:** To identify the editions of your Microsoft SQL Server components through ITOM Discovery, you must request and install version 1.7.0 or later of the Discovery and Service Mapping Patterns application from the [ServiceNow Store](#).
- Note:** Both Microsoft SQL Server databases and components consume licenses against the associated Microsoft SQL Server edition. For Microsoft SQL Server components, the ServiceNow® Content Service team automatically associates each component with an appropriate Microsoft SQL Server edition based on the edition of the component. By optimizing the license consumption for your databases and components, you are optimizing licensing for Microsoft SQL Server and its component editions.

ITOM Discovery locates and identifies the Microsoft SQL Server databases and components across your deployment. When it locates and identifies your Microsoft SQL Server components, it also identifies the edition of each component. The Software Asset Management application then creates a software installation record for each of your components based on the identified component edition. The Software Asset Management application also create a software installation record for each of your Microsoft SQL Server databases. You can use these software installation records to reconcile your components and databases based on both the associated Microsoft SQL Server edition and the following Microsoft SQL Server licensing rules:

- If your Microsoft SQL Server database and components are deployed on the same device, only one license must be consumed on the device.
- If your Microsoft SQL Server database and components are deployed on different devices, separate licenses must be consumed on each device.

For more information on Microsoft SQL Server component edition discovery, see [MSSQL server discovery](#).

## Reconciling Microsoft SQL Server components based on the discovered component editions

You can reconcile Microsoft SQL Server components based on the discovered component editions so that licenses are optimally consumed against the appropriate Microsoft SQL Server editions.

When you create software models for your various Microsoft SQL Server editions, such as Microsoft SQL Server Standard or Enterprise edition, your Microsoft SQL Server components are automatically associated with an appropriate model based on mappings that are provided by the ServiceNow® Content Service team. Mappings between your Microsoft SQL Server software models and components are based on the edition of each component. The Content Service team provides these mappings through predefined discovery maps (DMAPs) in the software library, which is a centralized repository of software content that you can use to normalize your discovered data. Each DMAP associates a software model with relevant software content, such as software model suite relationships and software product lifecycles. For more information on the Content Service and software library, see [Software Asset Management Content Service](#).

The Software Asset Management application considers software model suites during reconciliation so that you can accurately count your software rights and optimize your licenses, as child components are licensed against the parent software model and not the component itself. Reconciliation runs automatically as a scheduled job. However, you can also run reconciliation on-demand between scheduled jobs. For more information on software model suites, see [Software Asset Management software suites](#). For instructions on how to run reconciliation manually through the Software Asset Management classic application, see [Run software reconciliation](#). For instructions on how to run reconciliation manually through the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Importing Microsoft entitlements from a Microsoft License Statement (MLS)

You can import entitlements from an MLS to automatically define the license details and license agreements that are matched to your Microsoft software models.

An MLS is a report that contains a comprehensive inventory of licensing information for each of your Microsoft products. This report provides an in-depth look into your company's entire license transaction history, which you can use to better forecast your Microsoft licensing needs.

Each MLS contains the following information:

- **Organization Summary:** Scope of the MLS, including the MLS type and the organizations that are associated with the MLS.
- **License Summary:** Summary of the licenses that you are entitled to use.
- **Transaction Summary:** Detailed transaction information for each license.
- **License Agreement:** License agreements that are associated with each license.
- **Transaction Data:** Additional transaction information for each license.
- **Frequently Asked Questions and Glossary:** Answers to frequently asked questions and definitions for common Microsoft terminology.
- **Pivot Data:** Data that you can use to generate a license position for Microsoft.

When you import licensing information from an MLS, Software Asset Management automatically creates entitlements and license agreements using data from only the **Transaction Data** tab of the MLS.

## Import Microsoft entitlements from a Microsoft License Statement (MLS) in Software Asset Management classic

Import entitlements from an MLS using the Software Asset Management classic application.

### Before you begin

Before you can import entitlements from an MLS, you must request the MLS from Microsoft. Microsoft provides the MLS as an Excel file.

Role required: sam\_user or sam\_admin

### Procedure

1. On the page header of your ServiceNow® instance, select **All**.
2. In the menu navigation filter, enter `samp_bulk_import_list.do`. The Entitlement Imports [samp\_bulk\_import] table opens.
3. Select **New**.
4. On the Entitlement Import form, fill in the fields.

#### Entitlement Import form

Field	Description
Import type	Type of document that you are importing software entitlements from. The options are <b>Standard import document</b> and <b>Microsoft license statement (MLS)</b> . Set this field to <b>Microsoft license statement (MLS)</b> .
File	Spreadsheet of software entitlements that you want to import. Select <b>Click to add...</b> to search for and select the MLS Excel file that you requested from Microsoft.
Description	Brief description of the software entitlement import.
Automatic creation of contracts	Option to enable automatic creation of both parent and child contracts for the selected MLS. Refer to <a href="#">Contracts</a> for more information about contracts.
Import status	Status of the import. This field populates automatically.

5. Select **Import**.  
A confirmation message appears, informing you that the import is in progress. You can select the link in the message to open the Entitlement import list in the Software Asset Workspace, which provides the status of your import and the complete list of entitlement imports.
6. After the import is complete, open the corresponding entitlement import record to view additional information about the import.
  - a. From the Entitlement Imports [samp\_bulk\_import] table, select your MLS entitlement import.
  - b. Use the following options to view additional information about the import:
    - To view additional information about the import status, refer to the following fields:

#### Import status fields

Field	Description
Import status	Status of the import.

Field	Description
Number of rows processed	Number of Excel rows that were processed during the import.
Number of rows successful	Number of Excel rows that imported successfully.
Number of rows with errors	Number of Excel rows that imported with errors.
Number of entitlements in build state	Number of imported Microsoft Software Assurance (SA) or Step-up entitlements that are in the build state and can be linked to a base entitlement.

- To view the complete list of imported entitlements, select the **Entitlements** related list.
- If you enabled the **Automatic creation of contracts** option in [step 4](#), view the list of automatically created contracts by selecting the **Contracts** related list.

**Note:** These contracts are automatically linked to successfully imported entitlements.

- To view the list of imported Microsoft SA or Step-up entitlements that are in the build state and can be linked to base entitlements, select the **Entitlements in build state** related list.

See [step 7](#) for more information on how to assign a Microsoft SA or Step-up entitlement to a base entitlement.

7. If your entitlement import contains any Microsoft SA or Step-up entitlements, assign those entitlements to base entitlements.

- On the Entitlement Import record, select the **Entitlements in build state** related list.
- From the list of available Microsoft SA or Step-up entitlements, select the entitlement that you want to assign to a base entitlement.
- On the corresponding Software Entitlement form, select **Publish**.
- After the form reloads, select the **Related Entitlements** tab.
- In the **Related Entitlement** field, double-click **Insert a new row**.
- When prompted, search for and select the base entitlement that you want to assign the Microsoft SA or Step-up entitlement to, and then select the Save icon (✓).

**Note:** If an appropriate base entitlement is not available for the specified Microsoft SA or Step-up entitlement, you can create one.

- Double-click the corresponding **Active rights** field.
- When prompted, enter the number of rights that you want to grant to the base entitlement and then select the Save icon (✓).
- Select **Save** on the Software Entitlement form header.

The Microsoft SA or Step-up entitlement is assigned to the specified base entitlement.

- j. Return to the Entitlement Import record and repeat steps a to i for each import that you want to resolve.
8. If your entitlement import contains any errors, identify and resolve those errors.
- a. On the Entitlement Import record, select **Review import errors**.  
The Entitlement Import Errors list opens.
  - b. In the **Error status** field, select **Needs review** for the error that you want to resolve.
  - c. Update the corresponding Entitlement Import Error form as needed to resolve the error. For descriptions of the Entitlement Import Error form fields, see [Entitlement import error fields](#). For details about the actions that you can take on entitlement import errors, see [Entitlement import error actions](#).
  - d. Select **Import**.  
The associated entitlements are re-imported without any errors, and you automatically return to the Entitlement Import form.
  - e. Repeat steps a-d for each error that you want to resolve.

### Import Microsoft entitlements from a Microsoft License Statement (MLS) in the Software Asset Workspace

Import entitlements from an MLS using the Software Asset Workspace.

#### Before you begin

Before you can import entitlements from an MLS, you must request the MLS from Microsoft. Microsoft provides the MLS as an Excel file.


Role required: sam\_user or sam\_admin

#### Procedure

1. From your ServiceNow instance, navigate to **Software asset > Software Asset Workspace**.  
The Software Asset Workspace launches in a new tab, displaying the Software asset overview.
2. On the Software asset overview, select **Create entitlement**.  
The Create new entitlement dialog box opens.
3. In the dialog box, select **Import multiple entitlements from an Excel file** and then select **Next**.  
The dialog box closes and then the Create New Entitlement Import form opens in a new tab.
4. On the form, fill in the fields.

#### Create New Entitlement Import form

Field	Description
Import type	Type of document that you are importing entitlements from. Set this field to <b>Microsoft license statement (MLS)</b> .
File	File that you want to import entitlements from. Search for and select the MLS Excel file that you requested from Microsoft.

Field	Description
Description	Description of the entitlement import. This field populates automatically based on the file that you selected in the <b>File</b> field.
Automatic creation of contracts	Option to enable automatic creation of both parent and child contracts for the selected MLS. Refer to <a href="#">Contracts</a>  for more information about contracts.
Import status	Status of the import. This field populates automatically.

**5. Select Import.**

A confirmation message appears, informing you that the import is in progress. You can select the link in the message to open the Entitlement import list, which provides the status of your import and the complete list of entitlement imports.

**6. After the import is complete, open the corresponding entitlement import record to view additional information about the import.**

- a. From the Entitlement import view, select your MLS entitlement import.  
The corresponding entitlement import record opens.
- b. Use the following options to view additional information about the import:
  - To view additional information about the import status, refer to the following fields on the **Details** tab:

**Import status fields**

Field	Description
Import status	Status of the import.
Number of rows processed	Number of Excel rows that were processed during the import.
Number of rows successful	Number of Excel rows that imported successfully.
Number of rows with errors	Number of Excel rows that imported with errors.
Number of entitlements in build state	Number of imported Microsoft Software Assurance (SA) or Step-up entitlements that are in the build state and can be linked to a base entitlement.  See <a href="#">step 7</a> for more information on how to assign a Microsoft SA or Step-up entitlement to a base entitlement.

- To view the complete list of imported entitlements, select the **Entitlements** tab.
- If you enabled the **Automatic creation of contracts** option in [step 4](#), view the complete list of automatically created contracts on the **Contracts** tab.

**Note:** These contracts are automatically linked to successfully imported entitlements.

**7. If your entitlement import contains any errors, identify and resolve those errors.**

- a. On the entitlement import record, select **Review import errors**.  
The corresponding Review entitlement import errors view opens.
- b. Use one or both of the following options to resolve your import errors:
  - Resolve errors related to your imported entitlements.
    - i. Select the **Import errors** tab.
    - ii. In the **Error status** field, select **Needs review** for the error that you want to resolve.  
  
The corresponding entitlement import error record opens in a new tab.
    - iii. Update the record as needed to resolve the error.  
  
For descriptions of the entitlement import error fields, see [Entitlement import error fields](#). For details about the actions that you can take on entitlement import errors, see [Entitlement import error actions](#).
    - iv. Select **Import**.  
  
The associated entitlements are re-imported without any errors.
    - v. Close the record to return to the Review entitlement import errors view.
    - vi. Repeat steps i-v for each error that you want to resolve.
  - Resolve errors in which imported Microsoft SA or Step-up entitlements are not assigned to any base entitlements.
    - i. Select the **Relate entitlements** tab.
    - ii. From the list of available Microsoft SA or Step-up entitlements, select the entitlement that you want to assign to a base entitlement.  
  
The corresponding software entitlement record opens in a new tab.
    - iii. Select **Publish**.
    - iv. After the form reloads, select the Related Entitlements related list and then select **New**.  
  
The Create New Related Entitlement form opens in a new tab.
    - v. On the form, fill in the fields.

**Create New Related Entitlement form**

Field	Description
Active rights	Number of rights that you want to grant to the base entitlement.
Software Entitlement	Microsoft SA or Step-up entitlement that you are assigning to the base entitlement. This field populates automatically.
Related Entitlement	Base entitlement that you want to assign your Microsoft SA or Step-up entitlement to.  <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Note:</b> If an appropriate base entitlement is not available for the specified Microsoft SA or Step-up entitlement, you can create one.</p> </div>

Field	Description
Domain	Domain that the base entitlement applies to. The default value is <b>global</b> .

- vi. Select **Save**.
- vii. Close the software entitlement record to return to the Review entitlement import errors view.
- viii. Repeat steps i-vii for each Microsoft SA or Step-up entitlement that you want to assign to a base entitlement.

### Windows and SQL Server Infrastructure report

You can use the Windows and SQL Server Infrastructure report to gain visibility into the infrastructure details for all physical hosts and virtual machines (VMs) that are running Microsoft Windows Server or Microsoft SQL Server across your on-premise and public cloud environments, such as AWS and Microsoft Azure.

The Windows and SQL Server Infrastructure report is available in both the Software Asset Workspace and the Software Asset Management classic application.

To view this report in the Software Asset Workspace, navigate to **Workspaces > Software Asset Workspace**. From the Software Asset Workspace, navigate to **License usage > Reports > Windows and SQL Server Infrastructure**.

To view this report in the Software Asset Management classic application, navigate to **All > Reports > View/Run**. From the list of available reports, search for and select **Windows and SQL Server infrastructure details report**. When the corresponding Edit report page opens, select **Run**.

### Windows and SQL Server infrastructure report

Field	Description
Deployment type	Type of deployment that the physical host or VM is running in. The options are <b>On premise</b> and <b>Cloud</b> .
Cloud provider	Cloud provider that Microsoft Windows Server or Microsoft SQL Server is deployed on. The options are <b>AWS</b> and <b>Microsoft Azure</b> .  <b>i Note:</b> This field is applicable for cloud deployments only.
vCenter	VMware vCenter Server that you are using to manage the physical host or VM in a virtual VMware vSphere environment.  <b>i Note:</b> This field is applicable only if you are using VMware virtualization technology.
Cluster	Cluster that the physical host or VM resides in.
Host	For physical hosts, this field identifies the host that Microsoft Windows Server or Microsoft SQL Server is installed on.  For VMs, this field identifies the physical host that the VM is running on.
Host processor count	Number of CPUs that are assigned to the physical host.

**Windows and SQL Server infrastructure report (continued)**

Field	Description
Host core count	Number of cores within each CPU that is assigned to the physical host.
Virtualization technology	Virtualization technology that you are using to deploy and manage your physical hosts and VMs.
Virtual server	<p>VM on which you are running Microsoft Windows Server or Microsoft SQL Server.</p> <p><b>i Note:</b> If a VM resides in an on-premise cluster, it can migrate to any physical host within that cluster. Additionally, if you are using VM-Host affinity rules to specify the physical hosts on which a VM can run, the VM can migrate to any physical host that is specified in those rules. In these scenarios, the same VM can appear on the Windows and SQL Server Infrastructure report multiple times based on the physical hosts to which it can migrate.</p> <p><b>i Note:</b> This field is applicable for VMs only.</p>
Windows Server installation	<p>Microsoft Windows Server version that is installed on the physical host or VM.</p> <p>If multiple Microsoft Windows Server versions are installed on the same host or VM, this field displays all installed versions using a comma-separated list.</p>
SQL Server installation	<p>Microsoft SQL Server version that is installed on the physical host or VM.</p> <p>If multiple Microsoft SQL Server versions are installed on the same host or VM, this field displays all installed versions using a comma-separated list.</p>
VM processor count	<p>Number of virtual CPUs (vCPUs) that are assigned to the VM.</p> <p><b>i Note:</b> This field is applicable for VMs only.</p>
VM core count	<p>Number of virtual cores within each vCPU that is assigned to the VM.</p> <p><b>i Note:</b> This field is applicable for VMs only.</p>
VM CPU thread count	<p>Number of threads that divide each virtual core within the vCPUs that are assigned to the VM.</p> <p><b>i Note:</b> This field is applicable for VMs only.</p>
Cloud host type	<p>Type of cloud host that the VM is running on. The options are <b>Shared</b> and <b>Dedicated</b>.</p> <p><b>i Note:</b> This field is applicable for cloud deployments only.</p>
Cloud license type - Windows Server	<p>Cloud license type of the Microsoft Windows Server installation. The options are <b>BYOL</b> and <b>License Included</b>.</p> <p><b>i Note:</b> This field is applicable for cloud deployments only.</p>

**Windows and SQL Server infrastructure report (continued)**

Field	Description
Cloud license type - SQL Server	<p>Cloud license type of the Microsoft SQL Server installation. The options are <b>BYOL</b> and <b>License Included</b>.</p> <p><b>Note:</b> This field is applicable for cloud deployments only.</p>

**Microsoft dashboards in Software Asset Management classic**

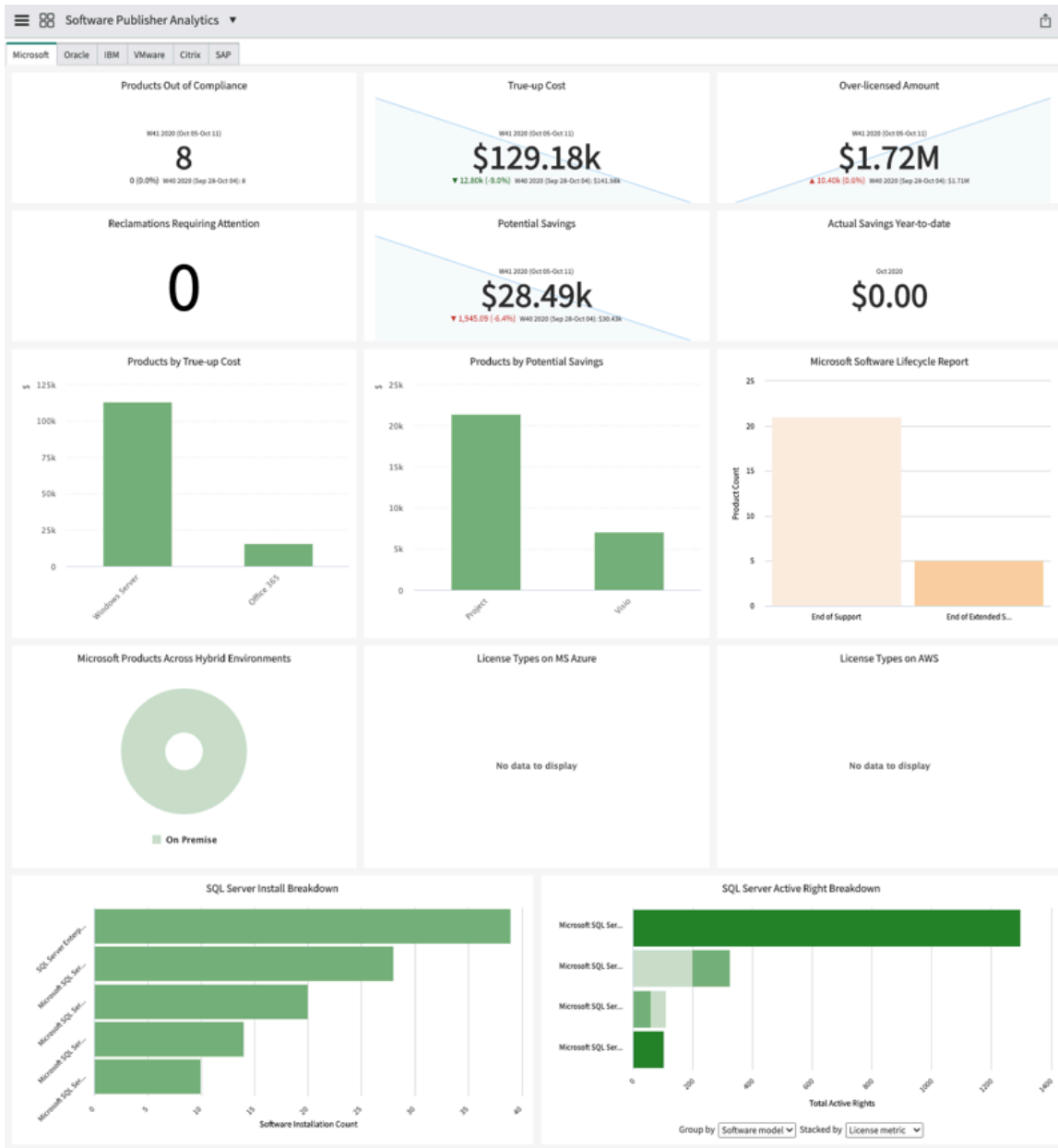
View installations, cost, and compliance for Microsoft software such as SQL Server in the Software Asset Management classic application. View subscription use, cost, and compliance for Microsoft 365.

**Note:** The add-on Microsoft publisher pack (com.snc.samp.microsoft) plugin must be installed to view the dashboards.

Dashboards are updated whenever a new reconciliation result is available. You can save charts in PNG or JPG format.

**Software Publisher Analytics dashboard for Microsoft**

Access the Software Publisher Analytics dashboard for Microsoft by navigating to **Software Asset > Publisher Overview**.



**Microsoft tab**

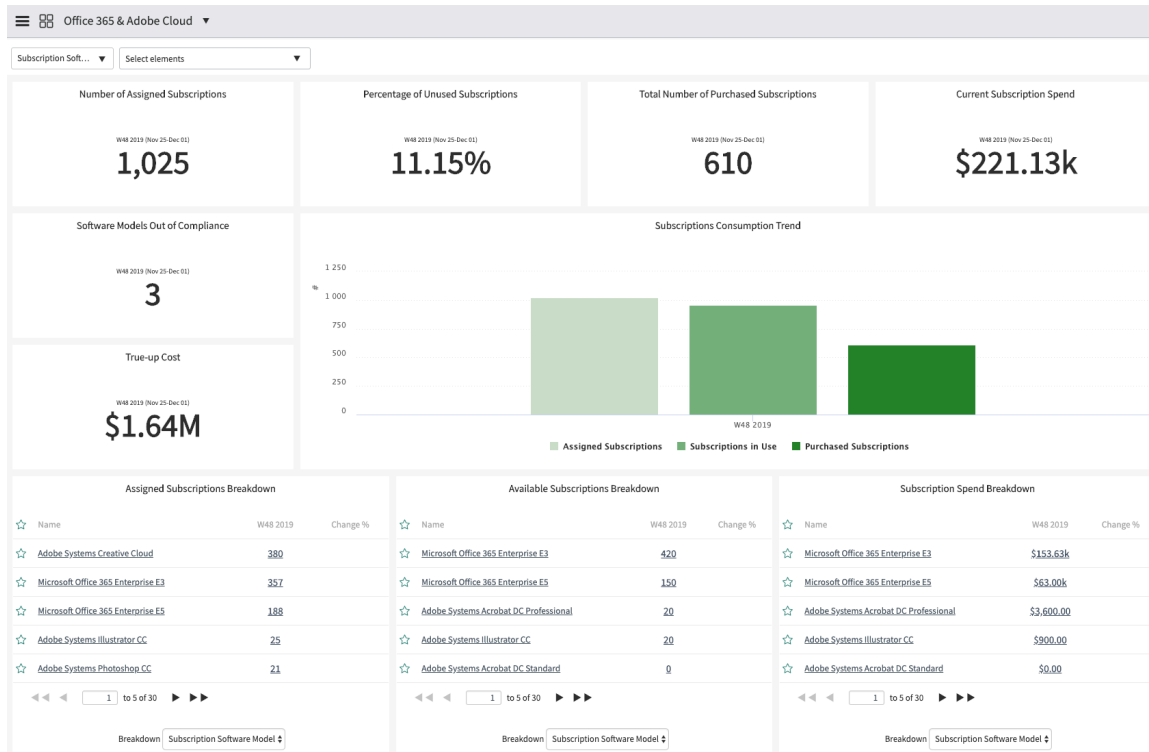
Report	Source list	Description
Products out of Compliance	Product Results	Number of products that have at least one software model out of compliance.  Select the report to view the results in the <a href="#">License Workbench</a> .
True-up Cost	Product Results	Cost to be compliant based on the average prices for entitlements for the rights.
Over-Licensed Amount	Product Results	Cost of licenses owned but not being used.

**Microsoft tab (continued)**

Report	Source list	Description
Reclamations Requiring Attention	Reclamation Candidates	State is Attention Required.
Potential Savings	Reclamation Candidates	Cost saved if removal candidates are reclaimed.
Actual Savings Year-to-date	Reclamation Candidates	Closed this Year and the State is set to Closed Complete.
Products by True-up Cost	Product Results	Greatest true-up costs by product.
Products by Potential Savings	Reclamation Candidates	Greatest potential savings by product.
Microsoft Software Lifecycle Report	Software Lifecycle Report	Number of products in each software lifecycle phase, including End of Extended Support, End of Life, and End of Support.
Microsoft Products Across Hybrid Environments	Software Installations	Distribution of Microsoft products across on-premise and cloud environments.
License Types on Microsoft Azure	Software Installations	License types used on Microsoft Azure.
License Types on AWS	Software Installations	License types used on AWS.
SQL Server Install Breakdown	Software Installations	Total software installations per SQL Server.
SQL Server Active Right Breakdown	Software Entitlements	Number of total active rights per SQL Server.

**Office 365 & Adobe Cloud dashboard**

Only Microsoft 365 software products that are recognized as subscription software are shown. [Microsoft Office 365 integration](#) must be set up to view compliance information.



Report	Source list	Description
Number of Assigned Subscriptions	Software Subscriptions	Aggregate sum of the number of subscriptions that are used (for example, user accounts active).
Percentage of Unused Subscriptions	Software Subscriptions	Ratio of rights available to rights owned.
Total Number of Purchased Subscriptions	License Metric Results	Total number of rights owned.
Current Subscription Spend	License Metric Results	Aggregate sum of the total cost for subscription rights.
Software Models Out of Compliance	Software Model Results	Number of software models out of compliance.  Select the report view the results in the <a href="#">License Workbench</a> .
True-up cost	Software Model Results	Sum of true-up costs on the latest software model results.
Subscriptions Consumption Trend	Software Subscriptions License Metric Results	Trend assigned, active, and available subscriptions.
Assigned Subscription Breakdown	Software Subscriptions	Breakdown of assigned subscriptions by software model.

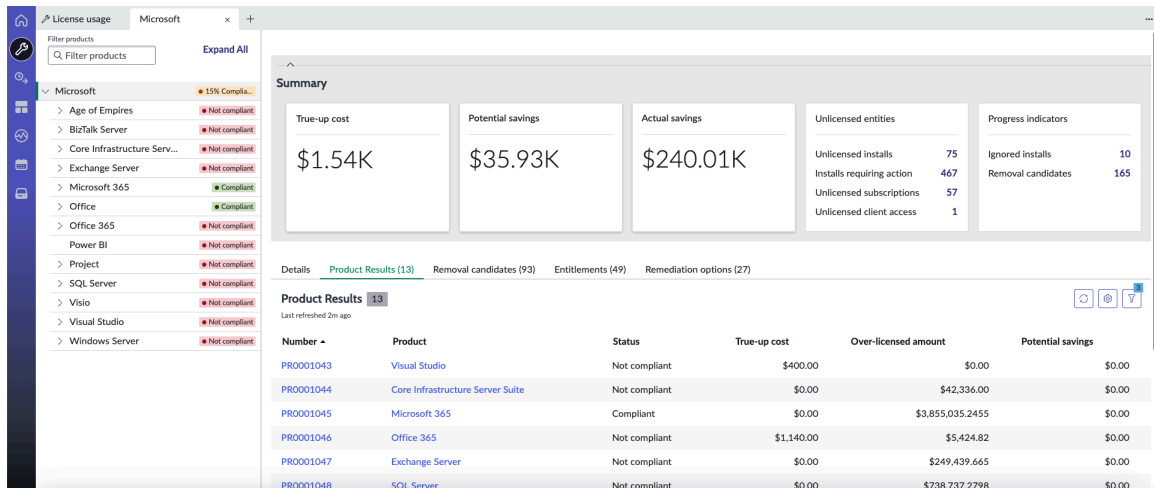
Report	Source list	Description
Available Subscription Breakdown	License Metric Results	Breakdown of total active rights by software model.
Subscription Spend Breakdown	License Metric Results	Breakdown of subscription total cost by product/version/edition (software model).

### Publisher overview for Microsoft in the Software Asset Workspace

View license usage information related to Microsoft in the publisher overview for Microsoft in the Software Asset Workspace.

From the Software Asset Workspace, access the Microsoft publisher overview by navigating to **License usage > Publishers** and then selecting **Microsoft** from the list of available software publishers.

Results are updated whenever a new reconciliation result is available.



You can view a summary of your license usage information in the Summary section of the Microsoft publisher overview.

### Microsoft Summary

Report	Description
True-up cost	Cost to be compliant based on the average price of rights in your Microsoft software entitlements.
Potential savings	Potential cost savings for your Microsoft licenses.
Actual savings	Actual cost savings for your Microsoft licenses.
Unlicensed entities	Summary of your unlicensed entities. This summary includes the following information:

### Microsoft Summary (continued)

Report	Description
	<ul style="list-style-type: none"> <li>• <b>Unlicensed installs:</b> Total number of unlicensed Microsoft software installations. Select the number to view the complete list of unlicensed Microsoft software installations.</li> <li>• <b>Installs requiring action:</b> Total number of Microsoft software installations that you must take action on. Select the number to view the complete list of these Microsoft software installations.</li> <li>• <b>Unlicensed subscriptions:</b> Total number of unlicensed Microsoft subscriptions. Select the number to view the complete list of unlicensed Microsoft subscriptions.</li> <li>• <b>Unlicensed client access:</b> Total number of unlicensed Microsoft client access records. Select the number to view the complete list of unlicensed Microsoft client access records.</li> </ul>
Progress indicators	<p>Summary of your license compliance progress.</p> <p>This summary includes the following indicators:</p> <ul style="list-style-type: none"> <li>• <b>Ignored installs:</b> Total number of Microsoft software installations that were ignored during reclamation. Select the number to view the complete list of ignored Microsoft software installations.</li> <li>• <b>Removal candidates:</b> Total number of Microsoft removal candidates. Select the number to view the list of all software removal candidates.</li> </ul>

For more details on the license usage information that is provided in the publisher overview, see [License usage publisher fields in workspace](#).

### Supported Microsoft license types

The Software Asset Management publisher pack for Microsoft adds license metrics that are specific to Microsoft.

The license metrics are available when Microsoft is selected as the **Metric group** for the entitlement.

### Per user licenses

A per user license is used when each user accessing the software is licensed, regardless of the number of devices they use to access the software.

To define the number of installations a user has, select the **Maximum installs per right** on the Metric Attribute related list of the associated software model. If the user exceeds the number of installations you've defined, additional rights are consumed until the user is fully licensed, or there are no more rights available.

You can manage user allocations for the per user license metric. Users are assigned a quantity of rights. Even if they don't need all of the allocations, the user will consume the number of rights you've allocated to them. If a user isn't assigned to a device, a right will be consumed for each unique device with a software installation.

During reconciliation, for a software model that has one or more software entitlements that use this license metric, a right is consumed for each unique user that has at least one installation of the software on any device assigned to them.

When a software model has downgrade or upgrade rights to another versions of a software product, rights are assigned to users with the specified versions of software installed after the primary version of the software has been fully licensed.

## Per device licenses

A per device license is used when each device accessing the software is licensed, regardless of the number of users accessing the software.

To define the number of installations a device can have, select the **Maximum installs per right** on the Metric Attribute related list of the associated software model. If the device exceeds the number of installations you've defined, additional rights are consumed until the device is fully licensed, or there are no more rights available.

You can manage device allocations for the per device license metric. Devices are assigned a quantity of rights. Even if they don't need all of the allocations, the device will consume the number of rights you've allocated to them.

During reconciliation, for a software model that has one or more software entitlements that use this license metric, a right is consumed for each unique device that has at least one installation of the software.

When a software model has downgrade or upgrade rights to another versions of a software product, rights are assigned to users with the specified versions of software installed after the primary version of the software has been fully licensed.

## Per core licenses

A server processor is one of the main components of a server. Each server processor contains smaller processing units called cores and the number of cores your processor has is dependent on your system hardware.

System hardware runs in an operating system environment (OSE) and they act as middleware between the operating system and the software applications on your system. OSEs can be either physical or virtual. Depending on the OSE you have, your processor will be physical, virtual, or a combination of both.

Regardless of whether your processor is in a physical or virtual OSE, Microsoft requires that every processor core running SQL Server, Windows Server, or any of their components must be licensed. However, the number of core licenses you need will depend on whether you are licensing a physical server or an individual virtual OSE. The number of licenses you need is based on the core factor table provided by Microsoft.

**Note:** If you are licensing a Microsoft cluster that contains both physical servers and virtual OSEs, you can use cost-based licensing optimizations to determine if it is more cost-effective to license the physical servers only, virtual OSEs only, or a combination of both. See [Cost-based licensing optimization for Microsoft](#) for more information on these optimizations.

Use the per core license metric for any of your physical or virtual core-based licenses. If you are licensing a virtual OSE, you must use either an active Microsoft Software Assurance (SA) or Microsoft software subscription license.

During reconciliation, for a software model that has one or more software entitlements that use this license metric, a check is done to see which edition of the software is installed. If the software is an Enterprise edition, a set number of rights are consumed based on the normalized core count on a physical server that has at least one installation of the Enterprise edition software in the physical operating system environment (OSE) or on a virtual machine (VM)

hosted by the physical server. Another check is run to ensure that the number of OSEs that have an Enterprise edition install don't exceed the number of core rights applied to the physical server. If the number of OSEs exceeds the number of core rights, a core right will be consumed for each additional OSE. If the edition is anything but Enterprise, a right is still consumed for every core on a physical server that has at least one install in the physical OSE. The difference is the additional check. In this case, the check ensures that these other editions of software are only installed on the physical server.

If other editions of software are found in a virtual environment and no other rights are owned, then the reconciliation result will be not compliant.

You can manage device allocations. Devices are assigned a quantity of rights. Even if they don't need all of the allocations, the device will consume the number of rights you've allocated to them. For this license metric, all device allocations should be created against the physical server. No matter what edition of the software it is, if the normalized core count is less than the specified value in the **Minimum cores per processor metric** attribute related to the software model, then the minimum number of rights will be consumed.

## Per core (with CAL) licenses

You can manage device allocations for this license metric. Devices are assigned a quantity of rights. Even if they don't need all of the allocations, the device will consume the number of rights you've allocated to them. For example, if a device allocation with a quantity of six is created for a server, but only four core rights are needed to fully license the server, six rights would still be consumed during reconciliation. The additional two rights would be considered allocated not in use in the reconciliation results.

For the Per core (with CAL) license metric, device allocations can be created against a physical server or virtual machine (VM). Device allocations that are created against a VM must be licensed using either an active Microsoft Software Assurance (SA) or Microsoft software subscription license. If the core count is less than the specified value in either the **Minimum cores per processor** or **Minimum cores per server** metric attributes of the software model, the minimum number of rights will be consumed.

**Note:** If you are licensing device allocations on a Microsoft cluster that contains both physical servers and VMs, you can use cost-based licensing optimizations to determine if it is more cost-effective to license the physical servers only, VMs only, or a combination of both. See [Cost-based licensing optimization for Microsoft](#) for more information on these optimizations.

This license metric should be used with device or user CAL license metrics. You need to create software entitlements using those license metrics separately.

During reconciliation, for a software model that has one or more software entitlements that use this license metric, a right is consumed for every core on a physical server that has at least one installation of the software in the physical OSE or on a virtual machine hosted by the physical server. A check runs to verify that the number of installations within an OSE and the number of active OSEs don't exceed the specified maximums you defined in the **Metric Attributes** related list on the Software Model form.

If the specified number of installs and OSEs are exceeded, core rights that are equal to the number of cores or minimum cores on either the physical server or VM will be consumed until all installs and OSEs are licensed or there are no more available rights.

## User CAL licenses

A user CAL license is a client access license (CAL) that allows users to access a server to use its services, regardless of the number of devices the user uses to access the services.

During reconciliation, for a software model that has one or more software entitlements that use this license metric, the number of rights consumed is equal to total user count in all client access records related to that software model.

## Device CAL licenses

A device CAL license is a client access license (CAL) that allows a set number of devices to access a server to use its services, regardless of the number of users accessing the services from the device.

During reconciliation, for a software model that has one or more software entitlements that use this license metric, the number of rights consumed is equal to total device count in all client access records related to that software model.

## Server (per instance) licenses

A server (per instance) license is used to license a set number of software installations on either a physical server or virtual machine.

During reconciliation, for a software model that has one or more software entitlements that use this license metric, a right is consumed for the number of installations that exist in an OSE. If the number of installations in an OSE exceeds the value specified in the maximum installs per OSE metric attribute, additional rights will be consumed until all installations on a physical server or virtual machine are licensed or there are no more rights variable.

You can manage device allocations. Devices are assigned a quantity of rights. Even if the software installations, the device will consume the number of rights you've allocated to them during reconciliation. For example, if a device allocation with a quantity of two is created for a server, but only one server (per instance) right is needed to fully license the server, two rights would still be consumed during reconciliation. The extra right would be marked as allocated no in use in the license metric results. Device allocations can be created against physical servers or virtual machines.

## Server (per server) licenses

A server (per server) license is used to license all software installations on a physical server and any virtual machines hosted by the physical server.

During reconciliation, for a software model that has one or more software entitlements that use this license metric, a right is consumed for every unique physical server. This license metric differs from the per device license metric, which consumes a right for every unique physical server and virtual machine that has a software installation.

You can manage device allocations. Devices are assigned a quantity of rights. Even if the software installations, the device will consume the number of rights you've allocated to them during reconciliation. For example, if a device allocation with a quantity of two is created for a server, but only one right is needed to fully license the server, two rights would still be consumed during reconciliation. The extra right would be marked as allocated not in use in the license metric results. Device allocations should be created against the physical server.

## Per Processor licenses

A per processor licenses is used to license a number of processors on a physical server.

During reconciliation, for a software model that has one or more software entitlements that use this license metric, a right is consumed for processors on a physical server that have at least one installation of the software in the physical OSE or on a virtual machine hosted by the physical

server. The quantity of processors licensed by a single right is determined by the **Maximum processor per rights** on the Metric Attribute related list of the software model.

An additional check is done to ensure that the number of installations in an OSE and the number of OSEs on a server don't exceed the specified maximums in the **Maximum installs per OSE** and **Maximum active OSEs per server** Metric Attribute related list of the software model. If any of the metric attributes are exceeded, additional rights are consumed until all processors, installs, and OSEs are licensed, or there are no more available rights. Per processor rights cannot partially license a physical server or license software installations on two different physical servers.

You can manage device allocations. Devices are assigned a quantity of rights. Even if the software installations, the device will consume the number of rights you've allocated to them during reconciliation. All device allocations should be created against the physical server.

## User Subscription licenses

User subscription licenses a user for the number of activated software subscriptions.

During reconciliation, for a software model that has one or more software entitlements that use this license metric, a right is consumed for each unique user that has at least one software subscription record associated with the software model. Any software installations that correspond with the software model will also be licensed. However, if a user has software installations, but no subscription record, that user will not consume a right and the installations will be unlicensed.

## Software Assurance licenses

Microsoft Software Assurance (SA) is the maintenance program used by Microsoft to provide active maintenance to its users. For more information, see [Software license maintenance](#).

## Software Asset Management publisher pack for Oracle

Use the Software Asset Management publisher pack for Oracle to track and optimize licensing for your Oracle products.

The Oracle publisher pack supports the following Oracle products:

- Oracle Database
- Oracle Database options
- Oracle management packs
- Oracle Weblogic Server
- Oracle Java

To use the publisher pack, activate the Software Asset Management Professional for Oracle plugin (com.snc.samp.oracle).

## Oracle licensing

The Oracle publisher pack adds Oracle specific licensing options for software entitlements.

### Software entitlement fields

Field	Options
Agreement Type	<ul style="list-style-type: none"> <li>• Generic</li> <li>• Unlimited License Agreement (ULA)</li> </ul>
License metric	<ul style="list-style-type: none"> <li>• Named User Plus</li> <li>• Per Processor</li> <li>• Employee</li> </ul>
Metric group	Oracle

**i Important:** The Software Asset Management application supports Bring Your Own License (BYOL) for Oracle Database and WebLogic servers across hybrid infrastructures. With BYOL support, you can track licenses for your Oracle Database and WebLogic servers in both on-premise and public cloud environments. For more information about Oracle BYOL support, see [Bring your own license or subscription to the public cloud](#).

Additionally, you can use the Oracle Global License Advisory Services (GLAS) to manage licensing of your deployed Oracle software products. For more information about Oracle GLAS, see [Oracle Global License Advisory Services \(GLAS\) data collection using patterns](#).

### Oracle license metrics

The Software Asset Management application supports the following license metrics for Oracle:

#### Named User Plus

The Named User Plus license metric licenses all users and physical devices that access the following Oracle products:

- Oracle Database
- Oracle Database options
- Oracle management packs
- Oracle Weblogic Server

If a user operates a device that accesses any of these Oracle products, the Named User Plus license metric licenses both the user and the device. Use this license metric in environments where users and devices are easily identifiable and countable.

**i Important:** To use this license metric, you must create a corresponding client access record. Client access records enable you to track and manage the users or devices that are accessing a particular version of your software. The Software Asset Management application can then use the information in these client access records to reconcile your software. For more information on client access records, see [Create a software client access record in workspace](#) or [Add a software client access record in Software Asset Management classic](#).

The Named User Plus license metric implements different licensing minimums based on the Oracle Database or Oracle WebLogic Server edition that your users and devices are accessing.

- If your users and devices are accessing Oracle Database Standard Edition (SE) or Standard Edition One (SE1), you must have a minimum of five Named User Plus licenses.
- If your users and devices are accessing Oracle Database Standard Edition 2 (SE2), you must have a minimum of 10 Named User Plus licenses per database server. In addition, each SE2 database can use a maximum of 16 CPU threads at any given time.
- If your users and devices are accessing Oracle Database Enterprise Edition (EE), you must have a minimum of either 25 Named User Plus licenses per processor or the total number of users and devices that are accessing this database edition. The license metric sets this licensing minimum to the larger of the two values.
- If your users and devices are accessing Oracle WebLogic Server Standard Edition, you must have a minimum of 10 Named User Plus licenses per processor.
- If your users and devices are accessing Oracle WebLogic Server Enterprise Edition, you must have a minimum of 10 Named User Plus licenses per processor core.

Licensing minimums are automatically applied to the software models for your Oracle products using the following metric attributes:

- **Minimum users per processor** (Oracle Database products)
- **Minimum NUPs for WebLogic on-premise deployments** (Oracle WebLogic Server products in on-premise environments)
- **Minimum NUPs for WebLogic cloud deployments** (Oracle WebLogic Server products in cloud environments)

The Software Asset Management application can then use the metric attribute values to determine the number of rights that are required for each Oracle product. To determine this number, the Software Asset Management application multiplies the appropriate metric attribute value by the number of processors (Oracle WebLogic Server Standard Edition and all Oracle Database Standard editions) or processor cores (Oracle WebLogic Server Enterprise Edition and Oracle Database Enterprise Edition) on the underlying physical server that the Oracle product is installed or running on. The resulting value is compared against the total number of users and devices that are accessing the Oracle product. The number of required rights is set to the larger of the two values.

For example, 20 users are accessing an Enterprise Edition (EE) database that is running on a physical server with eight processor cores. The Named User Plus license metric consumes 200 rights because the number of rights that is based on the metric attribute value (25 minimum licenses x 8 CPU cores = 200 rights) is greater than the number of users that are accessing the database (20 users).


### Per Processor

The Per Processor license metric licenses the server processors on which you install or run the following Oracle products:

- Oracle Database
- Oracle Database options
- Oracle management packs

- Oracle Weblogic Server
- Oracle Java

Although you can install and run Oracle products on physical servers, virtual servers, partitioned servers, and the cloud, the Per Processor license metric licenses processors on only the underlying physical server or cloud server.

The Per Processor license metric calculates the number of rights that are required for your Oracle products by multiplying the total number of processor cores by a core processor licensing factor, as specified on the [Oracle Processor Core Factor Table](#) . Use this license metric in environments where large numbers of users and devices are accessing the same environment or where users are not easily identifiable and countable, such as the Internet.

For example, a physical server that is running an Enterprise Edition (EE) database has two processors with four cores each. If your core processor licensing factor is 0.5, the Per Processor license metric consumes four rights for the physical server.

2 CPUs x 4 CPU cores x 0.5 licensing factor = 4 rights.

When you allocate rights for a database using the Named User Plus or Per Processor license metric, Software Asset Management automatically allocates rights for the associated database options and management packs using the same license metric.

If you create a [Client Access License \(CAL\)](#) record to specify the number of users or devices that can access an Oracle Database or WebLogic server, the Software Asset Management application licenses users and devices using only the Named User Plus license metric. Software Asset Management does not use the Per Processor license metric even if Per Processor licenses are available.

## Employee

The Employee license metric licenses the total number of full-time, part-time, and temporary employees, including those employed directly and indirectly through agents, contractors, and consultants, according to Oracle's definition of internal business operations.

The Employee license metric calculates the number of licenses that are required by the total number of employees and not the number of employees that use the Oracle Java SE Universal. The licensing cost is calculated using a tier-based pricing model defined by Oracle. The pricing model is stored in the Price tier [samp\_price\_tier] table. For more details, see [Pricing model for Oracle Java SE Universal](#).

Additionally, for the Employee license metric, the true-up cost is shown for a subscription period of one year.

When you run reconciliation for a software model that has one or more entitlements with the Employee license metric, a right is consumed for each employee recorded in the resource value records. You can create a resource value record for the Java SE software model keeping the value of units consumed same as the number of employees consuming the licenses. For details, see [Create a resource value record](#).

When you're using a custom tier table, you can update the override license cost records associated with the Java SE software model. For details, see [Create or update an override license cost record](#).

## Oracle verified third-party vendor tool

To collect installation and usage data for the Oracle products that are deployed in your environment, you must use a discovery process. With the verification and enrollment of ServiceNow in the Oracle Third-Party Tool Vendor (3PTV) Program, the ServiceNow Discovery application and Software Asset Management application are both verified by Oracle to collect and report on this data without requiring any Oracle measurement tools. You can collect and report on data for Oracle Database, Oracle WebLogic Server, Oracle Fusion Middleware, and the underlying hardware that supports these products.

During contract renewals and audits, Oracle requires you to provide specific usage data for your Oracle products. You can collect this data by running scripts that are provided by Oracle. These scripts collect data about the Oracle products that are deployed in your environment, as well as the physical and virtual hardware that supports those products. However, the process of collecting and reviewing this data can be very time consuming.

The ServiceNow Discovery application uses Oracle-verified Discovery patterns and reporting to collect the same data that is provided in the script output. You can collect this data regularly to track your compliance and minimize unexpected audit results.

For more information on Oracle discovery, see [Oracle Global License Advisory Services \(GLAS\) data collection](#).

**Note:** To access all the benefits of ServiceNow Discovery, request and install the CMDB CI Class Models application from the ServiceNow Store. See [CMDB CI Class Models store app](#) for more information on this application.

## Oracle Database and WebLogic Server licensing in partitioned environments

The Software Asset Management application supports Oracle licensing rules for Oracle Database and WebLogic Server in both soft- and hard-partitioned environments. You can use partitioning to help reduce the number of licenses that are required for your installations.

## Oracle Database and WebLogic Server licensing in soft-partitioned environments

The Software Asset Management application supports Oracle Database and WebLogic Server licensing rules in soft-partitioned environments, such as VMware virtualization technology.

Soft partitioning enables you to segment the operating system (OS) of the environment into different OS types and OS versions by using OS resource managers. OS resource managers limit the number of processors that each Oracle database or WebLogic server can run on by creating segments in which CPU resources are allocated to applications within the same OS. For more information about Oracle licensing and soft partitioning, refer to the [Oracle Help Center](#).

## VMware vSphere

VMware vSphere is a virtualization platform through which you can install and run Oracle databases or WebLogic servers on virtual machines (VMs). To run an Oracle database or WebLogic server on a VM, you must license all processors on the underlying physical ESXi host that is running your VM. If your physical ESXi host is running multiple VMs simultaneously, you must still license all processors on the host regardless of how many VMs are running the database or WebLogic server.

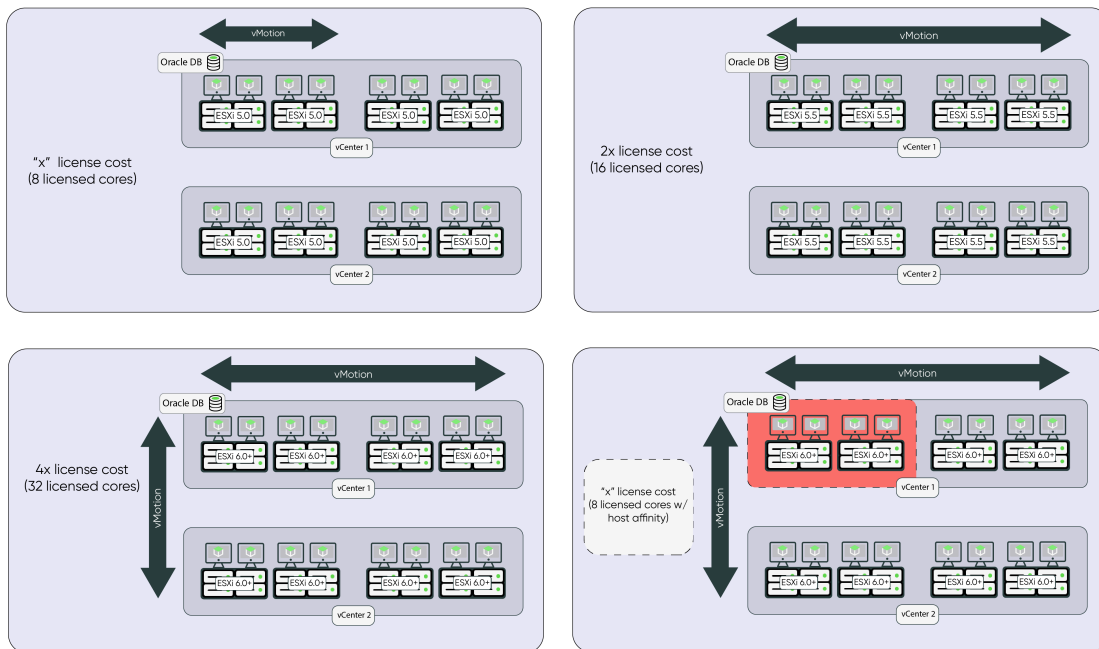
Oracle licensing on VMware vSphere is based on the VMware vMotion capability that is associated with each vSphere version. VMware vMotion is the VMware vSphere technology that enables VMs to migrate from one physical ESXi host to another without service interruptions.

The Oracle publisher pack supports the following Oracle licensing models on VMware vSphere:

### Oracle licensing models on VMware vSphere

VMware vSphere version	VMware vMotion capability	Licensing model
VMware vSphere ESXi 5.0 and earlier	VMs can migrate to any physical ESXi host within the same shared storage under the same datacenter.	You must license the processors on all physical ESXi hosts within the same shared storage under the same datacenter.
VMware vSphere ESXi 5.1-5.5	VMs can migrate to any physical ESXi host within the same VMware vCenter Server instance.	You must license the processors on all physical ESXi hosts within the same VMware vCenter Server instance.
VMware vCenter Server 6.0 and later	VMs can migrate to physical ESXi hosts within any VMware vCenter Server instance across your network. Migration is supported only on physical hosts that run VMware vSphere ESXi 5.1 or later on VMware vCenter Server 6.0 and later instances.	You must license the processors on all physical hosts that run VMware vSphere ESXi 5.1 or later within all VMware vCenter Server 6.0 and later instances across your network.

**i Important:** If you enable the **Use host affinity for reconciling licenses for Oracle databases and WebLogic servers on VMware at the vCenter(s) aggregation level** option in your **Software Asset Management properties**, the Software Asset Management application honors all VM-Host affinity rules when reconciling Oracle licenses within your VMware vCenter Server instances. In this scenario, licensing is based on the sum of all physical ESXi hosts that the VMs can reside on, as specified in your VM-Host affinity rules.



For more information about Oracle licensing on VMware, see [Understanding Oracle Certification, Support and Licensing for VMware Environments](#).

## Oracle Database and WebLogic Server licensing in hard-partitioned environments

The Software Asset Management application supports Oracle hard-partitioning licensing rules for IBM AIX LPAR and Solaris Zone.

When you hard partition a server, the server is divided into smaller systems that run independently from each other. Each system contains its own processors, network resources, operating system, memory, and more. For more information on Oracle licensing and hard partitioning, refer to [Oracle Partitioning Policy](#).

### IBM LPAR

A logical partition (LPAR) is a defined subset of processor hardware that supports the operating system. An LPAR contains resources, such as processors, memory, and input or output devices, that operate as an independent system. You can have multiple LPARs within each mainframe hardware system.

Discovering the LPARs and LPAR resources within your IBM LPAR infrastructure requires ServiceNow Discovery patterns for the IBM Hardware Management Console (HMC), which is the hardware appliance that enables you to manage and configure your LPARs. To access these discovery patterns, you must request and install the Discovery and Service Mapping Patterns application from the ServiceNow Store. For more information on how to configure a discovery on your LPARs, see [IBM Virtualization and Hardware Management Console discovery](#).

**Note:** The *lparstat* command pulls a report of LPAR-related information and usage. For more information, see the [IBM Knowledge Center](#).

When you run a discovery, your discovered LPAR data is populated and stored in the following Configuration Management Database (CMDB) tables on your ServiceNow instance:

- cmdb\_ci\_ibm\_frame
- cmdb\_ci\_aix\_server
- cmdb\_ci\_lpar\_instance
- cmdb\_ci\_lpar\_resource
- cmdb\_rel\_ci
- cmdb\_sam\_sw\_install

To populate and store this data, you must request and install the CMDB CI Class Models application from the ServiceNow Store. This application adds or updates CMDB classes for the IBM HMC. For more information on IBM HMC CMDB classes, see [IBM Hardware Management Console \(HMC\) extension classes](#).

After your discovered LPAR data is populated in the appropriate CMDB tables, you can use the *samp\_frame\_to\_lpar\_resource* database view to join the tables together and consolidate all LPAR data into a single view. Based on this database view and the Oracle Database and WebLogic Server licensing rules for IBM LPAR, you can identify and determine the license compliance of all Oracle database and WebLogic server installations across your IBM LPAR infrastructure.

### Oracle Database and WebLogic Server licensing rules for IBM LPAR

Processor pool	Description	Licensing rule
Dedicated	Processors are assigned to only	You must license the dedicated processors on which you install or run an Oracle database or WebLogic server.

### Oracle Database and WebLogic Server licensing rules for IBM LPAR (continued)

Processor pool	Description	Licensing rule
	<p>one dedicated LPAR, which is an LPAR that is built on dedicated CPU resources.</p>	<p>To determine the number of rights that are required for a dedicated LPAR, multiply the total number of processor cores that are running an Oracle database or WebLogic server on the LPAR by a core processor licensing factor, as specified on the <a href="#">Oracle Processor Core Factor Table</a>.</p>
<p>Shared</p>	<p>Processors are shared across micro-partitions, which are LPARs that are built on shared CPU resources.</p>	<p>You must license the shared processors on which you install or run an Oracle database or WebLogic server.</p> <p>You can determine the number of rights that are required across your micro-partitions based on the LPAR type:</p> <ul style="list-style-type: none"> <li>• <b>Capped LPAR:</b> A capped LPAR is a logical partition that is assigned a maximum entitled capacity, which is the number of CPU resources that the LPAR is entitled to receive. Capped LPARs cannot use more processor power than the assigned entitled capacity.</li> </ul> <p>To determine the number of rights that are required across your capped micro-partitions, multiply the sum of all assigned entitled capacities by a core processor licensing factor, as specified on the <a href="#">Oracle Processor Core Factor Table</a>.</p> <ul style="list-style-type: none"> <li>• <b>Uncapped LPAR:</b> An uncapped LPAR is a logical partition that can use more processor power than the assigned entitled capacity. Processor power usage is limited by the number of virtual processors that are assigned to the LPAR or by the maximum number of physical processor cores that are available to the shared processor pool.</li> </ul> <p>To determine the number of rights that are required across your uncapped micro-partitions, add the sum of all assigned virtual processors with the sum of all assigned entitled capacities.</p> <ul style="list-style-type: none"> <li>○ If the resulting value is lower than the number of physical processor cores that are available to the shared processor pool, multiply the value by a core processor licensing factor, as specified on the <a href="#">Oracle Processor Core Factor Table</a>.</li> <li>○ If the resulting value is greater than the number of physical processor cores that are available to the shared processor pool, multiply the number of physical processor cores by a core processor licensing factor, as specified on the <a href="#">Oracle Processor Core Factor Table</a>.</li> </ul>

For more information on database views, see [Working with database views for reporting](#).

### Solaris zones

You can set up a global zone on a Solaris server and hard partition it with multiple local zones.

You can then run an Oracle database or WebLogic server on one or more local zones. To license

your Oracle database or WebLogic server installations, rights should be allocated to the physical host that runs the entire Solaris zone configuration. For the Per Processor license metric, rights must cover the cores for all local zones up to the maximum capacity of the physical host. For the Named User Plus license metric, rights must cover the clients that access the database or WebLogic server on the local zones. For information about Solaris zone discovery, see [Solaris discovery](#).

### Oracle Database and WebLogic Server licensing in cloud environments

The Software Asset Management application supports licensing rules for Oracle Database and WebLogic Server in cloud environments.

**i Important:** The Software Asset Management application supports Bring Your Own License (BYOL) for Oracle Database and WebLogic servers across hybrid infrastructures. With BYOL support, you can track licenses for your Oracle Database and WebLogic servers in both on-premise and public cloud environments. For more information about Oracle BYOL support, see [Bring your own license or subscription to the public cloud](#).

When you install or run an Oracle database or WebLogic server in the cloud, you can license it using either the Named User Plus or Per Processor license metric. The Named User Plus license metric licenses all users and physical devices that access an Oracle cloud database or WebLogic server. The Per Processor license metric licenses the virtual CPUs (vCPUs) on which you install or run an Oracle cloud database or WebLogic server.

**i Note:** The Oracle Processor Core Factor Table is not applicable in cloud environments.

### Amazon Web Services (AWS)

Amazon Web Services (AWS) is a cloud computing platform on which you can install and run Oracle databases and WebLogic servers. You can manage your Oracle databases on AWS using either Amazon Elastic Compute Cloud (EC2) or Amazon Relational Database Service (RDS). However, you can manage your Oracle WebLogic servers using only Amazon Elastic Compute Cloud (EC2). For more information on Amazon EC2, refer to the [Amazon Elastic Compute Cloud documentation](#). For more information on Amazon RDS, refer to the [Amazon Relational Database Service documentation](#).

If you enable hyper-threading on your AWS virtual machine instance, the Software Asset Management application provides one Per Processor license for every two vCPUs on which you install or run an Oracle cloud database or WebLogic server. If you do not enable hyper-threading, the Software Asset Management application provides one Per Processor license for every vCPU on which you install or run an Oracle cloud database or WebLogic server.

For more information on Oracle databases and WebLogic servers in AWS, see [Oracle Database on the AWS Cloud: Quick Start Reference Deployment](#).

### Microsoft Azure

Microsoft Azure is a cloud computing platform on which you can create and run Oracle databases and WebLogic servers.

If you enable hyper-threading on your Microsoft Azure virtual machine instance, the Software Asset Management application provides one Per Processor license for every two vCPUs on which you install or run an Oracle cloud database or WebLogic server. If you do not enable hyper-threading, the Software Asset Management application provides one Per Processor license for every vCPU on which you install or run an Oracle cloud database or WebLogic server.

For more information on Oracle databases and WebLogic servers in Microsoft Azure, see [Accelerate your cloud adoption with Microsoft and Oracle](#).

### Oracle Database licensing in multitenant architectures

The Software Asset Management application supports licensing rules for Oracle databases in multitenant architectures.

The Oracle multitenant architecture simplifies database management by enabling you to consolidate multiple pluggable databases (PDBs) into a single container database (CDB). With a CDB, you can track, provision, clone, manage resources for, and upgrade multiple PDBs simultaneously. This multitenant architecture is supported on Oracle Database version 12c Release 1 (12.1) and later.

To run an Oracle database in a multitenant architecture, you must purchase and manage licenses for both Oracle Database and the Oracle Multitenant option. In most cases, Oracle Multitenant option licenses must be purchased and managed separately from Oracle Database licenses. However, Oracle Database Cloud Service Enterprise Edition - High Performance (DBCS EE-HP), Oracle Database Cloud Service Enterprise Edition - Extreme Performance (DBCS EE-EP), and Oracle Database Exadata Cloud Service (ExaCS) do not require a separate license for the Oracle Multitenant option, as it is already included in the database license. For more information on Oracle Database licensing, see [Software Asset Management publisher pack for Oracle](#).

### Oracle Multitenant option licensing

The Oracle Multitenant option supports both the Named User Plus and Per Processor license metrics. The Named User Plus license metric licenses all users and physical devices that access a user-created PDB. The Per Processor license metric licenses the processor cores on all physical hosts that are running a user-created PDB. For more information on these license metrics, see [Oracle license metrics](#).

**i Important:** Oracle Multitenant option licensing accounts for user-created PDBs only. It does not account for proxy PDBs or seed PDBs.

You can determine whether Oracle Multitenant option licensing is required for your database deployment based on the following criteria:

- The Oracle Database version and edition of your PDBs and CDBs.
- The number of user-created PDBs within each database instance that is running on the database installation.

### Oracle Multitenant option licensing requirements

Oracle Database version	Oracle Database edition	Licensing requirement
12c Release 1 (12.1)	Oracle Database Standard Edition (SE)	The Oracle Multitenant option is not supported.
	Oracle Database Standard Edition One (SE1)	
	Oracle Database	

**Oracle Multitenant option licensing requirements (continued)**

Oracle Database version	Oracle Database edition	Licensing requirement
	<p>Standard Edition 2 (SE2)</p> <p>Oracle Database Enterprise Edition (EE)</p>	<ul style="list-style-type: none"> <li>• If every database instance contains only one user-created PDB each, licensing is not required since the Oracle Multitenant option is not in use.</li> <li>• If any database instance contains more than one user-created PDB, licensing is required using either the Named User Plus or Per Processor license metric.</li> </ul> <div data-bbox="579 663 1390 869" style="background-color: #e0f2f7; padding: 10px;"> <p><b>i Important:</b> This version and edition of Oracle Database supports up to 252 user-created PDBs per database instance. If a database instance contains more than 252 user-created PDBs, Software Asset Management creates removal candidates for the additional PDBs. You must remove the additional PDBs to maintain compliance.</p> </div>
<p>12c Release 2 (12.2) and 18c</p>	<p>Oracle Database Enterprise Edition (EE)</p>	<ul style="list-style-type: none"> <li>• If every database instance contains only one user-created PDB each, licensing is not required since the Oracle Multitenant option is not in use.</li> <li>• If any database instance contains more than one user-created PDB, licensing is required using either the Named User Plus or Per Processor license metric.</li> </ul> <div data-bbox="579 1209 1390 1415" style="background-color: #e0f2f7; padding: 10px;"> <p><b>i Important:</b> This version and edition of Oracle Database supports up to 252 user-created PDBs per database instance. If a database instance contains more than 252 user-created PDBs, Software Asset Management creates removal candidates for the additional PDBs. You must remove the additional PDBs to maintain compliance.</p> </div>
	<p>Oracle Database Standard Edition 2 (SE2)</p>	<p>The Oracle Multitenant option is supported only in deployments where every database instance contains one user-created PDB each. However, licensing is not required since the Oracle Multitenant option is not in use.</p>
	<p>Oracle Database Cloud Service Enterprise Edition - High Performance (DBCS EE-HP)</p>	<ul style="list-style-type: none"> <li>• If every database instance contains one user-created PDB each, licensing is not required since the Oracle Multitenant option is not in use.</li> <li>• If any database instance contains more than one user-created PDB, the Oracle Multitenant option is in use. However, separate</li> </ul>

**Oracle Multitenant option licensing requirements (continued)**

Oracle Database version	Oracle Database edition	Licensing requirement
	<p>Oracle Database Cloud Service Enterprise Edition - Extreme Performance (DBCS EE-EP)</p> <p>Oracle Database Exadata Cloud Service (ExaCS)</p>	<p>licensing is not required for this option since it is already included in the Oracle Database license.</p> <div data-bbox="580 390 1390 632" style="background-color: #e0f2f7; padding: 10px;"> <p><b>i Important:</b> These versions and editions of Oracle Database support up to 4,096 user-created PDBs per database instance. If a database instance contains more than 4,096 user-created PDBs, Software Asset Management creates removal candidates for the additional PDBs. You must remove the additional PDBs to maintain compliance.</p> </div>
19c and later	Oracle Database Enterprise Edition (EE)	<ul style="list-style-type: none"> <li>• If every database instance contains three or less user-created PDBs each, licensing is not required since the Oracle Multitenant option is not in use.</li> <li>• If any database instance contains more than three user-created PDBs, licensing is required using either the Named User Plus or Per Processor license metric.</li> </ul> <div data-bbox="580 1024 1390 1230" style="background-color: #e0f2f7; padding: 10px;"> <p><b>i Important:</b> This version and edition of Oracle Database supports up to 252 user-created PDBs per database instance. If a database instance contains more than 252 user-created PDBs, Software Asset Management creates removal candidates for the additional PDBs. You must remove the additional PDBs to maintain compliance.</p> </div>
	Oracle Database Standard Edition 2 (SE2)	<p>The Oracle Multitenant option is supported only in deployments where every database instance contains three or less user-created PDBs each. However, licensing is not required since the Oracle Multitenant option is not in use.</p>
	Oracle Database Cloud Service Enterprise Edition - High Performance (DBCS EE-HP)	<ul style="list-style-type: none"> <li>• If every database instance contains three or less user-created PDBs each, licensing is not required since the Oracle Multitenant option is not in use.</li> <li>• If any database instance contains more than three user-created PDBs, the Oracle Multitenant option is in use. However, separate</li> </ul>

**Oracle Multitenant option licensing requirements (continued)**

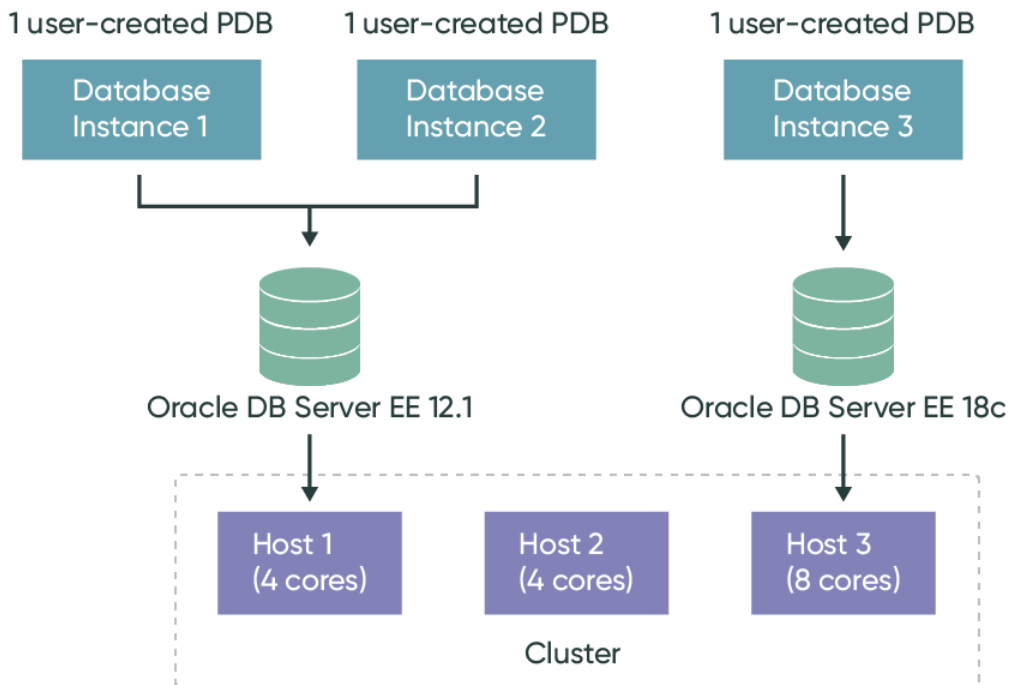
Oracle Database version	Oracle Database edition	Licensing requirement
	Oracle Database Cloud Service Enterprise Edition - Extreme Performance (DBCS EE-EP)	licensing is not required for this option since it is already included in the Oracle Database license.  <b>Important:</b> These versions and editions of Oracle Database support up to 4,096 user-created PDBs per database instance. If a database instance contains more than 4,096 user-created PDBs, Software Asset Management creates removal candidates for the additional PDBs. You must remove the additional PDBs to maintain compliance.
	Oracle Database Exadata Cloud Service (ExaCS)	

**Oracle Multitenant option use cases**

You can view the following use cases to better understand licensing requirements for the Oracle Multitenant option.

**The Oracle Multitenant option is not in use**

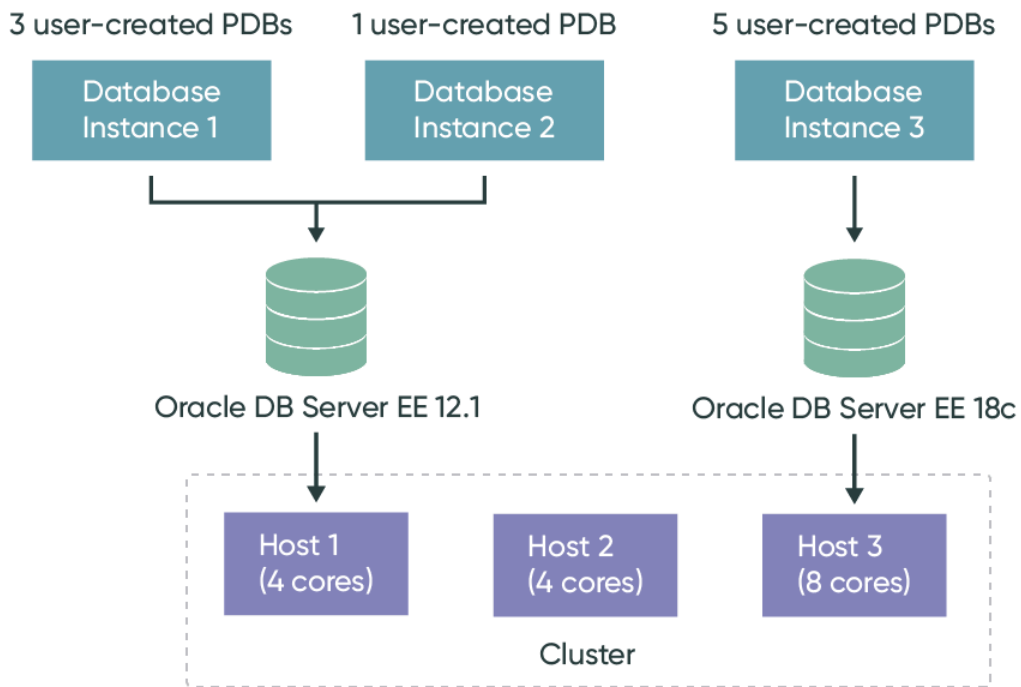
**Oracle Multitenant option not in use example**



In this scenario, Database Instance 1 and Database Instance 2 are running Oracle Database 12.1 Enterprise Edition and contain one user-created PDB each. Database Instance 3 is running Oracle Database 18c Enterprise Edition and also contains one user-created PDB. Since none of the database instances meet or exceed the minimum number of user-created PDBs for which the Oracle Multitenant option is required, the option is not in use on any of the database instances. Additional licensing for the Oracle Multitenant option is not required on any hosts within the cluster.

## The Oracle Multitenant option is in use

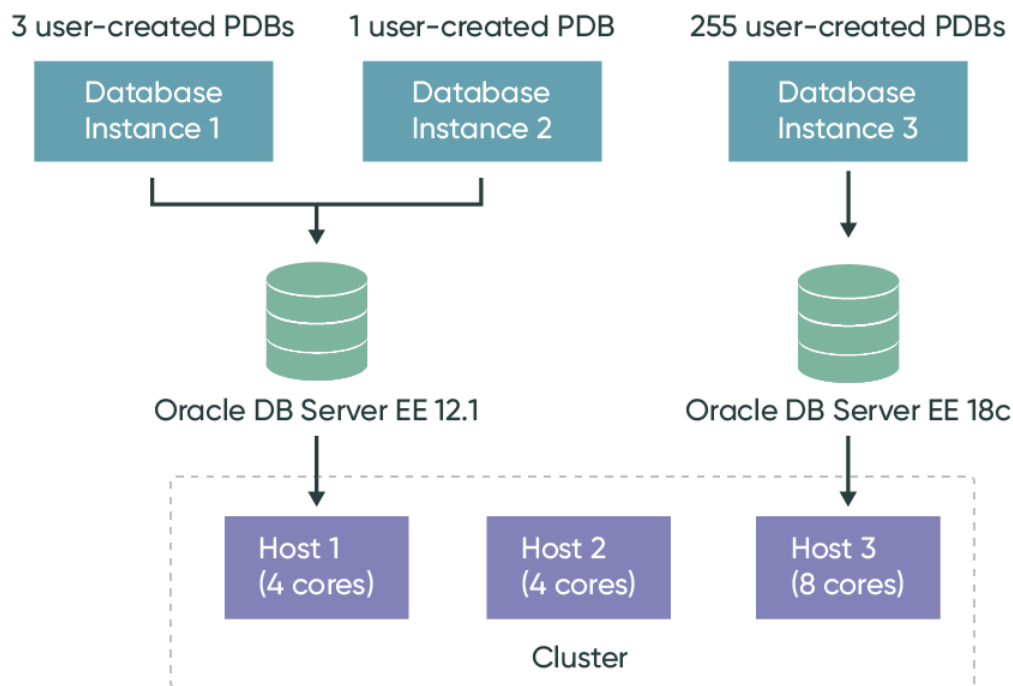
### Oracle Multitenant option in use example



In this scenario, Database Instance 1 and Database Instance 2 are running Oracle Database 12.1 Enterprise Edition. Database Instance 1 contains three user-created PDBs, while Database Instance 2 contains one user-created PDB. Database Instance 3 is running Oracle Database 18c Enterprise Edition and contains five user-created PDBs. Since both Database Instance 1 and Database Instance 3 exceed the minimum number of user-created PDBs for which the Oracle Multitenant option is required, the option is in use on both database instances. Additional licensing for the Oracle Multitenant option is required on all hosts within the cluster.

## The Oracle Multitenant option is in use but exceeds the maximum PDB amount

### Oracle Multitenant option in use but exceedx maximum PDB amount example



In this scenario, Database Instance 1 and Database Instance 2 are running Oracle Database 12.1 Enterprise Edition. Database Instance 1 contains three user-created PDBs, while Database Instance 2 contains one user-created PDB. Database Instance 3 is running Oracle Database 18c Enterprise Edition and contains 255 user-created PDBs. Since both Database Instance 1 and Database Instance 3 exceed the minimum number of user-created PDBs for which the Oracle Multitenant option is required, the option is in use on both database instances. Additional licensing for the Oracle Multitenant option is required on all hosts within the cluster.

However, Database Instance 3 is considered to be out of compliance. Based on licensing rules for the Oracle Multitenant option, the maximum number of user-created PDBs that are supported on database instances running Oracle Database 18c Enterprise Edition is 252. Since Database Instance 3 contains 255 user-created PDBs, Software Asset Management creates removal candidates for the three additional user-created PDBs. These additional PDBs must be removed to maintain compliance.

### Oracle Database licensing for Standard Editions

Oracle Database Standard Editions are licensed on servers having a value less than the maximum capacity of sockets to help ensure risk-free license compliance.

Sockets are slots on which processors or CPUs are placed. You must manually enter socket information under the non-discoverable field **Socket count** in the **cmdb\_hardware\_product\_model** hardware model table. ITOM Discovery discovers only the occupied slots and Software Asset Management reconciles and provides compliance.

### Oracle Database Standard Edition licensing rules

Edition	Max rule for NUP and processor
Oracle DB Standard Edition	4 sockets per server

### Oracle Database Standard Edition licensing rules (continued)

Edition	Max rule for NUP and processor
Oracle DB Standard Edition 1	2 sockets per server
Oracle DB Standard Edition 2	2 sockets per server

### Example: Oracle Standard Edition 2 deployed on a server with more than 2 sockets

The following example shows the message that would appear for a reclamation or removal candidate that doesn't follow the licensing rules.

```
Oracle DB Server Standard Edition 2 installed on <Server Name> has been flagged as an unlicensed install. As per Oracle Licensing Policy, Oracle Database Standard Edition 2 may only be licensed on servers that have a maximum capacity of 2 sockets. This Server is found to have <no. of socket> number of sockets available. You are advised to uninstall the Oracle DB Server Standard Edition 2 from this server or upgrade to Oracle DB Enterprise Edition. We suggest working with your Oracle Database Administrator to assess the impact before proceeding with this action. Please note that the maximum number of sockets or slots available on a server are part of the hardware specification. Hence it is advised to update this information on the hardware product model <hw model name>. If this information is not present on the hardware model, it is assumed that all sockets are occupied and discovered.
```

### Oracle Database options and management packs

You can use the Software Asset Management publisher pack for Oracle to track licensing positions for your Oracle Database options and management packs. The Licensable Oracle Options [samp\_oracle\_option\_set] table provides the complete list of database options and management packs that you can create software models for.

You must manage licensing for your Oracle Database options and management packs separately from your Oracle Database servers. Separate software models and entitlements are required for each of your database servers, database options, and management packs, thereby providing a more comprehensive view of your Oracle license compliance position.

For example, Oracle DB Server 12c R1 Enterprise with the Partitioning option requires two separate software models and entitlements.

### Oracle DB licensing example

Purpose	Software model	Software entitlement
Track licensing for Oracle DB Server 12c R1 Enterprise.	Oracle DB Server 12c R1 Enterprise  No value selected for the <b>Database option</b> field.	Record your purchased rights for Oracle DB Server 12c R1 Enterprise.

**Oracle DB licensing example (continued)**

Purpose	Software model	Software entitlement
Track licensing for the Partitioning option.	Oracle DB Server 12c R1 Enterprise Partitioning  <b>Partitioning</b> selected for the <b>Database option</b> field.	Record your purchased rights for the Partitioning option.

To track and measure usage for your Oracle Database options and management packs, request and install the Data Collection for Oracle Global Licensing and Advisory Services application from the ServiceNow Store. See [Request Data Collection for Oracle Global Licensing and Advisory Services \(GLAS\)](#) for detailed instructions.

**i Important:** If you are activating the Software Asset Management application for the first time in the San Diego and later releases, the Data Collection for Oracle Global Licensing and Advisory Services application is required for discovering and measuring the usage of your database options and management packs.

If you are activating the Software Asset Management application for the first time in the Rome and earlier releases or you are upgrading an existing instance of the Software Asset Management application from the Rome and earlier releases to the San Diego and later releases, you can continue using the existing patterns for discovering and measuring the usage of your database options and management packs. However, ServiceNow recommends that you use the Data Collection for Oracle Global Licensing and Advisory Services application instead, as the application provides enhanced capabilities that address additional use cases.

After you install the application, the SAM - Evaluate database option usage from Oracle GLAS data scheduled job runs weekly or on-demand to retrieve usage data for both the Oracle database options and management packs that are installed in your Oracle environment and the Oracle features that are associated with them. The Software Asset Management application can then include this data in the Oracle reconciliation process to help you determine the license compliance positions of your database options and management packs, which are reported separately from the license compliance positions of your Oracle Database servers.

**i Note:** For more information on how usage data for your Oracle features can help you determine the license compliance of your database options and management packs, see [Feature mapping for Oracle Database options and management packs](#).

Oracle Database options and management packs follow the Oracle Database server lifecycle and are displayed in the License usage view (Software Asset Workspace) or License Workbench (Software Asset Management classic application). However, the following remediation options are not available for database options and management packs:

- Remove Unallocated Installs
- Remove Unlicensed Installs

**Supported Oracle Database options and management packs**

The Software Asset Management publisher pack for Oracle supports the following database options and management packs based on whether you are using the existing discovery and usage measurement patterns or the Data Collection for Oracle Global Licensing and Advisory Services application to track and measure usage for your database options and management packs.

Oracle Database option or management pack	Supported by existing discovery and usage measurement patterns	Supported by the Data Collection for Oracle Global Licensing and Advisory Services application
Active Data Guard	Yes	Yes
Advanced Compression	Yes	Yes
Advanced Security	Yes	Yes
<p>Change Management Pack</p> <p><b>i Note:</b> If your database is running Oracle Database 12c or later, the Change Management Pack, Configuration Management Pack for Oracle Database, and Provisioning and Patch Automation Pack for Database are consolidated into the Oracle Database Lifecycle Management Pack for Oracle Database. To use the Change Management Pack, you must license the Oracle Database Lifecycle Management Pack for Oracle Database.</p>	Yes	Yes
<p>Configuration Management Pack for Oracle Database</p> <p><b>i Note:</b> If your database is running Oracle Database 12c or later, the Change Management Pack, Configuration Management Pack for Oracle Database, and Provisioning and Patch Automation Pack for Database are consolidated into the Oracle Database Lifecycle Management Pack for Oracle Database. To use the Configuration Management Pack for Oracle Database, you must license the Oracle Database Lifecycle Management Pack for Oracle Database.</p>	Yes	Yes
<p>Content Database Suite</p> <p><b>i Note:</b> Content Database Suite is available only on databases that are running Oracle Database 11g Release 1 and earlier.</p>	No	Yes
Data Masking Pack	Yes	No

Oracle Database option or management pack	Supported by existing discovery and usage measurement patterns	Supported by the Data Collection for Oracle Global Licensing and Advisory Services application
		<p><b>i Note:</b> If you are using the Data Collection for Oracle Global Licensing and Advisory Services application, you can track and measure usage for Oracle Data Masking and Sub-setting Pack instead.</p>
<p><b>i Note:</b> Data Mining requires separate licensing only if your database is running Oracle Database 11g Release 1 or earlier. If your database is running Oracle Database 11g Release 2 or later, Data Mining is already included in the database license.</p>	No	Yes
Database In-Memory	Yes	Yes
Database Vault	Yes	Yes
Diagnostics Pack	Yes	Yes
Label Security	Yes	Yes
Multitenant	Yes	Yes
OLAP	Yes	Yes
Oracle Cloud Management Pack for Oracle Database	No	Yes
Oracle Data Masking and Sub-setting Pack	No	Yes

Oracle Database option or management pack	Supported by existing discovery and usage measurement patterns	Supported by the Data Collection for Oracle Global Licensing and Advisory Services application
	<p><b>i Note:</b> If you are using the existing discovery and usage measurement patterns for your database options and management packs, you can track and measure usage for Data Masking Pack instead.</p>	
<p>Oracle Database Lifecycle Management Pack for Oracle Database</p> <p><b>i Note:</b> If your database is running Oracle Database 12c or later, the Change Management Pack for Oracle Database, and Provisioning and Patch Automation Pack for Database are consolidated into the Oracle Database Lifecycle Management Pack for Oracle Database. You can access all three packs by licensing only the Oracle Database Lifecycle Management Pack for Oracle Database.</p>	No	Yes
Oracle Spatial and Graph	No	Yes

Oracle Database option or management pack	Supported by existing discovery and usage measurement patterns	Supported by the Data Collection for Oracle Global Licensing and Advisory Services application
<p><b>i Note:</b> Oracle Spatial and Graph requires separate licensing only if your database is running Oracle Database 11g Release 1 or earlier. If your database is running Oracle Database 11g Release 2 or later, Oracle Spatial and Graph is already included in the database license.</p>	<p><b>i Note:</b> If you are using the existing discovery and usage measurement patterns for your database options and management packs, you can track and measure usage for Spatial and Graph instead.</p>	
Partitioning	Yes	Yes
<p>Provisioning and Patch Automation Pack for Database</p> <p><b>i Note:</b> If your database is running Oracle Database 12c or later, the Change Management Pack, Configuration Management Pack for Oracle Database, and Provisioning and Patch Automation Pack for Database are consolidated into the Oracle Database Lifecycle Management Pack for Oracle Database. To use the Provisioning and Patch Automation Pack for Database, you must license the Oracle Database Lifecycle Management Pack for Oracle Database.</p>	Yes	Yes
Real Application Clusters	Yes	Yes
Real Application Clusters One Node	Yes	Yes
Real Application Testing	Yes	Yes
<p>Records Database</p> <p><b>i Note:</b> Records Database is available only on databases that are running Oracle Database 10g Release 2 or earlier.</p>	No	Yes
Spatial and Graph	Yes	No

Oracle Database option or management pack	Supported by existing discovery and usage measurement patterns	Supported by the Data Collection for Oracle Global Licensing and Advisory Services application
<p><b>i Note:</b> Spatial and Graph requires separate licensing only if your database is running Oracle Database 11g Release 1 or earlier. If your database is running Oracle Database 11g Release 2 or later, Spatial and Graph is already included in the database license.</p>		<p><b>i Note:</b> If you are using the Data Collection for Oracle Global Licensing and Advisory Services application, you can track and measure usage for Oracle Spatial and Graph instead.</p>
<p>Total Recall</p> <p><b>i Note:</b> Total Recall is available only on databases that are running Oracle Database 11g and earlier.</p>	No	Yes
<p>Tuning Pack</p> <p><b>i Note:</b> Tuning Pack is supported only on databases that are running Oracle Database Enterprise Edition. If Tuning Pack is discovered on any database that is running Oracle Database Standard Edition or Express Edition, the Software Asset Management application generates a removal candidate for that Tuning Pack installation. To maintain compliance with Oracle, you must either uninstall Tuning Pack from the database or upgrade the database to Oracle Database Enterprise Edition.</p>	Yes	Yes

**Request Data Collection for Oracle Global Licensing and Advisory Services (GLAS)**

Request the Data Collection for Oracle GLAS application from the ServiceNow Store so that you can track and measure usage for your Oracle Database options and management packs.

**Before you begin**

Role required: admin

**Procedure**

1. From a web browser, go to the [ServiceNow Store](#).
2. Log in using your HI credentials.
3. In the search bar, enter `Data Collection for Oracle Global Licensing and Advisory Services` and then select **Search**.
4. Select the result called `Data Collection for Oracle Global Licensing and Advisory Services`.
5. On the `Data Collection for Oracle Global Licensing and Advisory Services` page, select **Request Install**.  
The ServiceNow Request for App Installation - Data Collection for Oracle Global Licensing and Advisory Services dialog box opens.
6. In the dialog box, fill in the fields.

**ServiceNow Request for App Installation - Data Collection for Oracle Global Licensing and Advisory Services dialog box**

Field	Description
Instance Name	Name of the instance on which you want to install the application. After you enter the instance name, select <b>Validate Instance</b> to verify that the instance exists.
Reason for request	Reason for requesting the application.

7. Select **Request**.
8. Select **Close**.

**Result**

If your request is approved, you will receive an email with detailed instructions on how to install the application.

**What to do next**

Install the application according to the instructions in the email.

**Related topics**

[Oracle Global License Advisory Services \(GLAS\) data collection using patterns](#)

**Feature mapping for Oracle Database options and management packs**

The Software Asset Management application automatically maps discovered Oracle features to the Oracle Database options and management packs that they are associated with. These mappings can help you determine the usage and license compliance of your database options and management packs.

Every Oracle Database option and management pack contains a set of features that enhance the capabilities of Oracle Database. For example, the Oracle Active Data Guard option provides real-time data protection and availability for Oracle Database using features such as automatic block repair, global data services, and application continuity. For more information on the features that are supported by each database option and management pack, refer to the [Oracle documentation](#).

When you run a discovery, the ServiceNow® Discovery application locates and identifies both the database options and management packs that are installed in your Oracle environment

and the features that are associated with them. This data is then sent to the Software Asset Management application, where it can be normalized and reconciled.

After the data is normalized, the Software Asset Management application uses the Oracle Feature Option Mapping [samp\_feature\_option\_mapping] table to map your features to the appropriate database options and management packs at the database instance level. Any subsequent usage data that you retrieve for each feature via the SAM - Evaluate database option usage from Oracle GLAS data scheduled job can then be applied to the mapped database options and management packs. The Software Asset Management application uses this data in conjunction with predefined database option and management pack usage rules to determine which database options and management packs are being used on each database instance. The resulting usage information is included in the Oracle reconciliation process to help you determine the license compliance of your database options and management packs.

### Update the default mapping for a feature

If a discovered feature is associated with more than one Oracle Database option or management pack, you can change the database option or management pack that the feature usage data is applied to by updating the default mapping for that feature.

#### Before you begin

Role required: admin

#### About this task

Oracle features can be associated with multiple database options and management packs. However, the Software Asset Management application can map each feature to only one database option or management pack at a time.

The Software Asset Management application automatically maps each discovered feature to an appropriate database option or management pack based on default mappings that have been predefined for each feature. Usage data for each feature can then be applied to the mapped database options and management packs to help you determine if they are in use.

If any of your discovered features are associated with more than one database option or management pack, you can update the default mappings for those features based on how you are using each feature and what entitlements you have purchased for the associated database options and management packs. By updating the default mappings for those features, you can change the database options and management packs that the corresponding feature usage data is applied to, thereby enabling you to better optimize the license compliance positions of your database options and management packs based on your organization's needs.

**Note:** You can update the default mappings only for features that are associated with multiple database options and management packs.

### Procedure

1. On the page header of your ServiceNow instance, select **All**.
2. In the menu navigation filter, enter `samp_option_for_feature_inuse.list`.  
The Default option for feature in use list opens. This list displays the default mappings for all discovered features that are currently in use and can be mapped to more than one database option or management pack.
3. From the list of available features, select the feature that you want to change the default mapping for.
4. From the **Default database option in use** drop-down on the Default option for feature in use form, select the database option or management pack that you want to map the feature to.

**Note:** The **Default database option in use** drop-down is automatically filtered to display only the database options and management packs that the selected feature is associated with.

**5. Select Update.**

You automatically return to the Default option for feature in use list, which displays the new default mapping.

**What to do next**

To activate the new default mapping, you must run the SAM - Evaluate database option usage from Oracle GLAS data scheduled job. You can either run the job on-demand or wait for the next scheduled job. After the job completes successfully, usage data for the specified feature can then be applied to the newly mapped database option or management pack.

**Unreported Database Options Usage report**

You can use the Unreported Database Options Usage report to gain visibility into the Oracle Database options and management packs that are being used on undiscovered database instances. Although you cannot track usage for these database options and management packs, this report can help you determine any potential licensing implications that are associated with them.

**Note:** This report is available only in the Software Asset Management classic application.

To view this report, navigate to **All > Reports > View/Run**. From the list of available reports, search for and select **Unreported Database Options Usage**. When the corresponding Edit report page opens, select **Run**.

**Oracle Unreported Database Options Usage report**

Field	Description
Database name	Undiscovered database instance on which the database option or management pack is being used.
Database option	Database option or management pack that is being used on the undiscovered database instance.
Host	Physical host on which the undiscovered database instance is running.
Server	Server on which the physical host is running.

**Oracle reconciliation**

Oracle reconciliation keeps your Oracle license positions accurate and up-to-date without requiring manual calculations. Reconciliation runs weekly or on-demand.

When you run an Oracle reconciliation, Software Asset Management determines the **Rights Used By** and **Rights Needed By** allocations for the named users, physical devices, and physical hosts that are accessing or running an Oracle product. You can use this information to keep your Oracle products in compliance.

**Note:** Any allocations that you make on a physical host are considered valid. Software Asset Management marks these allocations as **Allocated in use** in the license workbench. Any allocations that you make on a virtual host, such as a virtual machine (VM), are considered invalid. Software Asset Management marks these allocations as **Allocated not in use**.

For Oracle database and WebLogic server licensing on VMware virtualization technology, you can select the level of aggregation for your reconciliation calculation using the *Select the level of aggregation for reconciling licenses for Oracle databases and WebLogic servers on VMware* property. You can also enable Software Asset Management to account for VM-Host affinity rules during Oracle reconciliation using the *Use host affinity for reconciling licenses for Oracle databases and WebLogic servers on VMware at the vCenter(s) aggregation level* property. See [Software Asset Management properties](#) for information on these properties.

### Set up domain-specific reconciliation properties for Oracle

Use domain separation application properties for Software Asset Management to set up Oracle reconciliation properties for specific domains.

#### Before you begin

To set up domain separation application properties for Software Asset Management, you must activate the Domain Support - Domain Extensions Installer (com.glide.domain.msp\_extensions.installer) plugin on your ServiceNow instance.


Role required: sam\_admin

#### About this task

Domain separation application properties are available for the Software Asset Management application. These properties correspond directly to the existing Software Asset Management properties and enable you to specify the domain that you want each property to apply to.

Domain separation is supported on the following Oracle reconciliation properties:

- **Select the level of aggregation for reconciling licenses for Oracle databases and WebLogic servers on VMware** (*com.snc.samp.oracle.reconlevel*)
- **Use host affinity for reconciling licenses for Oracle databases and WebLogic servers on VMware at the vCenter(s) aggregation level** (*com.snc.samp.oracle.hostaffinityenabled*)

For more information on the existing Software Asset Management properties, see [Software Asset Management properties](#). For more information on domain separation application properties, see [Domain separation application properties](#) .

#### Procedure

1. From your ServiceNow<sup>®</sup> instance, navigate to **All > Software Asset Management > Administration > Application Properties**.
2. From the list of available application properties, select the application property that you want to modify.
3. In the Application Property Values related list, select the application property value that you want to modify.

If you do not have any existing application property values or you want to add additional application property values, select **New**.

4. On the form, fill in the fields.

### Application Property Values form

Field	Description
Application Property	Name of the application property that the application property value applies to. This field populates automatically.
Value	Value of the application property. This value must be equivalent to one of the available values in the corresponding Software Asset Management property. For example, you can set the value of the <i>com.snc.samp.oracle.reconlevel</i> application property to <i>esx</i> , <i>cluster</i> , or <i>vcenter</i> . See <a href="#">Software Asset Management properties</a> for more details on the available values in the Software Asset Management properties.
Domain	Domain that you want the application property value to apply to.

- Depending on whether you are updating an existing application property value or adding a new application property value, select either **Update** or **Submit**.  
If you are updating an existing application property value, select **Update**. If you are adding a new application property value, select **Submit**.

### Oracle Infrastructure report

You can use the Oracle Infrastructure report to gain visibility into your Oracle infrastructure. This report includes information about the Oracle databases that you are running and the configuration items that are supporting these databases.

**Note:** The Oracle Infrastructure report is domain separated.

You can view the Oracle Infrastructure report in both the Software Asset Management classic application and the Software Asset Workspace.

To view this report in the Software Asset Management classic application, navigate to **All > Reports > View/Run** on your ServiceNow instance. At the top of the Reports page, select **All**. From the list of all available reports, locate and select **Oracle infrastructure report**.

To view this report in the Software Asset Workspace, navigate to **Workspaces > Software Asset Workspace** on your ServiceNow instance. After the Software Asset Workspace launches, navigate to **License usage > Reports > Oracle infrastructure report**.

### Oracle Infrastructure Report

Column	Description
Required by (Device)	Configuration item, such as a server, cluster, vCenter, or datacenter, that the Oracle database, database option, or management pack is installed on.  Select an entry to view additional information about the licensing requirements for that configuration item. See <a href="#">Licenses Required By form</a> for more details.
Database option	Database option or management pack that is being used with the Oracle database.
Version	Oracle Database version that is installed on your configuration item.
Edition	Oracle Database edition that is installed on your configuration item.
Software model	Software model that is associated with the Oracle database, database option, or management pack.

### Oracle Infrastructure Report (continued)

Column	Description
License metric result	License metric that the Oracle license is counted against when reconciliation runs. The options are <b>Named User Plus</b> and <b>Per Processor</b> .
Licenses required	Number of rights that are required for license compliance.
Model ID	Model ID of the configuration item that the Oracle database, database option, or management pack is installed on.
CPU manufacturer	Manufacturer of the CPU that is used by the configuration item.
CPU type	Type of CPU that is used by the configuration item.
CPU count	Number of CPUs within the configuration item.
CPU core count	Number of cores within each CPU.
CPU core thread	Number of threads that divide each core within a CPU.
Oracle core factor	Oracle processor core factor that is used to determine the number of required rights.
CPU speed (MHz)	Clock speed (in megahertz) of the CPU that is used by the configuration item.
Purchased	Number of rights that you have purchased.
Operating System	Operating system of the configuration item that the Oracle database, database option, or management pack is installed on.
Socket Count	Number of slots available on the motherboard.

### Licenses Required By form

To view additional information about the licensing requirements for a specific configuration item, select the configuration item from the **Required by (Device)** field of the Oracle Infrastructure report. The corresponding Licenses Required By form opens, where you can view information about the license consumption, Oracle Database software installations, Oracle Database options and management packs, and database instances that are associated with the selected configuration item.

### Licenses Required By form

Field	Description
Required by	Configuration item, such as a server, cluster, vCenter, or datacenter, that the Oracle database, database option, or management pack is installed on.
License metric result	License metric that the Oracle license is counted against when reconciliation runs. The options are <b>Named User Plus</b> and <b>Per Processor</b> .
Licenses required	Number of rights that are required for license compliance.

**Licenses Required By form (continued)**

Field	Description
Licensing status	Licensing status of the Oracle database, database option, or management pack.
License Consumption Details related list	
Required by	Configuration item that the Oracle database, database option, or management pack is installed on.
Model ID	Model ID of the configuration item.
Processor name	Name of the processors that are running on the configuration item.
Processors	Number of processors that are running on the configuration item.
Cores	Total number of cores within the configuration item.
CPU count	Number of CPUs within the configuration item.
CPU core count	Number of cores within each CPU.
CPU core thread	Number of threads that divide each core within a CPU.
Core Factor	Oracle processor core factor that is used to determine the number of required rights.
Licenses required	Number of rights that are required for license compliance.
CPU speed (MHz)	Clock speed (in megahertz) of the CPU that is used by the configuration item.
Purchased	Number of rights that you have purchased.
Operating System	Operating system of the configuration item.
Options related list	
<p><b>i Note:</b> This related list appears only when the software model for the required license is associated with an Oracle Database option or management pack.</p>	
Instance	Database instance that accesses and manages data that is related to your Oracle Database option or management pack.
Option	Oracle Database option or management pack that is installed on your configuration item.
Licensable	Value that indicates whether the Oracle Database option or management pack is licensable. If the option or management pack is licensable, the value is automatically set to <b>true</b> . If the option or management pack is not licensable, the value is automatically set to <b>false</b> .
Currently used	Value that indicates whether the Oracle Database option or management pack has current or past usage. If the option or management pack has any current or past usage, the value is automatically set to <b>In Use</b> . If the option or management pack does not have any current or past usage, the value is automatically set to <b>Not In Use</b> .

**Licenses Required By form (continued)**

Field	Description
First usage date	Date on which you first started using the Oracle Database option or management pack.
Last usage date	Date on which you last used the Oracle Database option or management pack.
Installs related list	
<p><b>i Note:</b> This related list appears only when the software model for the required license is associated with an Oracle Database software installation.</p>	
Display name	Name of the Oracle Database software installation.
Publisher	Publisher of the installed software. This field is always set to <b>Oracle</b> .
Version	Oracle Database version that is installed on your configuration item.
Discovery model	Discovery model that is associated with the Oracle Database software installation.
Installed on	Configuration item that the Oracle Database software is installed on.
Assigned to	User that is associated with the Oracle Database software installation.
Instances related list	
<p><b>i Note:</b> This related list appears only when the software model for the required license is associated with an Oracle Database software installation.</p>	
Name	Name of the database instance that accesses and manages the data in your Oracle database.
Environment	Environment that the database instance resides in.
Version	Version of the database that the database instance accesses and manages.
Vendor	Vendor of the database that the database instance accesses and manages. This field is always set to <b>Oracle</b> .

**Oracle DB Server Deployments per Agreement report**

You can use the Oracle DB Server Deployments per Agreement report to gain visibility into your Oracle Database server deployments across hybrid infrastructures, based on the agreement type.

**i Note:** The Oracle DB Server Deployments per Agreement report is available only in the Software Asset Workspace. This report is not available in the Software Asset Management classic application.

To view this report, launch the Software Asset Workspace by navigating to **Workspaces > Software Asset Workspace** on your ServiceNow instance. From the Software Asset Workspace, navigate to **License usage > Reports > Oracle DB Server deployments per agreement**.

### Oracle DB Server Deployments per Agreement report

Field	Description
Name	Name of the Oracle Database server deployment.
Product	Oracle product that is running within your deployment. This field is always set to <b>DB Server</b> .
Version	Oracle Database version that is installed or running on your servers.
Edition	Oracle Database edition that is installed or running on your servers.
License metric	License metric that the Oracle Database license is counted against when reconciliation runs. The options are <b>Named User Plus</b> and <b>Per Processor</b> .
Agreement type	Agreement type for your Oracle Database server deployment. The options are <b>ULA</b> (Unlimited License Agreement) and <b>Generic</b> .
Cloud provider	Cloud provider through which your Oracle Database servers are deployed.
Cloud service type	Cloud service model through which your Oracle Database servers are deployed. The options are <b>PaaS</b> and <b>IaaS</b> .

### Software Publisher Analytics dashboard for Oracle in Software Asset Management classic

View compliance analysis results related to Oracle on the Software Publisher Analytics dashboard in the Software Asset Management classic application.

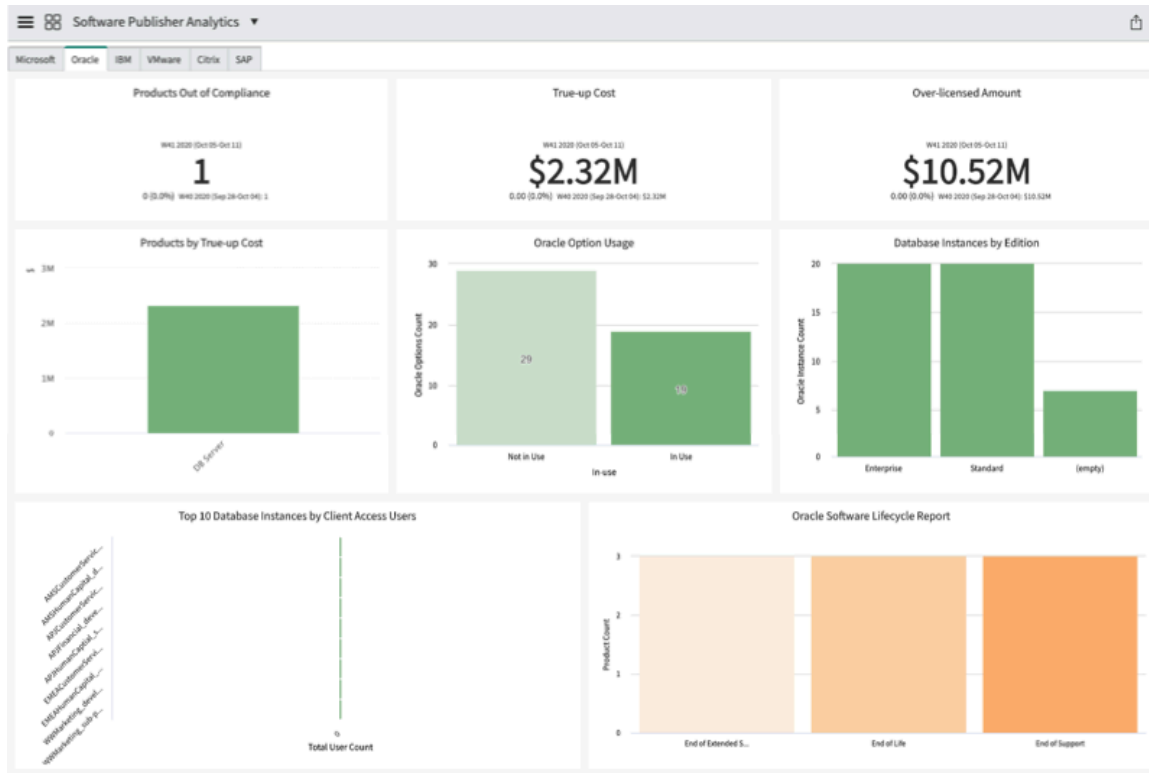
Access the Software Publisher Analytics dashboard by navigating to **All > Software Asset > Publisher Overview**.

**Note:** The add-on Oracle publisher pack (com.snc.samp.oracle) plugin must be installed to view the Oracle dashboard tab.

Results are updated whenever a new reconciliation result is available. You can save charts in PNG or JPG format.

### Oracle dashboard

You can manage Oracle Server Software, such as Database Server, using the Oracle publisher pack.



**Oracle tab**

Report	Source list	Description
Products out of Compliance	Product Results	Number of products that have at least one software model out of compliance.  Select the report to view the results in the <a href="#">License Workbench</a> .
True-up Cost	Product Results	Cost to be compliant based on the average prices for entitlements for the rights.
Over-Licensed Amount	Product Results	Cost of licenses owned but not being used.
Products by True-up Cost	Product Results	Greatest true-up costs by product.
Oracle Options Usage	Oracle Options	Installed Oracle licenses versus licenses in use (true versus false).
Database Instances by Edition	Oracle Instances	Total number of database instances by database edition.
Top 10 Database Instances by Client Access Users	Client Access	Database instances with the greatest number of client access users.
Oracle Software Lifecycle Report	Software Lifecycle Report	Number of products in each software lifecycle phase,

### Oracle tab (continued)

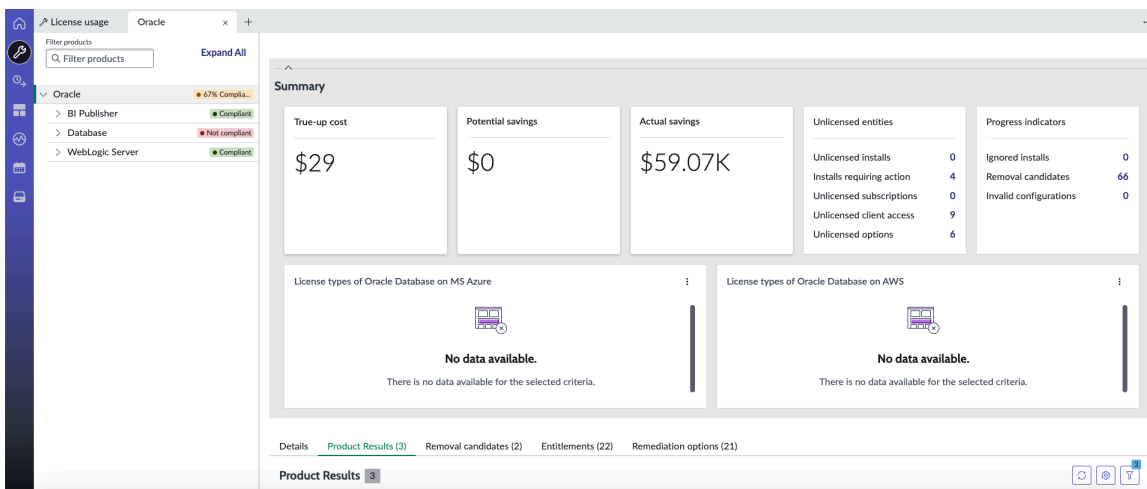
Report	Source list	Description
		including End of Extended Support, End of Life, and End of Support.

### Publisher overview for Oracle in the Software Asset Workspace

View license usage information related to Oracle in the publisher overview for Oracle in the Software Asset Workspace.

From the Software Asset Workspace, access the Oracle publisher overview by navigating to **License usage > Publishers** and then selecting **Oracle** from the list of available software publishers.

Results are updated whenever a new reconciliation result is available.



You can view a summary of your license usage information in the Summary section of the Oracle publisher overview.

### Oracle Summary

Report	Description
True-up cost	Cost to be compliant based on the average price of rights in your Oracle software entitlements.
Potential savings	Potential cost savings for your Oracle licenses.
Actual savings	Actual cost savings for your Oracle licenses.
Unlicensed entities	Summary of your unlicensed entities. This summary includes the following information:

**Oracle Summary (continued)**

Report	Description
	<ul style="list-style-type: none"> <li>• <b>Unlicensed installs:</b> Total number of unlicensed Oracle software installations. Select the number to view the complete list of unlicensed Oracle software installations.</li> <li>• <b>Installs requiring action:</b> Total number of Oracle software installations that you must take action on. Select the number to view the complete list of these Oracle software installations.</li> <li>• <b>Unlicensed subscriptions:</b> Total number of unlicensed Oracle subscriptions. Select the number to view the complete list of unlicensed Oracle subscriptions.</li> <li>• <b>Unlicensed client access:</b> Total number of unlicensed Oracle client access records. Select the number to view the complete list of unlicensed Oracle client access records.</li> <li>• <b>Unlicensed options:</b> Total number of unlicensed Oracle Database options and management packs. Select the number to view the complete list of unlicensed Oracle Database options and management packs.</li> </ul>
Progress indicators	<p>Summary of your license compliance progress.</p> <p>This summary includes the following indicators:</p> <ul style="list-style-type: none"> <li>• <b>Ignored installs:</b> Total number of Oracle software installations that were ignored during reclamation. Select the number to view the complete list of ignored Oracle software installations.</li> <li>• <b>Removal candidates:</b> Total number of Oracle removal candidates. Select the number to view the list of all software removal candidates.</li> <li>• <b>Invalid configurations:</b> Total number of Oracle removal candidates with invalid configurations. Select the number to view the complete list of these Oracle removal candidates.</li> </ul>
License types of Oracle Database on MS Azure	<p>Number of software installations for each license type that you are using in Microsoft Azure cloud environments. License types include BYOL and License Included.</p>
License types of Oracle Database on AWS	<p>Number of software installations for each license type that you are using in AWS cloud environments, based on the cloud service model through which your Oracle Database servers are deployed. License types include BYOL and License Included. Cloud service models include PaaS (Platform as a Service) and IaaS (Infrastructure as a Service).</p>

For more details on the license usage information that is provided in the publisher overview, see [License usage publisher fields in workspace](#).

**Software Asset Management publisher pack for SAP**

Use the Software Asset Management publisher pack for SAP to manage and optimize your SAP licenses. Get comprehensive visibility into your SAP license compliance and uncover potential savings.

**Note:** You can use the SAP publisher pack to manage and optimize licensing for SAP NetWeaver 7.4, SAP\_BASIS 740 and later versions.

**Note:** To use the publisher pack, activate the Software Asset Management Professional for SAP plugin (com.sn\_samp\_sap).

## Supported license types

The SAP publisher pack supports licensing for named users, engines, and third-party access to SAP systems.

### Named Users

SAP named users are the members in your organization who use SAP applications. You can purchase different types of named user licenses and then assign each license to a named user.

The SAP publisher pack supports named user licenses for both SAP ERP Central Component (ECC) applications and SAP S/4 HANA applications. Different named user license types are supported based on the application type. SAP ECC applications support various named user license types, including Professional, Limited Professional, and Employee Self Service. SAP S/4 HANA applications support only the Developer Access, Enterprise Management for Professional Use, Enterprise Management for Functional Use, Enterprise Management for Productivity Use, Technical SAP Engine User, and Technical Use named user license types. The ServiceNow AI Platform supports all named user types for both SAP ECC applications and SAP S/4 HANA applications.

### Engines (automated, calculated, and self-declared)

SAP engines, also known as packages, are optional applications that require additional licenses. Every engine has a unique license metric that is used to calculate the license usage for the engine. Examples of license metrics include the number of employees or number of contracts.

License usage is calculated through either an automated SAP engine measurement, calculation based on multiple engine measurements plus an indicator, or a manual self-declaration process.

- If an engine is supported by the SAP engine measurement process, Software Asset Management automatically calculates the license usage for that engine.
- If an engine is identified to be composed of multiple engine measurements, Software Asset Management calculates this value if the indicator license metric is also available.
- If an engine isn't supported by the SAP engine measurement process, you must manually enter the license usage information for that engine using the self-declaration process. For information on how to self-declare your SAP engine license usage, see [Self-declaring SAP engine license usage](#).

To view the complete list of engines that are supported by each process, see [Engine & Self-Declaration Product Measurement](#) in the SAP Support Portal.

**Important:** You must have an SAP Support Portal account to access the SAP Support Portal.

The SAP publisher pack supports engine licenses for both SAP ERP Central Component (ECC) applications and SAP S/4 HANA applications.

### Digital Access

The Digital Access license applies to indirect usage of SAP systems by people or third-party applications without logging into the system directly. A few examples for indirect usage of SAP systems are as follows:

- Using a third-party application to perform actions in the SAP system
- Entering data into the SAP system from a third-party application
- Viewing data in the SAP system from a third-party application

When you have many third-party product integrations with SAP systems, you can avoid unnecessary consumption of your named user license by purchasing Digital Access licenses. In this licensing model, the usage of SAP applications is licensed by the count of the predefined documents created by the third-party application. The details of the predefined document types are stored in the SAP Document Type [samp\_sap\_document] table that's installed with the Software Asset Management Professional for SAP (com.sn\_samp\_sap) plugin.

### SAP Document types

Document name	Document multiplier
Sales document	1
Purchase document	1
Invoice document	1
Manufacturing document	1
Material document	0.2
Quality Management document	1
Service and Maintenance document	1
Financial document	0.2
Time Management document	1

The SAP system stores the digital access data of the supported document types for different users and client systems. Make sure you have any of the following tools to pull the digital access data from the SAP system to your ServiceNow instance:

- SAP Passport tool
- SAP Estimation tool

**Note:** When you purchase an SAP Digital Access license, these tools are available for installation without any additional cost. For details on the SAP tools, see [SAP Help Portal](#).

When any of the predefined document types are created in the SAP system through a third-party application, the Digital Access licensing cost is applicable. However, there are no additional charges associated with reading, updating, or deleting these documents.

For the SAP Digital Access software model, digital access usage is calculated as follows:

1. The total count of documents of a particular document type created on each SAP system by all your users is calculated.

Consider a scenario where User A created 5 Material documents, and User B created 5 Material and 10 Sales documents on an SAP system. The total count of Material documents is 10 and Sales documents is 10.

2. The license consumption is calculated by multiplying the total count of a particular document type by the Document multiplier.

Based on the scenario mentioned in the preceding step, licenses consumed by Material documents is 2 ( $10 \times 0.2$ ) and by Sales documents is 10 ( $10 \times 1$ ). So, the total Digital Access license consumed is 12.

**Note:** The SAP Digital Access software model is installed with the Software Asset Management Professional for SAP (com.sn\_samp\_sap) plugin.

Reconciliation for the SAP Digital Access software model is done by comparing the Purchased rights with the licenses that you consumed.

## SAP connection with the ServiceNow AI Platform

To start connecting your SAP systems and your ServiceNow instance, [deploy the ABAP program for SAP](#). Then, follow the steps to [establish an SAP connection](#).

The Software Asset Management publisher pack for SAP uses a centralized design. When you import transport files into an SAP client that is considered a central system, the client uses the custom program-selected Remote Function Call (RFC) connection list to connect all other clients through RFC from the central system. It then fetches data to store in central system custom tables. To import the transport files, use either the SAP Solution Manager or another SAP client that has RFC connections activated to fetch data into a central system.

After the connection is established, data is pulled into your ServiceNow instance from your SAP system. For a list of all data that is pulled, see [Tables installed with the SAP publisher pack](#).

SAP data is scheduled to be pulled weekly. User activity data, web activity data, and engine usage data are pulled monthly. All user and web activity is deleted after 90 days. Engine usage measurement records in the SAP License Metric Measurement table [samp\_sap\_license\_metric\_measurement] are deleted after one year.

When SAP data enters the ServiceNow AI Platform, it's initially stored in staging tables before it's transferred to the final SAP tables. To edit the tables where data transfer takes place or to view the transfer logic, see [transform maps](#).

**Note:** The user activity and web activity transform maps aren't enabled by default because they may cause performance issues due to the large amount of data. However, you can manually enable these transform maps. To enable the activity transform maps, navigate to **All > Software Asset > SAP Compliance and Optimization > SAP Connections** and select the connection. In the Configuration section, set the **Fetch activity** field to **True** and then select **Update**.

## View SAP license usage and compliance

View your SAP license costs, usage, and compliance using the [Software Publisher Analytics dashboard](#) (Software Asset Management classic application) or [publisher overview](#) (Software Asset Workspace). The dashboard and overview also show how you can optimize license consumption by reassigning user roles in your SAP system. You can view the license optimization

details in the Software asset analytics view. For more details, see [Publisher optimizations for SAP](#).

Reconciliation runs weekly or on demand to determine your license compliance position for all of your SAP products. Reconciliation compares your purchased rights recorded in software entitlements with actual usage data pulled from your SAP systems. You can view reconciliation results for SAP in the License usage view of the Software Asset Workspace. The License usage view shows unlicensed users and engines, digital access licenses available and required, and remediation options to make your license position compliant, potential savings, and more. For more information on the License usage view, see [License usage view](#).

To view Software license compliance position reports for SAP, navigate to **License usage > Reports > Software license compliance position** in the Software Asset Workspace.

### Tables installed with the SAP publisher pack

Tables are installed with the Software Asset Management Professional for SAP plugin. The tables store data pulled from the SAP systems.

**Note:** Use the Application Files table to see all components installed with the SAP publisher pack. For more information, see [Find components installed with an application](#).

Demo data is available for the SAP publisher pack.

### Tables

Table	Description
Named User Type Role [samp_named_user_type_has_role]	Roles assigned to each named user type.
SAP Client [samp_sap_client]	Remote Function Call (RFC) destination connecting Advanced Business Application Programming (ABAP) systems to external systems.  To view the table, navigate to <b>SAP Compliance and Optimization &gt; Administration &gt; SAP Clients</b> .
SAP Connection [samp_sap_connection]	SAP system connections.  To view the table, navigate to <b>SAP Compliance and Optimization &gt; Administration &gt; SAP Connections</b> .
SAP Engine Usage [samp_sap_sw_client_access]	Most recent engine usage measurements for SAP clients based on the license metric for each engine.
SAP License Metric [samp_sap_license_metric]	This table is populated by the ServiceNow Content Service. It's a list of all license metrics that are used by SAP engines.  To view the table, navigate to <b>SAP Compliance and Optimization &gt; Administration &gt; Engines</b> .

Table	Description
	<p><b>Note:</b> The table is periodically updated with new data from the Content Service. New license metrics may be added, and existing license metrics may be deactivated to reflect current SAP licensing. To view your software models that have deactivated license metrics, navigate to <b>SAP Compliance and Optimization &gt; Administration &gt; Software Models with Deactivated SAP License Metrics.</b></p>
SAP License Metric Measurement [samp_sap_license_metric_measurement]	<p>Monthly engine usage measurements for SAP clients based on the license metric for each engine.</p> <p>To view the table, navigate to <b>SAP Compliance and Optimization &gt; Licensing &gt; All SAP Engines.</b></p>
SAP Roles [samp_sap_role]	SAP roles pulled from the SAP systems.
SAP System User [samp_sap_system_user]	<p>Discovered users pulled from the SAP systems.</p> <p>To view the table, navigate to <b>SAP Compliance and Optimization &gt; Licensing &gt; All SAP Users.</b></p> <p><b>Note:</b> The Discovered Users table [samp_discovered_user] maps the discovered SAP users to system user records in the Users table [sys_user].</p>
SAP User Activity [samp_sap_user_activity]	Data related to a user's activity on an SAP client, such as the amount of time spent on an SAP system or the number of database records created or updated.
SAP User Roles [samp_sap_user_has_role]	SAP users and their assigned roles.
SAP Web Activity [samp_sap_web_activity]	Data related to web activity or RFC connections performed in the SAP client, such as the number of calls or amount of data received or sent by each connection.
SAP User Active Transactions [samp_named_user_type_has_transactions]	Data related to a named user's transaction activity on an SAP client. User transaction activity is based on SAP transaction codes, which are shortcuts for performing transactions or tasks on an SAP client. For example, the ME21N transaction code enables you to create a purchase order in SAP.
SAP USMM Rules [samp_sap_usmm_rule]	USMM rules information from all connected SAP applications.

**Note:** Staging tables for SAP data are also installed.

Data from SAP is also stored in some additional tables that aren't part of the SAP publisher pack.

- Price list data is pulled and stored in the Price List table [samp\_price\_list].

To view the table, navigate to **SAP Compliance and Optimization > Administration > Price Lists**.

- Named user types are pulled and stored in the Named User Type table [samp\_named\_user\_type].

To view the table, navigate to **SAP Compliance and Optimization > Administration > Named User Types**.

- The Digital Access details such as Client, User name, Document type, Document type count, and Measured by are pulled from the SAP systems and stored in the SAP Digital Access [samp\_sap\_digital\_access] table.

To view the data in the table, navigate to **All > Software Asset Workspace > License operations > Discovery > SAP Digital Access Data**.

### Deploy the ABAP program for SAP

To begin establishing a connection between your SAP system and your ServiceNow instance, deploy the Advanced Business Application Programming (ABAP) program. Deploying the ABAP program allows data to be shared between SAP and your ServiceNow instance.

#### Before you begin

To access the ABAP program, download the SAP ABAP for Software Asset Management application from the [ServiceNow Store](#). Make sure you download the application version that is compatible with the Xanadu release.

Role required: sam\_admin

#### About this task

To deploy the ABAP program, import the transport files that are provided through the SAP ABAP for Software Asset Management application and then configure a service provider with the service-oriented architecture (SOA) Manager.

- **Note:** If you upgrade your ServiceNow instance, you must download and deploy the version of the ABAP program that is compatible with the new release. You must then reconfigure a service provider with the SOA Manager.

For SAP setup information, see [KB0813999](#).

For more information on SAP and its related tools, refer to the [SAP Help Portal](#).

### Procedure

1. In your SAP system, import the transport files using the SAP Transport Management System (STMS).
  - a. Copy and extract the COFILE and DATA files to your directory.
  - b. Start STMS and select **Import Overview**.
  - c. Double-click the target system, select **Extras > Other Requests > Add**, and then enter the transport request number.
  - d. Highlight the request and select **Request > Import**.
  - e. From the Import Transport Request window, enter the client number in the **Target Client** field.

- f. Select the Options tab, and then select the **Ignore Invalid Component Version** check box.
  - g. Select **OK**.
2. In your SAP system, configure a service provider with the SOA Manager.
- a. Start the SOA Manager and select **Service Administration > Web Service Configuration**.
  - b. Select **Service Definition** from the **Search By** field.
  - c. Enter the service definition location in the **Search Pattern** field.
  - d. Select **Go**.
  - e. From the Search Results pane, select the service definition row, and then select **Apply Selection**.
  - f. From the Configurations tab, select **Create**.
  - g. Complete the following fields.

**SOA Management dialog box**

Field	Description
Service Name	Name of the service.
Description	Description of the service.
New Binding Name	Name of the binding.

- h. Select **Apply Settings**.
- i. Select **Provider Security > Message Authentication**, and then select the **User ID/Password** check box.
- j. Select **Save**.
- k. Select **Overview > Open Design time WSDL document**.  
A browser window opens and a new WSDL is generated.
- l. Select **Open Service WSDL Generation**.
- m. Copy the link from the **WSDL URL for Binding** field.

3. Verify the RFC connection.

**What to do next**

Return to your ServiceNow instance to establish your SAP connection.

**Establish an SAP connection**

After you have deployed the Advanced Business Application Programming (ABAP) program in your SAP system, create a connection profile to establish a connection between your SAP system and your ServiceNow instance.

### Before you begin

Before establishing a connection between SAP and your ServiceNow instance, check if your SAP system network is accessible to external applications like ServiceNow. If external connections are blocked, you can install a MID Server. A MID Server enables communication and data movement between a ServiceNow instance and external applications or data sources. For instructions, see [Installing the MID Server](#).

If you already have a MID Server installed in the network and connected to your ServiceNow instance, this SAP connection will automatically use it.

Role required: admin

### Procedure

1. Navigate to **All > SAP Compliance and Optimization > Connection Setup** and select **New**.
2. On the form, fill in the fields.

#### SAP Connection Setup form

Field	Description
Name	Name of connection profile.
Default price list	Default price list that should be considered for reconciliation.
WSDL	Web Service Description Language (WSDL) URL from the SOA manager, that includes an IP address, that is used to connect to the SAP system.  <b>Note:</b> Do not change the SAP WSDL name. The WSDL service definition name must be /NOW/SAMP and the service binding name must be NOW_SAMP. The only WSDL name that can be changed is the WSDL generation name.
User name	User name used to connect to the SAP system.
Password	Password used to connect to the SAP system.

3. Select **Submit**.  
The initial connection is established.
4. Select the SAP connection and review the fields on the record.

#### SAP Connection record

Field	Description
Name	Name of the connection profile. The value is generated in the SAP Connection Setup form.
Default price list	Default price list that should be considered for reconciliation. The value is generated in the SAP Connection Setup form.
Use USMM Role Optimization	Check box to specify USMM role based optimization that must be applied during reconciliation.
Last run	Date and time that data was last pulled for the SAP connection.

Field	Description
SOAP message	SOAP message that has the SAP WSDL information.
Credential alias	Connection alias that contains the credentials for the connection. The connection alias resolves your connection and credentials at runtime.
Active	Option that indicates that the SAP connection is active.
User Mapping	
SAP user field	SAP users across different clients that are mapped to a corresponding ServiceNow user.
User field	ServiceNow user field.  <b>Note:</b> Changing the values in the User Mapping fields after data is pulled causes the mapping between discovered users and system users to be lost. The mapping between discovered users and the <b>Rights used by</b> and <b>Rights needed by</b> fields is also lost.
Configuration	
Fetch roles	Controls the data pull from SAP for roles data.
Fetch engine usage	Controls the data pull from SAP for engine usage data.
Fetch activity	Controls the data pull from SAP for user activity and web activity data.
Fetch user transactions	Controls the data pull from SAP for user transaction activity data.

5. In the SAP Credentials related list, view the credentials you used to create the connection.

**Note:** Only one credential record should be active for a given SAP connection. To determine the roles associated with your credentials, contact your SAP Basis administrator. Your administrator assigns respective roles to your SAP user ID credentials.

6. To test your SAP connection and if you're running the latest version of the ABAP program, select the **Test SAP Connection and Version** related link.

**Note:** If you upgrade your ServiceNow instance, you must download and deploy the new version of the ABAP program and reconfigure a service provider with the SOA Manager.

7. To send a request to the custom ABAP program to collect the SAP data into the custom tables again, select the **Refresh data in SAP** related link.

8. If the SAP data you pulled is corrupted and you need to see current data, select the **Pull all SAP Data to ServiceNow** related link. SAP data is scheduled to be pulled regularly.

9. View SAP clients in the **SAP Clients** related list. The SAP clients are generated when SAP data is pulled during the scheduled job.

10. Select **Update**.

**Result**

You can now begin creating software models and entitlements.

**Create entitlements for SAP**

Create software entitlements to record your license information for SAP products. You can create entitlements individually or import them from a spreadsheet.

**Before you begin**

Role required: sam\_user or sam\_admin

**Note:** The sam\_admin role is required to import entitlements.

**Important:** You can create and import entitlements in both the Software Asset Management classic application and the Software Asset Workspace. The following steps provide details on creating entitlements in the Software Asset Management classic application. For details on creating entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#). For details on importing entitlements in the Software Asset Workspace, see [Import bulk entitlements in workspace](#).

**About this task**

The following steps describe information specific to SAP. For general instructions on creating software entitlements, see [Create entitlements in Software Asset Management classic](#).

**Procedure**

1. Navigate to **All > Asset > Portfolios > Software Entitlement** and select **New**.
2. On the form, fill in the fields.

**Note:** Only information specific to SAP software entitlements is shown in the following table. For a detailed description of all software entitlement fields, see [Software entitlement fields](#).

**Software Entitlement form**

Field	Value
Metric group	SAP
License metric	<p>Select any of the following values:</p> <ul style="list-style-type: none"> <li>○ <b>Named User:</b> To license the number of named users that can be assigned a given Named User Type. The Named User Type is defined by the software model linked to the entitlement.</li> <li>○ <b>Engine Measurement:</b> To license the amount of usage for an SAP engine.</li> <li>○ <b>Digital Access:</b> To license the indirect usage of SAP applications through a third-party application or a non-SAP intermediary software based on the count of documents created by the third-party application</li> </ul> <p>The type of usage is defined by the <b>SAP license metric</b> field on the software model.</p>

Field	Value
	For more information about license metrics, see <a href="#">Software license metrics</a> .

3. Select **Save**.
4. After the form reloads, select **Publish**.

### Create software models for SAP

Create software models to record SAP product information.

#### Before you begin

Role required: sam\_user

**i Important:** You can create software models in both the Software Asset Management classic application and the Software Asset Workspace. The following steps provide details on creating software models in the Software Asset Management classic application. For details on creating software models in the Software Asset Workspace, see [Create software models in workspace](#).

#### About this task

Software models are automatically created for engines and license metrics that are pulled from your SAP systems. You can manually create additional software models for SAP products as needed.

The following steps describe information that is specific to SAP. For general instructions on creating software models, see [Create software models in Software Asset Management classic](#).

#### Procedure

1. Navigate to **All > Product Catalog > Product Models > Software Models** and select **New**.
2. On the form, fill in the fields.

**i Note:** Only the fields that are specific to SAP software models are shown below. For detailed descriptions of all software model fields, see [Software model fields](#).

#### Software Model form

Field	Description
Named user type	SAP named user type. <b>i Note:</b> This field appears only when <b>Named Users</b> is selected from the <b>Product</b> field.
Price List	Software group that corresponds to the named user type. <b>i Note:</b> This field appears only when <b>Named Users</b> is selected from the <b>Product</b> field.
SAP license metric	License metric that is used to calculate license consumption for an engine. Examples of license metrics are number of employees or number of contracts.

Field	Description
	<p><b>Note:</b> This field appears only when an SAP engine is selected from the <b>Product</b> field.</p>
Is relevant	<p>Some SAP engines don't require additional licensing. Select the check box if the engine requires additional licensing. Software models with <b>Is relevant</b> set to false will always be considered compliant by reconciliation.</p> <p><b>Note:</b> This field appears only when an SAP engine is selected from the <b>Product</b> field.</p>
Threshold	<p>Some SAP engines allow a certain amount of unlicensed usage before your licence position becomes not compliant. The threshold defines the allowed usage and is specific to each engine and license metric. If your engine usage exceeds your licensed amount but is less than the threshold value, the software model is still considered compliant by reconciliation.</p> <p><b>Note:</b> This field appears only when an SAP engine is selected from the <b>Product</b> field.</p>

3. Select **Submit**.

**What to do next**

Create a software entitlement to record your licenses for the software model.

**Create a custom SAP named user type**

Create a custom SAP named user type so that you can track and manage your SAP licenses based on the named user type that is specific to your SAP system.

**Before you begin**

Role required: sam\_admin

**Important:** You can create custom SAP named user types in both the Software Asset Management classic application and the Software Asset Workspace. Use the following steps to create custom named SAP user types in the Software Asset Management classic application. For details on how to create custom named user types in the Software Asset Workspace, see [Create a custom named user type in workspace](#).

**About this task**

**Note:** The custom SAP named user types that you create directly on your ServiceNow instance are not reflected in your SAP system. You must make the same changes in your SAP system.

**Procedure**

1. On the page header of your ServiceNow® instance, select **All**.
2. In the menu navigation filter, enter `samp_named_user_type_list.do`. The Named User Types [samp\_named\_user\_type] table opens.
3. Select **New**.
4. On the form, fill in the fields.

### Custom Named User Type form

Field	Description
Name	Name of custom named user.
Price list	Default price list.
Is developer	Option that indicates the user has a developer role.
Grants access to	Grant access to a named user type.
Value	Value associated with the named user type. This value can be either numbers or letters.
Rank	Priority of the named user type during reconciliation. Lower rank values take precedence.
Is licensable	Option that indicates the named user type license status.
Active	Option that indicates if the named user type is active.

#### 5. Select **Submit**.

#### Result

The named user type is added to the Named User Types [samp\_named\_user\_type] table.

#### What to do next

After you have added the custom named user, create a software model designating the custom named user in the form.

#### Map a role to a named user type


You can optimize your SAP licenses by mapping roles to a named user type. During reconciliation, discovered user roles and their assigned named user types are compared against these roles to identify user that can be given a lower named user type.

#### Before you begin

Role required: sam\_admin

#### About this task

#### Procedure

1. On the page header of your ServiceNow® instance, select **All**.
2. In the menu navigation filter, enter `samp_named_user_type_list.do`.  
The Named User Types [samp\_named\_user\_type] table opens.
3. Select the named user type that you want to map a role to.
4. In the **SAP Roles** related list, select **Edit...**
5. In the Collection list on the Edit Members form, search for and select the role that you want to map to the named user type.
6. Select the Add icon () to move the selected role to the SAP Roles List.
7. Repeat steps 5 and 6 for each role that you want to map to the named user type.
8. Select **Save**.

### Create custom SAP price lists

Create custom SAP price lists so that you can track and manage SAP licenses based on the contracts that are specific to your SAP system.

#### Before you begin

Role required: sam\_admin

**Note:** The custom SAP named user types that you create directly on your ServiceNow instance aren't reflected in your SAP system. You must make the same changes in your SAP system.

**Important:** You can create custom SAP price lists in both the Software Asset Management classic application and the Software Asset Workspace. Use the following steps to create custom SAP price lists in the Software Asset Management classic application. For details on how to create custom SAP price lists in the Software Asset Workspace, see [Create custom SAP price lists in workspace](#).

#### Procedure

1. On the page header of your ServiceNow instance, select **All**.
2. In the menu navigation filter, enter `samp_price_list_list.do`. The Price Lists [samp\_price\_list] table opens.
3. Select **New**.
4. On the form, fill in the fields.

##### Custom Price List form

Field	Description
Name	Name of the price list.
Id	Unique identifier for the price list.
Default named user type	Default named user type for the price list.
Active	Option that indicates if the price list is active.

5. Select **Submit**.  
You automatically return to the Price Lists [samp\_price\_list] table.
6. **Optional:** Associate SAP named user types with the custom SAP price list.
  - a. From the Price Lists [samp\_price\_list] table, select the custom SAP price list that you created. The Custom Price List record opens.
  - b. In the **Named User Types** related list, select **New**.
  - c. On the form, fill in the fields.

##### Create Custom Named User Type form

Field	Description
Name	Name of the named user type.
Price List	Price list that you want to associate the named user type with. This field populates automatically.

Field	Description
Is developer	Option that indicates if users with this named user type have a developer role.
Grants access to	Applications that the named user type has access to.
Value	Alphanumerical value that identifies the named user type.
Rank	Priority of the named user type during reconciliation. Lower rank values correlate with a higher priority during reconciliation.
Is licensable	Option that indicates if the named user type can be licensed.
Active	Option that indicates if the named user type is active.

d. Select **Submit**.

e. Repeat steps a to c for each custom named user type that you want to add.

### Import custom SAP named user types

Import custom SAP named user types into your ServiceNow® instance so that you can track and manage SAP licenses based on the named user types that are specific to your SAP system.

#### Before you begin

Role required: admin

#### Procedure

1. Go to [KB1299127](#) to download the Microsoft Excel spreadsheet template (imp\_samp\_sap\_custom\_nut.xlsx) that you can use to import custom SAP named user types into your ServiceNow instance.
2. Fill in the spreadsheet with all the custom SAP named user types that you want to import. The **Client**, **System**, **Named user type value**, and **Named user type name** fields are required for every entry on the spreadsheet.
3. From your ServiceNow instance, open the SAP Custom Named User Types [imp\_samp\_sap\_custom\_nut] table.

**Note:** The Application Scope of your ServiceNow instance must be set to **Software Asset Management Professional for SAP**.

- a. On the page header of your ServiceNow® instance, select **All**.
  - b. In the menu navigation filter, enter `imp_samp_sap_custom_nut_list.do`. The SAP Custom Named User Types [imp\_samp\_sap\_custom\_nut] table opens.
4. Right-click the table header and then select **Import**.
  5. On the form, fill in the fields.

### Import external data into SAP Custom Named User Type form

Field	Description
Do you want to insert or update data?	Option that indicates whether you're inserting new data or updating existing data in the SAP Custom Named User Types [imp_samp_sap_custom_nut] table.
Do you want to create an Excel template to enter data?	Option to generate the Microsoft Excel spreadsheet template that you can use to insert or update data in the SAP Custom Named User Types [imp_samp_sap_custom_nut] table. Enable this option only if didn't already download the spreadsheet template in <a href="#">step 1</a> .
Step 1: Create an Excel template file to enter data	
<p><b>Note:</b> This form section appears only when you enable the <b>Do you want to create an Excel template to enter data?</b> option.</p>	
Include all fields in the template	Option to include all available fields in the Microsoft Excel spreadsheet template.
Create Excel Template	Option to generate the Microsoft Excel spreadsheet template.
Step 2: Upload the template file	
Excel template file	Microsoft Excel spreadsheet that contains the named user types that you want to insert or update in the SAP Custom Named User Types [imp_samp_sap_custom_nut] table.

**6. Select Upload.**

**7. On successful upload, select Preview Imported Data.**

The Imp Tmpl Samp Sap Custom Nuts page opens.

**8. Verify that the correct number of custom SAP named user types were uploaded and then select Complete Import.**

The custom SAP named user types are imported into your ServiceNow® instance. The named user types are then added to the Named User Types [samp\_named\_user\_type] table.

### Import custom SAP price lists

Import custom SAP price lists into your ServiceNow® instance so that you can track and manage SAP licenses based on the contracts that are specific to your SAP system.

### Before you begin

Role required: admin

### Procedure

- Go to [KB1299127](#) to download the Microsoft Excel spreadsheet template (imp\_samp\_sap\_custom\_price\_list.xlsx) that you can use to import custom SAP price list data into your ServiceNow instance.
- Fill in the spreadsheet with all the custom SAP price list data that you want to import. The **Client**, **System**, and **Price list value** fields are required for every entry on the spreadsheet.

**Note:** You must fill in a separate spreadsheet for each custom SAP price list that you want to import data for.

3. From your ServiceNow instance, open the SAP Custom Price List Data [imp\_samp\_sap\_custom\_price\_list] table.

**Note:** The Application Scope of your ServiceNow instance must be set to **Software Asset Management Professional for SAP**.

a. On the page header of your ServiceNow instance, select **All**.

b. In the menu navigation filter, enter `imp_samp_sap_custom_price_list_list.do`. The SAP Custom Price List Data [imp\_samp\_sap\_custom\_price\_list] table opens.

4. Right-click the table header and then select **Import**.

5. On the form, fill in the fields.

**Import external data into SAP Custom Price List Data form**

Field	Description
Do you want to insert or update data?	Option that indicates whether you're inserting new data or updating existing data in the SAP Custom Price List Data [imp_samp_sap_custom_price_list] table.
Do you want to create an Excel template to enter data?	Option to generate the Microsoft Excel spreadsheet template that you can use to insert or update data in the SAP Custom Price List Data [imp_samp_sap_custom_price_list] table. Enable this option only if you didn't already download the spreadsheet template in <a href="#">step 1</a> .
Step 1: Create an Excel template file to enter data	
<p><b>Note:</b> This form section appears only when you enable the <b>Do you want to create an Excel template to enter data?</b> option.</p>	
Include all fields in the template	Option to include all available fields in the Microsoft Excel spreadsheet template.
Create Excel Template	Option to generate the Microsoft Excel spreadsheet template.
Step 2: Upload the template file	
Excel template file	Microsoft Excel spreadsheet that contains the data that you want to insert or update in the SAP Custom Price List Data [imp_samp_sap_custom_price_list] table.

6. Select **Upload**.

7. On successful upload, select **Preview Imported Data**. The Imp Tmpl Imp Samp Sap Custom Price Lists page opens.

8. Verify that the correct number of entries were uploaded for your custom SAP price list and then select **Complete Import**. The data for your custom SAP price list is imported into your ServiceNow instance. The price list is then added to the Price Lists [samp\_price\_list] table.

9. **Optional:** Associate your custom SAP price list with additional SAP named user types. By default, the Software Asset Management application automatically associates your custom SAP price list with the SAP named user types that you specified in the imported Microsoft

Excel spreadsheet. However, you can associate your price list with additional SAP named user types by adding custom named user types to it.

- a. On the page header of your ServiceNow instance, select **All**.
- b. In the menu navigation filter, enter `samp_price_list_list.do`.  
The Price Lists [samp\_price\_list] table opens.
- c. Select your custom SAP price list.  
The Price List record opens.
- d. In the **Named User Types** related list, select **New**.
- e. On the form, fill in the fields.

**Custom Named User Type form**

Field	Description
Name	Name of the named user type.
Price List	Price list that you want to associate the named user type with. This field populates automatically.
Is developer	Option that indicates if users with this named user type have a developer role.
Grants access to	Applications that the named user type has access to.
Value	Alphanumerical value that identifies the named user type.
Rank	Priority of the named user type during reconciliation. Lower rank values correlate with a higher priority during reconciliation.
Is licensable	Option that indicates if the named user type can be licensed.
Active	Option that indicates if the named user type is active.

- f. Select **Submit**.
- g. Repeat steps d to f for each custom named user type that you want to add.

**SAP USMM-based optimization**

Optimize licensing through SAP User License Measurement (USMM) rules that map roles to the Named User Type for an SAP client.

The rules in the SAP USMM map roles to a Named User Type on a system client basis. If you want to apply these rules for named user licensing, ServiceNow AI Platform pulls the USMM rules and stores all information in the SAP USMM Rules [samp\_sap\_usmm\_rule] table. A scheduled job, *SAM - SAP USMM Based Optimization*, runs weekly to maximize licensing according to the USMM rules of a system client for the discovered user. This optimized Named User Type is populated in the USMM Named user type column in the SAP System Users [samp\_sap\_system\_user] table. For more information, see [Tables installed with the SAP publisher pack](#).

If you opt in for the USMM rules by selecting the **Use USMM Role Optimization** check box in the SAP Connection record, the Software Asset Management application prefers the optimized USMM Named User Type during reconciliation. For more information about creating a connection profile to establish a connection between your SAP system and your ServiceNow instance, see [Establish an SAP connection](#).

### User transaction activity for named user types

Determine license optimizations for your SAP named user types based on your SAP user transaction activity.

User transaction activities are the transactions or tasks that users perform on an SAP client. These activities are based on SAP transaction codes (t-codes), which are the shortcuts that enable you to identify and perform these transactions or tasks. When you run scheduled jobs for SAP, the Software Asset Management application retrieves the SAP transaction codes that were actively used by your SAP users.

When you create a reclamation rule for an SAP named user type, you can specify the transaction codes and the minimum number of those transaction codes that must be active for a user to keep their assigned named user license. During reconciliation, the Software Asset Management application compares these transaction codes against the discovered user transaction codes for the named user type. You can view the resulting data in the Users for Transaction Based License Optimization report on the Software Publisher Analytics dashboard for SAP. Use this information to optimize your named user license position by downgrading licenses or reclaiming unused licenses. See [Software Publisher Analytics dashboard for SAP in Software Asset Management classic](#) for more information on this report.

### View active transaction codes for your SAP users

View the SAP transaction codes (t-codes) that were actively used by your SAP users. This list is compared against your reclamation rules to determine whether the user is assigned an optimized license.

### Before you begin

Role required: admin

**i Important:** You can view these SAP transaction codes in both the Software Asset Management classic application and the Software Asset Workspace. The following steps provide details on viewing these transaction codes in the Software Asset Management classic application. For details on viewing these transaction codes in the Software Asset Workspace, see [View SAP users in workspace](#).

### Procedure

1. On the page header of your ServiceNow® instance, select **All**.
2. In the menu navigation filter, enter `samp_sap_system_user_list.do`.  
The SAP System Users [samp\_sap\_system\_user] table opens.
3. Select the SAP user that you want to view active SAP transaction codes for.
4. On the SAP System User record, select the **SAP User Active Transactions** related tab to view the complete list of SAP transaction codes that were discovered for the given user.

### Self-declaring SAP engine license usage

You can self-declare the license usage for any SAP engines that cannot be measured by the automated SAP engine measurement process. Use this information to gain more comprehensive visibility into your SAP license compliance position so that you can optimize your licensing costs.


## Self-declare SAP engine license usage in the Software Asset Management classic application


Use the Software Asset Management classic application to self-declare the license usage for any SAP engines that cannot be measured by the automated SAP engine measurement process.

### Before you begin

Role required: admin or sam\_user

### About this task

To determine if you must self-declare the license usage for a given engine, see [Engine & Self-Declaration Product Measurement](#)  in the SAP Support Portal. You must self-declare the license usage for any engine that is included in the list of Self-Declaration Products.

 **Important:** You must have an SAP Support Portal account to access the SAP Support Portal.

### Procedure


1. Create a software model for the SAP engine.  
Refer to [Create software models for SAP](#) for detailed instructions.

#### **Note:**


On the Software Model form, you must set the **Publisher** field to SAP. The form then reloads with only the software model fields that are applicable to SAP.

In addition, you must set the **Product** field to the SAP engine that you want to self-declare the license usage for.

2. Create entitlements for your software model.  
Refer to [Create entitlements for SAP](#) for detailed instructions.

 **Note:** On the Software Entitlement form, you must set the **Software model** field to the same software model that you created in [step 1](#).

3. Create a client access record to specify the license usage of the SAP engine.

- a. On the page header of your ServiceNow instance, select **All**.
- b. In the menu navigation filter, enter `samp_sw_client_access_list.do`.  
The Client Access [`samp_sw_client_access`] table opens.
- c. Select **New**.
- d. In the **Name** field of the Client Access form, enter a name for the client access record.
- e. Select the Lookup using list icon () next in the **Software model** field to locate and select the software model for the SAP engine.

 **Note:** Select the same software model that you created in [step 1](#).

- f. Enter an engine license usage value in the **Usage** field.

This license usage value is based on the license metric that is associated with the engine. For example, the license metric for the SAP E-Recruiting engine is **Employees**. If 200

employees are using an SAP E-Recruiting license, you must enter a license usage value of 200 in the **Usage** field.

Refer to [Engine & Self-Declaration Product Measurement](#)  for more information on the license metrics that are associated with each SAP engine.

**g.** Select **Submit**.

### Result

After you self-declare the license usage for the SAP engine, it is automatically included in the next SAP reconciliation that runs on your ServiceNow instance. Reconciliation runs weekly or on-demand.


### Self-declare SAP engine license usage in the Software Asset Workspace


Use the Software Asset Workspace to self-declare the license usage for any SAP engines that cannot be measured by the automated SAP engine measurement process.

### Before you begin

Role required: admin or sam\_user

### About this task

To determine if you must self-declare the license usage for a given engine, see [Engine & Self-Declaration Product Measurement](#)  in the SAP Support Portal. You must self-declare the license usage for any engine that is included in the list of Self-Declaration Products.

 **Important:** You must have an SAP Support Portal account to access the SAP Support Portal.

### Procedure

**1.** Create a software model for the SAP engine.

Refer to [Create software models in workspace](#) for detailed instructions.

 **Note:**

On the Create New Software Model form, you must set the **Publisher** field to SAP. The form then reloads with only the software model fields that are applicable to SAP.


In addition, you must set the **Product** field to the SAP engine that you want to self-declare the license usage for.

**2.** Create entitlements for your software model.

You can create entitlements using either of the following options:

- The **Create entitlement** button on the Software asset overview.

Refer to [Create entitlements in workspace](#) for detailed instructions on how to create entitlements using this option.

 **Note:** On the Create New Software Entitlement form, you must set the **Software model** field to the same software model that you created in [step 1](#).

- The **Software Entitlements** tab on the software model record.

To create entitlements using this option, open the record for the software model that you created in [step 1](#). On the **Software Entitlements** tab of the software model record, select **New** and then fill in the fields on the corresponding Create New Software Entitlement form.

Refer to [Software entitlement fields](#) for detailed descriptions of each field.

**Note:** The **Software model** field populates automatically.

3. Specify the license usage of the SAP engine.
  - a. Open the record for the software model that you created in [step 1](#).
  - b. On the **SAP Engine Usages** tab, select **New**.
  - c. On the Create new SAP Engine Usage form, fill in the fields.

**Create New SAP Engine Usage form**

Field	Description
Name	Name that is used to identify and track your SAP engine license usage.
Software model	Software model that the SAP engine is associated with. This field populates automatically.
SAP client	SAP client that the SAP engine is installed or running on.
Usage	<p>License usage of the SAP engine.</p> <p>This value is based on the license metric that is associated with the engine. For example, the license metric for the SAP E-Recruiting engine is <b>Employees</b>. If 200 employees are using an SAP E-Recruiting license, you must enter a license usage value of 200 in the <b>Usage</b> field. Refer to <a href="#">Engine &amp; Self-Declaration Product Measurement</a> for more information on the license metrics that are associated with each SAP engine.</p>

- d. Select **Save**.

**Result**

After you self-declare the license usage for the SAP engine, it is automatically included in the next SAP reconciliation that runs on your ServiceNow instance. Reconciliation runs weekly or on-demand.

**Software Publisher Analytics dashboard for SAP in Software Asset Management classic**

View your license compliance position for SAP on the Software Publisher Analytics dashboard in the Software Asset Management classic application.

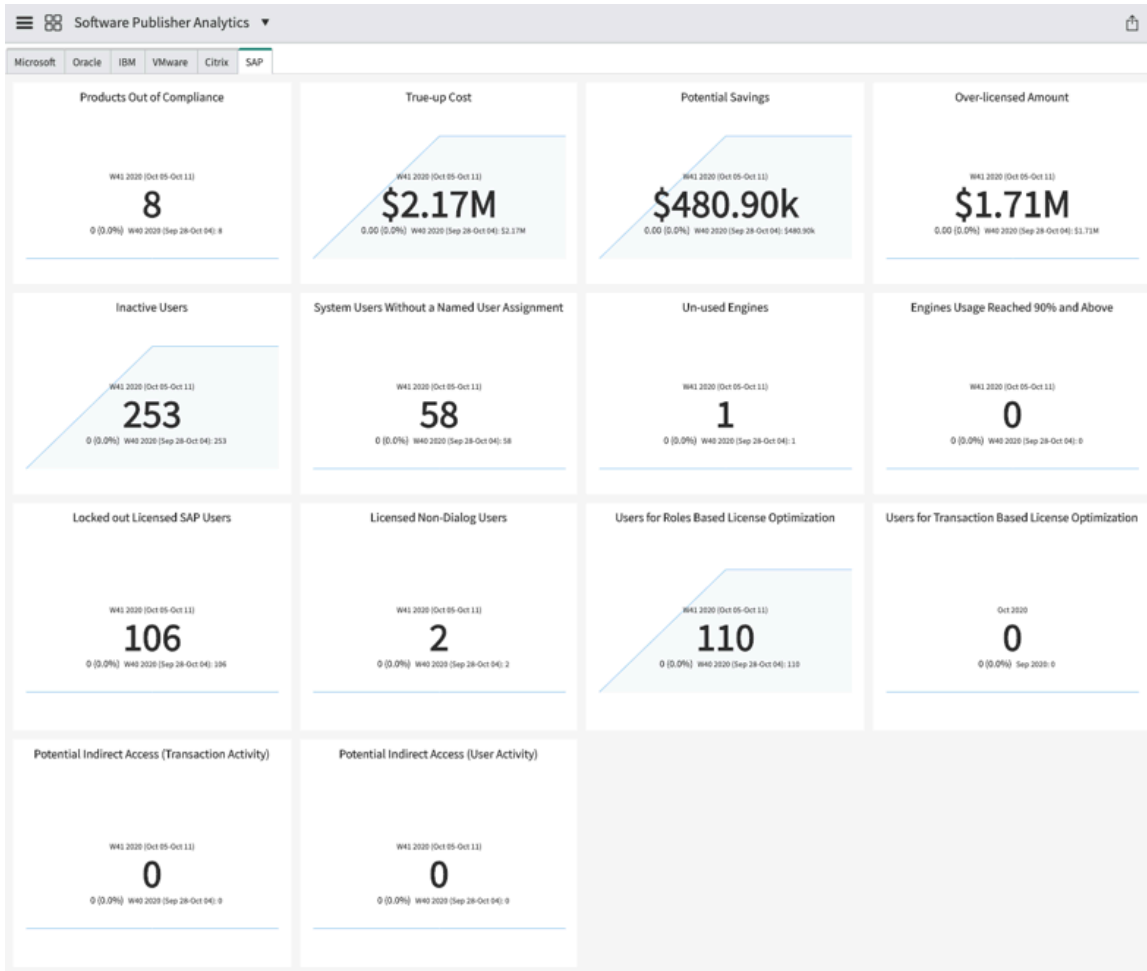
Access the dashboard by navigating to **All > Software Asset > SAP Compliance and Optimization > Overview**.

The dashboard is updated whenever a new reconciliation result is available.

## End users and roles

End user and goal	Required role
SAM user: Can view the dashboard to track SAP license compliance and potential savings.	sam_user

## SAP dashboard



## SAP tab

Report	Source list	Description
Products Out of Compliance	Software Model Result	Number of software models that are out of compliance.
True-up Cost	Software Model Result	Cost to be compliant based on the average prices for entitlements. The cost covers Named User Types and Engines.
Potential Savings	Software Model Result	Amount saved if removal candidates are reclaimed. The savings covers Named User Types and Engines.

**SAP tab (continued)**

Report	Source list	Description
Over-licensed Amount	Software Model Result	Cost of licenses that are owned but not used. The cost covers Named User Types and Engines.
Inactive Users	SAP System Users	SAP users who logged in over 90 days ago.
System Users Without a Named User Assignment	SAP System Users	SAP users who do not have a named user assignment.
Un-used Engines	License Metric Results	Number of SAP engines that have not been used but have active software entitlements.
Engines Usage Reached 90% and Above	License Metric Results	Number of SAP engines that reached 90% usage or higher.
Locked Out Licensed SAP Users	SAP System Users	Locked SAP users consuming a license.
Licensed Non-Dialog Users	SAP System Users	SAP non-dialog users that have a named user assignment.
Users For Roles Based License Optimization	SAP System Users	Number of SAP users that could have their role changed to optimize license consumption.
Users for Transaction Based License Optimization	SAP System Users	Number of SAP users for which Software Asset Management has detected user transaction-based license optimizations.  Select the report to view the list of users that can be optimized.
Potential Indirect Access (Transaction Activity)	SAP System Users	Number of SAP users with indirect access to the SAP system based on user transaction activity.  Users are given a score based on the amount of data received or sent by each connection.
Potential Indirect Access (User Activity)	SAP System Users	Number of SAP users that have indirect access to the SAP system.

### SAP tab (continued)

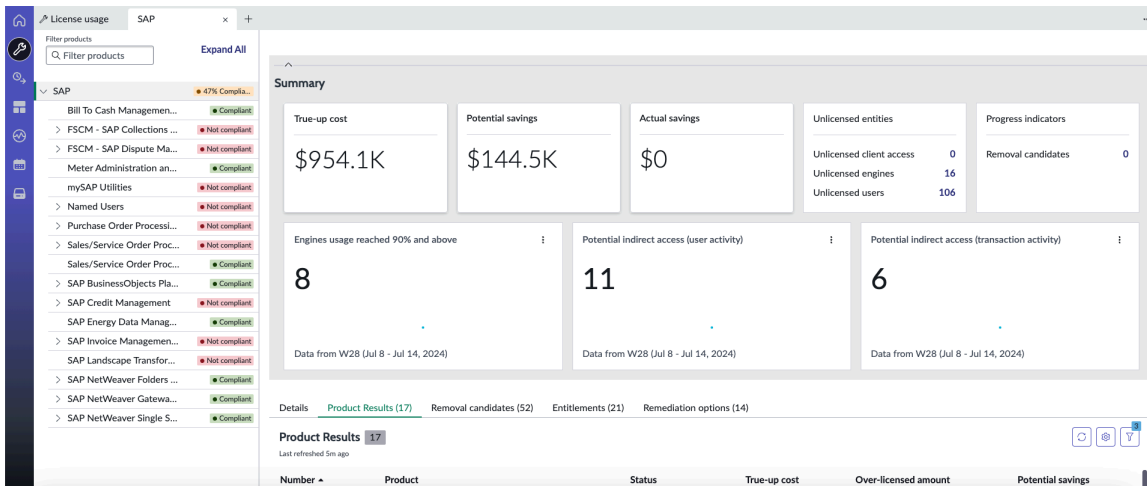
Report	Source list	Description
		Users are given a score based on total CPU time, peak count, and steps.

### Publisher overview for SAP in the Software Asset Workspace

View license usage information related to SAP in the publisher overview for SAP in the Software Asset Workspace.

From the Software Asset Workspace, access the SAP publisher overview by navigating to **License usage > Publishers** and then selecting **SAP** from the list of available software publishers.

Results are updated whenever a new reconciliation result is available.



You can view a summary of your license usage information in the Summary section of the SAP publisher overview.

### SAP Summary

Report	Description
True-up cost	Cost to be compliant based on the average price of rights in your SAP software entitlements.
Potential savings	Potential cost savings for your SAP licenses.
Actual savings	Actual cost savings for your SAP licenses.
Unlicensed entities	Summary of your unlicensed entities. This summary includes the following information:

**SAP Summary (continued)**

Report	Description
	<ul style="list-style-type: none"> <li>• <b>Unlicensed client access:</b> Total number of unlicensed SAP client access records. Select the number to view the complete list of unlicensed SAP client access records.</li> <li>• <b>Unlicensed engines:</b> Total number of unlicensed SAP engines. Select the number to view the complete list of unlicensed SAP engines.</li> <li>• <b>Unlicensed users:</b> Total number of unlicensed SAP users. Select the number to view the complete list of unlicensed SAP users.</li> </ul>
Progress indicators	<p>Summary of your license compliance progress.</p> <p>This summary includes the <b>Removal candidates</b> indicator, which displays the total number of SAP removal candidates. Select the number to view the list of all software removal candidates.</p>
Engines usage reached 90% and above	Total number of SAP engines that have reached 90% usage or higher.
Potential indirect access (user activity)	<p>Total number of SAP users that have indirect access to the SAP system.</p> <p>Users are given a score based on total CPU time, peak count, and steps.</p>
Potential indirect access (transaction activity)	<p>Total number of SAP users with indirect access to the SAP system based on user transaction activity.</p> <p>Users are given a score based on the amount of data received or sent by each connection.</p>

For more details on the license usage information that is provided in the publisher overview, see [License usage publisher fields in workspace](#).

**Software Asset Management publisher pack for VMware**

Use the Software Asset Management publisher pack for VMware to create software entitlements, software models, and track your licensing positions using VMware-specific licensing metrics.

**Note:** To access all the benefits of the Software Asset Management publisher pack for VMware, activate the VMware content pack (com.sn\_samp\_vmware) [plugin](#).

VMware is a virtualization and cloud computing software. VMware virtualization offers two types of hypervisors, as well as additional products that you can use to optimize virtualization.

Most VMware product features are accessed using a license key, which can make managing your license compliance difficult. The Software Asset Management publisher pack for VMware allows you to track your license compliance position to optimize your software spend and reduce audit risk.

A discovery process is required for VMware data to be collected. For more information, see [Data collected by ITOM Visibility](#).

[Track the software rights](#) that you've purchased for your VMware with the Software Entitlement form. You can also store the licensing key information for your software using the License Key related list on the form. For more information on the different license agreement types that are supported for VMware, see [License agreement types](#).

View your VMware license compliance using the License usage view of the Software Asset Workspace. If your VMware software is out of compliance, the License usage view provides remediation suggestions on how to return your licenses back to compliance. For more information, see [License usage view](#).

View compliance analysis results related to VMware using either the Software Publisher Analytics dashboard (Software Asset Management classic application) or publisher overview (Software Asset Workspace). For more information on the Software Publisher Analytics dashboard, see [Software Publisher Analytics dashboard for VMware in Software Asset Management classic](#). For more information on the publisher overview, see [Publisher overview for VMware, Inc. in the Software Asset Workspace](#).

### Software Publisher Analytics dashboard for VMware in Software Asset Management classic

View compliance analysis results related to VMware on the Software Publisher Analytics dashboard in the Software Asset Management classic application.


Access the Software Publisher Analytics dashboard by navigating to **All > Software Asset > Publisher Overview**.

**Note:** The add-on VMware publisher pack (com.sn\_samp\_vmware) plugin must be installed to view the VMware dashboard tab.

The dashboard is updated whenever a new reconciliation result is available. You can save charts in PNG or JPG format.

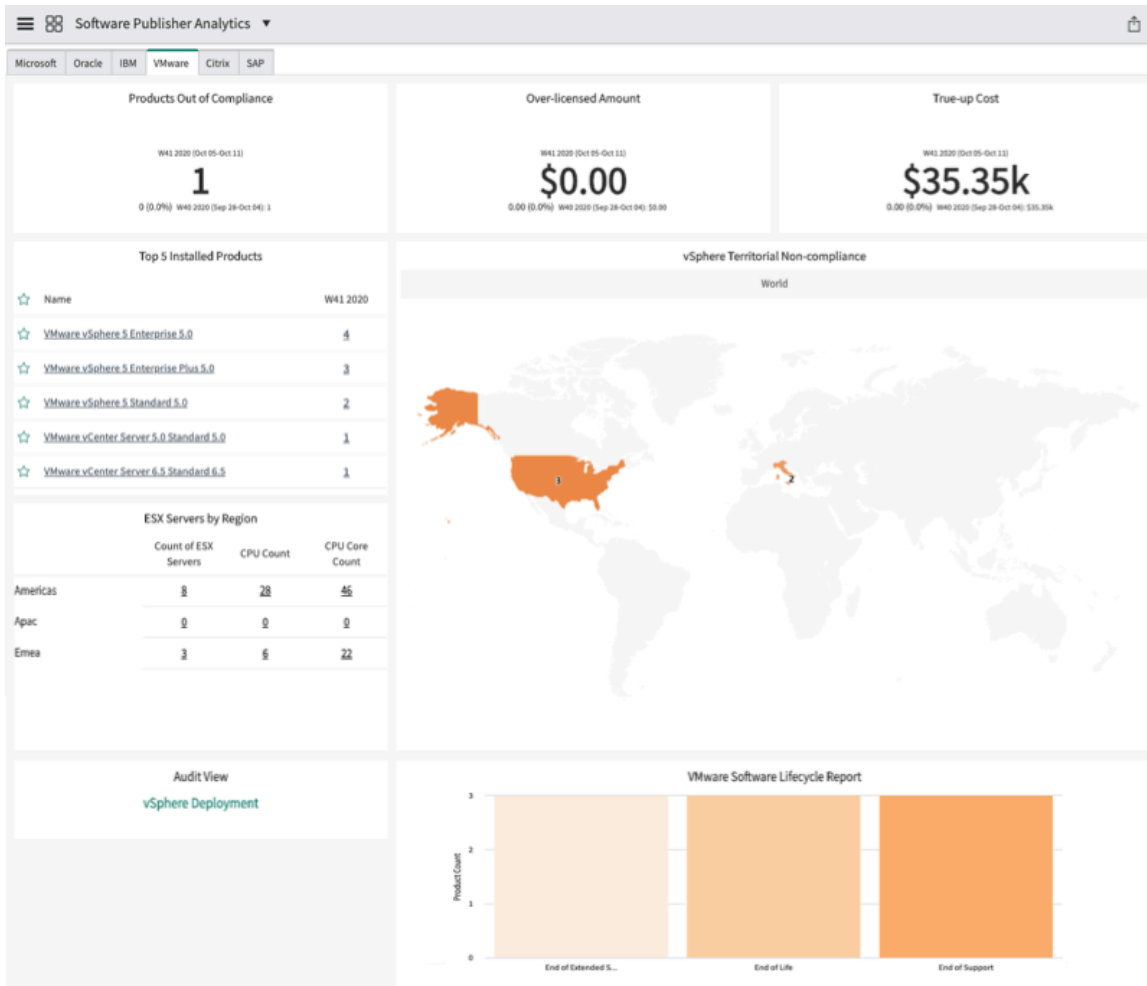
### VMware dashboard

Information from VMware vCenter software is discovered and used for VMware reconciliation. Discovery uses these probes and populates these tables:

- [vCenter probe](#)  VMware – vCenter ESX Hosts License
- VMware Discovered License Key [samp\_vmware\_license\_key] and VMware Discovered License Key Consumption [samp\_vmware\_license\_key\_usage] tables

For more information, see [vCenter discovery with Software Asset Management](#) .

**Note:** The add-on VMware publisher pack (com.sn\_samp\_vmware) plugin must be installed to view the VMware dashboard tab.



**VMware tab**

Report	Source list	Description
Products out of Compliance	Product Results	Number of products that have at least one software model out of compliance.  Select the report to view the results in the <a href="#">Software license usage</a> .
Over-licensed Amount	Product Results	Cost of licenses owned but not being used.
True-up Cost	Product Results	Cost to be compliant based on the average prices for entitlements for the rights.
Top 5 Installed Products	Software Installations	Count of top 5 VMware products installed.
vSphere Territorial Non-compliance	VMware Discovered License Key Consumptions	Compliance of VMware vCenter deployments. Drill down on the location to filter.
ESX Servers by Region	ESX Servers	Location, ESX count, CPU count, and cores count.

**VMware tab (continued)**

Report	Source list	Description
Audit View	VMware Discovered License Key Consumptions	VMware vSphere deployments: Product, License Key, Used By, Assigned To, Location, CPU core count, CPU count, vCenter reference, evaluation expiration date, and software install.
VMware Software Lifecycle Report	Software Lifecycle Report	Number of products in each software lifecycle phase, including End of Extended Support, End of Life, and End of Support.

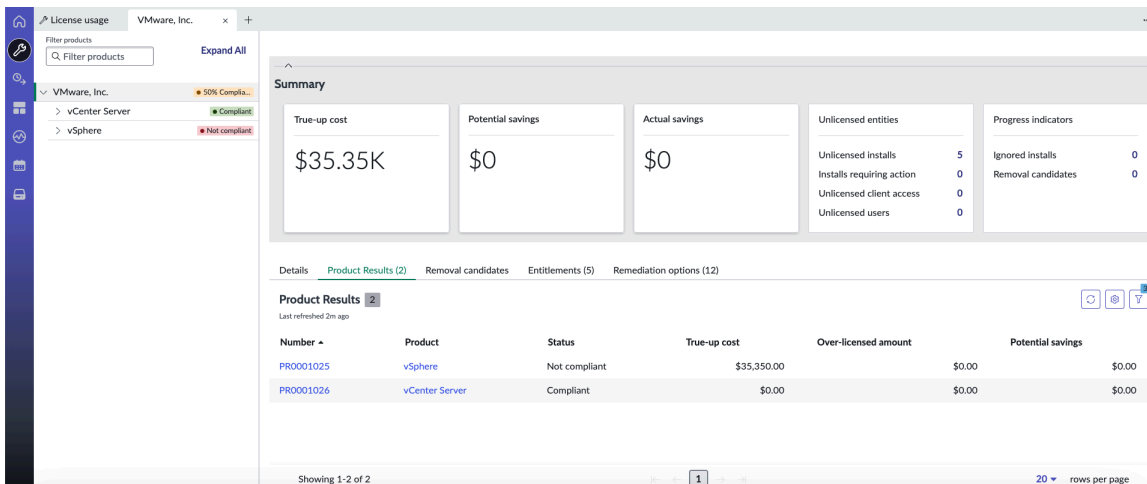
The **vSphere Deployment** related link shows the VMware Discovered License Key Consumptions list.

**Publisher overview for VMware, Inc. in the Software Asset Workspace**

View license usage information related to VMware in the publisher overview for VMware, Inc. in the Software Asset Workspace.

From the Software Asset Workspace, access the VMware, Inc. publisher overview by navigating to **License usage > Publishers** and then selecting **VMware, Inc.** from the list of available software publishers.

Results are updated whenever a new reconciliation result is available.



You can view a summary of your license usage information in the Summary section of the VMware, Inc. publisher overview.

**VMware, Inc. Summary**

Report	Description
True-up cost	Cost to be compliant based on the average price of rights in your VMware software entitlements.

**VMware, Inc. Summary (continued)**

Report	Description
Potential savings	Potential cost savings for your VMware licenses.
Actual savings	Actual cost savings for your VMware licenses.
Unlicensed entities	<p>Summary of your unlicensed entities.</p> <p>This summary includes the following information:</p> <ul style="list-style-type: none"> <li>• <b>Unlicensed installs:</b> Total number of unlicensed VMware software installations. Select the number to view the complete list of unlicensed VMware software installations.</li> <li>• <b>Installs requiring action:</b> Total number of VMware software installations that you must take action on. Select the number to view the complete list of these VMware software installations.</li> <li>• <b>Unlicensed client access:</b> Total number of unlicensed VMware client access records. Select the number to view the complete list of unlicensed VMware client access records.</li> <li>• <b>Unlicensed users:</b> Total number of unlicensed VMware users. Select the number to view the complete list of unlicensed VMware users.</li> </ul>
Progress indicators	<p>Summary of your license compliance progress.</p> <p>This summary includes the following indicators:</p> <ul style="list-style-type: none"> <li>• <b>Ignored installs:</b> Total number of VMware software installations that were ignored during reclamation. Select the number to view the complete list of ignored VMware software installations.</li> <li>• <b>Removal candidates:</b> Total number of VMware removal candidates. Select the number to view the list of all software removal candidates.</li> </ul>

For more details on the license usage information that is provided in the publisher overview, see [License usage publisher fields in workspace](#).

**Engineering license management**

Get visibility into your license position and usage of your engineering applications to eliminate audit risks, inefficient usage of licenses, inaccurate forecasting, and to help prevent denials.

Watch this short video for an introduction to engineering license management.

[https://player.vimeo.com/video/1011366881?badge=0&autoplay=0&player\\_id=0&app\\_id=58479](https://player.vimeo.com/video/1011366881?badge=0&autoplay=0&player_id=0&app_id=58479)

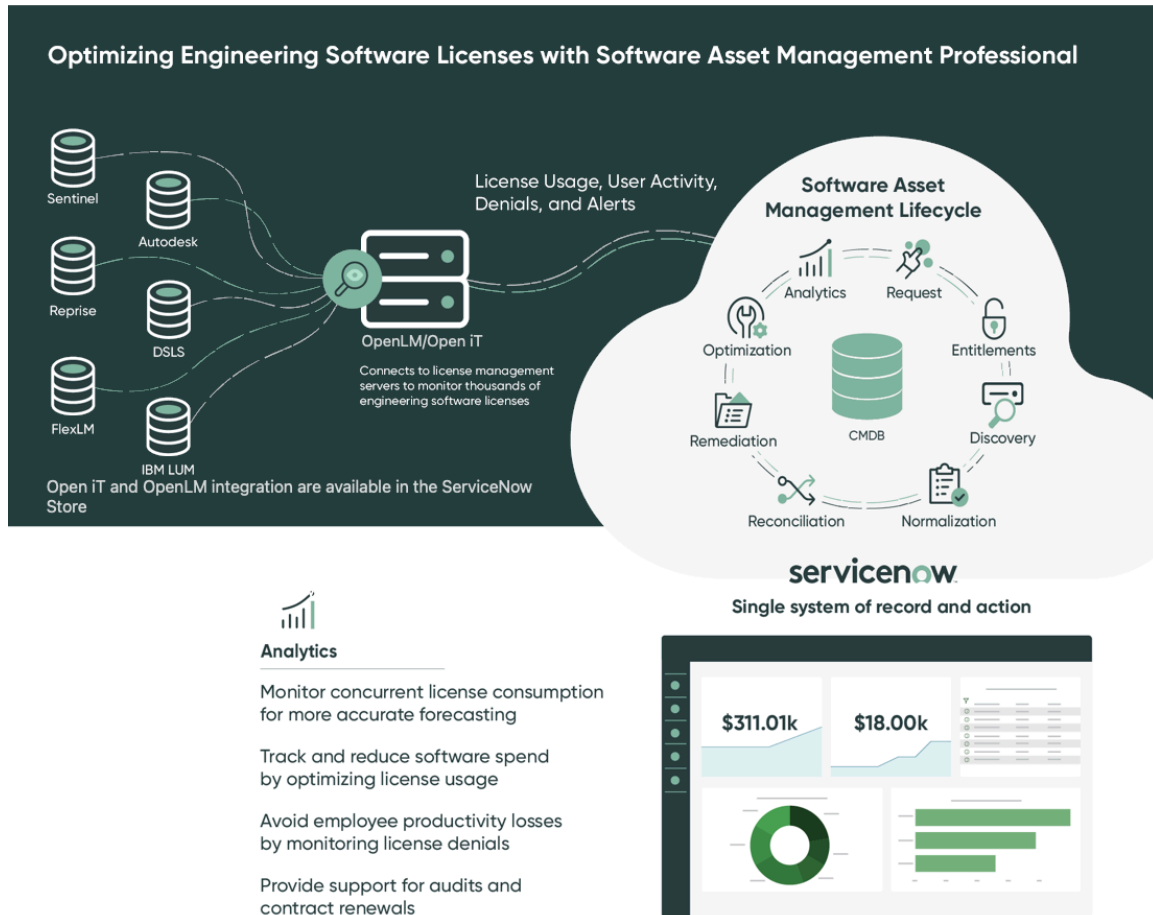
**i Note:** To access all the benefits of the Software Asset Management Professional for engineering applications, request the Software Asset Management Professional for Engineering Applications plugin (com.sn\_samp\_eng\_app). For more information, see [Request Software Asset Management](#).

Engineering applications refer to categorizing software products in industries such as aerospace, oil and gas, and construction.

A concurrent license enables multiple users to share access to software applications from any computer on a network or from a virtual machine. License management servers that are installed on the network manage the distribution of a pool of shared licenses.

You can have multiple license management servers; one for each engineering application. The number of concurrent licenses in the shared pool determines the number of users who can use the software application at a given time. When you want to use an application, that application sends a request to the appropriate license management server to determine if a license is available. If a license is available, the application starts and the number of available licenses decreases by one. When the user exits the application, the license returns to the pool.

The following graphic illustrates the way OpenLM and Open iT work with the ServiceNow instance.



The Software Asset Management application supports three types of licenses: floating, network, and token licenses. For information on these licenses, see [Software license metrics](#).

The ServiceNow instance integrates with OpenLM and Open iT to collect data from license management servers. OpenLM and Open iT are software license monitoring and management tools that integrate with a wide variety of license management servers such as IBM License Use Management (LUM), Sentinel Technologies, and Bentley Systems, Inc. Both OpenLM and Open iT connect with each license management server, consolidate the data, and get the data into your ServiceNow instance via the [ServiceNow Store](#) application.

After you download the ServiceNow Store application and configure the application via Guided Setup, both OpenLM and Open iT trigger data collection from all the license management servers that are connected to either of these. Data such as license usage, denials, user activity, and alerts are collected from the license management servers by OpenLM and Open iT, and

transferred to the ServiceNow instance. The data is normalized and reconciled to produce reports. You can see the total spend on engineering software, the most denied products, license usage over time, and many other reports on the [Engineering License Overview dashboard](#) (Software Asset Management classic application) or the [Engineering License overview dashboard in workspace](#) (Software Asset Workspace).

**i Important:** For more details on the OpenLM setup and configuration, refer to the Supporting Links and Docs section of the [OpenLM Adapter Integration](#) page in the ServiceNow Store.

For more details on the Open iT setup and configuration, refer to the [Open iT LicenseAnalyzer](#) page in the ServiceNow Store.

## SaaS License Management

SaaS License Management helps organizations track and control cloud-based applications and service subscriptions as part of Software Asset Management (SAM). It promotes ownership, visibility, agility, and accountability, enabling better cost control and efficient use of resources.

### SaaS subscription models

SaaS applications and services are typically subscribed to on a per-user basis. They generally fall into two categories:

- **Hybrid SaaS**

Hybrid SaaS combines on-premise installations with cloud-based subscriptions. It's commonly used by organizations that require offline access to certain applications while also using cloud features for collaboration. This model is also suitable for businesses with compliance requirements that mandate local installations. For example, a Microsoft 365 subscription enables you to access cloud services and install applications like Microsoft Excel on their devices. SAM supports the following Hybrid SaaS integrations:

- [Adobe Cloud integration](#)
- [Microsoft 365 integration](#)

- **Direct SaaS**

Direct SaaS refers to applications where all data and functionality are hosted in the cloud and accessed through the internet. You typically log in via a web browser or a dedicated app without installing software locally. For example, a Miro subscriber accesses the application entirely online. This model is common for organizations that prioritize ease of deployment and minimal maintenance, and for teams that work remotely or across multiple locations.

**i Important:** This topic focuses on the Direct SaaS category. It explains how to get started, identifies areas where Direct SaaS can be applied, and outlines ways to use available solutions and workflows effectively.

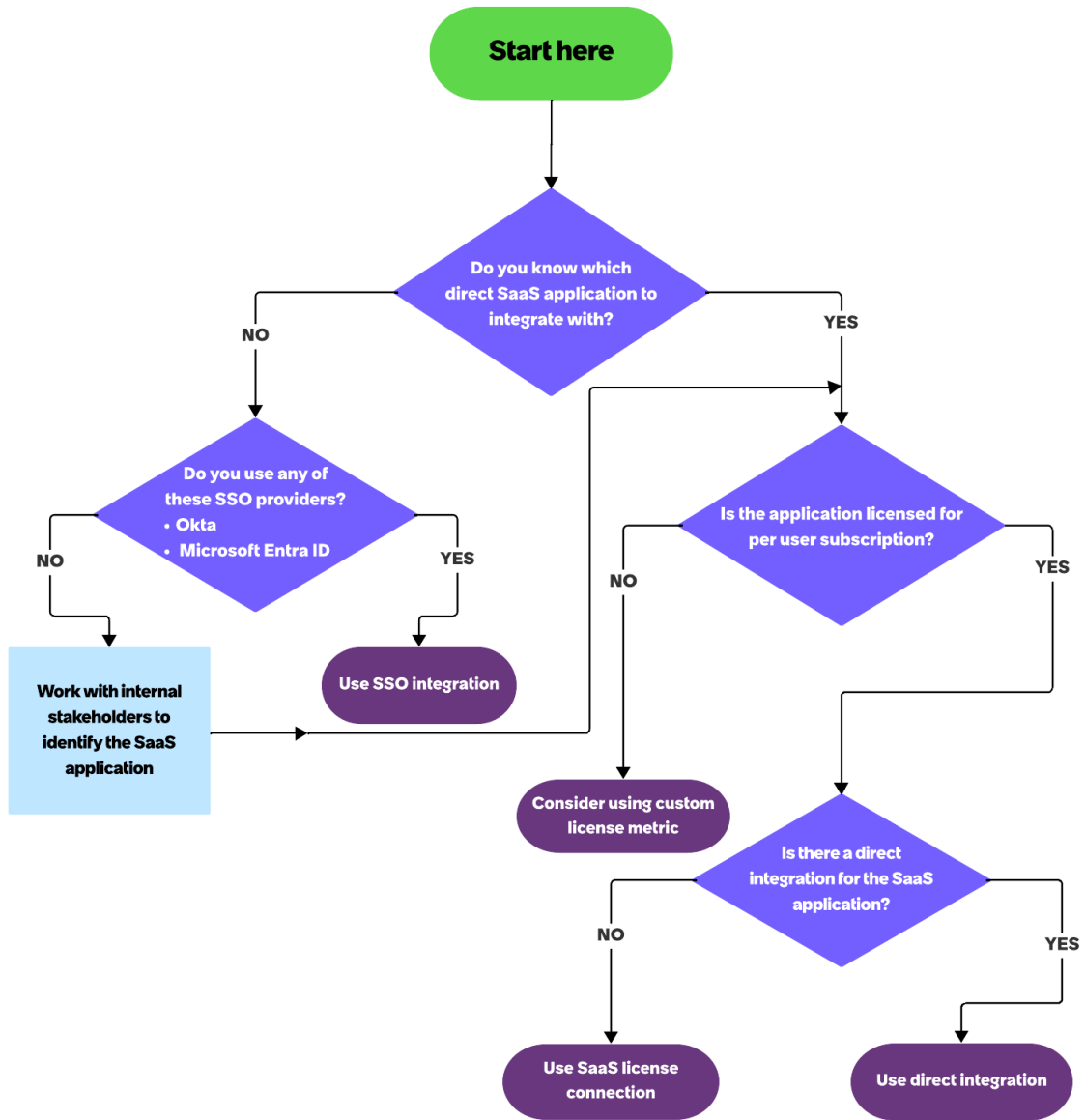
### Managing Direct SaaS with the SaaS License Management application

Managing Direct SaaS applications can vary based on organizational needs. The best approach depends on factors such as the level of integration required, available APIs, and whether Single Sign-On (SSO) is in place.

- Use [Direct Integration](#) when you need deep usage insights and automated license management for supported vendors.
- Use [SaaS License Connections](#) when you want flexibility to connect any SaaS app with a public API and prefer a low-code setup.
- Use [SSO Integration](#) when you need visibility into apps connected through an SSO provider and want to address SaaS sprawl.

For more information about installing SaaS License Management, see [Request SaaS License Management](#).

# SaaS License Management



### Approaches to manage your SaaS applications

Option	Key features	Benefits
Direct Integration	<ul style="list-style-type: none"> <li>• Base system or default direct integrations</li> <li>• Automated license reclamation</li> </ul>	<ul style="list-style-type: none"> <li>• Provides detailed usage insights</li> <li>• Automates license management</li> <li>• Reduces manual effort</li> </ul>
SaaS License Connections	<ul style="list-style-type: none"> <li>• Connect to any SaaS application with a public API</li> <li>• Low-code framework using ServiceNow® via <a href="#">Integration Hub</a> and Workflow Studio</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible for any SaaS application</li> <li>• Customizable workflows</li> </ul>
SSO Integration	<ul style="list-style-type: none"> <li>• Connect via SSO providers such as Okta and Microsoft Entra ID.</li> <li>• Download the list of applications or users</li> <li>• Identify overlapping software and rationalize applications</li> </ul>	<ul style="list-style-type: none"> <li>• Helps tackle SaaS sprawl</li> <li>• Improves cost control</li> <li>• Simplifies user access management</li> </ul>

### Request SaaS License Management

Request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) so that you can create and manage integrations with your SaaS and Single Sign-on (SSO) applications. You can use these integrations to track license usage and to reclaim unused licenses.

#### Before you begin

Activate the ServiceNow Software Asset Management Professional plugin (com.snc.samp) on your ServiceNow instance. For more information on how to request and activate the Software Asset Management Professional plugin (com.snc.samp), see [Request Software Asset Management](#).

Role required: admin

#### About this task

To use the SaaS License Management application, you must request the Software Asset Management – SaaS License Management plugin (sn\_sam\_saas\_int) from the ServiceNow Store.

#### Procedure

1. From a web browser, go to the [ServiceNow Store](#).
2. Log in using your HI credentials.

3. In the search bar, enter **Software Asset Management - SaaS License Management** and then select **Search**.
4. Select the result called **Software Asset Management - SaaS License Management**.
5. On the **Software Asset Management - SaaS License Management** page, select **Request Install**.
6. In the **ServiceNow Request for App Installation - Software Asset Management - SaaS License Management** dialog box, fill in the fields.

**ServiceNow Request for App Installation - Software Asset Management - SaaS License Management dialog box**

Field	Description
Instance Name	Name of the instance on which you want to install the plugin. After you enter the instance name, select <b>Validate Instance</b> to verify that the instance exists.
Reason for request	Reason for requesting the plugin.

7. Select **Request**.
8. Select **Close**.

**Result**

If your request is approved, you receive an email with detailed instructions on how to install the plugin.

**What to do next**

Install the plugin according to the instructions from the email.

**Installed with SaaS License Management**

User roles and tables are installed with SaaS License Management. Demo data is available for the **Software Asset Management - SaaS License Management (sn\_sam\_saas\_int)** plugin.

**User roles**

Role	Description
sam_integrator	Inherits the sam_user role and can also create and manage SaaS integration profiles.

**Tables**

Table	Description
Custom Subscription Product Definitions [samp_sw_custom_subscription_product_definition]	Enables you to create and update customized software models for SaaS and SSO applications.
Custom Subscription Integration [samp_sw_custom_subscription_integration]	List of SaaS and SSO providers for your custom integration profiles.

Table	Description
Product profile types [samp_sw_product_profile_type]	Provides a mapping between integration profile types and products in the Software Product [samp_sw_product] table.
SAM Subscription Script Routes [sam_saas_script_route]	Stores which script includes and scopes implement a given integration type to register available integrations from separate scoped apps.
SSO Application [samp_sso_application]	List of all SSO applications for all SSO integrations.
SSO Application Groups [m2m_sso_group_application]	Provides a mapping between connected SSO applications and the directory groups that have access to them.
SSO Application Role [samp_sso_application_role]	List of SSO users and groups for all connected SSO applications.
SSO Application Users [m2m_sso_user_application]	Provides a mapping between connected SSO applications and the directory users that have access to them.
SSO Integration Profile [samp_sso_integration_profile]	List of all SSO integration profiles.
SSO Subscription [samp_sso_subscription]	List of SSO subscriptions for all connected SSO applications.
Subscription Consumption Summaries [sam_saas_consumption_summary]	Consumption summary information including units consumed, monthly consumption, and contract dates.
Subscription Integration [samp_sw_subscription_integration]	List of SaaS and SSO providers that is mapped to subscription products in the Subscription Product Definition [samp_sw_subscription_product_definition] table.
Subscription Product Definitions [samp_sw_subscription_product_definition]	SaaS License Management uses this table to automatically create software models for SaaS and SSO applications. Software models are automatically created for applications with an <b>External Catalog ID</b> that matches an <b>Identifier</b> in this table.
Subscription Usage Summary [samp_subscription_usage_summary]	Software usage summary information including rights owned, rights assigned, stale rights, available rights, and cost.
Unrecognized Subscription Identifiers [samp_sw_unrecognized_subscription_identifier]	List of subscription identifiers that are not associated with a software model.

### SaaS License Management setup for large companies

Set up SaaS License Management for large companies to confirm that you can view all SaaS usage data in your ServiceNow instance.

Some large companies must update the `com.snc.pa.dc.max_row_count_indicator_source` system property before

creating integration profiles. If either of the following conditions is true for your company, an admin must update this property.

- If there are more than 50,000 user subscriptions for the [SaaS applications](#), excluding the subscriptions for [Adobe Cloud](#) and [Microsoft 365](#).
- If there are more than 50,000 user subscriptions for Adobe Cloud and Microsoft 365 combined.

Update the `com.snc.pa.dc.max_row_count_indicator_source` system property to be the greater value between your subscriptions for the two groups. For example, if you have 60,000 user subscriptions for [SaaS applications](#) combined and 25,000 user subscriptions for [Adobe Cloud](#) and [Microsoft 365](#) combined, update the property to be 60,000.

- Note:** For more information about how to use the `com.snc.pa.dc.max_row_count_indicator_source` property, see [Data collector properties](#).

## SaaS Overview dashboard

Optimize how much your organization spends on SaaS and SSO licensing by analyzing the subscription usage, cost, and compliance of your SaaS applications and SSO providers using the SaaS Overview dashboard.

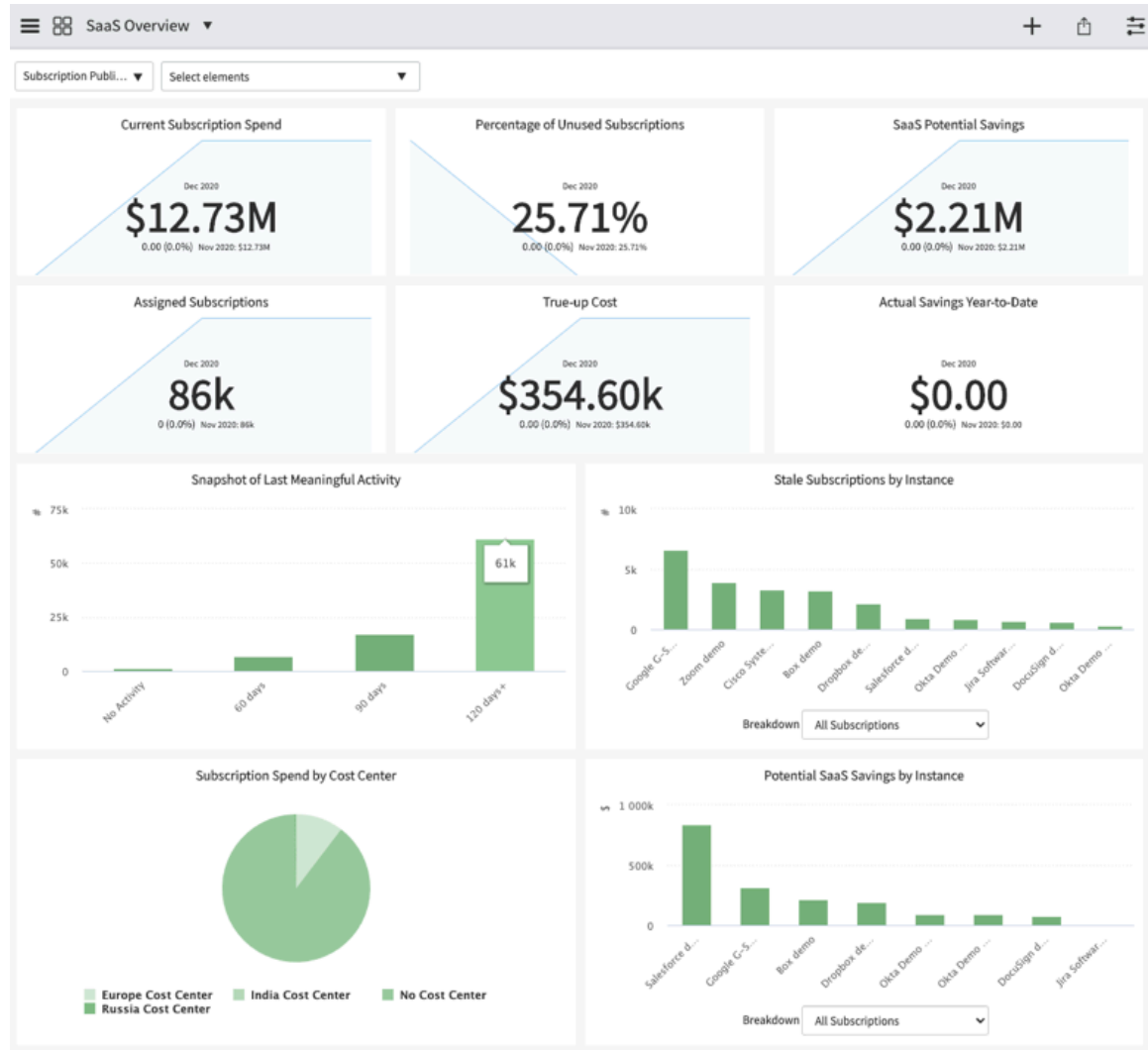
- Important:** The SaaS Overview dashboard is available in both the Software Asset Management classic application and the Software Asset Workspace. This topic provides information on the SaaS Overview dashboard in the Software Asset Management classic application. For information on the SaaS Overview dashboard in the Software Asset Workspace, see [SaaS overview dashboard in workspace](#).

The SaaS Overview dashboard is no longer available for new Xanadu users who have activated the Software Asset Management Professional (com.snc.samp) plugin or upgraded to Xanadu without activating the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu. If you activated the Software Asset Management Professional (com.snc.samp) plugin prior to Xanadu but didn't activate the Workspace plugin (com.sn\_sam\_workspace), you have access to this dashboard. If you activated the workspace plugin (before or after upgrading to Xanadu, you won't be able to access this dashboard from the **Software Asset** navigation menu in your instance. You can however access this dashboard from the **Dashboards** navigation menu.

The SaaS Overview dashboard displays information about the usage, costs, and potential savings that are associated with your SaaS and SSO applications. Access this dashboard by navigating to **SaaS License > Overview**. You can filter the dashboard by software model or publisher. Click any report to see more information.

- Note:** To view your organization's software usage and compliance for Microsoft Office 365 and Adobe Cloud, navigate to **SaaS License > Office 365 & Adobe Cloud**.

### SaaS Overview dashboard



### SaaS Overview reports

Report	Description
Current Subscription Spend	Total cost of all active subscription software entitlements.
Percentage of Unused Subscriptions	Percentage of subscriptions that don't meet the usage requirements that are defined by reclamation rules. This percentage is calculated as the number of stale rights (subscriptions that have limited to no activity within the activity threshold that is defined in the reclamation rule) divided by the total number of assigned rights.
SaaS Potential Savings	Potential cost saved if you reclaim unused subscriptions.
Assigned Subscriptions	Total number of assigned subscriptions.
True-up Cost	Cost to have the number of rights you own match the number of rights you've assigned to users. This metric helps to verify that your organization is paying for all the rights that your organization is using.

### SaaS Overview reports (continued)

Report	Description
Actual Savings Year-to-Date	Total yearly savings for all subscription software. This value is calculated as the total savings from closed complete reclamation candidates.
Snapshot of Last Meaningful Activity	Distribution of users based on their subscription software usage behavior. Use this data to identify the users with the highest software usage and determine the most appropriate threshold for your software reclamation rules. This report displays the data for the last 30 days, 30–60 days, 60–90 days, and 90–120 days.
Stale Subscriptions by Instance	<p>Total number of stale subscriptions for each subscription profile. If you have multiple profiles for the same subscription software, this report displays each profile separately.</p> <p>You can filter the data that is displayed on this report by selecting an option from the Breakdown list. To view the stale subscriptions for both SaaS and SSO subscription profiles, select <b>All Subscriptions</b>. To view the stale subscriptions for only SaaS subscription profiles, select <b>Subscriptions Excluding SSO</b>.</p>
Subscription Spend by Cost Center	Total cost of all active subscription software entitlements by cost center.
Potential SaaS Savings by Instance	<p>Potential cost saved for each subscription profile if you reclaim unused subscriptions.</p> <p>You can filter the data that is displayed on this report by selecting an option from the Breakdown list. To view the potential savings for both SaaS and SSO subscription profiles, select <b>All Subscriptions</b>. To view the potential savings for only SaaS subscription profiles, select <b>Subscriptions Excluding SSO</b>.</p>

### Playbook for SaaS integrations

The SaaS playbook provides step-by-step guidance for integrating an SaaS application. It takes you in a phased way through each stage of the integration process, from initiation to completion.

The SaaS playbook includes multiple lanes that consist of:

- A list of tasks that you must perform within a lane
- Status indicators that display the current state of each task

Once you mark a task as complete, you move to the next task. You can save a task at any time and return to the playbook later.

Complete all the tasks in a lane to move to the next lane. As you keep completing tasks and lanes, the status gets reflected in the left-hand panel. Once you complete all the tasks, review the details you entered in all the lanes.

#### Related topics

[Interact with Playbook](#) 

### Create a Salesforce CRM integration

Integrate your ServiceNow instance with the Salesforce customer relationship management (CRM) services to track your software subscriptions and to reclaim unused licenses by using the guided walk-through playbook.

#### Before you begin

Role required: Salesforce admin, sam\_admin

- Create the Salesforce CRM integration only in the Global scope.

#### About this task

- **Note:** The **Client Credentials** grant type is supported in Software Asset Management - SaaS License Management (sn\_sam\_saas\_int) 14.1.0, Salesforce CRM application 11.9, and Salesforce CRM Spoke 2.4.0 version onwards.

#### Procedure

1. From your ServiceNow instance, navigate to **Software Asset Workspace > Software asset analytics**.
2. Select **Create direct integration**.
3. In the list of supported integrations, select **Salesforce CRM**.
4. Register the Salesforce application through the Salesforce admin portal.  
For more information, see [Register a Salesforce application](#).
  - a. Select **Register a Salesforce application** in the side pane.
  - b. Complete the tasks in the Salesforce application.  
Select each check box as you complete each step.
  - c. Select **Mark Complete**.
5. Create an integration profile to track software subscriptions and optimize licensing.
  - a. Select **Profile details** in the left pane.
  - b. On the form, fill in the fields,

#### Profile Details

Field	Description
Display name	Name of the integration profile to identify uniquely the organization for which you're creating the profile.
Status	Status of the integration profile. If you have not published the integration profile, this field is automatically set to <b>Draft</b> . If you have already published the integration profile, this field is automatically set to <b>Published</b> .
Profile type	Type of integration profile. This value is automatically set to Salesforce CRM.

Field	Description
Download subscription subflow	The value must be set to <b>Salesforce CRM Download Subscriptions</b> .
Reclaim subscription subflow	The value must be set to <b>Salesforce CRM Reclaim Subscription</b> .

c. Save your data.

- To save your data without continuing the integration, select **Save**.
- To save your data and continue the integration, select **Mark Complete**.

6. Create a connection and credential in the ServiceNow Classic interface.

a. Select **Connection and credential** in the left pane.

b. Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field.

c. Select **Continue**.

d. Select the **Create New Connection & Credential** link.

e. On the form, fill in the fields.

**Create Connection and Credential**

Field	Description
Connection information	
Connection Name	Name of the connection to identify uniquely the Salesforce organization for which you're creating this connection and credential.
Connection URL (Instance URL)	URL that displays after logging in to Salesforce, which is the custom domain URL of Salesforce.
Credential information	
Grant type	The grant type for your application according to your authentication needs. Possible values are: <ul style="list-style-type: none"> <li>▪ <b>Authorization Code</b></li> <li>▪ <b>Client Credentials</b></li> </ul>
OAuth Client ID	Client ID (consumer key) assigned to your Salesforce application.
OAuth Client Secret	Client secret (consumer secret) assigned to your Salesforce application.
OAuth Redirect URL	URL of the OAuth provider that users are redirected to after authentication.  This is generally the URL of the ServiceNow instance that you specified while registering a Salesforce application in <a href="#">Step 4</a> .

f. Select **Create and Get OAuth Token**.

- g.** In the OAuth2 authentication dialog box, log in to the same Salesforce admin account that you used to create your Salesforce application.

If you have selected **Client Credentials** as the grant type, the OAuth2 dialog box doesn't appear.

Your ServiceNow instance creates an OAuth token for Salesforce.

- h.** Select **Mark Complete**.

The integration profile uses the Salesforce CRM Download Subscriptions and Salesforce CRM Reclaim Subscription subflows to retrieve user data from your Salesforce CRM services.

## **7. Optional:** Create a child alias and an extra integration profile.

(Optional) The child alias uniquely identifies the connection and credentials for this additional integration profile.

The first Salesforce CRM integration profile that you create uses the default (parent) connection and credential alias for Salesforce. Each additional Salesforce CRM integration profile that you create requires a unique child alias that helps differentiate the connection and credentials between each integration profile.

**i Note:** The application scope must be set to **Salesforce Spoke**.

- a.** Select **Connect to additional Salesforce org (Optional)** in the left pane.
- b.** Open the connection & credential aliases record by selecting the preview icon (🔍) next to the **Connection & Credential** field.  
The display redirects to the ServiceNow Classic interface where you can configure the child alias.
- c.** In the **Child Aliases** tab, select **New**.
- d.** Enter a name for the child alias in the Connection and Credential Aliases form.
- e.** Select **Submit**.  
After the form reloads, you can see the newly created child alias in the **Child Aliases** list.
- f.** Select the **Create New Connection & Credential** related link to create multiple connections.  
Follow the same steps as for creating the parent connection.
- g.** Select **Mark Complete** after you have completed the steps and select all the check boxes in the Playbook view.

## **8.** Review the required fields before publishing the integration profile.

- a.** Select **Review and Publish** in the left pane.
- b.** Review the details of the integration profile.
- c. Optional:** In the Connection & Credential field, select the preview icon (🔍) to locate and select the child alias that you created in [Step 7](#).

Selecting the child alias associates the additional integration profile with the child alias. Your ServiceNow instance uses this alias to identify the connection and credentials for this integration profile.

d. Select **Save** if you want to publish the integration profile later.

e. Select **Mark Complete**.

9. Select **Publish** to publish the integration profile.

10. **Optional:** Verify whether the status of all scheduled job results is complete.

## Result

After the integration is published successfully, you're redirected to the record page. You can view the details of the integration profile, associated software models, triggered scheduled jobs, scheduled job results, and unrecognized subscription identifier.

## Integrate with SaaS applications

Create an integration profile to view software usage information and optimize stale licenses.

A SaaS integration profile pulls your company's software usage information from the software vendor. This information includes a list of all users and identifies which users haven't recently used the software.

You can create an integration profile for the following SaaS applications:

- [Adobe Cloud](#)
- [Adobe Workfront](#)
- [Aha!](#)
- [Asana](#)
- [Box](#)
- [Calendly](#)
- [Cisco Webex](#)
- [Confluence Cloud](#)
- [CrowdStrike](#)
- [DocuSign](#)
- [Dropbox](#)
- [Google Workspace](#)
- [GitHub](#)
- [GoTo](#)
- [Jira Software](#)
- [Looker](#)
- [Microsoft 365](#)
- [Microsoft Dynamics 365 and Power Apps](#)
- [Miro](#)
- [monday.com](#)
- [PagerDuty](#)

- Rally
- Roadmunk
- Salesforce CRM
- Salesforce Marketing Cloud
- Slack
- SmartRecruiters
- Smartsheet
- SAP SuccessFactors
- SurveyMonkey
- Tableau Cloud
- Trello
- Workday
- Workplace from Facebook
- Zendesk
- Zoom

You can also create integrations for Adobe Cloud and Microsoft Office 365. For more information, see [Microsoft 365 integration](#) and [Software Asset Management publisher pack for Adobe](#).

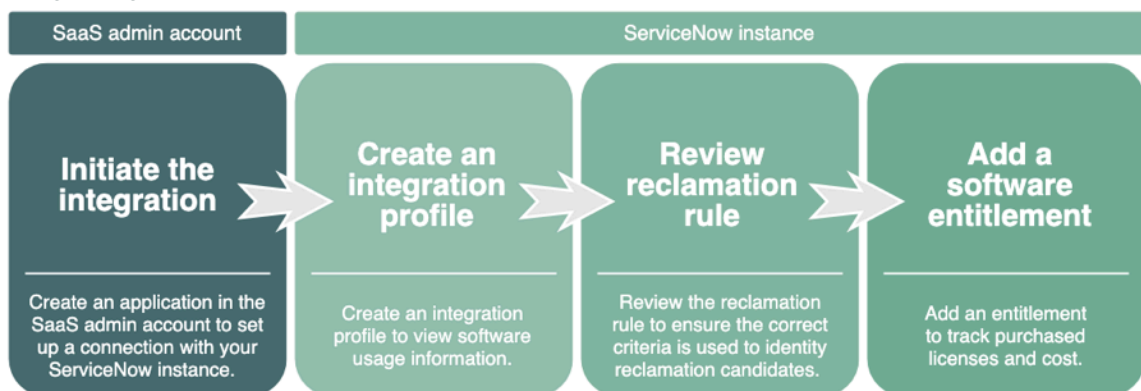
If you want to integrate with a SaaS application that is not on this list, you can create a custom integration profile. For more information, see [Create a custom integration profile](#).

**Note:**

The SaaS integration automatically creates a software model and a reclamation rule for the software. Always [review the reclamation rule](#) to make sure that reclamation candidates are identified using the criteria you want.

After reviewing the reclamation rule, [create a software entitlement](#) to track purchased licenses and cost.

**Integrating with SaaS applications**



After following this process, you're ready to start reclaiming unused licenses to reduce software costs for your company.

## Integrating with Adobe Workfront

Integrating your Software Asset Management application with the Adobe Workfront application enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

### Minimal user permissions

Process	Required user role in the Adobe Workfront application	Authentication scopes
Download subscriptions	administrator	None
Pull user activity	administrator	None
Reclaim subscription	administrator	None



## Generate a Workfront API key

Generate an API key for authenticating Workfront API requests.

### Before you begin

Workfront Role required: administrator

### Procedure

1. From a web browser, open [Adobe Workfront](#) .
2. Log in using your admin credentials.  
Your Adobe Workfront instance opens.
3. On the page header of your Adobe Workfront instance, select the Main Menu icon  and then select **Setup**.
4. From the left navigation menu of the Setup page, navigate to **System > Customer Info**.  
The Customer Info page opens.
5. In the API Key Settings section, select **Generate API Key**.  
Adobe Workfront automatically generates your API key and displays it under Your User's API Key.
6. Copy your API key and save it in a secure location for later use.
7. In the same section, select the time period after which you want the API key to expire from the **After creation, API keys expire** list.  
The default time period is one month.

**i Note:** You can change this time period at any time. Whenever you change the time period, the newly selected time period begins from the moment that you make the change.

## Create a Workfront connection

Create a connection between your Workfront applications and your ServiceNow instance so that your instance can retrieve user data from your applications.

### Before you begin

ServiceNow Role required: admin

**Procedure**

1. From your ServiceNow instance, navigate to **Process Automation > Flow Designer**.  
The Flow Designer launches in a new tab.
2. Select the **Connections** tab.
3. Locate your Workfront connection and then select **Add Connection**.
4. In the Create Connection dialog box, fill in the fields.

**Create Connection dialog box**

Field	Description
Connection Information	
Connection Name	Name of the Workfront connection. This field populates automatically.
Connection URL	URL for the connection.  Enter <code>https://&lt;domain-name&gt;.my.workfront.com</code> , where <code>&lt;domain-name&gt;</code> is your company subdomain.
Credential Information	
API Key	API key for your Workfront applications.  Enter the same API key that you generated in <a href="#">Generate a Workfront API key</a> .

5. Select **Create Connection**.

**Create a Workfront integration profile**

Create a Workfront integration profile to track software subscriptions and optimize licensing for your Workfront applications.

**Before you begin**

To create a Workfront integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you're using Software Asset Workspace, the option to create the Workfront integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Workfront Integration Profile</b>.</li> </ol>

Interface	Action
<b>Software Asset Workspace</b>	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles.</b></li> <li>b. Select <b>New.</b></li> <li>c. Select <b>Workfront</b> from the drop-down list.</li> <li>d. Select <b>Continue.</b></li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Display Name	Name of the integration profile. For example, <code>Workfront Integration</code> .
Connection & Credential	Connection and credential alias for the Workfront spoke. This field is automatically set to <code>sn_workfront_spoke.Workfront</code> .
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>o If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>o If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile Type	Type of integration profile. This field is automatically set to <b>Workfront Subscription</b> .

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **Workfront Download Subscriptions**.

4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to **Workfront Update User Activity Subflow**.

5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **Workfront Reclaim Subscription**.

6. Select **Save**.

Your ServiceNow instance creates a draft integration profile. The integration profile uses the Workfront Download Subscriptions, Workfront Update User Activity, and Workfront Reclaim Subscription subflows to retrieve user data from the Workfront application.

7. After the form reloads, select **Publish**.

**Note:**

To optimize memory and avoid performance issues in your Workfront flow, you can turn off the flow engine reporting level by navigating to **System Properties > All Properties** and selecting the `com.snc.process_flow.reporting.level` system property. On the System Property page, set the **Value** to OFF and then select **Update**.

In addition, you can reduce the number of items in the execution details by navigating to **System Properties > All Properties** and then selecting the `com.snc.process_flow.reporting.datastream.item.lastn` system property. On the System Property page, set the **Value** to 10 and then select **Update**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Aha!

Integrating your Software Asset Management application with the Aha! service enables you to track your software subscriptions and to reclaim unused licenses.

For more information about the Aha! service, see [Aha! Product management guide](#).

**Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the Aha! application	Authentication scopes
Download subscriptions	admin	None
Pull user activity	admin	None
Reclaim subscription	admin	None

### Create an Aha! OAuth2 application

Create an Aha! OAuth2 application to get access to the Aha! API.

### Before you begin

Aha! Role required: admin

**Procedure**

1. Go to [OAuth2 Authentication](#).
2. Log in to the Aha! site using your admin credentials.
3. On the Personal settings page, select **Developer**.
4. Select the **OAuth applications** tab.
5. Select **Register OAuth application**.
6. On the Register new OAuth application form, enter `https://instance/oauth_redirect.do` as the Redirect URI, where *instance* is the name of your ServiceNow instance.
7. Select **Create**.  
The **OAuth applications** tab shows Client ID and Client Secret keys.
8. Note down the values in the Client ID and Client Secret fields.

**Set up ServiceNow instance for Aha!**

Set up your ServiceNow instance to add the Aha! Client ID and Client Secret keys.

**Before you begin**

ServiceNow Role required: admin or sam\_integrator

**Procedure**

1. Log in to your ServiceNow instance.
2. Navigate to **Connection & Credentials > Connection & Credentials Aliases**.  
Connection & Credentials Aliases page appears and shows the list of apps.
3. Locate and open the Connection & Credentials record for Aha!.
4. Select the **Create New Connection & Credential** related link.
5. On the Create Connection and add Credential form, fill in the details.

**Create Connection and add Credential form**

Fields	Descriptions
Connection Name	Name of the integration profile.
Connection URL	Connection URL for Aha!.
OAuth Client ID	OAuth2 key that you received while creating an OAuth2 authentication from the Aha! site.
OAuth Client Secret	OAuth Client Secret key that you received while creating an OAuth2 authentication from the Aha! site.
OAuth Redirect URL	ServiceNow redirect URL.

6. Select **Configure and get OAuth Token** and then select **Authorize**.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

### Create an Aha! integration profile

Create an integration profile to track software subscriptions and optimize licensing for the Aha! service.

#### Before you begin

To create an Aha! integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

#### About this task

If you're using Software Asset Workspace, the option to create the Aha! integration profile in Core UI is inactive.

#### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Aha Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Aha!</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol>

2. In the **Display name** field, enter a display name of your choice.

On the form, the following fields are automatically populated.

#### Aha! Integration Profile form

Field	Value
Connection & Credential Alias	sn_aha_spoke.Aha_
Status	Draft
Profile Type	Aha! Subscription
Download Subscription Subflow	<p>Aha! Download Subscription</p> <p>You can view events performed by individual users up to one year prior to the current date. For more information, see <a href="#">Review a software reclamation rule</a>.</p> <p><b>Note:</b> Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.</p>

Field	Value
Reclaim Subscription Subflow	Aha! Reclaim Subscription

3. Select **Create and Get OAuth Token**.

4. After the Aha! form is saved, select **Publish**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Asana

Integrating your Software Asset Management application with the Asana application enables you to track your software subscriptions and to reclaim unused licenses.

**Note:** This integration supports all plans of Asana at organization level only.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Asana application	Authentication scopes
Download subscriptions	admin	default
Pull user activity	admin	default
Reclaim subscription	admin	default

**Register an Asana OAuth 2.0 application**

Register an Asana OAuth application to access the Asana API 1.0 and to receive a Client ID and Client secret.

**Before you begin**

Asana Role required: admin

**Procedure**

1. Log in to your Asana account.
2. Select the user's profile icon.
3. Select **Settings**.
4. Select the **Apps** tab.
5. Navigate to the developer console window by selecting the **View developer console** link.
6. Select **+ Create new app**.
7. On the **Create new app** page, provide a name for your application and then select the **Integrate Asana and another tool** check box.
8. Select the **I agree to the Asana API Terms** check box and then select **Create app**.
9. **Optional:** Provide basic information about your application.
10. Select **OAuth**.
11. Copy the Client ID and Client secret for later use.
12. In the **Redirect URLs** field, select **+ Add redirect URL**.
13. Enter `https://<instance>.service-now.com/oauth_redirect.do` where <instance> is the name of your ServiceNow instance.

**Create an Asana integration profile**

Create an Asana integration profile to track software subscriptions and optimize licensing for your Asana solutions.

**Before you begin**

The Software Asset Management - SaaS License Management Integrations plugin (sn\_sam\_saas\_int) must be installed from the [ServiceNow Store](#).

Role required: admin or sam\_integrator

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles.</b></li> <li>Select <b>New.</b></li> <li>Select <b>Asana Integration Profile.</b></li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles.</b></li> <li>Select <b>New.</b></li> <li>Select <b>Asana</b> from the drop-down list.</li> <li>Select <b>Continue.</b></li> </ol>

2. On the form, fill in the fields.

**Integration profile form**


Field	Value
Display name	Name of the integration profile. For example, Asana integration.
Connection & Credential	Connection and credential alias for the Asana spoke. This field is automatically set to sn_asana_spoke.Asana.
Status	<p>Status of the integration profile.</p> <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>#Draft.</b></li> <li>○ If you have already published the integration profile, this field is automatically set to <b>#Published.</b></li> </ul>
Profile type	Type of integration profile. This field is automatically set to Asana Subscription.

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to Asana Download Subscriptions.
4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to Asana Update User Activity Subflow.
5. **Optional:** In the **Analyze user activity from** field, select the date and time from which you want to start to analyze user activity.

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

6. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to Asana Reclaim Subscriptions.
7. Select **Save**.  
A draft integration profile is created. The integration profile uses the Asana Download Subscriptions, Asana Update User Activity, and Asana Reclaim Subscription subflows to retrieve user data from the Asana application.
8. Open the connection & credential aliases record by selecting the preview icon () beside the **Connection & Credential** field.
9. Select **Open Record** in the record preview.
10. Select the **Create New Connection & Credential** related link.
11. On the form, fill in the fields.

**Create Connection and Credential form**

Field	Value
Connection Name	Name of the Asana connection. This field populates automatically.
Connection URL	URL for the connection. This field is automatically set to <code>https://app.asana.com</code> .
Client ID	Client ID that you created while registering Asana OAuth application.
Client Secret	Client secret that you created while registering Asana OAuth application.
OAuth Redirect URL	This field is automatically populated to <code>https://&lt;instance name&gt;.service-now.com/oauth_redirect.do</code> , where instance name is the name of your ServiceNow instance.

12. Select **Save**.
13. Return to the integration profile and select **Publish**.

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).


### Integrating with Box

Integrating your Software Asset Management application with the Box service enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the Box application	Authentication scopes
Download subscriptions	Co-Admin with <b>Manage users</b> permission	Manage users
Pull user activity	Co-Admin with Run new reports and access existing reports permission	Manage enterprise properties
Reclaim subscription	<ul style="list-style-type: none"> <li>• Co-Admin with <b>Manage users</b> permission</li> <li>• Co-Admin with <b>View users' content</b> permission</li> </ul>	<ul style="list-style-type: none"> <li>• Manage users</li> <li>• Read all files and folders stored in Box</li> <li>• Write all files and folders stored in Box</li> </ul>

For additional information on the Box service, see the [Box Community](#) .

### Create a Box application

Create an application on the Box Platform.

### Before you begin

Box Role required: Refer to the [Minimal user permissions](#) table.

**Procedure**

1. Navigate to the [Box Developer Console](#) and sign in to your account.
2. On the My Apps page, select **Create New App**.
3. Select **Custom App**.
4. On the Authentication Method page, select **Standard OAuth 2.0 (User Authentication)**.
5. Enter an application name, and then select **Create App**.
6. On the Configuration page, obtain the Client ID and Client Secret.

You'll need to copy and paste these values into your ServiceNow instance in the following steps.

**Note:** Your Client ID and Client secret are sensitive. Don't share them.

7. Enter `https://instance.service-now.com/oauth_redirect.do` as the Redirect URI, where *instance* is the name of your ServiceNow instance.
8. Select the following application scope check boxes:
  - Read and write all files and folders stored in Box
  - Manage users
  - Manage enterprise properties

These scopes enable the integration to get a list of users, get user activity, and reclaim unused subscriptions.

9. Select **Save Changes**.

**Create a Box integration profile**

Create an integration profile to track software subscriptions and optimize licensing for the Box service.

**Before you begin**

To create a Box integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you're using Software Asset Workspace, the option to create the Box integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Box Integration Profile</b>.</li> </ol>

Interface	Action
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles.</b></li> <li>b. Select <b>New.</b></li> <li>c. Select <b>Box</b> from the drop-down list.</li> <li>d. Select <b>Continue.</b></li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Value
Display name	Name of the integration profile. For example, <i>Box Integration</i>
Client Id	Client ID for the OAuth application created in the SaaS admin account.
Redirect url	URL of the OAuth provider that you're redirected to after authentication. This value is automatically populated.
Client secret	Password associated with the client ID.
Profile type	Type of integration profile. This value is automatically set to <i>Box Subscription.</i>
Analyze user activity from	You can choose to start analyzing data from the current date or from up to 60 days in the past. Choosing a date in the past enables you to detect stale subscriptions without waiting in real time because you can see subscriptions that haven't been used recently. Because choosing a date in the past increases the amount of data that is analyzed, it could take several hours for you to be able to view the results.

3. Select **Submit.**

4. On the integration profile, select **Get OAuth Token.**

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

5. In the pop-up window, select your Box admin account and select **Allow.**

**Note:** When user subscriptions are reclaimed, files from the reclaimed accounts are transferred to the admin account selected in this step. This account can be a different admin account than the one used to set up the integration. If you transfer files to a new admin, you can select the **Get OAuth Token** related link again at any time to select a different admin account. After selecting a new admin, you can reclaim the old admin account to transfer all of their files to the new admin, including all previously reclaimed user files.

**Result**

You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule.](#)

**Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Calendly

Integrating your Software Asset Management application with the Calendly service enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the Calendly application	Authentication scopes
Download subscriptions	admin	None
Pull user activity	admin	None
Reclaim subscription	admin	None

### Create a Calendly OAuth application


Register a public application with the Calendly service so that you can access the Calendly API using OAuth 2.0.

#### Before you begin

Calendly Role required: admin

You must have a Google or GitHub account to sign up for a Calendly developer.

## Procedure

1. Navigate to [Calendly developer portal](#) .
  - If you already have a Calendly developer account, sign in with your credentials and go to step 3.
  - If you don't have a Calendly developer account account, complete step 2.
2. **Optional:** Sign up for a Calendly developer account through your GitHub or Google account by selecting **Sign Up** on the top-right corner of the Calendly Developer Site page. This account isn't associated with your Calendly Google user account.
3. Navigate to **Account > My Apps** to create a OAuth application.
4. Select **Create a new app**.
5. On the form, fill in the fields.

### Create Oauth app form

Field	Description
Name of app	Name of your application.
Kind of app	The application type such as Web or Native.
Environment type	The environment type that you want to associate your application to, such as Sandbox or Production.
Redirect URI	ServiceNow redirect URL. For example, <code>https://app.example.com/auth</code> .

6. Select **Save & Continue**.

### What to do next

Copy your Client ID and Client Secret.


#### Important:

You must copy these values as you can't access the Client Secret again.

### Create a Calendly integration profile

Create an integration profile to track software subscriptions and optimize stale licenses for the Calendly service.

#### Before you begin

To create a Calendly integration profile, request the Software Asset Management - SaaS License Management (sn\_sam\_saas\_int) from the [ServiceNow Store](#) .

ServiceNow Role required: sam\_integrator or admin

#### About this task

If you're using Software Asset Workspace, the option to create the Calendly integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles.</b></li> <li>Select <b>New.</b></li> <li>Select <b>Calendly Integration Profile.</b></li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles.</b></li> <li>Select <b>New.</b></li> <li>Select <b>Calendly</b> from the drop-down list.</li> <li>Select <b>Continue.</b></li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Display Name	Name of the integration profile. For example, Calendly Integration.
Connection & Credential	Connection and credential alias for the Calendly spoke. This field is automatically set to <b>sn_calendly_spoke.Calendly.</b>
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft.</b></li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published.</b></li> </ul>
Profile Type	Type of integration profile. This field is automatically set to <b>Calendly Subscription.</b>

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **Calendly Download Subscriptions Subflow.**
4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to **Calendly Update User Activity Subflow.**

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **Calendly Reclaim Subscription**.
6. Select **Save**.  
Your ServiceNow instance creates a draft integration profile. The integration profile uses the Calendly Download Subscriptions, Calendly Update User Activity, and Calendly Reclaim Subscription subflows to retrieve user data from the Calendly service.
7. Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field and then selecting **Open Record** in the record preview.
8. On the Connection & Credential Aliases form, select the **Create New Connection & Credential** related link.
9. In the dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Connection Name	Name of the connection.
Connection URL	Base URL for the Calendly API. This field is automatically set to <code>https://api.calendly.com</code> .
OAuth Client ID	Client ID that is assigned to the public application that you registered with the Calendly service.
OAuth Client Secret	Client secret that is assigned to the public application that you registered with the Calendly service.
OAuth Redirect URL	URL of the OAuth provider that users are redirected to after authentication. This field populates automatically based on your instance name.

10. Select **Create and Get OAuth Token**.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

11. In the Authorize App dialog box, log in to your Calendly account.  
The dialog box closes and then you automatically return to the integration profile form.
12. Select **Publish**.

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### **Integrating with Cisco Webex**

Integrating your Software Asset Management application with Cisco Webex applications enable you to track your software subscriptions and reclaim unused licenses.

The supported Cisco Webex applications are:

- Webex Meetings
- Webex Teams
- Webex Training
- Webex Events
- Webex Support Session

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Cisco Webex application	Authentication scopes
Download subscriptions	Read-only admin	<ul style="list-style-type: none"> <li>• spark-admin:licenses_read</li> <li>• spark-admin:people_read</li> </ul>
Pull user activity	<ul style="list-style-type: none"> <li>• Compliance Officer</li> <li>• Full admin</li> </ul>	<ul style="list-style-type: none"> <li>• spark-compliance:events_read</li> <li>• meeting:admin_schedule_read</li> </ul>
Reclaim subscription	Full admin	<ul style="list-style-type: none"> <li>• spark-admin:people_read</li> <li>• spark-admin:people_write</li> </ul>


**Create a Webex Meetings OAuth application**

Create an OAuth integration application in Cisco DevNet.

**Before you begin**

Webex Role required: Refer to the [Minimal user permissions](#) table.

**Procedure**

1. Login to [Webex developer portal](#)  by using your Webex credentials.
2. Select your profile icon and then select **My Webex Apps**.
3. Navigate to **Create a New App > Select Integration > Create an Integration**.
4. On the form, fill in the fields:

**New Integration form**

Field	Value
Will This Integration Use A Mobile SDK?	No
Integration Name	Name of your integration as it appears in Webex. For example, ServiceNow integration.
Contact Email	Email address of the administrator.
Icon	Icon to appear on the My Apps page. Either upload your own application icon or select one from the list of default icons.
Description	Description of your integration. For example, functionality of the integration and its benefits.

Field	Value
Redirect URI	The URI that will be redirected to when completing an OAuth grant flow. <code>https://&lt;instance&gt;.service-now.com/oauth_redirect.do</code> , where <i>instance</i> is the name of your ServiceNow instance.
Scopes	To access the integration APIs, you must select the <b>meeting:admin:schedule_read</b> scope.

5. Select **Add Integration**.

6. Copy and save the **OAuth Client ID** and **OAuth Client Secret** that appear for later use.

### Create a Webex Teams OAuth application

Create an OAuth integration application in Cisco Webex for Developers.

### Before you begin

Webex Role required: Refer to the [Minimal user permissions](#) table.

### Procedure

1. Navigate and log in to [Cisco Webex for Developers](#).
2. Under the profile icon, select **My Webex Apps**.
3. Navigate to **Create a New App > Select Integration > Create an Integration**.
4. On the form, fill in the fields:

#### New Integration form

Field	Value
Will This Integration Use A Mobile SDK?	No
Integration Name	Name of your integration as it appears in Webex. For example, ServiceNow integration.
Contact Email	Email address of the administrator.
Icon	Icon to appear on the My Apps page. Either upload your own application icon or select one from the list of default icons.
Description	Description of your integration. For example, functionality of the integration and its benefits.
Redirect URI	The URI that will be redirected to when completing an OAuth grant flow. <code>https://&lt;instance&gt;.service-now.com/oauth_redirect.do</code> , where <i>instance</i> is the name of your ServiceNow instance.
Scopes	To access the integration APIs, you must select these scopes: <ul style="list-style-type: none"> <li>○ spark-admin:licenses_read</li> <li>○ spark-admin:organizations_read</li> <li>○ spark-admin:people_read</li> </ul>

Field	Value
	<ul style="list-style-type: none"> <li>○ spark-admin:people_write</li> <li>○ spark-admin:roles_read</li> <li>○ spark-compliance:events_read</li> <li>○ meeting:admin_schedule_read</li> </ul>

5. Select **Add Integration**.

6. Copy and save the **OAuth Client ID** and **OAuth Client Secret** that appear for later use.

### Create a Webex integration profile

Create an integration profile to track software subscriptions and optimize licensing for the Cisco Webex applications.

#### Before you begin

To create a Webex integration profile, request the Cisco Webex Meetings and Webex Teams spoke apps from the [ServiceNow Store](#).

ServiceNow Role required: admin or sam\_integrator

#### About this task

If you're using Software Asset Workspace, the option to create the Webex integration profile in Core UI is inactive.

#### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<p>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</p> <p>b. Select <b>New</b>.</p> <p>c. Select <b>Webex Integration Profile</b>.</p>
Software Asset Workspace	<p>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</p> <p>b. Select <b>New</b>.</p> <p>c. Select <b>Webex</b> from the drop-down list.</p> <p>d. Select <b>Continue</b>.</p>

2. On the form, fill in the fields.

#### Integration profile form

Field	Description
Display name	<p>Name of the profile.</p> <p>For example, Webex integration.</p>
Status	Status of the integration profile.

Field	Description
	<ul style="list-style-type: none"> <li>○ If you haven't published the integration profile, this field is automatically set to <b>#Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>#Published</b>.</li> </ul>
Profile type	<p>Type of integration profile.</p> <p>This field is automatically set to Webex Subscription.</p>

**3.** In the **Calculate Activity Subflow** tab, choose a value for the **Analyze user activity from** field.

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.


**i Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

**4.** Select **Save**.

A draft integration profile is created.

In the **Download Subscription Subflow** tab, the **Connection & Credential** field appears and is automatically set to **sn\_cisco\_teams\_spk.CiscoWebexTeams**. In the **Calculate Activity Subflow** tab, the **Connection & Credential** field appears and is automatically set to **sn\_webex\_mtg\_spoke.Webex**.

**5.** In the **Download Subscription Subflow** tab, select the preview icon (  ) next to the **Connection & Credential** field and then select **Open Record** in the record preview.

**6.** If you see a text on the record as `This record is in the Cisco Webex Teams Spoke application, but 'xxx' is the current application. To edit the record click here,` select the link.

**a.** Set the configuration template record to **SAM SaaS Webex Teams**.

**b.** Save the record.

**7.** Select the **Create New Connection & Credential** related link.

**8.** On the form, fill in the **OAuth Client ID** and **OAuth Client Secret** that you had saved while creating the Webex Teams OAuth application. Leave all other fields as is.

**9.** Select **Create and Get OAuth Token**.

**i Note:** Make sure you're logged in to your ServiceNow instance using your local admin credentials. Logging in with SSO user credentials might cause the tokens to be generated automatically.

For the role required to perform this step, refer to the [Minimal user permissions](#) table.

**10.** When prompted, log in using your Webex Email address and Password.

**11.** After the connection is successfully created, navigate to the Webex integration profile.

12. In the **Calculate Activity Subflow** tab, select the preview icon ( ⓘ ) next to the **Connection & Credential** field and then select **Open Record** in the record preview.
13. Select the **Create New Connection & Credential** related link.
14. On the form, fill in the fields.

**Create Connection and Credential form**

Connection URL	<p>Replace &lt;subdomain&gt; with the Webex Meeting site domain configured for the organization.</p> <p>Log in to the Webex admin portal and navigate to <b>SERVICES &gt; Meeting &gt; Sites</b>. In the Site name column, &lt;subdomain&gt; is the part of &lt;subdomain&gt; .webex . com in the site name.</p>
Webex Admin User Name	User name or email address to log in to Webex.

15. Fill in the **OAuth Client ID** and **OAuth Client Secret** values that you saved while creating the Webex Meetings OAuth application.
16. Select **Create and Get OAuth Token** and follow the steps to get an OAuth token.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

17. Return to the integration profile and select **Publish**.

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Confluence Cloud

Integrating your Software Asset Management application with the Confluence Cloud application enables you to track your software subscriptions and to reclaim unused licenses.

Currently this integration supports only one site integration per profile.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the Confluence Cloud application	Authentication scopes
Download subscriptions	User role for confluence product	<ul style="list-style-type: none"> <li>• Read user groups (read:confluence-groups)</li> <li>• Read user (read:confluence-user)</li> </ul>
Pull user activity	User role for confluence product	Search Confluence content and space summaries (search:confluence)
Reclaim subscription	site admin	<ul style="list-style-type: none"> <li>• Read user groups (read:confluence-groups)</li> <li>• Create, remove, and update user groups (write:confluence-groups)</li> </ul>


### Create a Confluence Cloud OAuth 2.0 (3LO) application

Create a Confluence Cloud OAuth 2.0 (3LO) application to enable access to the Confluence Cloud API.

#### Before you begin

Atlassian Role required: Refer to the [Minimal user permissions](#) table.

#### Procedure

1. From a web browser, open the [Atlassian Developer portal](#) .
2. Log in to your site admin account.
3. On the page header of the portal, select your profile icon and then select **Developer console**. The My apps page of the Atlassian Developer Console opens.
4. Select the **Create app** menu and then select **OAuth 2.0 (3LO) integration**. The Create a new OAuth 2.0 (3LO) integration page opens.
5. Enter a name for the OAuth 2.0 (3LO) application in the **Name** field.

6. Select the **I agree to be bound by Atlassian's developer terms** check box and then select **Create**.
7. Configure the authorization settings for your application.
  - a. From the left navigation pane, select **Authorization**.
  - b. Select **Configure** for the OAuth 2.0 (3LO) authorization type.  
The OAuth 2.0 authorization code grants (3LO) for apps page opens.
  - c. In the **Callback URL** field, enter the URL of the OAuth provider that users are redirected to after authentication.  
Enter `https://instance.service-now.com/oauth_redirect.do`, where `<instance>` is the name of your ServiceNow instance.
  - d. Select **Save changes**.
8. Configure API scopes for your application.  
API scopes specify the level of access that the application has to the Atlassian APIs.
  - a. From the left navigation pane, select **Permissions**.
  - b. From the list of available APIs, locate the Confluence API and then select **Add**.  
The **Add** action button automatically changes to the **Configure** action button.
  - c. Select **Configure**.  
The Confluence API page opens.
  - d. Add the following scopes for the Confluence API:
    - Search Confluence content and space summaries
    - Read user groups
    - Create, remove, and update user groups
    - Read user
9. Retrieve the client ID and client secret that are assigned to your application.
  - a. From the left navigation pane, select **Settings**.
  - b. In the Authentication details section, copy the values in the **Client ID** and **Secret** fields.  
Save them in a secure location for later use.

### Obtain the Cloud ID value of Confluence Cloud instance

Obtain the value of the Cloud ID of the Confluence Cloud cloud instance. This value is required during the configuration of the connection record in your ServiceNow instance.

### Before you begin

Confluence Cloud Role required: admin

**Procedure**

1. Log in to [Atlassian Administration](#).
2. Select the **Select** button against the required organization.
3. Select the **Products** tab.
4. On the Products page, select **Manage product** on the Confluence product row.

The URL is in the following format in a new window: `https://admin.atlassian.com/o/<orgID>/products/conf/<Cloud-Id>`.

5. Copy the value of the Cloud ID for later use.

**Create a Confluence Cloud integration profile**

Create a Confluence Cloud integration profile to track software subscriptions and optimize licensing for your Confluence Cloud applications.

**Before you begin**

To create a Confluence Cloud integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

Atlassian Role required: site admin

ServiceNow Role required: sam\_integrator, sn\_confluence\_spoke.confluence\_cloud\_admin

**About this task**

If you're using Software Asset Workspace, the option to create the Confluence Cloud integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Confluence Cloud Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Confluence Cloud</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

### Integration Profile form

Field	Value
Display Name	Name of the integration profile. For example, <b>Confluence Cloud Integration</b> .
Connection & Credential	Connection and credential alias for Confluence Cloud. This field populates automatically.
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile Type	Type of integration profile.  This field is automatically set to <b>Confluence Cloud Subscription</b> .

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **Confluence Cloud Download Subscriptions Subflow**.
4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to **Confluence Cloud Update User Activity Subflow**.

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **Confluence Cloud Reclaim Subscription Subflow**.
6. Select **Save**.  
Your ServiceNow instance creates a draft integration profile. The integration profile uses the Confluence Cloud Download Subscriptions, Confluence Cloud Update User Activity, and Confluence Cloud Reclaim Subscription subflows to retrieve user data from the Confluence Cloud application.

The **Connection & Credential** field appears and is automatically set to **sn\_confluence\_spoke.confluence\_subscription\_activity\_reclaim** when all the processes are selected.

7. Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field and then selecting **Open Record** in the record preview.
8. If you see a text on the record as This record is in the Confluence Cloud Spoke application, but 'xxx' is the current application. To edit the record click here, select the link, set the configuration template record to **SAM SaaS Confluence Cloud**.
9. Save the record.


10. On the Connection & Credential Aliases form, select the **Create New Connection & Credential** related link.
11. In the dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Name	Name of the connection.
Connection URL	API URL for Confluence Cloud. This field is automatically set to <code>https://api.atlassian.com</code> .  For Software Asset Management - SaaS License Management version 14.0.8 and above, provide the URL of your Confluence Cloud instance in the <code>https://api.atlassian.com/ex/confluence/&lt;Cloud-ID</code> format. For more information about getting the value of Cloud ID, see <a href="#">Obtain the Cloud ID value of Confluence Cloud instance</a> .
OAuth Client ID	Client ID that is assigned to your Confluence Cloud OAuth 2.0 (3LO) application.
OAuth Client Secret	Client secret that is assigned to your Confluence Cloud OAuth 2.0 (3LO) application.
OAuth Redirect URL	URL of the OAuth provider that users are redirected to after authentication.  This field populates automatically based on the callback URL that you specified in <a href="#">Create a Confluence Cloud OAuth 2.0 (3LO) application</a> .

12. Select **Create and Get OAuth Token**.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.


13. When the dialog box appears, grant permission to the Confluence Cloud application. The dialog box closes and you automatically return to the Connection & Credential Aliases form.
14. Specify the groups that have access to Confluence products. By specifying these groups on your ServiceNow instance, you can retrieve data and manage licenses for only the users within these groups.
  - a. In a new tab, open the [Atlassian Administration portal](#) .
  - b. Log in to the admin account with a site\_admin role.
  - c. Select the **Select** button against the required organization.
  - d. Select the **Products** tab.
  - e. On the Products page, select **Manage product** on the Confluence product row.
  - f. View the list of groups that have access to Confluence products.

Take note of this information for later use.

**g.** Return to your ServiceNow instance and navigate to **Confluence Cloud > Confluence Groups**.

**h.** On the Confluence Groups form, select the **Add Groups** related link.  
The Add Confluence Groups dialog box opens.

**i.** In the Available list, select the groups that have access to Confluence products.

 **Tip:** The Available list includes all groups that are associated with your Atlassian account. Select only the groups that have access to Confluence products.

**j.** Select the right arrow button to move the groups from the Available list to the Selected list.

**k.** Select **OK**.

**15.** Return to your integration profile and then select the integration profile.

**16.** Select **Publish**.

**17.** In the Publish Confirmation dialog box, select **OK**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
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- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

## Integrating with CrowdStrike

Integrating your Software Asset Management application with the CrowdStrike enables you to view CrowdStrike active host sensors information and check license compliance.

**Note:** CrowdStrike currently doesn't support the APIs for integration in regulated environments, including US-GOV-1 (GovCloud) or US-GOV-2 CrowdStrike clouds.

**Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

### Minimal user permissions

Process	Required user role in the CrowdStrike application	Authentication scopes
Download consumption	Falcon administrator	Sensor usage scope with read permissions

This process is applicable for Xanadu Patch 6 and Software Asset Management - SaaS License Management (sn\_sam\_saas\_int) 14.0.7 version onwards. If you are on any version for Xanadu below Patch 6, refer [KB1801232](#).

## Register a CrowdStrike OAuth application

Register the CrowdStrike OAuth application to access the CrowdStrike API and to receive a Client ID and Client secret.

### Before you begin

The CrowdStrike Integration Hub spoke must be active. For more information, see [CrowdStrike spoke](#).

CrowdStrike Role required: Falcon administrator

### Important:

- To use the Sensor Usage APIs, your API client must be assigned the Sensor usage scope with Read permissions.
- Contact your account team to enable the following feature flags:
  - Hourly usage data feature flag: This flag must be enabled for your Customer Identification (CID) to view hourly usage data.
  - Aggregated usage data feature flag: This flag must be enabled to get aggregated usage data in multi-CID (non-Flight Control) accounts.

This prerequisite is required for Xanadu Patch 6 onwards.

## Procedure

- Log in to [Falcon](#) using your admin credentials.
- Navigate to **Support and resources > API Clients and Keys**.
- Select **Create API Client**.
- Provide the client name and description.
- Select the **Read** check box for the **Sensor usage** scope.
- Select **Create**.  
The API client created screen is displayed.

7. Copy the Client ID and Secret for later use.

8. Select **Done**.

### Create a CrowdStrike integration profile

Create a CrowdStrike integration profile to track software subscriptions and optimize licensing for your CrowdStrike applications.

#### Before you begin

The Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) must be installed from the [ServiceNow Store](#).

ServiceNow Role required: admin or sam\_integrator

#### About this task

If you're using Software Asset Workspace, the option to create the CrowdStrike integration profile in Core UI is inactive.

**Note:** When upgrading to Yokohama patch 1 with Software Asset Management - SaaS License Management (sn\_sam\_saas\_int) 15.0.8 and Software Asset Management (sn\_itam\_samp) 2.1.0 store applications installed, you must delete the entitlements for the existing CrowdStrike integration profiles. Then, create entitlements for various CrowdStrike products, such as Falcon Endpoint Protection and Falcon Discover, based on their license metrics. These metrics include Reserved Hourly Average Sensor and Sensor Subscription, which are found under the CrowdStrike license metric group.

- If any existing CrowdStrike profiles are in the **Draft** state, create new integration profiles and delete the existing ones.
- If any existing CrowdStrike profiles are in the **Published** state, their state changes to Draft.

If you are on any version for Yokohama below patch 1, refer [KB1801232](#).

### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>CrowdStrike Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>CrowdStrike</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

### Integration profile form

Field	Value
Display name	Name of the integration profile. For example, CrowdStrike integration.
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>#Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>#Published</b>.</li> </ul>
Profile type	Type of integration profile. This field is automatically set to CrowdStrike Subscription.

3. On the **Download Consumptions** tab, verify that the **Subflow** field is set to **CrowdStrike Download Weekly and Hourly Sensor Usage**.

For more information about the required roles and scopes, see [Minimal user permissions table](#).

4. Select **Save**.

A draft integration profile is created.

The **Connection & Credential** field appears and is automatically set to **sn\_crowdstrk\_spoke.CrowdStrike**.

5. Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field and then selecting **Open Record** in the record preview.
6. On the Connection & Credential Aliases form, select the **Create New Connection & Credential** related link.
7. In the Create Connection and Credential dialog box, fill in the fields.

### Create Connection and Credential dialog box

Field	Value
Connection Information	
Connection Name	Name of the CrowdStrike connection. This field populates automatically.
Connection URL	URL for the connection. This field is automatically set to <code>https://api.crowdstrike.com</code> .  Each CrowdStrike cloud has a different base URL. Use the base URL that corresponds to the cloud where your integration is hosted.

Field	Value
	<ul style="list-style-type: none"> <li>○ <b>US-1:</b> https://api.crowdstrike.com</li> <li>○ <b>US-2:</b> https://api.us-2.crowdstrike.com</li> <li>○ <b>EU-1:</b> https://api.eu-1.crowdstrike.com</li> </ul>
Credential Information	
OAuth Client ID	Client ID that you generated while configuring the CrowdStrike API settings.
OAuth Client Secret	Client Secret that you generated while configuring the CrowdStrike API settings.
OAuth Redirect URL	https://<instance name>/oauth_redirect.do, where the instance name is the name of your ServiceNow instance.

**8. Select Create and Get OAuth Token.**

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

The OAuth token is generated successfully.

**9. On the Integration Profile form, proceed with the Workload product mapping by selecting the **CrowdStrike Product Workload Mappings** tab.**

Workload mapping is essential for accurately associating specific products with the types of workloads they manage (for example, servers, desktops, containers). This is because CrowdStrike provides data on workloads and not direct product-to-machine connections. With workload mapping, you can correctly count license usage and ensure compliance. The system adds up the relevant workloads for each product based on this mapping, preventing over- or under-counting. This new approach replaces previous methods and aligns with how CrowdStrike now tracks usage, making it easier to manage compliance.

**a. On the CrowdStrike Product Workload Mappings page, select **New**.**

**Note:** The software entitlements and software models must be created before proceeding to the next step.

- For more information on creating software entitlements in the Software Asset Management classic application, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

**b. On the form, fill in the fields.**

**CrowdStrike Product Workload Mapping form**

Field	Description
Integration profile	This field is automatically set to the integration profile for which the workload mapping is being created.
Workload	<p>Endpoints are physical or virtual devices, such as a computer, server, laptop, desktop computer, mobile, cellular, container, pod, or virtual machine image.</p> <p>Endpoints are sometimes referred to as workloads.</p> <p>For example,</p> <ul style="list-style-type: none"> <li>▪ containers</li> <li>▪ public_cloud_with_containers</li> <li>▪ servers_without_containers</li> <li>▪ chrome_os</li> </ul>
Software model	Profile of the software, which includes publisher, version, and discovery map.
License metric	<p>License metric for the selected software model.</p> <ul style="list-style-type: none"> <li>▪ <b>Reserved Hourly Average Sensor:</b> This metric counts the number of unique active endpoints per clock-hour and averages them over a rolling 28-day period. The count of Reserved Hourly Average Sensor Licenses resets at the start of each clock-hour.</li> <li>▪ <b>Sensor Subscription:</b> This metric calculates license usage by averaging endpoint counts over four consecutive weeks. Weekly endpoint counts are based on the total number of endpoints consumed in the previous seven days.</li> </ul>

c. Select **Save**.

10. After the workload product mapping is provided, select **Publish**.

**i Important:** You must provide the Workload product mapping before publishing the profile.

11. In the Publish Confirmation dialog box, select **OK**.

**Result**

This integration pulls or creates usage records in the CrowdStrike Product Usage [samp\_crowdstrike\_product\_usage] table and CAL records in the Client Access [samp\_sw\_client\_access] table.

### What to do next

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.


- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with DocuSign

Integrating your Software Asset Management application with the DocuSign service enables you to track your software subscriptions and to reclaim unused licenses.

DocuSign purchases made through resellers don't reflect within the DocuSign standard billing system. So no values are returned through the APIs for envelope consumption that is available to ServiceNow.

**i Important:** DocuSign has removed the **lastLogin** field from the Users API, so the user's last activities are no longer tracked as part of this integration. The Software Asset Management application now creates reclamation candidates based on the subscription assigned date.

For more information about the DocuSign service, see [the DocuSign Developer site](#) .

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the DocuSign application	Authentication scopes
Download subscriptions	admin	No scopes
Reclaim subscription	admin	No scopes

### Register a DocuSign application

Register a DocuSign application through the DocuSign admin portal.

### Before you begin

DocuSign Role required: admin

### Procedure

1. Log in to your DocuSign demo (non-production) account.
2. Select your profile picture.
3. Select **My Apps and Keys**.

- If you already have an API integration key from a previous integration ready for use in production, [skip to step 33](#).
  - If you don't have your client secret saved, you must generate a new one.
- 4.** On the left pane, select **INTEGRATIONS > Apps and Keys**.
  - 5.** In the **Apps and Integration Keys** section, select **ADD APP AND INTEGRATION KEY**.
  - 6.** On the Add Integration Key form, provide a name in the **App Name** field and select **CREATE APP**.
  - 7.** Select **ADD URI** under the **Redirect URIs** field in the **Additional Settings** section.
  - 8.** Add `https://oauth.pstmn.io/v1/browser-callback`.
  - 9.** Select **ADD URI** again and add `https://ServiceNow instance.service-now.com/oauth_redirect.do`.
  - 10.** Select **ADD SECRET KEY**.  
Save the Integration Key (Client ID) and Secret Key (Client secret) in a secure location to use them later in the Postman App and the Integration Key (Client ID) in the ServiceNow instance.
  - 11.** Select **Save**.
  - 12.** Download the latest version of [Postman App](#) and skip the login.
  - 13.** Select **New Collection** and provide a name to the collection.
  - 14.** Select the **Authorization** tab.
  - 15.** From the Type list menu, select **OAuth 2.0**.
  - 16.** Provide a name and complete the fields on the **Configuration Options** tab to create a token:

Field	Value
Callback URL	<code>https://oauth.pstmn.io/v1/browser-callback</code>
Auth URL	<code>https://account-d.docusign.com/oauth/auth</code>
Access Token URL	<code>https://account-d.docusign.com/oauth/token</code>
Client ID	The integration key from your Docusign demo account created in <a href="#">step 10</a> .
Client Secret	The secret key from your Docusign demo account <a href="#">step 10</a> .


- 17.** Select **Get New Access Token**.  
You get redirected to Docusign.
- 18.** Select **Accept**.
- 19.** After the access token is collected and authentication is complete, copy the Access Token to use it later.
- 20.** Select **New Request** to create a GET request for your account id.
- 21.** Enter the URL in the GET field as `https://account-d.docusign.com/oauth/userinfo`.
- 22.** On the Headers tab, select **Authorization** under **KEY** and enter `Bearer <Access Token that you copied during authentication>` under **Value**.
- 23.** Select **Send** and verify that your request is complete.  
The account id is displayed in the response body.
- 24.** Duplicate the GET request.  
Copy the authorization key and value under **Headers**.

25. Update the URL in the GET field as `https://demo.docusign.net/restapi/v2/accounts/<account-id>/users`.  
Here, *account-id* is the ID that you saved from the previous request.
26. Select **Send** 20 times to make 20 API calls.  
You must invoke a minimum of 20 API calls to register your application through the Docusign admin portal.
27. Navigate to **Apps and Integration Keys** on the Docusign admin portal.
28. Select **Actions > View API Dashboard** next to your application.
29. Wait a few minutes for Docusign to register all 20 API calls.
30. Navigate to **INTEGRATIONS > Apps and Keys** and select **Submit for review**.  
After 5-20 minutes, your application review is complete. You can promote the application to your production account.
31. Select **Actions > Start-Go- Live review** to promote the application to the production account.
32. Select an eligible production account to manage the integration key.
33. Log in to your Docusign production content account.
34. Select your profile picture.
35. Select **Go to Admin**.
36. On the left pane, select **INTEGRATIONS > Apps and Keys**.  
Locate your API Account ID to use for the integration profile in your ServiceNow instance.
37. Next to your application, select **Actions > Edit**.
38. Select **ADD URI** and add `https://ServiceNow instance.service-now.com/oauth_redirect.do`.
39. Select **ADD SECRET KEY**.  
Save the Secret Key (Client secret) for your production account in a secure location to use it in your ServiceNow instance.
40. Select **Save**.

### Create a Docusign integration profile

Create an integration profile to track software subscriptions and optimize licensing for the Docusign service.

### Before you begin

To create a Docusign integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#) .

ServiceNow Role required: sam\_integrator or admin

### About this task

If you're using Software Asset Workspace, the option to create the Docusign integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles.</b></li> <li>b. Select <b>New.</b></li> <li>c. Select <b>DocuSign Integration Profile.</b></li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles.</b></li> <li>b. Select <b>New.</b></li> <li>c. Select <b>DocuSign</b> from the drop-down list.</li> <li>d. Select <b>Continue.</b></li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Value
Display name	Name of the integration profile. For example, DocuSign Integration
Client Id	Client ID for the OAuth application created in <a href="#">step 10</a> in the SaaS admin account.
Redirect url	URL of the OAuth provider that you're redirected to after authentication. This value is automatically populated.
Technical account Id	API Account ID from your DocuSign production account.
Instance URL	URL of the login page used for accessing your DocuSign production account. This field is automatically set to <b>https://account.docuSign.com.</b>
Client secret	Password associated with the client ID created in <a href="#">step 39</a> .
Profile type	Type of integration profile. This value is automatically set to <b>DocuSign Subscription.</b>

3. Select **Submit.**
4. On the integration profile, select **Get OAuth Token** and follow the steps to get an OAuth token.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

**Result**

You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule.](#)

**Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

## What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.


- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

## Integrating with Dropbox

Integrating your Software Asset Management application with the Dropbox service enables you to track your software subscriptions and to reclaim unused licenses.

For more information about the Dropbox service, see the [Dropbox Business User and Admin Guides](#) .

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

### Minimal user permissions

Process	Required user role in the Dropbox application	Authentication scopes
Download subscriptions	Security Admin	<ul style="list-style-type: none"> <li>members.read</li> <li>team_data.member</li> </ul>
Pull user activity	Security Admin	<ul style="list-style-type: none"> <li>events.read</li> <li>team_data.member</li> </ul>
Reclaim subscription	Security Admin	<ul style="list-style-type: none"> <li>team_info.read</li> <li>members.write</li> <li>members.delete</li> </ul>


### Create a Dropbox application for user subscriptions

Create an application on the DBX Platform for Developers.

#### Before you begin

Dropbox Role required: Refer to the [Minimal user permissions](#) table.

#### Procedure

1. Navigate to [Dropbox Developer Apps](#)  and sign in to your account.
2. On the My Apps page, select **Create App**.
3. Select scoped access API.
4. Specify the type of access to **Full Dropbox**.
5. Enter a name for your application and select **Create app**.
6. Select the **Permission** tab.
7. Select these permission check boxes:
  - team\_info.read
  - members.write
  - members.delete
  - groups.read
  - events.read
  - team\_data.member
8. Select **Submit** to save the changes.
9. Navigate to the **Settings** tab.
10. Obtain the App key and App secret.

You will need to copy and paste these values into the Client ID and Client Secret fields in your ServiceNow instance in the following steps.

**Note:** Your App key (client ID) and App secret (client secret) are sensitive. Do not share them.

11. Enter `https://instance.service-now.com/oauth_redirect.do` as the redirect URI, where *instance* is the name of your ServiceNow instance.
12. Click the **Branding** tab and then click **Save changes**.

### Create a Dropbox integration profile

Create an integration profile to track software subscriptions and optimize licensing for the Dropbox service.

#### Before you begin

To create a Dropbox integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

#### About this task

If you're using Software Asset Workspace, the option to create the Dropbox integration profile in Core UI is inactive.

#### Procedure

1. Using the information from the application with the permissions set to **Team member file access**, return to your ServiceNow instance to create an integration profile.
2. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Dropbox Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Dropbox</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ol>

3. On the form, fill in the fields.

#### Integration Profile form

Field	Value
Display name	Name of the integration profile. For example, DropBox Integration
Client Id	Client ID for the OAuth application created in the SaaS admin account.
Redirect url	URL of the OAuth provider that you're redirected to after authentication. This value is automatically populated.

Field	Value
Client secret	Password associated with the client ID.
Profile type	Type of integration profile. This value is automatically set to <b>DropBox Subscription</b> .
Analyze user activity from	<p>You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.</p> <p><b>Note:</b> Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.</p> <p>You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see <a href="#">Review a software reclamation rule</a>.</p>

4. Select **Submit**.

5. On the integration profile, select **Get OAuth Token**.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

6. Select **Allow** if you have already logged in to the Dropbox application.

7. **Optional:** If you haven't logged in to the Dropbox application, log in with your admin credentials and then continue with the next steps.

8. In the pop-up window, select **Allow**.

**Note:** When user subscriptions are reclaimed, files from the reclaimed accounts are transferred to the admin account selected in this step. This account can be a different admin account than the one used to set up the integration. If you have to start transferring files to a new admin, you can select the **Get OAuth Token** related link again at any time to select a different admin account. After selecting a new admin, you can reclaim the old admin account to transfer all of their files to the new admin, including all previously reclaimed user files.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Google Workspace

Integrating your Software Asset Management application with the Google Workspace service enables you to track your software subscriptions and to reclaim unused licenses.

**i Note:** The Google Workspace integration supports the following products:

- Google Apps
- Google Vault SKUs
- Archived User SKUs

For additional information about the Google Workspace service, see [Google Workspace Admin Help](#) [↗](#).

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Google Workspace application	Authentication scopes
Download subscriptions	Admin API privileges: Users Read	<ul style="list-style-type: none"> <li>• [Admin SDK API] https://www.googleapis.com/auth/admin.directory.user.readonly</li> <li>• [Admin SDK API] https://www.googleapis.com/auth/admin.directory.domain.readonly</li> <li>• [Enterprise License Manager API] https://www.googleapis.com/apps/licensing</li> </ul>
Pull user activity	Admin API privileges: Users Read	<ul style="list-style-type: none"> <li>• [Admin SDK API] https://www.googleapis.com/auth/admin.directory.user.readonly</li> <li>• [Admin SDK API] https://www.googleapis.com/auth/admin.reports.usage.readonly</li> </ul>
Reclaim subscription	Super Administrator	<ul style="list-style-type: none"> <li>• [Admin SDK API] https://www.googleapis.com/auth/admin.directory.user.readonly</li> <li>• [People SDK API] https://www.googleapis.com/auth/userinfo.email</li> <li>• [People SDK API] https://www.googleapis.com/auth/userinfo.profile</li> <li>• [Admin SDK API] https://www.googleapis.com/auth/admin.datatransfer.readonly</li> </ul>

### Create a Google Workspace project


Create a new project in the Google API Console.

#### Before you begin

Google Workspace Role required: Refer to the [Minimal user permissions](#) table.

#### Procedure

1. Log in to [Google API Console](#).
2. Select **Select a project > New Project**.
3. Enter a name for your project in the Project name, then select your Organization and Location.
4. Select **Create**.
5. Select the OAuth consent screen on the left navigation menu.
6. Select **User Type** as **Internal** and select **Create**.
7. Enter the App name and select User support email in the App information section.
8. In Authorized domains, select the **ADD DOMAIN** button and add `service-now.com`.
9. Enter Email addresses in the Developer contact information section.
10. Select **Save and Continue** to add scopes.
11. On the Scopes page, select the **Add or Remove Scopes** button.
12. In the Manually add scopes section, enter the following scopes by pasting them to the text area:
  - `https://www.googleapis.com/auth/apps.licensing`
  - `https://www.googleapis.com/auth/admin.directory.user`
  - `https://www.googleapis.com/auth/admin.directory.user.readonly`
  - `https://www.googleapis.com/auth/admin.directory.domain.readonly`
  - `https://www.googleapis.com/auth/admin.datatransfer`
  - `https://www.googleapis.com/auth/admin.datatransfer.readonly`
  - `https://www.googleapis.com/auth/admin.reports.usage.readonly`
  - `https://www.googleapis.com/auth/userinfo.profile`
  - `https://www.googleapis.com/auth/userinfo.email`
13. Select **ADD TO TABLE** and then select **Update**.
14. Select **Save and Continue**.
15. Select **Credentials** on the left navigation menu and select **CREATE CREDENTIALS**.
16. Select **OAuth client ID**.
17. Fill out the form as shown and select **Create**.

Field	Value
Application type	Web application
 <b>Note:</b> Selecting a value for this field causes the remaining fields to be displayed.	

Field	Value
Name	Any name of your choice
Authorized JavaScript origins	https:// <i>instance</i> .service-now.com, where <i>instance</i> is the name of your ServiceNow instance
Authorized redirect URIs	https:// <i>instance</i> .service-now.com/oauth_redirect.do, where <i>instance</i> is the name of your ServiceNow instance

**18. Select OK.**

You can now view your client ID and client secret that you would use in your ServiceNow instance.

**Note:** Your client ID and client secret are sensitive. Don't share them.

**19. Select Library on the left navigation menu.**

Search for and enable the following APIs:

- Enterprise License Manager API
- Admin SDK
- Google People API

**Create a Google Workspace integration profile**

Create an integration profile to track software subscriptions and optimize licensing for the Google Workspace service.

**Before you begin**

To create a Google Workspace integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you're using Software Asset Workspace, the option to create the Google Workspace integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Google Workspace Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> </ol>

Interface	Action
	<p><b>c.</b> Select <b>Google Workspace</b> from the drop-down list.</p> <p><b>d.</b> Select <b>Continue</b>.</p>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Value
Display name	Name of the integration profile. For example, <i>Google Workspace Integration</i>
Client Id	Client ID for the OAuth application created in the SaaS admin account.
Redirect url	URL of the OAuth provider that you're redirected to after authentication. This value is automatically populated.
Client secret	Password associated with the client ID.
Profile type	Type of integration profile. This value is automatically set to <i>Google Workspace Subscription</i> .

3. Select **Submit**.

4. On the integration profile, select **Get OAuth Token**.

**i Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

5. In the pop-up window, select your Google admin account and select **Allow**.

**i Note:** When user subscriptions are reclaimed, files from the reclaimed accounts are transferred to the admin account selected in this step. This account can be a different admin account than the one used to set up the integration. If you have to start transferring files to a new admin, you can select the **Get OAuth Token** related link again at any time to select a different admin account. After selecting a new admin, you can reclaim the old admin account to transfer all of their files to the new admin, including all previously reclaimed user files.

**Result**

You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule](#).

**i Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

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Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with GitHub

Integrating your Software Asset Management application with the GitHub repository hosting service enables you to track your software subscriptions and reclaim unused licenses.

With this integration, you can retrieve and analyze licensing information for both the GitHub Enterprise Cloud and GitHub Enterprise Server applications.

- [Integrate with GitHub Enterprise Cloud](#)
- [Integrate with GitHub Enterprise Server](#)

### Integrate with GitHub Enterprise Cloud

Integrating your Software Asset Management application with the GitHub Enterprise Cloud application help you track your software subscriptions and reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the GitHub Enterprise Cloud application	Authentication scopes
Download subscriptions	Organization owner	read:org
Pull user activity	Organization owner	<ul style="list-style-type: none"> <li>• read:org</li> <li>• repo</li> </ul>
Reclaim subscription	Organization owner	write:org

## Generate an API access token for GitHub Enterprise Cloud

Generate a token that you can use to access the GitHub Enterprise Cloud API.

### Before you begin



GitHub Role required: organization owner

The user account that you use for authentication should be able to read all repositories in the organization they're a part of.

### About this task

The GitHub repository hosting service uses personal access tokens to grant users access to the GitHub API. Personal access tokens function similarly to OAuth access tokens by authorizing API requests. By generating a personal access token to authorize your GitHub Enterprise Cloud API requests, you can gain access to the GitHub Enterprise Cloud API.

### Procedure

1. From a web browser, open [GitHub](#) .
2. Sign in to your GitHub account.
3. On the GitHub page header, select your profile photo and then select **Settings**.  
Your profile settings open.
4. From the left navigation pane, select **Developer Settings**.  
Your developer settings open.
5. From the left navigation pane, select **Personal access tokens**.
6. Select **Tokens (classic)**.
7. On the Personal access tokens page, select **Generate new token**.
8. Select **Generate new token (classic)**.
9. If you're prompted to confirm your password before proceeding, enter your GitHub password and then select **Confirm password**.
10. On the New personal access token form, describe the purpose of the token in the **Note** field.
11. To give your token an expiration, select the Expiration drop-down menu and select a default value or use the calendar picker.
12. In the Select scopes form section, enable the repo, write:org, and read:org OAuth scopes. OAuth scopes limit the level of access that the application has to your protected resources. The repo OAuth scope gives you full control of your private repositories. The write:org and read:org OAuth scopes enable you to manage your entire organization, including all teams, projects, and memberships. See [Scopes for OAuth Apps](#)  for more information about GitHub OAuth scopes.
  - a. Enable the repo OAuth scope by selecting the **repo** check box.  
By enabling this OAuth scope, you automatically enable the repo:status, repo\_deployment, public\_repo, repo:invite, and security\_events OAuth scopes.
  - b. Enable the write:org and read:org OAuth scope.
13. Select **Generate token**.  
Your personal access token generates.
14. Copy the access token and save it in a secure location for later use.

- To use your token to access resources owned by an organization that uses SAML single sign-on, authorize the token.  
For more information, see [Authorizing a personal access token for use with SAML single sign-on](#).

### Create a GitHub Enterprise Cloud connection

Create a connection between your GitHub Enterprise Cloud applications and your ServiceNow instance.

#### Before you begin

If you want to use a MID Server for communication between your ServiceNow instance and your GitHub Enterprise Cloud applications, you must first set up a MID Server on your instance. See [MID Server](#) for detailed instructions.

ServiceNow Role required: admin

#### Procedure

- From your ServiceNow instance, navigate to **Process Automation > Flow Designer**. The Flow Designer tab gets created.
- Select the **Connections** tab.
- Select **View Details** for your GitHub connection.
- From the list of available connections, locate GitHub and then select **Configure**.
- In the Configure Connection dialog box, fill in the fields.

#### Configure Connection dialog box

Field	Description
Connection Name	Name of the GitHub connection.
Connection URL	URL of the GitHub API endpoint. Enter <code>https://api.github.com</code> .
Use MID Server	Option that enables your ServiceNow instance to use a MID Server for communication with your GitHub Enterprise Cloud applications. <ul style="list-style-type: none"> <li>If your instance requires a MID Server, set this field to <code>true</code>.</li> <li>If your instance doesn't require a MID Server, leave this field empty.</li> </ul> <div style="background-color: #e0f2f7; padding: 5px; margin-top: 10px;"> <b>Important:</b> To enable this option, you must already have a MID Server set up on your instance. See <a href="#">MID Server</a> for detailed instructions.                 </div>
API Key	Personal access token that enables you to access the GitHub Enterprise Cloud API. <ul style="list-style-type: none"> <li>If the GitHub spoke version installed is 2.2.5 or higher, enter <code>&lt;api-key&gt;</code>.</li> <li>If the GitHub spoke version installed is lower than 2.2.5, enter <code>Bearer &lt;api-key&gt;</code>.</li> </ul> The <code>&lt;api-key&gt;</code> is the personal access token that you generated in <a href="#">Generate an API access token for GitHub Enterprise Cloud</a>

#### 6. Select **Configure Connection**.

### Create a GitHub Enterprise Cloud integration profile

Create a GitHub Enterprise Enterprise Cloud integration profile to track software subscriptions and optimize licensing for your GitHub Enterprise Cloud applications.

#### Before you begin

To create a GitHub Enterprise Cloud integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

#### About this task

If you're using Software Asset Workspace, the option to create the GitHub Cloud integration profile in Core UI is inactive.

#### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>GitHub Cloud Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>GitHub Cloud</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

#### Integration Profile form

Field	Description
Display Name	Name of the integration profile. For example, <code>GitHub Cloud Integration</code> .
Connection & Credential	<p>Connection and credential alias for the GitHub spoke.</p> <p>This field is automatically set to <code>sn_github_spoke.GitHub</code>.</p>
Status	<p>Status of the integration profile.</p> <ul style="list-style-type: none"> <li>If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile type	<p>Type of integration profile.</p> <p>This field is automatically set to <code>github_cloud_subscription</code>.</p>

**3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **GitHub Cloud Download Subscriptions**.**

Software Asset Management pulls the members, outside collaborators, pending invitations, and pending outside collaborators to provide a complete view of your GitHub Enterprise Cloud Subscriptions.

**i Important:** To pull pending outside collaborators, enable the `sn_sam_saas_int.pull_pending_collaborator_github` system property. A higher number of repositories would lead to an increased number of API transactions.

**4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to **GitHub Cloud Update User Activity**.**

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**i Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

**💡 Tip:** To avoid performance issues with this subflow, the best approach is to set the **Analyze user activity from** field to a maximum of seven days prior to the current date.

**5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **GitHub Cloud Reclaim Subscription**.**

**6. Select **Save**.**

Your ServiceNow instance creates a draft integration profile. The integration profile uses the GitHub Cloud Download Subscriptions, GitHub Cloud Update User Activity, and GitHub Cloud Reclaim Subscription subflows to retrieve user data from your GitHub Enterprise Cloud applications.

**7. After the form reloads, select **Publish**.**

The Publish Confirmation dialog box opens.

**8. In the dialog box, select **OK**.**

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrate with GitHub Enterprise Server

Integrating your Software Asset Management application with the GitHub Enterprise Server application help you track your software subscriptions and reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the GitHub Enterprise Server application	Authentication scopes
Download subscriptions	site administrator	site_admin
Reclaim subscription	site administrator	site_admin

### Generate an API access token for GitHub Enterprise Server

Generate a token that you can use to access the GitHub Enterprise Server API.

#### Before you begin

GitHub Role required: site administrator

#### About this task

The GitHub repository hosting service uses personal access tokens to grant users access to the GitHub API. Personal access tokens function similarly to OAuth access tokens by authorizing API requests. By generating a personal access token to authorize your GitHub Enterprise Server API requests, you can gain access to the GitHub Enterprise Server API.

#### Procedure


1. From a web browser, open your GitHub Enterprise Server instance.
2. Sign in to your GitHub account.
3. On the GitHub page header, select your profile photo and then select **Settings**.  
Your profile settings open.
4. From the left navigation pane, select **Developer Settings**.  
Your developer settings open.

5. From the left navigation pane, select **Personal access tokens**.
6. On the Personal access tokens page, select **Generate new token**.
7. If you're prompted to confirm your password before proceeding, enter your GitHub password and then select **Confirm password**.
8. On the New personal access token form, describe the purpose of the token in the **Note** field.
9. In the Select scopes form section, enable the site\_admin OAuth scope by selecting the **site\_admin** check box.  
 OAuth scopes limit the level of access that the application has to your protected resources. The site\_admin OAuth scope enables you to manage your enterprise users, organizations, and repositories.
10. Select **Generate token**.  
 Your personal access token generates.
11. Copy the access token and save it in a secure location for later use.

### Create a GitHub Enterprise Server connection

Create a connection between your GitHub Enterprise Server applications and your ServiceNow instance.

#### Before you begin



If you want to use a MID Server for communication between your ServiceNow instance and your GitHub Enterprise Server applications, you must first set up a MID Server on your instance. See [MID Server](#)  for detailed instructions.

ServiceNow Role required: admin

#### Procedure

1. From your ServiceNow instance, navigate to **Process Automation > Flow Designer**.  
 The Flow Designer launches in a new tab.
2. Select the **Connections** tab.
3. Select **View Details** for your GitHub Server connection.
4. From the list of available connections, locate GitHub Server and then select **Configure**.
5. In the Configure Connection dialog box, fill in the fields.

#### Configure Connection dialog box

Field	Description
Connection Name	Name of the GitHub Server connection.
Connection URL	URL of your GitHub instance.
Use MID Server	Option that enables your ServiceNow instance to use a MID Server for communication with your GitHub Enterprise Server applications. <ul style="list-style-type: none"> <li>○ If your instance requires a MID Server, set this field to <code>true</code>.</li> <li>○ If your instance doesn't require a MID Server, leave this field empty.</li> </ul> <div style="background-color: #e1f5fe; padding: 5px; margin-top: 10px;">  <b>Important:</b> To enable this option, you must already have a MID Server set up on your instance. See <a href="#">MID Server</a>  for detailed instructions.           </div>

Field	Description
API Key	Personal access token that enables you to access the GitHub Enterprise Server API. Enter <code>&lt;api-key&gt;</code> , where <code>&lt;api-key&gt;</code> is the personal access token that you generated in <a href="#">Generate an API access token for GitHub Enterprise Server</a> .

**6. Select **Configure Connection**.**

**Create a GitHub Enterprise Server integration profile**

Create a GitHub Enterprise Server integration profile to track software subscriptions and optimize licensing for your GitHub Enterprise Server applications.

**Before you begin**

To create a GitHub Enterprise Server integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you're using Software Asset Workspace, the option to create the GitHub Server integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
<b>Core UI</b>	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>GitHub Server Subscription Profile</b>.</li> </ol>
<b>Software Asset Workspace</b>	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>GitHub Server</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Display Name	Name of the integration profile. For example, <code>GitHub Server Integration</code> .
Connection & Credential	Connection and credential alias for the GitHub spoke. This field is automatically set to <code>sn_github_spoke.GitHub_Server</code> .
Status	Status of the integration profile.

Field	Description
	<ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile type	Type of integration profile. This field is automatically set to <code>github_server_subscription</code> .

**3. On the `Download Subscription Subflow` tab, verify that the `Subflow` field is set to `GitHub Server Download Subscriptions`.**

You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule](#).

**Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

**4. On the `Reclaim Subscription Subflow` tab, verify that the `Subflow` field is set to `GitHub Server Reclaim Subscription`.**

**5. Select `Save`.**

Your ServiceNow instance creates a draft integration profile. The integration profile uses the GitHub Server Download Subscriptions and GitHub Server Reclaim Subscription subflows to retrieve data from your GitHub Enterprise Server applications.

**6. After the form reloads, select `Publish`.**

**7. In the Publish Confirmation dialog box, select `OK`.**

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with GoTo

Integrating your Software Asset Management application with GoTo applications enable you to track your software subscriptions and reclaim unused licenses.

With this integration, you can retrieve and analyze licensing information for the following GoTo applications:

- GoToMeeting (user subscriptions, user activity, and reclamation candidates)
- GoToWebinar (user subscriptions, user activity, and reclamation candidates)
- GoToConnect (user subscriptions, user activity, and reclamation candidates)
- GoToTraining (user subscriptions only)
- GoToAssist (user subscriptions only)
- OpenVoice (user subscriptions only)

Use this information to manage and optimize your GoTo license position.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the GoTo application	Authentication scopes
Download subscriptions	LogMeIn developer account and admin role	<ul style="list-style-type: none"> <li>• Profile</li> <li>• Admin Center</li> </ul>
Pull user activity	LogMeIn developer account and admin role	<ul style="list-style-type: none"> <li>• Profile</li> <li>• Admin Center</li> <li>• GoToConnect</li> </ul>
Reclaim subscription	LogMeIn developer account and admin role	Admin Center


### Create a GoTo OAuth client

Create an OAuth client for authenticating GoTo API requests.

#### Before you begin

GoTo Role required: Refer to the [Minimal user permissions](#) table.

#### Procedure

1. From a web browser, open the [GoTo Developer Center](#) .
2. Sign in using your LogMeIn developer account.

If you have not already set up a LogMeIn developer account, see [How to login or create a developer account](#) for detailed instructions.

3. From the LogMeIn Developers home page, select the **OAuth Clients** tab.
4. Select **Create a client**.
5. On the Details tab of the Create client form, fill in the client details.

**Details tab**

Field	Description
Client name	Name of the OAuth client.
Description	Optional description for the OAuth client.
Redirect URLs	Redirect URL of the ServiceNow instance on which you're integrating your GoTo applications. Enter <code>https://&lt;instance-url&gt;/oauth_redirect.do</code> , where <code>&lt;instance-url&gt;</code> is the URL of your ServiceNow instance.

6. Select **Next**.
7. On the Scopes tab, specify the level of access that the OAuth client has to your GoTo users and applications.

**Scopes tab**

Field	Description
Profile	OAuth scopes for getting and modifying user information for your authenticated users. The <b>Get user information</b> scope is enabled automatically. Select the check box to enable the <b>Modify user details</b> scope.
GoToMeeting, GoToWebinar, or GoToTraining	OAuth scope for creating, starting, and modifying sessions for your GoToMeeting, GoToWebinar, and GoToTraining applications. Select the check box to enable this scope.  <b>Note:</b> The SaaS License Management GoTo integration doesn't support license management for the GoToTraining application.
GoToAssist Remote Support or Service Desk	OAuth scope for creating, starting, and modifying sessions for the GoToAssist Remote Support and Service Desk applications. Leave this check box unselected.  <b>Note:</b> The SaaS License Management GoTo integration doesn't support license management for the GoToAssist applications.
SCIM	OAuth scope for automating user management using the System for Cross-domain Identity Management (SCIM) protocol. Leave this check box unselected.
Admin Center	OAuth scope for managing LogMeIn users through the GoTo Admin Center. Select the check box to enable this scope.
GoToConnect	OAuth scope for initiating phone calls and other telephone services using the GoToConnect. If GoToConnect license is enabled, select these check boxes:

Field	Description
	<ul style="list-style-type: none"> <li>○ Access call history for phone lines in the PBX [cr.v1.read]</li> <li>○ Retrieve your phone line information [users.v1.lines.read]</li> </ul>

8. Select **Save**.
9. On the Credentials tab, copy the values in the **Client ID** and **Client secret** fields. Save them in a secure location for later use.
10. Select the check box to verify that you have stored the client secret.
11. Select **Done**.

### Create a GoTo connection

Create a connection between your GoTo applications and your ServiceNow instance.

### Before you begin

ServiceNow Role required: sam\_integrator or admin

### Procedure

1. From your ServiceNow instance, navigate to **Process Automation > Flow Designer**. The Flow Designer launches in a new tab.
2. Select the **Connections** tab.
3. Select **View Details** for your GoTo connection.
4. From the list of available connections, locate GoTo and then select **Configure**.
5. In the dialog box, fill in the fields.

### Configure Connection dialog box

Field	Description
Connection Name	Name of the GoTo connection. This field populates automatically.
Name	Name of your GoTo credentials. This field populates automatically.
OAuth Client ID	Client ID that is assigned to your GoTo OAuth client.
OAuth Client Secret	Client secret that is assigned to your GoTo OAuth client.
OAuth Redirect URL	Redirect URL of the ServiceNow instance on which you're integrating your GoTo applications. This field populates automatically.

6. Select **Configure and Get OAuth Token**.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

7. In the Authorize App dialog box, select **Allow**. The OAuth access token becomes available for authorizing your GoTo connection.

8. If GoToConnect license is enabled, navigate to the **Connections** tab.
9. Find the connection for GoToConnect and select **View Details**.
10. Select **Get OAuth Token** to generate a token for GoToConnect.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

### Create a GoTo integration profile

Create a GoTo integration profile to track software subscriptions and optimize licensing for your GoTo applications.

#### Before you begin

To create a GoTo integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

#### About this task

If you're using Software Asset Workspace, the option to create the GoTo integration profile in Core UI is inactive.

#### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>GoTo Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>GoTo</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the following fields.

#### Integration Profile form

Field	Description
Display Name	Name of the integration profile. For example, GoTo Integration.
Connection & Credential	<p>Connection and credential alias for the GoTo spoke.</p> <p>This field is automatically set to sn_goto_spoke . GoTo.</p>
Status	Status of the integration profile.

Field	Description
	<ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile Type	<p>Type of integration profile.</p> <p>This field is automatically set to GoTo Subscription.</p>

**3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **GoTo Download Subscriptions**.**

**i Note:** This subflow is used for all supported GoTo applications.

**4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to **GoTo Update User Activity**.**

This subflow is used for only the GoToMeeting and GoToWebinar applications.

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**i Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

**5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **GoTo Reclaim Subscription**.**

**i Note:** This subflow is used for only the GoToMeeting and GoToWebinar applications.

**6. Select **Save**.**

Your ServiceNow instance creates a draft integration profile. The integration profile uses the GoTo Download Subscriptions, GoTo Update User Activity, and GoTo Reclaim Subscription subflows to retrieve user data from your GoTo applications.

**7. After the form reloads, select **Publish**.**

**8. In the Publish Confirmation dialog box, select **OK**.**

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Jira Software Cloud

Integrating your Software Asset Management application with Atlassian Jira Software Cloud enables you to track your software subscriptions and to reclaim unused licenses.

**i Note:** Currently this integration supports only one site integration per profile.

- If your installed Jira spoke version is 4.1.0 or higher, you can integrate Jira with your ServiceNow instance by using one of the following methods:
  - [Using basic authentication](#)
  - [Using OAuth authentication](#)
- If your installed Jira spoke version is lower than 4.1.0, integrate Jira with your ServiceNow instance by [Using basic authentication](#) method.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Jira Software Cloud application	Authentication scopes
Download subscriptions	Permission to access Jira	<ul style="list-style-type: none"> <li>• read:application-role:jira</li> <li>• read:group:jira</li> <li>• read:user:jira</li> <li>• read:avatar:jira</li> </ul>
Pull user activity	<ul style="list-style-type: none"> <li>• Administer Jira global permission</li> <li>• Browse projects permission for the project containing the issue.</li> </ul> <p>If issue-level security is configured, issue-level security permission to view the issue.</p>	<ul style="list-style-type: none"> <li>• read:user:jira</li> <li>• read:issue-details:jira</li> <li>• read:audit-log:jira</li> <li>• read:avatar:jira</li> <li>• read:field-configuration:jira</li> <li>• read:issue-meta:jira</li> </ul>
Reclaim subscription	Site administration, that is, member of the site-admin group	<ul style="list-style-type: none"> <li>• read:group:jira</li> <li>• write:group:jira</li> </ul>

**Using basic authentication**

Integrate the Software Asset Management application and Jira using an API key to authenticate ServiceNow requests.

You can integrate a ServiceNow instance with multiple Jira instances. For this integration, create a connection and credential alias record and a connection record for each Jira instance.


**Create an Jira account API token**

Create an API token in Jira to authenticate requests.

**Before you begin**

Jira Role required: Refer the [Minimal user permissions](#) table.

**Procedure**

1. Navigate to [Atlassian API Tokens](#) .
2. Select **Create API token**.
3. Enter a name for your API token, then select **Create**.
4. Copy the API token and save it.  
You'll use the token later.

### Configure the connection and credential record

Configure the default connection and credential alias record to authenticate the requests from ServiceNow.

#### Before you begin

Role required: admin

#### Procedure

1. Navigate to **All > Connections & Credentials > Connection & Credential Aliases**.
2. Open the alias record for Jira that is shipped with the spoke.
3. Select the **Create New Connection & Credential** related link.
4. On the form, fill in the fields.

#### Create Connection and Credential

Field	Description
Connection URL	URL of your Jira instance in <code>https://&lt;provider-domain-name&gt;.atlassian.net</code> format.
User Name	Enter the email address of the user.
API Key	Enter the API token that you generated for Jira.

5. Select **Create**.

#### Using OAuth authentication

Integrate the Software Asset Management application with your Jira account using OAuth to authenticate ServiceNow requests.


#### Create an OAuth 2.0 integration in Jira account

Create an OAuth 2.0 integration in the Atlassian Developer console to authenticate the requests.

#### Before you begin

Jira Role required: Refer the [Minimal user permissions](#) table.

#### Procedure

1. Log in to [Atlassian Developer console](#) .
2. Under **My apps**, select **Create** and select **OAuth 2.0 integration**.
3. On the form, provide a name for the integration and select **Create**.

The integration is created and the value of App ID is displayed.

4. Select **Authorization**.
  - a. Select **Add** under **Action**.
  - b. In **Callback URL**, provide the URL of your ServiceNow instance in this format: `https://<ServiceNow-Instance-Name>.service-now.com/oauth_redirect.do`.

For example, `https://example.service-now.com/oauth_redirect.do`.

c. Select **Save changes**.

5. Select **Settings**.

6. Under **Authentication details**, copy the values of Client ID and Client Secret.

7. Select **Permissions > Jira API > Configure**.

8. Select the **Granular scopes** tab.

9. Select **Edit Scopes** to add the following scopes:

- read:application-role:jira
- read:group:jira
- read:user:jira
- read:avatar:jira
- read:audit-log:jira
- read:issue-details:jira
- read:field-configuration:jira
- read:issue-meta:jira
- write:group:jira

You can configure other scopes according to your requirement.


### Obtain the Cloud ID value of Jira instance

Obtain the value of the Cloud ID of the Jira cloud instance. This value is required during the configuration of the connection record in your ServiceNow instance.

### Before you begin

Jira Role required: admin

### Procedure

1. Log in to [Atlassian Administration](#) .
2. Select the **Select** button against the required organization.
3. Select the **Products** tab.
4. On the Products page, select **Manage product** on the Jira product row.

The URL is in the following format in a new window: `https://admin.atlassian.com/o/<orgID>/products/jira-software/<Cloud-Id>`.

5. Copy the value of the Cloud ID for later use.

### Create an application registry in ServiceNow instance

Use the generated information while creating the OAuth 2.0 integration to create an application registry record in your ServiceNow instance.


### Before you begin

Role required: admin

**Procedure**

1. Navigate to **All > System OAuth > Application Registry**.
2. Select **New**.  
The system displays a message as What kind of OAuth application?.
3. Select **Connect to a third party OAuth Provider**.
4. On the form, fill these values.

**Application Registries**

Field	Description
Name	Name to identify the application registry record.
Client ID	Client ID generated when the OAuth 2.0 integration was created in the Atlassian Developer console.
Client Secret	Client secret generated when the OAuth 2.0 integration was created in the Atlassian Developer console.
Default Grant type	Grant type used to establish the token. Select <b>Authorization Code</b> .
Authorization URL	OAuth authorization code endpoint. Enter <code>https://auth.atlassian.com/authorize</code> .
Token URL	OAuth server token endpoint. Enter <code>https://auth.atlassian.com/oauth/token</code> .
Redirect URL	OAuth callback endpoint. System generates the URL while saving the application registry.
Refresh Token URL	URL to refresh a token. Enter <code>https://auth.atlassian.com/oauth/token</code> .   <b>Note:</b> This field is hidden in the form layout. Configure the form layout to show this field.

5. Select and hold (or right-click) the form header and select **Save**.  
A default OAuth entity profile record is created in the **OAuth Entity Profiles** tab.
6. In the OAuth Entity Scopes, create the following entity scope records.

Name	OAuth scope
read:application-role:jira	read:application-role:jira
read:group:jira	read:group:jira
read:user:jira	read:user:jira
read:avatar:jira	read:avatar:jira

Name	OAuth scope
read:audit-log:jira	read:audit-log:jira
read:issue-details:jira	read:issue-details:jira
read:field-configuration:jira	read:field-configuration:jira
read:issue-meta:jira	read:issue-meta:jira
write:group:jira	write:group:jira
offline_access	offline_access

**Result**

An application registry record is created in your ServiceNow instance.

**Create a credential record for Jira**

Create a credential record for the Jira account. The Jira spoke connection and credential alias uses this credential to authorize actions.

**Before you begin**

Role required: admin

**Procedure**

1. Navigate to **All > Connections & Credentials > Credentials**.
2. Select **New**.  
The system displays a message as What type of Credentials would you like to create?.
3. Select **OAuth 2.0 Credentials**.
4. On the form, fill these values.

**OAuth 2.0 Credentials**

Field	Description
Name	Name to identify the credential record for the Jira spoke. For example, Jira OAuth credential.
OAuth Entity Profile	Default OAuth entity profile record created when the application registry record is configured.

5. Select **Submit**.

**Create a connection record for Jira**

Create a connection record for the Jira account. The connection and credential alias uses this connection to perform actions in Jira.

**Before you begin**

Role required: admin

**Procedure**

1. Navigate to **All > Connections & Credentials > Connection & Credential Aliases**.
2. Open the alias record for Jira that is shipped with the spoke.
3. On the **Connections** tab, select **New**.
4. On the HTTP(s) Connection form, fill in these fields.

**HTTP(s) Connection**

Field	Description
Name	Enter any unique name to identify the connection record. For example, enter Jira OAuth Connection.
Credential	Select the Credential record created for Jira. For example, select Jira OAuth Credentials.
Connection alias	Search for and select <b>sn_jira_spoke.Jira</b> alias.
Connection URL	Enter the URL of your Jira instance in the <code>https://api.atlassian.com/ex/jira/&lt;Cloud-ID&gt;</code> format.  For information about getting the value of Cloud ID, see <a href="#">Obtain the Cloud ID value of Jira instance</a> .

5. In the Attributes related list, provide these values.
  - a. Enter the value of 2 for **api\_version**.
  - b. Enter the value `cloud` for **server\_type**.
6. Select **Submit**.
7. Navigate to **All > Connections & Credentials > Credentials**.
8. Open the credential record that you had created for the Jira spoke. For example, Jira OAuth credential.
9. Select the **Get OAuth Token** related link. In a new window, the system asks access to your Atlassian account.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

10. Select **Accept**. Access is granted to the Atlassian account and a confirmation message is displayed in your ServiceNow instance that the refresh token is available.

**Create a Jira Software Cloud integration profile**

Create an integration profile to track software subscriptions and optimize licensing for Atlassian Jira Software Cloud.

**Before you begin**

To create a Jira integration profile, request the Software Asset Management - SaaS License Management plugin (`sn_sam_saas_int`) from the [ServiceNow Store](#).

To enable the integration profile to retrieve and update user activity through the Jira Update User Activity subflow, set the `com.glide.transform.json.max-partial-length` system property **Value** to 32768.

Atlassian Role required: site admin

ServiceNow Role required:

- Starting with version 5.0.1 of Software Asset Management - SaaS License Management and version 3.0.4 of the Jira spoke, either of the following ServiceNow roles is required:
  - sam\_integrator and sn\_jira\_spoke.jira\_admin
  - admin
- Prior to version 5.0.1 of Software Asset Management - SaaS License Management and version 3.0.4 of the Jira spoke, the sam\_integrator or admin ServiceNow role is required.

### About this task

If you're using Software Asset Workspace, the option to create the Jira integration profile in Core UI is inactive.

### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Jira Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Jira</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

#### Integration Profile form

Field	Value
Display name	Name of your choice. For example, Jira integration.
Connection & Credential	sn_jira_spoke.Jira. This field is automatically populated.
Status	Status of the integration profile. The options are <b>Draft</b> and <b>Published</b> . This field is automatically populated.
Profile type	Jira Subscription. This field is automatically populated.

3. In the **Calculate Activity Subflow** form section, choose a value for the **Analyze user activity from** field.

You can also select the date and time that you want to analyze user activity from in the **Analyze user activity from** field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the **Last activity threshold** field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

**Note:** After you save the integration profile, the **Analyze user activity from** field becomes read only.

4. Select **Save**.

A draft integration profile is created. The integration profile uses the Jira Download Subscriptions, Jira Update User Activity, and Jira Reclaim Subscription subflows to get user data from the Jira Software application.

5. Specify the groups that have access to Jira products.

**Important:** This step is applicable only starting with version 5.0.1 of Software Asset Management - SaaS License Management Integrations and version 3.0.4 of the Jira spoke.

By specifying these groups on your ServiceNow instance, you can retrieve data and manage licenses for only the users within these groups.

- a. In a new tab, open the [Atlassian Administration portal](#).
- b. Log in to your site admin account.
- c. Select the **Select** button against the required organization.
- d. Select the **Products** tab.
- e. On the Products page, select **Manage product** on the Jira product row.
- f. View the list of groups that have access to Jira Software.  
Take note of this information for later use.
- g. Return to your ServiceNow instance and navigate to **Jira > Jira Groups**.
- h. On the Jira Groups form, select the **Add Groups** related link.  
The Add Jira Groups dialog box opens.
- i. In the Available list, select the groups that have access to Jira products.

**Tip:** The Available list includes all groups that are associated with your Atlassian account. Select only the groups that have access to Jira products.

j. Select the right arrow button to move the groups from the Available list to the Selected list.

k. Select **OK**.

6. Return to your integration profile and then select the integration profile.

7. Select **Publish**.

8. In the Publish Confirmation dialog box, select **OK**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Looker

Integrating your Software Asset Management application with the Looker, a Google Cloud application enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Box application	Authentication scopes
Download subscriptions	User with see_users permission	None
Pull user activity	User with see_users permission	None
Reclaim subscription	admin	None

**Configure Looker API key settings**

Configure API key settings to manage and retrieve Looker API keys.

**Before you begin**

Looker Role required: admin

**Procedure**

1. Log in to your Looker (<https://<instancename>.looker.com/>) instance.
2. Select the gear icon to open Admin settings.
3. Select **Users > Open the admin user account.**
4. Select **Edit API3 Keys** under the Profile tab.
5. Select **New API3 Key.**
6. Copy the Client ID and Client secret for later use.

**Create a Looker connection**

Create a connection between your Looker applications and your ServiceNow instance so that your instance can retrieve user data from your applications.

**Before you begin**

ServiceNow Role required: admin

**Procedure**

1. Log in to your ServiceNow instance.
2. Navigate to **Connection & Credentials > Connection & Credentials Aliases.**
3. Locate your Looker connection and select **Create New Connection & Credential.**
4. In the dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Value
Connection Information	
Connection Name	Name of the Looker connection. This field populates automatically.

Field	Value
Connection URL	URL for the connection. This field is automatically set to <code>https://&lt;instance name&gt;.looker.com</code> .
Credential Information	
OAuth Client ID	Client ID that you generated while configuring the Looker API settings.
OAuth Client Secret	Client Secret that you generated while configuring the Looker API settings.
OAuth Redirect URL	<code>https://&lt;instance name&gt;/oauth_redirect.do</code> , where instance name is the name of your ServiceNow instance.

**5. Select Create and Get OAuth Token.**

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

**Create a Looker integration profile**

Create a Looker integration profile to track software subscriptions and optimize licensing for your Looker solutions.

**Before you begin**

The Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) must be installed from the [ServiceNow Store](#).

ServiceNow Role required: admin or sam\_integrator

**About this task**

If you are using Software Asset Workspace, the option to create the Looker integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Looker Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Looker</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

**Integration profile form**

Field	Value
Display name	Name of the integration profile. For example, Looker integration.
Connection & Credential	Connection and credential alias for the Looker spoke. This field is automatically set to sn_looker_spoke.Looker.
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to #Draft.</li> <li>○ If you have already published the integration profile, this field is automatically set to #Published.</li> </ul>
Profile type	Type of integration profile. This field is automatically set to Looker Subscription.

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to Looker Download Subscriptions.

You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule](#).

**Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

4. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to Looker Reclaim Subscription.

5. Select **Save**.

A draft integration profile is created. The integration profile uses the Looker Download Subscriptions and Looker Reclaim Subscription subflows to retrieve user data from the Looker application.

6. Select **Save**.

7. After the page reloads, select **Publish**.

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
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- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Microsoft Dynamics 365 and Power Apps

Integrating your ServiceNow instance with the Microsoft Dynamics 365 and Power Apps service enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:**

This integration retrieves user subscription details for all Microsoft Dynamics 365 and Power Apps products. Furthermore, Software Asset Management provides license compliance for the products using user subscription-based models.

For optimization, Software Asset Management automatically tracks the last activity date and identifies low-usage for the following applications:

- Dynamics 365 for Sales (Professional, Premium, Enterprise)
- Dynamics 365 for Customer Service (Enterprise Attach to Qualifying Dynamics)
- Dynamics 365 for Team Members

For more information about the Microsoft 365 service, see [Microsoft 365 frequently asked questions](#).

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the Microsoft Dynamics 365 and Power Apps application	Authentication scopes
Download subscriptions	<ul style="list-style-type: none"> <li>• Global administrator</li> <li>• Dynamics 365 administrator</li> </ul>	<ul style="list-style-type: none"> <li>• Organization.Read.All</li> <li>• User.Read.All</li> <li>• user_impersonation</li> </ul>
Pull user activity	Dynamics 365 administrator	user_impersonation

### Set up Microsoft Azure Active Directory

Set up Microsoft Azure Active Directory (AD).

#### Before you begin

Role required: Global administrator and Dynamics 365 administrator in Microsoft admin center

#### Procedure

1. Log in to the Microsoft Azure portal using an admin account and navigate to **Azure Active Directory**.
2. Navigate to the App registrations section and select **App registration** under **+ Add**.
3. On the Register an application form, fill in the fields.

#### Register an application form fields

Field	Description
Name	Name of the application that you want to register.
Supported account types	The account with the required organizational directory.
Redirect URI	URL that will access Azure. Typically the URL of the ServiceNow instance.  <div style="background-color: #e1f5fe; padding: 5px; border: 1px solid #ccc;"> <p><b>Important:</b> You must select <b>Web</b> in the <b>Select a platform</b> drop-down list because Azure AD app must be a web application in App registration for this setup.</p> </div>

4. Select **Register**.
5. Open the application that you registered and navigate to the **Overview** section.
6. Collect the Application (client) ID and Directory (tenant) ID.
7. Navigate to the Certificates and Secrets section.
8. Create a client secret and collect the client secret key.  
You need the client secret key while configuring your ServiceNow instance.
9. Under API Permission, select **+ Add a permission** and then select **APIs my organization uses**.
10. Select Microsoft Graph and add the following Delegated Permissions.
  - Organization.Read.All
  - User.Read.All
  - Offline\_access
11. Select Dynamics CRM and add the following permission.  
`user_impersonation`
12. Under Grant consent, select **Grant admin consent**.
13. In the Authentication section, under the Redirect URI, enter the redirect URI of the ServiceNow instance.


## Set up Microsoft Dynamics 365 and Power Apps

Set the system-level settings for Microsoft Dynamics 365 and Power Apps.

### Before you begin

Role required: admin

### Procedure

1. Go to <https://admin.powerplatform.microsoft.com/> .
2. Under Environments, select the environment for which you want to pull the dynamics activities.
3. From the top ribbon, select **Settings**.
4. Select **Audit and logs**.
5. Select the following check boxes.
  - Start Auditing
  - Log access
  - Read logs
6. Select **Additional Audit Settings**.
7. From the **Settings** list, select **Auditing**.
8. Select **Global Audit Settings**.
9. Select the following check boxes.
  - Start Auditing
  - Audit user access
  - Start Read Audit
  - Common Entities
  - Sales Entities
  - Customer Service Entities
10. Select **OK**.

## Set up ServiceNow instance for Microsoft Dynamics 365 and Power Apps

Set up ServiceNow instance for Microsoft Dynamics 365 and Power Apps to track your software subscriptions and to reclaim unused licenses.

### Before you begin

Role required: admin or sam\_integrator

### About this task

If you're using Software Asset Workspace, the option to create the Microsoft Dynamics 365 and Power Apps integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
<b>Core UI</b>	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Microsoft Dynamics 365 and Power Apps Integration Profile</b>.</li> </ol>
<b>Software Asset Workspace</b>	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Microsoft Dynamics 365 and Power Apps</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ol>

2. In the **Display name** field, enter a name of your choice.
3. Under the **Calculate Activity Subflow** tab in the **Analyze user activity from** field, select the date since when you want to pull the activity.

4. Select **Save**.

A draft integration profile is created. In the **Download Subscription Subflow** tab, the **Connection & Credential** field appears and is automatically set to **sn\_ms\_365\_spoke.Microsoft\_365\_Graph**. In the **Calculate Activity Subflow** tab, the **Connection & Credential** field appears and is automatically set to **sn\_ms\_365\_spoke.Microsoft\_365\_Dynamics**.

5. Under the **Download Subscription Subflow** tab, beside the **Connection & Credential** field, select the preview (i) icon.
6. Under the **Please Enter the Credential Information** section, enter the values you received from [Set up Microsoft Azure Active Directory](#).
  - a. In the **Tenant ID** field, enter your Tenant ID.
  - b. In the **OAuth Client ID** field, enter the OAuth Client ID.
  - c. In the **OAuth Client Secret** field, enter the OAuth Client Secret key.

**i Important:** You must configure both the Download Subscription and Calculate Activity subflows to ensure both jobs complete successfully.

7. Select **Create and Get OAuth Token**.

**i Important:** This step must be executed by a user with the Global administrator role in the Microsoft admin center.

8. If you're prompted to log in to your Microsoft 365 account, enter your Microsoft 365 credentials and log in to your Microsoft 365 account.
9. Under the **Calculate Activity Subflow** tab, beside the **Connection & Credential** field, select the Preview (i) icon.

10. Select **Create New connection and credential alias**.

11. In the Create Connection and Credential window, perform the following.
  - a. In the **Connection URL** field, enter the connection URL.  
To fetch the Connection URL, log in to the Microsoft Admin portal and navigate to **Admin Centers > All admin centers > Select Dynamics 365 apps > Environments**. Select the environment that you want to integrate with. The environment URL is the Connection URL.
  - b. In the **OAuth Client ID** field, enter the OAuth Client ID.
  - c. In the **OAuth Client Secret** field, enter the OAuth Client Secret key.

12. Select **Create and Get OAuth Token**.

**Important:** This step must be executed by a user with the Dynamics 365 administrator role in the Microsoft admin center.

13. Return to the integration profile.
14. Select **Publish**.
15. In the Publish Confirmation dialog box, select **OK**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Miro Enterprise

Integrating your Software Asset Management application with the Miro Enterprise application enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

### Minimal user permissions

Process	Required user role in the Miro Enterprise application	Authentication scopes
Download subscriptions	Company admin	organizations:read
Pull user activity	Company admin	organizations:read
Reclaim subscription	Company admin	None

## Create a Miro Enterprise OAuth 2.0 application

Create a Miro Enterprise OAuth 2.0 application to enable access to the Miro API.

### Before you begin

Miro Role required: Refer to the [Minimal user permissions](#) table.

### Procedure

1. From a web browser, open the [Miro Platform](#).
2. If you have not created any teams within your organization or you want to build and test the OAuth 2.0 application using fake data, [get a developer team](#).
3. Sign in using your Company Admin credentials.
4. On the page header of the Miro Platform, select the organization profile icon.
5. On the side navigation panel, select **Your Apps**.
6. Select **Create a new app**.
7. In the Create new app dialog box, enter a name for the OAuth 2.0 application in the **App Name** field.
8. Select the developer team for which you want to build the OAuth 2.0 application.
9. Select **Create app**.  
The profile settings for your newly created app open.
10. In the App Credentials section, copy the values in the **Client ID** and **Client secret** fields and save them in a secure location for later use.
11. In the Redirect URI for OAuth 2.0 section, enter the URL of the OAuth provider that users are redirected to after authentication and then select **Add**.  
For example, `https://instance.service-now.com/oauth_redirect.do`, where `<instance>` is the name of your ServiceNow instance.
12. In the Permissions section, select the **organizations:read** OAuth scope.  
OAuth scopes specify the level of access that the application has to your protected resources. The organizations:read OAuth scope enables your application to read information about your organization and organization members.
13. Select **Install app and get OAuth token**.

### What to do next

Keep your organization profile open so that you can enable SCIM (System for Cross-domain Identity Management) on your Miro Enterprise account. For more information, see [Enable SCIM on your Miro Enterprise account](#).

### Enable SCIM on your Miro Enterprise account

Enable SCIM (System for Cross-domain Identity Management) on your Miro Enterprise account so that you can generate an API access token for authenticating your Miro API requests.

#### Before you begin

Miro Role required: Refer to the [Minimal user permissions](#) table.

#### Procedure

1. On the left navigation pane of your Miro organization profile, select **Security**.
2. On the Security page, select the option to **Enable SSO/SAML**.
3. After SSO/SAML is enabled, select the option to enable **SCIM Provisioning**.  
Miro automatically generates and displays your API access token in the **Api Token** field.
4. **Optional:** Select the **Send email notifications to users provisioned by SCIM** check box to enable Miro to send email notifications to all users that have been provisioned using SCIM.
5. Copy the API access token in the **Api Token** field.  
Save it in a secure location for later use.

### Create a Miro Enterprise connection

Create a connection between your Miro Enterprise applications and your ServiceNow instance.

#### Before you begin

ServiceNow Role required: admin

#### Procedure

1. From your ServiceNow instance, navigate to **Process Automation > Flow Designer**.  
The Flow Designer launches in a new tab.
2. Select the **Integrations** tab and then search for Miro.
3. Select **View Details** for your Miro Enterprise connection.
4. From your Miro Enterprise connection details, select **Configure**.
5. In the Create Connection dialog box, fill in the fields.

#### Create Connection dialog box

Field	Description
Connection Information	
Connection Name	Name of the Miro Enterprise connection. This field populates automatically.
Credential Information	
OAuth Client ID	Client ID that is assigned to your Miro Enterprise OAuth 2.0 application.
OAuth Client Secret	Client secret that is assigned to your Miro Enterprise OAuth 2.0 application.
OAuth Redirect URL	URL of the OAuth provider that users are redirected to after authentication. This field populates automatically based on the redirect URL that you specified in <a href="#">Create a Miro Enterprise OAuth 2.0 application</a> .

6. Select **Create and Get OAuth Token**.

**i Important:**  
This step must be executed by a ServiceNow admin with the Company Admin role in Miro.

7. On the Miro OAuth authorization dialog box, locate the team that you built the Miro Enterprise OAuth 2.0 application for and then select **Install**.

**i Note:** If another ServiceNow instance is using the same credentials, you would be prompted for a reinstall.

The OAuth access token becomes available for authorizing your Miro Enterprise connection.

**Create a Miro Enterprise SCIM connection**

Create a connection between the Miro Enterprise SCIM and your ServiceNow instance.

**Before you begin**

ServiceNow Role required: admin

**Procedure**

1. From your ServiceNow instance, navigate to **Process Automation > Flow Designer**. The Flow Designer launches in a new tab.
2. Select the **Integrations** tab and then search for Miro.
3. Select **View Details** for your Miro Enterprise SCIM connection.
4. From your Miro Enterprise SCIM connection details, select **Configure**.
5. In the Create Connection dialog box, fill in the fields.

**Create Connection dialog box**

Field	Description
Connection Information	
Connection Name	Name of the Miro Enterprise SCIM connection. This field populates automatically.
Credential Information	
API Token	API access token for authenticating Miro API requests.  Enter the same API access token that you generated and copied in <a href="#">Enable SCIM on your Miro Enterprise account</a> .

6. Select **Create Connection**.

**Create a Miro Enterprise integration profile**

Create a Miro Enterprise integration profile to track software subscriptions and optimize licensing for your Miro Enterprise applications.

**Before you begin**

To create a Miro Enterprise integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you’re using Software Asset Workspace, the option to create the Miro Enterprise integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Miro Enterprise Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Miro Enterprise</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the following fields.

**Integration Profile form**

Field	Description
Display Name	Name of the integration profile. For example, <b>Miro Enterprise Integration</b> .
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile Type	Type of integration profile. This field is automatically set to <b>Miro Enterprise Subscription</b> .

3. On the **Download Subscription Subflow** tab, verify that the **Connection & Credential** field is set to `sn_miro_spoke.Miro_Enterprise` and the **Subflow** field is set to **Miro Download Subscriptions**.

You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule](#).

**Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

4. On the **Reclaim Subscription Subflow** tab, verify that the **Connection & Credential** field is set to `sn_miro_spoke.Miro_Enterprise_SCIM` and the **Subflow** field is set to **Miro Reclaim Subscription**.
5. Select **Save**.  
Your ServiceNow instance creates a draft integration profile. The integration profile uses the Miro Download Subscriptions and Miro Reclaim Subscription subflows to retrieve user data from your Miro Enterprise applications.
6. After the form reloads, select **Publish**.  
The Publish Confirmation dialog box opens.
7. In the dialog box, select **OK**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with monday.com

Integrating your Software Asset Management application with monday.com enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the monday.com application	Authentication scopes
Download subscriptions	Member	users:read
Pull user activity	Member	users:read

**Create a monday OAuth2 application**

Create a monday OAuth2 application to authorize access to the monday.com API.

**Before you begin**

monday.com Role required: Refer to the [Minimal user permissions](#) table.

**About this task**

A monday application enables you to build workflows, user experiences, and products on top of the existing monday.com work operating system (Work OS). When you configure a monday application to use OAuth2, access is granted to the monday.com API so that it can read and modify user data.

**Procedure**

1. From a web browser, go to [monday.com](https://monday.com).
2. Log in using your admin credentials.
3. Select your profile icon and then select **Developers**.  
The My Apps page opens.
4. Select **Create App**.  
The Basic Information page for the new application opens.
5. In the Display Information section, fill in the fields.

**Display Information**

Field	Description
Name	Name of the monday application.
Short Description	Description of the application.

6. **Optional:** In the same section, add your own application icon by selecting the auto-generated icon and then selecting an icon image.  
You can also change the icon color by selecting **App Color** and then selecting either a preset or custom color. If you don't add your own application icon or select an icon color, the application uses the auto-generated icon and default icon color.
7. In the App Credentials section, copy the values in the **Client ID** and **Client Secret** fields.  
Save them in a secure location for later use.
8. Select **Save App**.
9. From the left navigation menu of the new application, navigate to **General > OAuth**.  
The **Scopes** tab of the OAuth & Permissions page opens.
10. In the Scopes section, specify how the application can access or use different types of user data by selecting the check box for the **users:read** OAuth scope.

11. Select **Save Feature**.
12. Select the **Redirect URLs** tab of the OAuth & Permissions page.
13. In the Redirect URLs section, enter the URL of the OAuth provider that users are redirected to after authentication.  
Enter `https://instance.service-now.com/oauth_redirect.do`, where `<instance>` is the name of your ServiceNow instance.
14. Select **Save Feature**.

**Create a monday.com integration profile**

Create a monday.com integration profile to track software subscriptions and optimize licensing for your monday applications.

**Before you begin**

To create a monday.com integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you're using Software Asset Workspace, the option to create the monday.com integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>monday.com Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>monday.com</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Display Name	Name of the integration profile. For example, monday . com Integration.
Connection & Credential	Connection and credential alias for the monday.com spoke. This field is automatically set to <b>sn_monday_com_spok.Monday</b> .

Field	Description
Status	<p>Status of the integration profile.</p> <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile Type	<p>Type of integration profile.</p> <p>This field is automatically set to <b>monday.com Subscription</b>.</p>

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **monday.com Download Subscriptions Subflow**.
4. Select **Save**.  
Your ServiceNow instance creates a draft integration profile. The integration profile uses the monday.com Download Subscriptions and monday.com Update User Activity subflows to retrieve user data from your monday applications.
5. Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field and then selecting **Open Record** in the record preview.
6. On the Connection & Credential Aliases form, select the **Create New Connection & Credential** related link.
7. In the dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Connection Name	Name of the connection.
Connection URL	<p>Base URL for the monday.com API.</p> <p>This field is automatically set to <code>https://api.monday.com/</code>.</p>
OAuth Client ID	Client ID that is assigned to your monday application.
OAuth Client Secret	Client secret that is assigned to your monday application.
OAuth Redirect URL	<p>URL of the OAuth provider that users are redirected to after authentication.</p> <p>This field populates automatically based on the redirect URL that you specified in <a href="#">Create a monday OAuth2 application</a>.</p>

8. Select **Create and Get OAuth Token**.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

9. In the Authorize App dialog box, sign in using the same monday.com credentials that you used to create your monday application.

**10. Select **Allow**.**

The dialog box closes and then you automatically return to the integration profile form.

**11. Select **Publish**.****What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

**Integrating with PagerDuty**

Integrating your Software Asset Management application with the PagerDuty application enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the PagerDuty application	Authentication scopes
Download subscriptions	<ul style="list-style-type: none"> <li>• Create OAuth app: Manager</li> <li>• Token generation: Observer</li> </ul>	<ul style="list-style-type: none"> <li>• Scoped OAuth: users:read</li> <li>• Classic User OAuth: Read</li> </ul>
Pull user activity	<ul style="list-style-type: none"> <li>• Create OAuth app: Manager</li> <li>• Token generation: Observer</li> </ul>	<ul style="list-style-type: none"> <li>• Scoped OAuth: oncalls:read</li> <li>• Classic User OAuth: Read</li> </ul>
Reclaim subscription	Create OAuth app and token generation: Global admin	<ul style="list-style-type: none"> <li>• Scoped OAuth: users:write</li> <li>• Classic User OAuth: Read/Write</li> </ul>

**Create a PagerDuty application**

Create a PagerDuty application to integrate with your ServiceNow instance.

**Before you begin**

- Activate the PagerDuty spoke. For more information, see [PagerDuty Spoke](#).
- PagerDuty Role required: Refer to the [Minimal user permissions](#) table.

**Procedure**

1. From a web browser, log in to the [PagerDuty portal](#) using your account credentials.
2. Log in to your PagerDuty account.
3. Enable Developer Mode.
  - If you're logged in with a developer account, you can access Developer Mode automatically.
  - If you're logged in with a customer account, you must enable Developer Mode manually by following these steps.
    - a. Select the INTEGRATIONS tab.
    - b. In the DEVELOPER TOOLS section, navigate to **App Registration**. You're redirected to the Add New App page in Developer Mode.
4. On the Add New App page, select **New App**.
5. On the App Information form, fill in the fields.

### App Information form

Field	Description
Name	Name of the PagerDuty application. For example, <i>ServiceNow Integration</i> .
Description	Brief description of the application.

6. Select **OAuth 2.0** in the Functionality section.

7. Select **Next**.

PagerDuty registers your application and then returns you to the Add New App page.

### Configure OAuth 2.0 for your PagerDuty application

After you create a PagerDuty application, configure OAuth 2.0 application to administer PagerDuty and access user-specific data on user login.

### Before you begin

PagerDuty Role required: Refer to the [Minimal user permissions](#) table.


### Procedure

1. On the Add New App page of your PagerDuty account, select **Scoped OAuth** or **Classic User OAuth** in the Authorization section.  
For more information about the permission scopes, refer to the [Minimal user permissions](#) table.
2. In the **Redirect URL** field, enter the URL of the OAuth provider that users are redirected to after authentication.  
For example, `https://<instance-name>/oauth_redirect.do`, where `<instance-name>` is the name of your ServiceNow instance.
3. In the **Permission Scope** field, select the required permission.
4. Select **Register App**.
5. From the OAuth 2.0 Client Information window section, copy the values in the **Client ID** and **Client Secret** fields.  
Save them in a secure location for later use.
6. Select **Continue**.

### Create a PagerDuty integration profile

Create a PagerDuty integration profile to track software subscriptions and optimize licensing for your PagerDuty applications.

### Before you begin

To create a PagerDuty integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#) .

ServiceNow Role required: sam\_integrator or admin

### About this task

If you're using Software Asset Workspace, the option to create the PagerDuty integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles.</b></li> <li>Select <b>New.</b></li> <li>Select <b>PagerDuty Integration Profile.</b></li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles.</b></li> <li>Select <b>New.</b></li> <li>Select <b>PagerDuty</b> from the drop-down list.</li> <li>Select <b>Continue.</b></li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Display Name	Name of the integration profile. For example, <i>PagerDuty Integration.</i>
Connection & Credential	Connection and credential alias for the PagerDuty spoke. This field is automatically set to <i>sn_pagerduty_spoke . PagerDuty.</i>
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <i>Draft.</i></li> <li>○ If you have already published the integration profile, this field is automatically set to <i>Published.</i></li> </ul>
Profile Type	Type of integration profile. This field is automatically set to <i>PagerDuty Subscription.</i>

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to *PagerDuty Download Subscriptions Subflow.*
4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to *PagerDuty Update User Activity Subflow.*

You can also select the date and time that you want to analyze user activity from in the *Analyze user activity from* field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to *PagerDutyReclaim Subscription Subflow*.
6. Select **Save**.  
Your ServiceNow instance creates a draft integration profile. The integration profile uses the PagerDuty Download Subscriptions, PagerDuty Update User Activity, and PagerDuty Reclaim Subscription subflows to retrieve user data from the PagerDuty application.
7. Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field and then selecting **Open Record** in the record preview.
8. On the Connection & Credential Aliases form, select the **Create New Connection & Credential** related link.
9. In the dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Name	Name of the connection. For example, PagerDuty Connection.
OAuth Client ID	Client ID that is assigned to your PagerDuty application.
OAuth Client Secret	Client secret that is assigned to your PagerDuty application.
OAuth Redirect URL	URL of the OAuth provider that users are redirected to after authentication. Enter <code>https://&lt;instance-name&gt;/oauth_redirect.do</code> , where <i>&lt;instance-name&gt;</i> is the name of your ServiceNow instance.

10. Select **Create and Get OAuth Token**.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

You're redirected to the PagerDuty Accounts page.

11. Select the same PagerDuty account that you used to create your PagerDuty application.
12. When you're prompted to Authorize *<pagerduty-app-name>* to use your account, select **Submit Consent**.  
Your ServiceNow instance creates an OAuth token for PagerDuty and then automatically returns you to the Integration Profile form.
13. Select **Publish**.

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
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Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Rally

Integrating your Software Asset Management application with the Broadcom Rally application enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the Rally application	Authentication scopes
Download subscriptions	Workspace admin	None
Pull user activity	Workspace admin	None
Reclaim subscription	Workspace admin	None

### Register a Rally OAuth application

Register the Rally OAuth application to access the Rally API 2.0 and to receive a Client ID and Client secret.

#### Before you begin

The Rally Integration Hub spoke must be active. For more information, see [Rally spoke](#).

Rally Role required: Refer to the [Minimal user permissions](#) table.

#### Procedure

1. Log in to [CA Agile Central](#) by using your admin credentials.
2. On the page header, select your profile and then select **My Settings**.
3. Navigate to **Access > OAUTH CLIENTS**.
4. Select **Create**.

5. In the dialog box, fill in the fields.

**Create OAuth Client dialog box**

Field	Value
Application Name	Provide a name for the application.
Callback URL	Callback URL of the ServiceNow instance to which the application is to be integrated. For example, <code>https://&lt;instance_url&gt;/oauth_redirect.do</code> .

6. Select **Next**.

7. Copy the Client ID and Client secret for later use.

**Create a Rally connection**

Create a connection between your Rally applications and your ServiceNow instance so that your instance can retrieve user data from your applications.

**Before you begin**

Role required: admin

**Procedure**

1. Log in to your ServiceNow instance.
2. Navigate to **Connection & Credentials > Connection & Credentials Aliases**.
3. Locate your Rally connection and select **Create New Connection & Credential**.
4. In the Create Connection and Credential dialog box, fill in the fields.

**Create Connection and Credential**

Field	Value
Connection Information	
Connection Name	Name of the Rally connection. This field populates automatically.
Connection URL	URL for the connection. This field is automatically set to <code>https://rally1.rallydev.com/slm/webservice</code> .
Credential Information	
OAuth Client ID	Client ID that you generated while configuring Rally API settings.
OAuth Client Secret	Client Secret that you generated while configuring Rally API settings.
OAuth Redirect URL	<code>https://&lt;instance_name&gt;/oauth_redirect.do</code> , where instance name is the name of your ServiceNow instance.

5. Select **Create and Get OAuth Token**.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

**Create a Rally integration profile**

Create a Rally integration profile to track software subscriptions and optimize licensing for your Rally solutions.

**Before you begin**

The Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) must be installed from the [ServiceNow Store](#).

Role required: admin or sam\_integrator

**About this task**

If you are using Software Asset Workspace, the option to create the Rally integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ul style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Rally Integration Profile</b>.</li> </ul>
Software Asset Workspace	<ul style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Rally</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ul>

2. On the form, fill in the fields.

**Integration profile form**

Field	Value
Display name	Name of the integration profile. For example, Rally integration.
Connection & Credential	Connection and credential alias for the Rally spoke. This field is automatically set to sn_rally_spoke.Rally.
Status	Status of the integration profile.

Field	Value
	<ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to #Draft.</li> <li>○ If you have already published the integration profile, this field is automatically set to #Published.</li> </ul>
Profile type	Type of integration profile. This field is automatically set to Rally Subscription.

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to Rally Download Subscriptions.

You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule](#).

**Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

4. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to Rally Reclaim Subscription.

5. Select **Save**.

A draft integration profile is created. The integration profile uses the Rally Download Subscriptions and Rally Reclaim Subscription subflows to retrieve user data from the Rally application.

6. After the page reloads, select **Publish**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Roadmunk

Integrating your Software Asset Management application with the Roadmunk application enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the Roadmunk application	Authentication scopes
Download subscriptions	Account Admin	No scopes
Pull user activity	Account Admin	No scopes
Reclaim subscription	Account Admin	No scopes

### Generate a Roadmunk API access token

Generate an API access token that authorizes access to the Roadmunk GraphQL API.

#### Before you begin

Roadmunk Role required: Account Admin

#### Procedure

1. From a web browser, open [Roadmunk](#).
2. Log in using your account admin credentials.
3. On the left navigation menu of the Roadmunk dashboard, select your profile icon and then select **Account Settings**.
4. On the page header of your account settings, select the **Integrations** tab.
5. Under Existing Integrations, select **Add an integration**.
6. When prompted to select an integration to configure, select **API Tokens**.
7. On the Roadmunk API Tokens form, enter a name for your API access token in the **Application Name** field.
8. Select **Create API Token**.  
The API access token is generated and then the API Token Created dialog box opens.
9. On the API Token Created dialog box, copy your API access token by selecting **Copy To Clipboard**.  
Save it in a secure location for later use.

### Create a Roadmunk connection

Create a connection between your Roadmunk applications and your ServiceNow instance so that your instance can retrieve user data from your applications.

#### Before you begin

ServiceNow Role required: admin

## Procedure

1. From your ServiceNow instance, navigate to **Process Automation > Flow Designer**.  
The Flow Designer launches in a new tab.
2. Select the **Connections** tab.
3. Locate your Roadmunk connection and then select **Add Connection**.
4. In the dialog box, fill in the fields.

### Create Connection dialog box


Field	Description
Connection Information	
Connection Name	Name of the Roadmunk connection. This field populates automatically.
Connection URL	URL for the connection. This field is automatically set to <b>https://app-gateway.roadmunk.com</b> , where <b>app</b> is the default geographic region (North America) in which the connection is being created.  If you're creating the connection outside of the default <b>app</b> (North America) region, you can change the value of the region to either <b>eu</b> (Europe) or <b>apac</b> (Asia-Pacific Region).
Credential Information	
API Token	API access token that authorizes access to the Roadmunk GraphQL API.  Enter the same API access token that you generated in <a href="#">Generate a Roadmunk API access token</a> .

5. Select **Create Connection**.

### Create a Roadmunk integration profile

Create a Roadmunk integration profile to track software subscriptions and optimize licensing for your Roadmunk applications.

#### Before you begin

To create a Roadmunk integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#) .

ServiceNow Role required: sam\_integrator or admin

#### About this task

If you are using Software Asset Workspace, the option to create the Roadmunk integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles.</b></li> <li>Select <b>New.</b></li> <li>Select <b>Roadmunk Integration Profile.</b></li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles.</b></li> <li>Select <b>New.</b></li> <li>Select <b>Roadmunk</b> from the drop-down list.</li> <li>Select <b>Continue.</b></li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Display Name	Name of the integration profile. For example, Roadmunk Integration.
Connection & Credential	Connection and credential alias for the Roadmunk spoke. This field is automatically set to <b>sn_roadmunk_spoke.Roadmunk.</b>
Status	Status of the integration profile. If you have not published the integration profile, this field is automatically set to <b>Draft.</b> If you have already published the integration profile, this field is automatically set to <b>Published.</b>
Profile Type	Type of integration profile. This field is automatically set to <b>Roadmunk Subscription.</b>

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **Roadmunk Download Subscriptions.**
4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to **Roadmunk Update User Activity Subflow.**

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule.](#)

5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **Roadmunk Reclaim Subscription.**

**6. Click Save.**

Your ServiceNow instance creates a draft integration profile. The integration profile uses the Roadmunk Download Subscriptions and Roadmunk Update User Activity subflows to retrieve user data from the Roadmunk application.

**7. Optional:** To prevent your integration profile from including inactive users in your list of Roadmunk subscriptions, enable the Roadmunk Download Subscriptions subflow to download only the active users in your Roadmunk account.

By default, the Roadmunk Download Subscriptions subflow downloads all users in your Roadmunk account, including both active and inactive users.

**a.** In a new tab or window, open [Roadmunk](#) .


**b.** Log in using your Account Admin credentials.  
The Roadmunk dashboard opens.

**c.** On the left navigation menu of the Roadmunk dashboard, click your profile icon and then select **Account Settings**.  
Your account settings open.

**d.** On the page header of your account settings, select the **Reports** tab.


**e.** From the list of available Roadmunk reports, click **Download User CSV**.  
The Roadmunk User Report downloads in CSV format.

**f.** Return to the Integration Profile form.

**g.** On the form header, click the Manage Attachments icon ()  
The Attachments dialog box opens.

**h.** On the dialog box, click **Choose file** to locate and select the Roadmunk User Report that you downloaded in [step e](#).

**i.** After the report uploads successfully, close the dialog box to return to the Integration Profile form.

 **Tip:** ServiceNow recommends that you download and attach the latest version of the Roadmunk User Report periodically so that you can continuously remove inactive users from your list of Roadmunk subscriptions.

**8. Click Publish.****What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Salesforce CRM

Integrating your Software Asset Management application with the Salesforce customer relationship management (CRM) services enable you to track your software subscriptions and to reclaim unused licenses.

#### **Note:**

If you're using Software Asset Workspace, use SaaS Playbook for integrating your ServiceNow instance with the Salesforce CRM. For more information about creating a Salesforce CRM integration profile through Playbook, see [Create a Salesforce CRM integration](#).

The supported Salesforce CRM services include

- Salesforce Sales Cloud
- Salesforce Service Cloud
- Salesforce Platform
- Salesforce Customer Community
- Salesforce Partner Community
- Salesforce Company Community
- Salesforce Chatter

Both Salesforce Classic and Salesforce Lightning organizations are supported.

- **Note:** You can track entitlements for other services that you pay for but aren't user subscription based by using custom license metrics. See [Add a custom license metric](#) for more details on how to create a custom license metric.

The Salesforce account that you use to connect the integration requires a Salesforce user license and the following user access permissions.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Salesforce CRM application	Authentication scopes
Download subscriptions	User with the following permissions: <ul style="list-style-type: none"> <li>• View Setup and Configuration</li> <li>• Customize Application</li> <li>• Manage Connected Apps</li> <li>• API Enabled</li> </ul>	<ul style="list-style-type: none"> <li>• manage your data (api)</li> <li>• Perform requests on your behalf at any time (refresh_token, offline access)</li> </ul>
Pull user activity	User with the following permissions: <ul style="list-style-type: none"> <li>• View Setup and Configuration</li> <li>• Customize Application</li> <li>• Manage Connected Apps</li> <li>• API Enabled</li> </ul>	<ul style="list-style-type: none"> <li>• manage your data (api)</li> <li>• Perform requests on your behalf at any time (refresh_token, offline access)</li> </ul>
Reclaim subscription	User with Admin permissions	<ul style="list-style-type: none"> <li>• manage your data (api)</li> <li>• Perform requests on your behalf at any time (refresh_token, offline access)</li> </ul>
Download consumption	User with the following permissions: <ul style="list-style-type: none"> <li>• View Setup and Configuration</li> <li>• Customize Application</li> <li>• Manage Connected Apps</li> <li>• API Enabled</li> </ul>	<ul style="list-style-type: none"> <li>• manage your data (api)</li> <li>• Perform requests on your behalf at any time (refresh_token, offline access)</li> </ul>

For additional information on the Salesforce CRM services, see the [Salesforce Developer Documentation](#).


**Register a Salesforce application**


Register an application through the Salesforce admin portal.

**Before you begin**

Salesforce Role required: admin

**Procedure**

1. Log in to [Salesforce](#) .
 

You can also switch from the Lightning UI.
2. Select the setup icon  and then select **Setup**.
3. Search for and select **App Manager** in the setup page search bar.
4. On the App Manager page, select **New External Client App** to create an external client application.
5. On the form, fill in the fields.

**New Connection App form**

Field	Description
Basic Information	
External Client App Name	Name of your application.
API Name	Name of the API. This field is automatically populated.
Contact Email	The email address that you want to associate with the application.
Distribution State	The scope of distribution of the application. Select <b>Local</b> as the distribution state.
Contact Phone	The phone number that you want to associate with the application.
Info URL	The URL of the web page with more information about your application.
Logo URL	The URL of your logo image that is displayed with the connected application.
Icon URL	The URL of the icon for the connected application.
Description	Description of the application.
API (Enable OAuth Settings)	
Enable OAuth	Option to enable OAuth settings. Select this option to enable the OAuth settings.
Callback URL	URL of the OAuth provider that users are redirected to after authentication.  Enter <code>https://instance.servicenow.com/oauth_redirect.do</code> , where <code>&lt;instance&gt;</code> is the name of your ServiceNow instance.
OAuth Scopes	OAuth scopes that determine the amount of access that is granted to an access token. The following values are required:

Field	Description
	<ul style="list-style-type: none"> <li>○ <b>Manage user data via APIs (api)</b></li> <li>○ <b>Perform requests at any time (refresh_token, offline_access)</b></li> </ul>
Security	
Require Secret for Web Server Flow	Enable this option to implement the Require Secret for Web Server Flow in your external client app or connected app settings.
Require Secret for Refresh Token Flow	Enable this option in your external client app or connected app while implementing the refresh token flow using a server-side callback handler.
Require Proof Key for Code Exchange (PKCE) Extension for Supported Authorization Flows	Clear this option.

**6. Select Create.**

The application registration is complete and you're redirected to the Manage External Client Apps page.

**7. Verify and edit the policies for the registered application by selecting Edit.**

**8. In the OAuth Policies section, verify that the Permitted Users field is set to Admin approved users are pre-authorized for the ServiceNow application.**

**Note:** Admin-approved users who are preauthorized enable any users with the corresponding profile or permission set to access the application without prior authorization. For more information, see [Pre-Authorize User App Access Through Connected App Policies](#).

**9. In the App Policies section, select either the profile of the integration user or the profile of the user that you want to use for the integration.**

**10. In the App Authorization section, verify that the Refresh token policy field is set to Refresh token is valid until revoked and the IP Relaxation field is set to Relax IP restrictions.**

**11. Select Save.**

**12. Retrieve OAuth credentials.**

- a. Navigate to Settings > OAuth Settings and then select Consumer Key and Secret.**  
The Salesforce login page opens in a new window.
- b. Enter your credentials to log in to Salesforce.**
- c. Copy the Consumer Key and Consumer Secret and save them in a secure location for later use.**

**Create a Salesforce CRM integration profile**

Create an integration profile to track software subscriptions and optimize licensing for the Salesforce CRM services.

**Note:** You must create Salesforce CRM integration only in the Global scope.

### Create your first Salesforce CRM integration profile

Create an integration profile for the first Salesforce organization that you want to track software subscriptions and optimize licensing for.

#### Before you begin

To create a Salesforce CRM integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

#### About this task

If you're using Software Asset Workspace, the option to create the Salesforce CRM integration profile in Core UI is inactive.

#### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Salesforce CRM Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Salesforce CRM</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol> <p>The Playbook launches for Salesforce CRM integration and the next steps aren't valid. For more information, see <a href="#">Create a Salesforce CRM integration</a>.</p>

2. On the form, fill in the fields.

#### Integration Profile form

Field	Description
Display name	<p>Name of the integration profile.</p> <p>Enter a name that uniquely identifies the Salesforce organization for which you're creating this integration profile. For example, SFDC Org1.</p> <p> <b>Tip:</b> Keep this name short to help it displays better during reporting.</p>
Connection & Credential	<p>Connection and credential alias for Salesforce.</p> <p>For your first Salesforce CRM integration profile, use the default connection and credential alias that populates automatically.</p>

Field	Description
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile type	Type of integration profile. This value is automatically set to <b>Salesforce CRM</b> .

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **Salesforce CRM Download Subscriptions**.

You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule](#).

**Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

4. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **Salesforce CRM Reclaim Subscription**.

5. On the **Download Consumption Subflow** tab, verify that the **Subflow** field is set to **Salesforce CRM Download Consumption**.

6. Select **Save**.

**Note:** The Calculate Activity Subflow isn't required for Salesforce CRM integrations because these integrations use information about last user login from the user records.

Your instance creates a draft integration profile. You can view consumption counts for the specific consumption based Salesforce CRM application.

The **Connection & Credential** field appears and is automatically set to **sn\_sforce\_v2\_spoke.Salesforce**.

7. Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field to configure the child alias.

8. Select **Open Record** in the record preview.

9. On the Connection & Credential Aliases form, select the **Create New Connection & Credential** related link.

10. In the Create Connection and Credential dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Connection Name	Name of the connection.  Enter a name that uniquely identifies the Salesforce organization for which you're creating this connection and credential. For example, SFDC Org1.
Connection URL (Instance URL)	URL that displays after logging in to Salesforce or your custom domain URL of Salesforce.

Field	Description
OAuth Client ID	Client ID (consumer key) that is assigned to your Salesforce application.
OAuth Client Secret	Client secret (consumer secret) that is assigned to your Salesforce application.
OAuth Redirect URL	URL of the OAuth provider that users are redirected to after authentication.  This field populates automatically based on the callback URL that you specified in <a href="#">Register a Salesforce application</a> .

**11. Select Create and Get OAuth Token.**

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

**12.** In the OAuth2 dialog box, log in to the same Salesforce admin account that you used to create your Salesforce application.

**Tip:** If the dialog box doesn't open automatically, check to make sure that pop-ups are allowed on your browser.

Your ServiceNow instance creates an OAuth token for Salesforce and then automatically returns you to the Integration Profile form.

**13. Select Publish.**

**Result**

After you publish the integration profile, your ServiceNow instance begins retrieving data from your Salesforce CRM services. For organizations with fewer than 100 users, this process typically takes only a few minutes to complete. For organizations with 100–5000 users, this process can take around 15 minutes to complete. For organizations with over 5000 users, this process can take over one hour to complete.

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).


Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Create additional Salesforce CRM integration profiles

Create an integration profile for each additional Salesforce organization that you want to track software subscriptions and optimize licensing for.

#### Before you begin

To create a Salesforce CRM integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#) .

ServiceNow Role required: sam\_integrator or admin

#### About this task

If you're using Software Asset Workspace, the option to create the Salesforce CRM integration profile in Core UI is inactive.

#### Procedure


1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Salesforce CRM Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Salesforce CRM</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol> <p>The Playbook launches for Salesforce CRM integration and the next steps aren't valid. For more information, see <a href="#">Create a Salesforce CRM integration</a>.</p>

2. On the form, fill in the fields.


#### Integration Profile form

Field	Description
Display name	Name of the integration profile.

Field	Description
	<p>Enter a name that uniquely identifies the Salesforce organization for which you're creating this integration profile. For example, SFDC Org2.</p> <p> <b>Tip:</b> Keep this name short to help it display better during reporting.</p>
Status	<p>Status of the integration profile.</p> <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile type	Type of integration profile. This value is automatically set to <b>Salesforce CRM</b> .

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **Salesforce CRM Download Subscriptions**.


You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule](#).

 **Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

4. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **Salesforce CRM Reclaim Subscription**.

5. On the **Download Consumption Subflow** tab, verify that the **Subflow** field is set to **Salesforce CRM Download Consumption**.

6. Select **Save**.

 **Note:** The Calculate Activity subflow isn't required for Salesforce CRM integrations because these integrations use information about last user logins from the user records.

Your instance creates a draft integration profile. You can view consumption counts for the specific consumption based Salesforce CRM application.

The **Connection & Credential** field appears and is automatically set to **sn\_sforce\_v2\_spoke.Salesforce**.

7. Select the preview icon () next to the **Connection & Credential** field to open the connection & credential aliases record.

8. Select **Open Record** in the record preview.

9. On the Connection & Credential Aliases form, create a child alias that can uniquely identify the connection and credentials for this integration profile.

The first Salesforce CRM integration profile that you create uses the default (parent) connection and credential alias for Salesforce. Each additional Salesforce CRM integration profile that you create requires a unique child alias that helps differentiate the connection and credentials between each integration profile.

- a. Select the link under **Child Aliases > Parentalias=\*\*\*** to add child aliases.

- b. Select **New**.

The Connection & Credential Aliases form for the child alias opens.

- c. Enter a name for the child alias in the **Name** field.
- d. Select and hold (or right-click) the form header and then select **Save**.
- e. After the form reloads, select the **Create New Connection & Credential** related link.
- f. In the Create Connection and Credential dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Connection Name	Name of the connection.  Enter a name that uniquely identifies the Salesforce organization for which you're creating this connection and credential. For example, SFDC Org2.
Connection URL (Instance URL)	URL of the Salesforce instance that you're connecting to through this integration.
OAuth Client ID	Client ID (consumer key) that is assigned to your Salesforce application.
OAuth Client Secret	Client secret (consumer secret) that is assigned to your Salesforce application.
OAuth Redirect URL	URL of the OAuth provider that users are redirected to after authentication.  This field populates automatically based on the callback URL that you specified in <a href="#">Register a Salesforce application</a> .

- g. Select **Create and Get OAuth Token**.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

- h. In the OAuth2 dialog box, log in to the same Salesforce admin account that you used to register your Salesforce application.

**Tip:** If the dialog box doesn't open automatically, check to make sure that pop-ups are allowed on your browser.

Your ServiceNow instance creates an OAuth token for Salesforce and then automatically returns you to the Connection & Credential Aliases form.

- 10. Return to your integration profile by navigating to **SaaS License > Administration > Direct Integration Profiles** and then selecting the profile from the Integration Profiles list.
- 11. In the **Connection & Credential** field of the Integration Profile form, select the lookup icon to locate and select the child alias that you created in [step 8](#).  
Selecting the child alias associates the alias with the integration profile. Your ServiceNow instance uses this alias to identify the connection and credentials for this integration profile.
- 12. Select **Publish**.

## Result

After you publish the integration profile, your ServiceNow instance begins retrieving data from your Salesforce CRM services. For organizations with fewer than 100 users, this process typically takes only a few minutes to complete. For organizations with 100-5000 users, this process can take around 15 minutes to complete. For organizations with over 5000 users, this process can take over one hour to complete.

## What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

## Integrating with Salesforce Marketing Cloud

Integrating your Software Asset Management application with the Salesforce Marketing Cloud service enables you to track your software subscriptions and to reclaim unused licenses.

Use either of the following authentication methods to integrate your ServiceNow<sup>®</sup> instance with Salesforce Marketing Cloud:

- [Basic authentication](#)
- [OAuth 2.0](#)

### Integrate Salesforce Marketing Cloud using basic authentication

Integrate your ServiceNow instance with Salesforce Marketing Cloud by using basic authentication.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Salesforce Marketing Cloud application	Authentication scopes
Download subscriptions	<ul style="list-style-type: none"> <li>Email &gt; Admin &gt; API Access &gt; WebService API</li> <li>Administration &gt; Users &gt; View</li> </ul>	None
Pull user activity	<ul style="list-style-type: none"> <li>Email &gt; Admin &gt; API Access &gt; WebService API</li> <li>Administration &gt; Users &gt; View</li> </ul>	None
Reclaim subscription	<ul style="list-style-type: none"> <li>Email &gt; Admin &gt; API Access &gt; WebService API</li> <li>Administration &gt; Users &gt; View</li> <li>Administration &gt; Users &gt; Update</li> </ul>	None
Download consumptions	<ul style="list-style-type: none"> <li>Email &gt; Admin &gt; API Access &gt; WebService API</li> <li>Email &gt; Subscribers &gt; Data Extension &gt; View</li> <li>Email &gt; Subscribers &gt; Data Extension &gt; Manage Data</li> </ul>	None

**Create a user for accessing the Salesforce Marketing Cloud SOAP API**

Create a user with which you can access the Salesforce Marketing Cloud SOAP API. The SOAP API enables you to retrieve records from your Salesforce Marketing Cloud data extensions and get information about your Salesforce Marketing Cloud users.

**Before you begin**

Salesforce Marketing Cloud Role required: admin user with privileges to create users and roles

**About this task**

**Note:**

To use the web services, navigate to **Setup Home > Settings > Security > Security Settings**. In the Username and Logins section, select the **Enable Username and Password for Web Services** check box.

For accessing user licenses and data extension, the API user must be created within the parent business unit. If the API user is created in a child business unit, it might not have access to the parent business unit's data.

**Procedure**

1. From a web browser, go to your Salesforce Marketing Cloud instance.
2. Log in using your admin credentials.
3. On the page header of your instance, select your profile icon and then select **Setup**.
4. Create a Salesforce Marketing Cloud user.
  - a. Navigate to **Administration > Users > Users**.
  - b. Select **Create**.
  - c. On the form, fill in the fields.

**General Settings form**

Field	Description
Name	Name of the user.
Reply Email Address	Email address that you want to send and reply to email messages from. Salesforce Marketing Cloud also sends forgotten password requests to this email address.  After you enter an email address, select <b>Verify</b> to verify the email address.
Add to From Name Dropdown	Option to send the reply email address through a domain verification process before the email address populates in an email.
Notification Email Address	The email address that you want to send Salesforce Marketing Cloud notifications to.
Username	User name for the user.
External Key	Key that uniquely identifies the user during API calls.
Time Zone	Time zone in which the user is located.
Culture Code	Language that is used on the Salesforce Marketing Cloud user interface for this user.
API User	The option indicating whether the user can access the Salesforce Marketing Cloud SOAP API. Select the check box to enable this option.
Temporary Password	A temporary password with which you can log in for the first time. You're prompted to change this password on the first login.

Field	Description
Verify Password	Field to verify the temporary password.

- d. Select **Save**.
5. Create a user role that enables assigned users to access the Salesforce Marketing Cloud SOAP API and also manage users and data extensions.

a. Navigate to **Administration > Users > Roles**.

b. Select **Create**.

c. On the form, fill in the fields.

**Properties form**

Field	Description
Name	Name of the user role.
External Key	Key that uniquely identifies the user role.
Description	Description of the user role.

- d. In the Permissions form section, expand the **Email > Subscribers > Data Extension** permission category and then select the **Allow** check box for the View and Manage Data access permissions.
  - e. Expand the **Email > Admin > API Access** permission category and then select the **Allow** check box for the WebService API access permission.
  - f. Expand the **Administration > Users** permission category and then select the **Allow** check box for the following access permissions:
    - View
    - Update
    - Disable
  - g. Select **Save**.
6. Assign the user role to your Salesforce Marketing Cloud user.
- a. Navigate to **Administration > Users > Users**.
  - b. From the list of available users, select the check box for the user that you created in [step 4](#).
  - c. Select **Manage Roles**.  
The Roles form for the selected user opens.
  - d. In the Roles form section, select **Edit Roles**.

- e. When the list of available roles appears, select the check box for the user role that you created in [step 5](#).
- f. Select **Save**.

### Create a Contacts Counts report in Salesforce Marketing Cloud

Create a Contacts Counts report to retrieve and display the total number of billable contacts in your Salesforce Marketing Cloud account.

#### Before you begin

Salesforce Marketing Cloud Role required: admin

#### Procedure

1. From a web browser, go to your Salesforce Marketing Cloud instance.
2. Log in using your admin credentials.
3. On the page header of your instance, select the business unit profile icon and then select the top-level parent business unit so that your Contacts Counts report includes data for both the parent business unit and all corresponding child business units.
4. From the list of available Salesforce Marketing Cloud applications, select the **Analytics Builder** app icon and then select **Reports**.  
The Reports app overview opens.
5. In the Report Catalog section, select **View Catalog**.
6. From the Reports Catalog, search for **Contacts Counts** and then select **Create**.  
The Create Report dialog box opens.
7. In the dialog box, select the time period that you want to retrieve and display data for from the **Date Range** list.  
The default value is **Last 30 Days**.
  - 💡 **Tip:** To avoid performance issues during report generation, you should set this value to **Last 7 Days**.
8. Select **Submit**.  
Your Salesforce Marketing Cloud instance generates the report and displays the results on the Results: Contacts Counts page.
9. On the Results: Contacts Counts page, select **Save**.  
The Save Report dialog box opens.
10. In the dialog box, fill in the fields.

#### Save Report dialog box

Field	Description
Report Name	Name of the report.
Report Source	Source of the report. This field is automatically set to <b>Contacts Counts</b> .
Description	Description of the report.

11. Select **Save**.
12. Create a schedule to run the Contacts Counts report automatically.

- a. On the page header of the Reports app, select the **Overview** tab to return to the Reports app overview.
- b. From your list of reports, open your newly created Contacts Counts report.
- c. In the Schedule Options section, select **Edit**.
- d. In the dialog box, fill in the fields.

**Edit Schedule Options dialog box**

Field	Description
Schedule Options	
Start	The date and time from which you want to start running the report.
Time Zone	Time zone in which the report is being scheduled.
Repeat	Frequency at which you want to run the report. Configure the report to run once every week on Sundays.
End	Date on which you want to stop running the report.
Delivery Options	
Format	File type and file extension in which you want to receive the report results. Select <b>Data File (.csv)</b> .
Location	<p>Location in which you want to save or share the report. Set this field to <b>Save report for FTP</b> and then fill in the corresponding fields:</p> <ul style="list-style-type: none"> <li>▪ <b>Report Name:</b> The file name of the report, excluding the file extension.  If you want to include date and time in the report name, add it in the Reportname_YYYYMMDD_HHMMSS format.</li> <li>▪ <b>Note:</b> Take note of this file name for later use.</li> <li>▪ <b>Unique Option:</b> Option to create a report record instead of replacing the existing report record in SFTP. Leave this check box unselected.</li> <li>▪ <b>FTP Location:</b> Location of your Salesforce Marketing Cloud FTP files. Select <b>ExactTarget Enhanced FTP</b> so that the report is saved to your SFTP (SSH File Transfer Protocol) Reports folder.</li> <li>▪ <b>Note:</b> You can set up an SFTP user account in Salesforce Marketing Cloud to view the saved files at a specific FTP location. For more information, see <a href="#">Setting up an SFTP user account in Salesforce Marketing Cloud</a>.</li> </ul>

- e. Select **Save**.

**Create a data extension for your Contacts Counts report**

Create a data extension to store your Contacts Counts report data on your Salesforce Marketing Cloud instance.

### Before you begin

Salesforce Marketing Cloud Role required: admin

### About this task

Data extensions are tables that contain attributes representing your report data. When your ServiceNow instance connects with the Salesforce Marketing Cloud service, it retrieves data from this data extension.

### Procedure

1. On the page header of your Salesforce Marketing Cloud instance, hover the Salesforce icon to display the list of available Salesforce Marketing Cloud applications.
2. Select the **Audience Builder** app icon and then select **Contact Builder**.  
The Contact Builder app opens.
3. Select the **Data Extensions** tab.
4. In the pop-up dialog box, select **Get started** and then select **Create**.  
The Create New Data Extension dialog box opens.
5. In the Properties step, fill in the fields.

#### Properties fields

Field	Description
Creation Method	Method in which you want to create the data extension. Select <b>Create from New</b> .
Name	Name of the data extension.
External Key	Optional key that uniquely identifies the data extension. You can enter a key of your choice.
Description	Description of the data extension.
Type	Type of data extension. This field is automatically set to <b>Standard</b> .
Location	Location in which you want to store the data extension. This field is automatically set to <b>Data Extensions</b> . Select <b>Change Location</b> to select a different location.
Is Sendable?	Option to indicate whether the data extension can be sent to your subscribers.

6. Select **Next**.
7. In the Data Retention Policy step, set the **Retention Setting** field to **Off**.
8. Select **Next**.
9. In the Attributes step, add the attributes that you want to include in the data extension.  
Attributes are used to map and import data from a report to a data extension. You must create an attribute for each report column that you want to import data from. Each attribute name must exactly match the corresponding report column name.

For the Salesforce Marketing Cloud integration, attributes for the following Contacts Counts report columns are required:

**Attributes fields**

Field	Description
Primary Key	Option for the attribute to include a unique identifier for all records in the data extension.  This option must be enabled for the <b>Count_Date</b> attribute.
Name	Name of the attribute.  This name must exactly match the corresponding report column name.
Data Type	Data type of the attribute.
Required	Option that indicates whether the attribute requires a value for each record in the data extension.
Length	Maximum number of characters allowed in the attribute value.
Default Value	Optional default value for the attribute.  For the <b>Flag</b> attribute, set the default value to <b>1</b> .  <b>Note:</b> Don't enter a default value for any attributes that are assigned as a primary key.

Name	Data Type
Count_Date	Text
Total_Distinct_Contacts_Count	Text
Total_Distinct_Email_Addresses1	Text
Total_Distinct_Mobile_Addresses_Count	Text
Flag	Text

**Note:** You can add additional attributes and the name must be the same as the Integration Attributes. For more information, see [Create a Salesforce Marketing Cloud integration profile using basic authentication](#) or [Create a Salesforce Marketing Cloud integration profile using OAuth 2.0](#).

Attributes for all other Contacts Counts report columns are optional. Fill in the fields for each attribute that you want to add.

10. Select **Complete**.

11. In the Data Extension Created dialog box, select **OK**.

**Build an automation to import Contacts Counts report data in your data extension**

Create an automation to automatically import Contacts Counts report data into your data extension after the report is generated.


**Before you begin**

Salesforce Marketing Cloud Role required: admin

**Procedure**

1. On the page header of your Salesforce Marketing Cloud instance, hover the Salesforce icon to display the list of available Salesforce Marketing Cloud applications.
2. Select the **Journey Builder** app icon and then select **Automation Studio**.  
The Automation Studio app overview opens.
3. Select **New Automation**.  
The workflow for the new automation opens.
4. Create an automation schedule by dragging the **Schedule** icon from the Starting Sources section of the left menu pane to the Starting Source section of the workflow canvas.
5. Define a schedule for the automation.
  - a. In the Starting Source section of the workflow canvas, select **Configure**.
  - b. In the dialog box, fill in the fields.

**Define Schedule dialog box**

Field	Description
Start Date	The date from which you want to start running the automation.
Start Time	The time from which you want to start running the automation.
Time Zone	Time zone in which the automation is being scheduled.
Repeat	<p>The frequency at which you want to run the automation. Configure the automation to run after the Contacts Counts report is generated.</p> <p>Select the same frequency that you had selected while <a href="#">creating a Contacts Counts report in Salesforce Marketing Cloud</a>.</p> <p> <b>Tip:</b> If you configure the automation to run on the same day that the report is generated, select a start time that gives enough time for the report to finish generating. ServiceNow recommends a start time of at least two hours after the report start time.</p>
End	<p>Number of times that the automation can run until the automation schedule ends.</p> <p>If you don't want the automation schedule to end, set this field to <b>Never</b>.</p> <p>This field doesn't appear only when <b>None (run once)</b> is selected from <b>Repeat</b>.</p>

- c. Select **Done**.
6. Add a script activity to execute the Server-Side JavaScript for all activities that require it.
  - a. In the Activities section of the left menu pane, drag the **Script** icon into the workflow canvas.  
The script activity becomes the first step of the automation workflow.
  - b. Select **Choose** on the script activity step.  
The Choose Script Activity dialog box opens.

- c. Select **Create New Script Activity**.  
The Create New Script Activity dialog box opens.
- d. In the Properties step, fill in the fields.

**Properties fields**

Field	Description
Name	Name of the script activity.
External Key	Optional key that uniquely identifies the script activity. You can enter a key of your choice.
Folder Location	The location in which you want to store your scripts. Select <b>Choose...</b> to select a different location.  This field is automatically set to <b>Scripts</b> .
Description	Description of the script activity.

- e. Copy and paste the following Server-Side JavaScript into the Server-Side JavaScript text box:

```
<script runat="server">
var rows =
Platform.Function.DeleteData('*<data-extension-name>*', ['Flag'], ['1']);
</script>
```

The *\*<data-extension-name>\** must exactly match the file name of the Data Extension that you created in [Create a data extension for your Contacts Counts report](#).

- f. Select **Validate Syntax** to verify that the Server-Side JavaScript syntax is valid.
  - g. Select **Next**.
  - h. In the Summary step, verify that the script activity configuration is correct and then select **Finish**.
- 7.** Add a data extract activity to copy the Contacts Counts report from the SFTP Reports folder to the SFTP Import folder.  
The Salesforce Marketing Cloud instance uses the SFTP Import folder to locate and import report data into your data extensions. To enable your instance to import data from the Contacts Counts report into the corresponding data extension, you must copy the report to the SFTP Import folder.
- a. In the Activities section of the left menu pane, drag the **Data Extract** icon into the workflow canvas.  
The data extract activity becomes the second step of the automation workflow.
  - b. Select **Choose** on the data extract activity step.  
The Choose Data Extract Activity dialog box opens.

- c. Select **Create New Data Extract Activity**.  
The Create New Data Extract Activity dialog box opens.
- d. In the Properties step, fill in the fields.

**Properties fields**

Field	Description
Name	Name of the data extract activity.
External Key	Optional key that uniquely identifies the data extract activity. You can enter a key of your choice.
File Naming Pattern	The file name of the Contacts Counts report that you want to extract data from.  This name must exactly match the file name of the Contacts Counts report that you created in <a href="#">Create a Contacts Counts report in Salesforce Marketing Cloud</a> , including the file extension.
Extract Type	Data extract method.  Set this field to <b>Enhanced FTP File Move and Copy</b> .
Description	Description of the data extract activity.

- e. Select **Next**.
- f. In the Configuration step, fill in the fields.


**Configuration fields**

Field	Description
Input Folder	Location in which you've saved the Contacts Counts report. Enter <code>\reports\</code> .
Output Folder	Location that you want to copy the report to. Enter <code>\Import\</code> .
Copy To Folder	Option to copy instead of move the report from the input folder to the output folder. This option enables you to keep the report in both locations. Select the check box to enable this option.

- g. Select **Next**.
  - h. In the Summary step, verify that the data extract activity configuration is correct and then select **Finish**.
- 8.** Add an import file activity to import the Contacts Counts report data into the data extension.
- a. In the Activities section of the left menu pane, drag the **Data Copy or Import** icon into the workflow canvas.  
The Data Copy or Import activity becomes the third step of the automation workflow.

- b. Select **Choose** on the Data Copy or Import activity step.  
The Choose Data Copy or Import dialog box opens.
- c. Select **Create New Copy or Import Definition**.  
The Create New Copy or Import Definition dialog box opens.
- d. In the Activity Info step, fill in the fields.

**Activity Info fields**

Field	Description
Name	Name of the import file activity.
Description	Description of the import file activity.
External Key	Optional key that uniquely identifies the import file activity. You can enter a key of your choice.
Send notification email to	The email address to which you want to send notifications when an import completes. If you specify an email address, a notification email that contains the number of inserted and updated rows is sent to that address on successful import.  <div style="background-color: #e0f2f1; padding: 5px;"> <p> <b>Important:</b> The notification email contains an Invalid Field Count validation error due to the presence of empty lines in the imported CSV file. These empty lines appear automatically when you save the report to FTP. However, they have no impact on the integration.</p> </div>

- e. Select **Next**.
- f. In the Source step, select **File Location** in the Data Source header and fill in the fields.

**Import File fields**

Field	Description
File Location	Location of the Contacts Counts report that you want to import data from. Select <b>ExactTarget Enhanced FTP</b> .
File Naming Pattern	The file name of the Contacts Counts report that you want to import data from. If you want to include date and time in the report name, add it in the Reportname_YYYYMMDD_HHMMSS format by selecting the <b>Date variable</b> and <b>Time variable</b> fields.  This name must exactly match the file name of the Contacts Counts report that you created in <a href="#">Create a Contacts Counts report in Salesforce Marketing Cloud</a> , including the file extension.
Date Format	Format in which you want to display the date and time of the report data.
Delimiter	Format in which you want to separate each report record. Select <b>comma</b> to separate each record with a comma.

Field	Description
	If you want to enable the use of double quotes to separate each record, enable the <b>Respect double quotes (") as a text delimiter</b> option.
Bad Data Behavior	Option to skip rows with bad data. Select the check box to enable this option.

**g.** Select **Next**.

**h.** In the Destination step, search for and select the data extension that you created in [Create a data extension for your Contacts Counts report](#).

**i.** Select **Next**.

**j.** In the Mapping step, select the options **Add and Update** and **Map by Ordinal** in the Data Action header.

**k.** When prompted, enable the **Import file has column headers** option and then map each data extension attribute to the corresponding column number in the Contacts Counts report.

 **Note:** Leave the **Flag** attribute unmapped.

**l.** Select **Next**.

**m.** In the Review step, verify that the import file activity configuration is correct and then select **Finish**.

**9.** Select **Save**.

**10.** In the dialog box, fill in the fields.

**Save Automation dialog box**

Field	Description
Name	Name of the automation.
Description	Description of the automation.
External Key	Optional key that uniquely identifies the automation.
Location	Location in which you want to save the automation.

**11.** Select **Save**.

**12.** In the Starting Source section of the workflow canvas, select **Active**.

**13.** In the Activate Schedule Confirmation dialog box, select **Activate** to activate the automation schedule.

**Retrieve Contacts Counts report data manually**

After you create the Contacts Counts report, data extension, and automation, you can retrieve report data between your scheduled report and automation jobs by running these jobs manually.

**Before you begin**


Salesforce Marketing Cloud Role required: admin

**About this task**

Your Salesforce Marketing Cloud instance runs the report and automation jobs automatically based on the schedules that you define. If you want to retrieve Contacts Counts report data before the next scheduled report and automation jobs, you can run these jobs manually.

**Procedure**

**1. Run your Contacts Counts report.**

- a. On the page header of your Salesforce Marketing Cloud instance, hover the Salesforce icon to display the list of available Salesforce Marketing Cloud applications.
- b. Select the **Analytics Builder** app icon and then select **Reports**.  
The Reports app overview opens.
- c. From your list of reports, select the Contacts Counts report that you created in [Create a Contacts Counts report in Salesforce Marketing Cloud](#).
- d. Select **Run**.  
Your Salesforce Marketing Cloud instance generates the report and displays the results on the Results: *<report - name>* page.
- e. On the Results: *<report - name>* page, select the Download Results icon ().
- f. In the dialog box, fill in the fields.

**Download Results dialog box**

Field	Description
Filename	The file name of the report, excluding the file extension.
Report Source	Source of the report. This field is automatically set to <b>Contacts Counts</b> .
Format	File type and file extension in which you want to receive the report results. Select <b>Data File (.csv)</b> .

- g. Select **Save**.
- h. Save the file in your system.

**2. Import the file in your Data Extension.**

- a. On the page header of your Salesforce Marketing Cloud instance, hover the Salesforce icon to display the list of available Salesforce Marketing Cloud applications.
- b. Select the **Audience Builder** app icon and then select **Contact Builder**.
- c. Open the recently created Data Extension that you created while [creating a data extension for your Contacts Counts report](#).
- d. Select **Import**.

- e. In the Import Data Confirmation dialog box, select **Import into Data Extension** and then select **Ok**.
- f. In the Import into Data Extension step, choose the file that you downloaded in the previous Step 1.
- g. Select **Delimiter** as **comma**.
- h. Select **Import Type** as **Add and Update**.
- i. Select **Import options** as **Skip rows in the import file with bad data**.
- j. Select **Next**.
- k. In the Configure mapping dialog box, select **Map Manually**.
  - l. Match the available data extension columns with the imported report columns and leave the Flag column empty.
- m. Select **Next**.
- n. In the Review and create dialog box, enter the email id on which you want notification when import completes and select **Finish**.
- o. In the Run Confirmation dialog box, select **Done**.

**Result**


The latest Contacts Counts report data is imported into the data extension.

**Create a Salesforce Marketing Cloud integration profile using basic authentication**

Create an integration profile by using basic authentication to track software subscriptions and optimize stale licenses for the Salesforce Marketing Cloud service.

**Before you begin**

To create a Salesforce Marketing Cloud integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

 **Tip:** To avoid incurring additional subscription costs, install the plugin and build the integration on a non-production instance.

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you're using Software Asset Workspace, the option to create the Salesforce Marketing Cloud integration profile in Core UI is inactive.

**Procedure**

- 1. Navigate to the integration profile.

Interface	Action
Core UI	<ul style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Salesforce Marketing Cloud Integration Profile</b>.</li> </ul>

Interface	Action
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles.</b></li> <li>b. Select <b>New.</b></li> <li>c. Select <b>Salesforce Marketing Cloud</b> from the drop-down list.</li> <li>d. Select <b>Continue.</b></li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Display name	Name of the integration profile. For example, <b>Salesforce Marketing Cloud integration profile.</b>
Authentication type	Type of authentication to access Salesforce Marketing Cloud APIs. <ul style="list-style-type: none"> <li>o Basic Auth: Select this value.</li> <li>o OAuth 2.0</li> </ul> <p><b>Note:</b> For a new Salesforce Marketing Cloud profile, the authentication type is set to <b>Basic Auth</b> by default.</p>
Connection & Credential	Connection and credential alias for Salesforce Marketing Cloud. This field is automatically set to <b>sn_sforce_mc_spoke.SalesforceMarketingCloud.</b>
Status	Status of the integration profile. If you have not published the integration profile, this field is automatically set to <b>Draft.</b> If you have already published the integration profile, this field is automatically set to <b>Published.</b>
Profile type	Type of integration profile. This value is automatically set to <b>Salesforce Marketing Cloud Subscription.</b>
Download Subscription Subflow	
Subflow	This field is automatically set to <b>Salesforce Marketing Cloud Download Subscriptions.</b> <p>You can view events performed by individual users up to one year prior to the current date. For more information, see <a href="#">Review a software reclamation rule.</a></p> <p><b>Note:</b> Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.</p>
Reclaim Subscription Subflow	
Subflow	This field is automatically set to <b>Salesforce Marketing Cloud Reclaim Subscription.</b>

Field	Description
Download Consumption Subflow	
Subflow	This field is automatically set to <b>Salesforce Marketing Cloud Download Contacts Consumption</b> .
Integration Attributes	
Attributes	<p>The name-value attributes such as Count Date, Contacts, Email Contacts, and Mobile Contacts are automatically populated for the integration profile.</p> <p>You can add or remove the attributes based on your requirements.</p> <p><b>Note:</b> The attribute name must match the report column header in Salesforce Marketing Cloud instance. For more information, see <a href="#">Create a data extension for your Contacts Counts report</a>.</p>

**3. Select Save.**

Your ServiceNow instance creates a draft integration profile. The integration profile uses the Salesforce Marketing Cloud Download Subscriptions, Salesforce Marketing Cloud Reclaim Subscription, and Salesforce Marketing Cloud Download Contacts Consumption subflows to retrieve user data from your Salesforce Marketing Cloud services.

- 4.** Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field and then selecting **Open Record** in the record preview.
- 5.** On the Connection & Credential Aliases form, select the **Create New Connection & Credential** related link.
- 6.** In the dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Please Enter the Connection Information	
Connection Name	Name of the connection.
SOAP Connection URL	URL of your SOAP Connection endpoint. Enter <code>https://&lt;subdomain&gt;.soap.marketingcloudapis.com/Service.asmx</code> , where <code>&lt;subdomain&gt;</code> is your Salesforce Marketing Cloud subdomain.
Please Enter the Credential Information	
Username Profile Name	Name of your credentials.
Username	Username of the user that you can access the Salesforce Marketing Cloud SOAP API with. Enter the user name of the user that you created in <a href="#">Create a user for accessing the Salesforce Marketing Cloud SOAP API</a> .
Password	Password of the user that you can access the Salesforce Marketing Cloud SOAP API with. Enter the password of the user that you created in <a href="#">Create a user for accessing the Salesforce Marketing Cloud SOAP API</a> .

Field	Description
Please enter additional information used for post processing	
Contacts Counts Data Extension	Name of the data extension that you want to retrieve Contacts Counts report data from. This name must exactly match the name of the data extension that you created in <a href="#">Create a data extension for your Contacts Counts report</a> .

7. Select **Create**.  
The dialog box closes.
8. On the Connection & Credential Aliases form header, select the Back button to return to the Integration Profile form.
9. Select **Publish**.
10. In the Publish Confirmation dialog box, select **OK**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrate Salesforce Marketing Cloud using OAuth 2.0

Integrate your ServiceNow instance with Salesforce Marketing Cloud services by using OAuth 2.0.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Salesforce Marketing Cloud application	Authentication scopes
Download subscriptions	User	Users : Read
Pull user activity	User	Users : Read
Reclaim subscription	User	Users : Write
Download consumptions	User	Data Extensions : Read, Write

**Create Salesforce Marketing Cloud OAuth 2.0 credentials**

Create Salesforce Marketing Cloud OAuth 2.0 credentials to get access to Salesforce Marketing Cloud APIs.

**About this task**

The credentials must be created in the Salesforce Marketing Cloud Spoke application scope.

**Before you begin**

Role required: Salesforce Marketing Cloud admin

**About this task**

For accessing user licenses and data extension, the connection configuration must be set up in the parent business unit. If the configuration is set up in a child business unit, it might not be able to access data from the parent business unit.

**Procedure**

1. Log in to the Salesforce Marketing Cloud tenant.
2. Navigate to **Setup Home > Platform Tools > Apps > Installed Packages**.
3. Select **New** to create a package.
4. In the New Package Details dialog box, fill in the **Name** and **Description** fields.
5. Select **Save**.
6. Select **Add Component**.
7. Select **API Integration** to integrate Salesforce Marketing Cloud APIs to your application.
8. Select **Next**.
9. Select **Server-to-Server** as the integration type.
10. Select **Next**.
11. Select the following scopes for your integration.
  - Users : Read
  - Users : Write
  - Data Extensions : Read, Write
12. Select **Save**.

Your Client Id, Client Secret, and SOAP Base URI are displayed in your configuration summary. Navigate to the Components section under **SETUP > INSTALLED PACKAGES > DETAILS** to view the Client Id, Client Secret, and SOAP Base URI. Copy the values to use them later.

**Note:** Note: You must add `/Service.smx` in the SOAP Base URI while passing it in your ServiceNow instance.

13. Select the **ACCESS** tab and confirm that your business unit is enabled.

If your business unit is inactive, select and enable it, then select **Save**.

### Create a Contacts Counts report in Salesforce Marketing Cloud

Create a Contacts Counts report to retrieve and display the total number of billable contacts in your Salesforce Marketing Cloud account.

#### Before you begin

Salesforce Marketing Cloud Role required: admin

#### Procedure

1. From a web browser, go to your Salesforce Marketing Cloud instance.
2. Log in using your admin credentials.
3. On the page header of your instance, select the business unit profile icon and then select the top-level parent business unit so that your Contacts Counts report includes data for both the parent business unit and all corresponding child business units.
4. From the list of available Salesforce Marketing Cloud applications, select the **Analytics Builder** app icon and then select **Reports**.  
The Reports app overview opens.
5. In the Report Catalog section, select **View Catalog**.
6. From the Reports Catalog, search for **Contacts Counts** and then select **Create**.  
The Create Report dialog box opens.
7. In the dialog box, select the time period that you want to retrieve and display data for from the **Date Range** list.  
The default value is **Last 30 Days**.

**Tip:** To avoid performance issues during report generation, you should set this value to **Last 7 Days**.

8. Select **Submit**.  
Your Salesforce Marketing Cloud instance generates the report and displays the results on the Results: Contacts Counts page.
9. On the Results: Contacts Counts page, select **Save**.  
The Save Report dialog box opens.
10. In the dialog box, fill in the fields.

#### Save Report dialog box

Field	Description
Report Name	Name of the report.
Report Source	Source of the report. This field is automatically set to <b>Contacts Counts</b> .
Description	Description of the report.

11. Select **Save**.

12. Create a schedule to run the Contacts Counts report automatically.

- a. On the page header of the Reports app, select the **Overview** tab to return to the Reports app overview.
- b. From your list of reports, open your newly created Contacts Counts report.
- c. In the Schedule Options section, select **Edit**.
- d. In the dialog box, fill in the fields.

**Edit Schedule Options dialog box**

Field	Description
Schedule Options	
Start	The date and time from which you want to start running the report.
Time Zone	Time zone in which the report is being scheduled.
Repeat	Frequency at which you want to run the report. Configure the report to run once every week on Sundays.
End	Date on which you want to stop running the report.
Delivery Options	
Format	File type and file extension in which you want to receive the report results. Select <b>Data File (.csv)</b> .
Location	<p>Location in which you want to save or share the report. Set this field to <b>Save report for FTP</b> and then fill in the corresponding fields:</p> <ul style="list-style-type: none"> <li>▪ <b>Report Name:</b> The file name of the report, excluding the file extension. If you want to include date and time in the report name, add it in the Reportname_YYYYMMDD_HHMMSS format.</li> <li>▪ <b>Note:</b> Take note of this file name for later use.</li> <li>▪ <b>Unique Option:</b> Option to create a report record instead of replacing the existing report record in SFTP. Leave this check box unselected.</li> <li>▪ <b>FTP Location:</b> Location of your Salesforce Marketing Cloud FTP files. Select <b>ExactTarget Enhanced FTP</b> so that the report is saved to your SFTP (SSH File Transfer Protocol) Reports folder.</li> <li>▪ <b>Note:</b> You can set up an SFTP user account in Salesforce Marketing Cloud to view the saved files at a specific FTP location. For more information, see <a href="#">Setting up an SFTP user account in Salesforce Marketing Cloud</a>.</li> </ul>

e. Select **Save**.

### Create a data extension for your Contacts Counts report

Create a data extension to store your Contacts Counts report data on your Salesforce Marketing Cloud instance.

#### Before you begin

Salesforce Marketing Cloud Role required: admin

#### About this task

Data extensions are tables that contain attributes representing your report data. When your ServiceNow instance connects with the Salesforce Marketing Cloud service, it retrieves data from this data extension.

#### Procedure

1. On the page header of your Salesforce Marketing Cloud instance, hover the Salesforce icon to display the list of available Salesforce Marketing Cloud applications.
2. Select the **Audience Builder** app icon and then select **Contact Builder**.  
The Contact Builder app opens.
3. Select the **Data Extensions** tab.
4. In the pop-up dialog box, select **Get started** and then select **Create**.  
The Create New Data Extension dialog box opens.
5. In the Properties step, fill in the fields.

#### Properties fields

Field	Description
Creation Method	Method in which you want to create the data extension.  Select <b>Create from New</b> .
Name	Name of the data extension.
External Key	Optional key that uniquely identifies the data extension.  You can enter a key of your choice.
Description	Description of the data extension.
Type	Type of data extension.  This field is automatically set to <b>Standard</b> .
Location	Location in which you want to store the data extension.  This field is automatically set to <b>Data Extensions</b> . Select <b>Change Location</b> to select a different location.
Is Sendable?	Option to indicate whether the data extension can be sent to your subscribers.

6. Select **Next**.
7. In the Data Retention Policy step, set the **Retention Setting** field to **Off**.
8. Select **Next**.
9. In the Attributes step, add the attributes that you want to include in the data extension.

Attributes are used to map and import data from a report to a data extension. You must create an attribute for each report column that you want to import data from. Each attribute name must exactly match the corresponding report column name.

For the Salesforce Marketing Cloud integration, attributes for the following Contacts Counts report columns are required:

**Attributes fields**

Field	Description
Primary Key	Option for the attribute to include a unique identifier for all records in the data extension.  This option must be enabled for the <b>Count_Date</b> attribute.
Name	Name of the attribute.  This name must exactly match the corresponding report column name.
Data Type	Data type of the attribute.
Required	Option that indicates whether the attribute requires a value for each record in the data extension.
Length	Maximum number of characters allowed in the attribute value.
Default Value	Optional default value for the attribute.  For the <b>Flag</b> attribute, set the default value to <b>1</b> .  <b>Note:</b> Don't enter a default value for any attributes that are assigned as a primary key.

Name	Data Type
Count_Date	Text
Total_Distinct_Contacts_Count	Text
Total_Distinct_Email_Addresses1	Text
Total_Distinct_Mobile_Addresses_Count	Text
Flag	Text

**Note:** You can add additional attributes and the name must be the same as the Integration Attributes. For more information, see [Create a Salesforce Marketing Cloud integration profile using basic authentication](#) or [Create a Salesforce Marketing Cloud integration profile using OAuth 2.0](#).

Attributes for all other Contacts Counts report columns are optional. Fill in the fields for each attribute that you want to add.

**10. Select Complete.**

**11. In the Data Extension Created dialog box, select OK.**

**Build an automation to import Contacts Counts report data in your data extension**

Create an automation to automatically import Contacts Counts report data into your data extension after the report is generated.


### Before you begin

Salesforce Marketing Cloud Role required: admin

### Procedure

1. On the page header of your Salesforce Marketing Cloud instance, hover the Salesforce icon to display the list of available Salesforce Marketing Cloud applications.
2. Select the **Journey Builder** app icon and then select **Automation Studio**.  
The Automation Studio app overview opens.
3. Select **New Automation**.  
The workflow for the new automation opens.
4. Create an automation schedule by dragging the **Schedule** icon from the Starting Sources section of the left menu pane to the Starting Source section of the workflow canvas.
5. Define a schedule for the automation.
  - a. In the Starting Source section of the workflow canvas, select **Configure**.
  - b. In the dialog box, fill in the fields.

#### Define Schedule dialog box

Field	Description
Start Date	The date from which you want to start running the automation.
Start Time	The time from which you want to start running the automation.
Time Zone	Time zone in which the automation is being scheduled.
Repeat	<p>The frequency at which you want to run the automation. Configure the automation to run after the Contacts Counts report is generated.</p> <p>Select the same frequency that you had selected while <a href="#">creating a Contacts Counts report in Salesforce Marketing Cloud</a>.</p> <p> <b>Tip:</b> If you configure the automation to run on the same day that the report is generated, select a start time that gives enough time for the report to finish generating. ServiceNow recommends a start time of at least two hours after the report start time.</p>
End	<p>Number of times that the automation can run until the automation schedule ends.</p> <p>If you don't want the automation schedule to end, set this field to <b>Never</b>.</p> <p>This field doesn't appear only when <b>None (run once)</b> is selected from <b>Repeat</b>.</p>

- c. Select **Done**.
6. Add a script activity to execute the Server-Side JavaScript for all activities that require it.
  - a. In the Activities section of the left menu pane, drag the **Script** icon into the workflow canvas.  
The script activity becomes the first step of the automation workflow.

- b.** Select **Choose** on the script activity step.  
The Choose Script Activity dialog box opens.
- c.** Select **Create New Script Activity**.  
The Create New Script Activity dialog box opens.
- d.** In the Properties step, fill in the fields.

**Properties fields**

Field	Description
Name	Name of the script activity.
External Key	Optional key that uniquely identifies the script activity. You can enter a key of your choice.
Folder Location	The location in which you want to store your scripts. Select <b>Choose...</b> to select a different location.  This field is automatically set to <b>Scripts</b> .
Description	Description of the script activity.

- e.** Copy and paste the following Server-Side JavaScript into the Server-Side JavaScript text box:

```
<script runat="server">
var rows =
  Platform.Function.DeleteData('*<data-extension-name>*', ['Flag'], ['1']);
</script>
```

The *\*<data-extension-name>\** must exactly match the file name of the Data Extension that you created in [Create a data extension for your Contacts Counts report](#).

- f.** Select **Validate Syntax** to verify that the Server-Side JavaScript syntax is valid.
  - g.** Select **Next**.
  - h.** In the Summary step, verify that the script activity configuration is correct and then select **Finish**.
- 7.** Add a data extract activity to copy the Contacts Counts report from the SFTP Reports folder to the SFTP Import folder.  
The Salesforce Marketing Cloud instance uses the SFTP Import folder to locate and import report data into your data extensions. To enable your instance to import data from the Contacts Counts report into the corresponding data extension, you must copy the report to the SFTP Import folder.
- a.** In the Activities section of the left menu pane, drag the **Data Extract** icon into the workflow canvas.  
The data extract activity becomes the second step of the automation workflow.

- b. Select **Choose** on the data extract activity step.  
The Choose Data Extract Activity dialog box opens.
- c. Select **Create New Data Extract Activity**.  
The Create New Data Extract Activity dialog box opens.
- d. In the Properties step, fill in the fields.

**Properties fields**

Field	Description
Name	Name of the data extract activity.
External Key	Optional key that uniquely identifies the data extract activity. You can enter a key of your choice.
File Naming Pattern	The file name of the Contacts Counts report that you want to extract data from. This name must exactly match the file name of the Contacts Counts report that you created in <a href="#">Create a Contacts Counts report in Salesforce Marketing Cloud</a> , including the file extension.
Extract Type	Data extract method. Set this field to <b>Enhanced FTP File Move and Copy</b> .
Description	Description of the data extract activity.

- e. Select **Next**.
- f. In the Configuration step, fill in the fields.


**Configuration fields**

Field	Description
Input Folder	Location in which you've saved the Contacts Counts report. Enter <code>\reports\</code> .
Output Folder	Location that you want to copy the report to. Enter <code>\Import\</code> .
Copy To Folder	Option to copy instead of move the report from the input folder to the output folder. This option enables you to keep the report in both locations. Select the check box to enable this option.

- g. Select **Next**.
  - h. In the Summary step, verify that the data extract activity configuration is correct and then select **Finish**.
- 8.** Add an import file activity to import the Contacts Counts report data into the data extension.

- a. In the Activities section of the left menu pane, drag the **Data Copy or Import** icon into the workflow canvas.  
The Data Copy or Import activity becomes the third step of the automation workflow.
- b. Select **Choose** on the Data Copy or Import activity step.  
The Choose Data Copy or Import dialog box opens.
- c. Select **Create New Copy or Import Definition**.  
The Create New Copy or Import Definition dialog box opens.
- d. In the Activity Info step, fill in the fields.

**Activity Info fields**

Field	Description
Name	Name of the import file activity.
Description	Description of the import file activity.
External Key	Optional key that uniquely identifies the import file activity. You can enter a key of your choice.
Send notification email to	The email address to which you want to send notifications when an import completes.  If you specify an email address, a notification email that contains the number of inserted and updated rows is sent to that address on successful import.  <div style="background-color: #e1f5fe; padding: 5px; border: 1px solid #ccc;"> <p> <b>Important:</b> The notification email contains an <code>Invalid Field Count</code> validation error due to the presence of empty lines in the imported CSV file. These empty lines appear automatically when you save the report to FTP. However, they have no impact on the integration.</p> </div>

- e. Select **Next**.
- f. In the Source step, select **File Location** in the Data Source header and fill in the fields.

**Import File fields**

Field	Description
File Location	Location of the Contacts Counts report that you want to import data from. Select <b>ExactTarget Enhanced FTP</b> .
File Naming Pattern	The file name of the Contacts Counts report that you want to import data from.  If you want to include date and time in the report name, add it in the <code>Reportname_YYYYMMDD_HHMMSS</code> format by selecting the <b>Date variable</b> and <b>Time variable</b> fields.  This name must exactly match the file name of the Contacts Counts report that you created in <a href="#">Create a Contacts Counts report in Salesforce Marketing Cloud</a> , including the file extension.

Field	Description
Date Format	Format in which you want to display the date and time of the report data.
Delimiter	Format in which you want to separate each report record. Select <b>comma</b> to separate each record with a comma.  If you want to enable the use of double quotes to separate each record, enable the <b>Respect double quotes (") as a text delimiter</b> option.
Bad Data Behavior	Option to skip rows with bad data. Select the check box to enable this option.

**g.** Select **Next**.

**h.** In the Destination step, search for and select the data extension that you created in [Create a data extension for your Contacts Counts report](#).

**i.** Select **Next**.

**j.** In the Mapping step, select the options **Add and Update** and **Map by Ordinal** in the Data Action header.

**k.** When prompted, enable the **Import file has column headers** option and then map each data extension attribute to the corresponding column number in the Contacts Counts report.

**Note:** Leave the **Flag** attribute unmapped.

**l.** Select **Next**.

**m.** In the Review step, verify that the import file activity configuration is correct and then select **Finish**.

**9.** Select **Save**.

**10.** In the dialog box, fill in the fields.

**Save Automation dialog box**

Field	Description
Name	Name of the automation.
Description	Description of the automation.
External Key	Optional key that uniquely identifies the automation.
Location	Location in which you want to save the automation.

**11.** Select **Save**.

**12.** In the Starting Source section of the workflow canvas, select **Active**.

**13.** In the Activate Schedule Confirmation dialog box, select **Activate** to activate the automation schedule.

### Retrieve Contacts Counts report data manually

After you create the Contacts Counts report, data extension, and automation, you can retrieve report data between your scheduled report and automation jobs by running these jobs manually.


#### Before you begin

Salesforce Marketing Cloud Role required: admin

#### About this task

Your Salesforce Marketing Cloud instance runs the report and automation jobs automatically based on the schedules that you define. If you want to retrieve Contacts Counts report data before the next scheduled report and automation jobs, you can run these jobs manually.

#### Procedure

1. Run your Contacts Counts report.
  - a. On the page header of your Salesforce Marketing Cloud instance, hover the Salesforce icon to display the list of available Salesforce Marketing Cloud applications.
  - b. Select the **Analytics Builder** app icon and then select **Reports**.  
The Reports app overview opens.
  - c. From your list of reports, select the Contacts Counts report that you created in [Create a Contacts Counts report in Salesforce Marketing Cloud](#).
  - d. Select **Run**.  
Your Salesforce Marketing Cloud instance generates the report and displays the results on the Results: *<report - name>* page.
  - e. On the Results: *<report - name>* page, select the Download Results icon ().
  - f. In the dialog box, fill in the fields.

#### Download Results dialog box

Field	Description
Filename	The file name of the report, excluding the file extension.
Report Source	Source of the report. This field is automatically set to <b>Contacts Counts</b> .
Format	File type and file extension in which you want to receive the report results. Select <b>Data File (.csv)</b> .

- g. Select **Save**.
- h. Save the file in your system.
2. Import the file in your Data Extension.
  - a. On the page header of your Salesforce Marketing Cloud instance, hover the Salesforce icon to display the list of available Salesforce Marketing Cloud applications.
  - b. Select the **Audience Builder** app icon and then select **Contact Builder**.

- c. Open the recently created Data Extension that you created while [creating a data extension for your Contacts Counts report](#).
- d. Select **Import**.
- e. In the Import Data Confirmation dialog box, select **Import into Data Extension** and then select **Ok**.
- f. In the Import into Data Extension step, choose the file that you downloaded in the previous Step 1.
- g. Select **Delimiter** as **comma**.
- h. Select **Import Type** as **Add and Update**.
- i. Select **Import options** as **Skip rows in the import file with bad data**.
- j. Select **Next**.
- k. In the Configure mapping dialog box, select **Map Manually**.
- l. Match the available data extension columns with the imported report columns and leave the Flag column empty.
- m. Select **Next**.
- n. In the Review and create dialog box, enter the email id on which you want notification when import completes and select **Finish**.
- o. In the Run Confirmation dialog box, select **Done**.


## Result


The latest Contacts Counts report data is imported into the data extension.

## Create a Salesforce Marketing Cloud integration profile using OAuth 2.0

Create a Salesforce Marketing Cloud integration profile by using OAuth 2.0 to track software subscriptions and optimize stale licenses for the Salesforce Marketing Cloud service.

### Before you begin

To create a Salesforce Marketing Cloud integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#) .

 **Tip:** To avoid incurring additional subscription costs, install the plugin and build the integration on a non-production instance.

ServiceNow Role required: sam\_integrator or admin

Salesforce Marketing Cloud Role required: sn\_sforce\_mc\_spoke.Salesforce Marketing Cloud Admin

### About this task

If you're using Software Asset Workspace, the option to create the Salesforce Marketing Cloud integration profile in Core UI is inactive.

## Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ul style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles.</b></li> <li>b. Select <b>New.</b></li> <li>c. Select <b>Salesforce Marketing Cloud Integration Profile.</b></li> </ul>
Software Asset Workspace	<ul style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles.</b></li> <li>b. Select <b>New.</b></li> <li>c. Select <b>Salesforce Marketing Cloud</b> from the drop-down list.</li> <li>d. Select <b>Continue.</b></li> </ul>

2. On the form, fill in the fields.

### Integration Profile form

Field	Description
Display name	Name of the integration profile. For example, <b>Salesforce Marketing Cloud integration profile.</b>
Authentication type	<p>Type of authentication to access Salesforce Marketing Cloud APIs.</p> <ul style="list-style-type: none"> <li>○ Basic Auth</li> <li>○ OAuth 2.0: Select this value.</li> </ul> <p><b>Note:</b> For a new Salesforce Marketing Cloud profile, the authentication type is set to <b>Basic Auth</b> by default.</p>
Connection & Credential	Connection and credential alias for Salesforce Marketing Cloud. This field is automatically set to <b>sn_sforce_mc_spoke.SalesforceMarketingCloudSoapConnection.</b>
Status	<p>Status of the integration profile.</p> <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft.</b></li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published.</b></li> </ul>
Profile type	Type of integration profile. This value is automatically set to <b>Salesforce Marketing Cloud Subscription.</b>
Download Subscription Subflow	
Subflow	This field is automatically set to <b>Salesforce Marketing Cloud Download Subscriptions.</b>

Field	Description
	<p>You can view events performed by individual users up to one year prior to the current date. For more information, see <a href="#">Review a software reclamation rule</a>.</p> <p><b>Note:</b> Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.</p>
Reclaim Subscription Subflow	
Subflow	This field is automatically set to <b>Salesforce Marketing Cloud Reclaim Subscription</b> .
Download Consumption Subflow	
Subflow	This field is automatically set to <b>Salesforce Marketing Cloud Download Contacts Consumption</b> .
Integration Attributes	
Attributes	<p>The name-value attributes such as Count Date, Contacts, Email Contacts, and Mobile Contacts are automatically populated for the integration profile.</p> <p>You can add or remove the attributes based on your requirements.</p> <p><b>Note:</b> The attribute name must match the report column header in Salesforce Marketing Cloud instance. For more information, see <a href="#">Create a data extension for your Contacts Counts report</a>.</p>

**3. Select Save.**

Your ServiceNow instance creates a draft integration profile. The integration profile uses the Salesforce Marketing Cloud Download Subscriptions, Salesforce Marketing Cloud Reclaim Subscription, and Salesforce Marketing Cloud Download Contacts Consumption subflows to retrieve user data from your Salesforce Marketing Cloud services.

- 4.** Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field and then selecting **Open Record** in the record preview.
- 5.** On the Connection & Credential Aliases form, select the **Create New Connection & Credential** related link.
- 6.** In the dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Connection Information	
Connection Name	Name of the connection. For example, SFMC SOAP Connection.

Field	Description
SOAP Connection URL	URL of your SOAP Connection endpoint. Enter <code>https://&lt;subdomain&gt;.soap.marketingcloudapis.com/Service.asmx</code> , where <code>&lt;subdomain&gt;</code> is your Salesforce Marketing Cloud subdomain.
Credential Information	
OAuth Client ID	Client ID that you generated while creating a <a href="#">Salesforce Marketing Cloud OAuth credential</a> .
OAuth Client Secret	Client Secret that you retrieved while creating a Salesforce Marketing Cloud OAuth credential.
OAuth Redirect URL	<code>https://&lt;instance_name&gt;/oauth_redirect.do</code> , where the instance name is the name of your ServiceNow instance.
Additional information used for post processing	
Contacts Counts Data Extension	Name of the data extension that you want to retrieve Contacts Counts report data from. This name must exactly match the name of the data extension that you created in <a href="#">Create a data extension for your Contacts Counts report</a> .

**7. Select [Create and Get OAuth Token](#).**

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

**8. Select [Save](#).**

**9. Return to the integration profile and select [Publish](#).**

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic


application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Create additional Salesforce Marketing Cloud integration profiles

Create an integration profile for each additional Salesforce Marketing Cloud that you want to track software subscriptions and optimize licensing for.

#### Before you begin

To create a Salesforce Marketing Cloud integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#) 

Role required: sam\_integrator or admin

Salesforce Marketing Cloud Role required: sn\_sforce\_mc\_spoke.Salesforce Marketing Cloud Admin

#### About this task

If you're using Software Asset Workspace, the option to create the Salesforce Marketing Cloud integration profile in Core UI is inactive.

#### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Salesforce Marketing Cloud Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Salesforce Marketing Cloud</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

#### Integration Profile form

Field	Description
Display name	Name of the integration profile. For example, Salesforce Marketing Cloud integration profile.

Field	Description
Authentication type	<p>Type of authentication to access Salesforce Marketing Cloud APIs.</p> <ul style="list-style-type: none"> <li>Basic Auth</li> <li>OAuth 2.0: Select this value.</li> </ul> <p><b>Note:</b> For a new Salesforce Marketing Cloud profile, the authentication type is set to <b>Basic Auth</b> by default.</p>
Connection & Credential	<p>Connection and credential alias for Salesforce Marketing Cloud. This field is automatically set to <b>sn_sforce_mc_spoke.SalesforceMarketingCloudSoapConnection</b>.</p>
Status	<p>Status of the integration profile.</p> <ul style="list-style-type: none"> <li>If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile type	<p>Type of integration profile. This value is automatically set to <b>Salesforce Marketing Cloud Subscription</b>.</p>
Download Subscription Subflow	
Subflow	<p>This field is automatically set to <b>Salesforce Marketing Cloud Download Subscriptions</b>.</p> <p>You can view events performed by individual users up to one year prior to the current date. For more information, see <a href="#">Review a software reclamation rule</a>.</p> <p><b>Note:</b> Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.</p>
Reclaim Subscription Subflow	
Subflow	<p>This field is automatically set to <b>Salesforce Marketing Cloud Reclaim Subscription</b>.</p>
Download Consumption Subflow	
Subflow	<p>This field is automatically set to <b>Salesforce Marketing Cloud Download Contacts Consumption</b>.</p>
Integration Attributes	
Attributes	<p>The name-value attributes such as Count Date, Contacts, Email Contacts, and Mobile Contacts are automatically populated for the integration profile.</p> <p>You can add or remove the attributes based on your requirements.</p>

Field	Description
	<b>Note:</b> The attribute name must match the report column header in Salesforce Marketing Cloud instance. For more information, see <a href="#">Create a data extension for your Contacts Counts report</a> .

3. Select the preview icon (i) next to the **Connection & Credential** field to open the connection & credential aliases record.
4. Select **Open Record** in the record preview.
5. On the Connection & Credential Aliases form, create a child alias that can uniquely identify the connection and credentials for this integration profile.  
The first Salesforce Marketing Cloud integration profile that you create uses the default (parent) connection and credential alias for Salesforce. Each additional Salesforce Marketing Cloud integration profile that you create requires a unique child alias that helps differentiate the connection and credentials between each integration profile.
  - a. Select the link under **Child Aliases > Parentalias=\*\*\*** to add child aliases.
  - b. Select **New**.  
The Connection & Credential Aliases form for the child alias opens.
  - c. Enter a name for the child alias in the **Name** field.
  - d. Right-click the form header and then select **Save**.
  - e. After the form reloads, select the **Create New Connection & Credential** related link.
6. In the dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Connection Information	
Connection Name	Name of the connection. For example, SFMC SOAP Connection.
SOAP Connection URL	URL of your SOAP Connection endpoint. Enter <code>https://&lt;subdomain&gt;.soap.marketingcloudapis.com/Service.asmx</code> , where <code>&lt;subdomain&gt;</code> is your Salesforce Marketing Cloud subdomain.
Credential Information	
OAuth Client ID	Client ID that you generated while creating a <a href="#">Salesforce Marketing Cloud OAuth credential</a> .
OAuth Client Secret	Client Secret that you retrieved while creating a Salesforce Marketing Cloud OAuth credential.
OAuth Redirect URL	<code>https://&lt;instance_name&gt;/oauth_redirect.do</code> , where the instance name is the name of your ServiceNow instance.
Additional information used for post processing	

Field	Description
Contacts Counts Data Extension	Name of the data extension that you want to retrieve Contacts Counts report data from. This name must exactly match the name of the data extension that you created in <a href="#">Create a data extension for your Contacts Counts report</a> .

**7. Select **Create and Get OAuth Token**.**

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

**8. Select **Save**.**

**9. Return to the integration profile and select **Publish**.**

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

**Setting up an SFTP user account in Salesforce Marketing Cloud**

Set up an SSH File Transfer Protocol (SFTP) user account to access your Salesforce Marketing Cloud FTP files.

Creating an SFTP user account enables you to access the Contacts Counts reports that are saved at an FTP location. The Contacts Counts report displays the total number of billable contacts in your Salesforce Marketing Cloud account.

## Create an SFTP User Account in Salesforce Marketing Cloud

Create user accounts for SFTP users in Salesforce Marketing Cloud to access the Contacts Counts report.

### Before you begin

Salesforce Marketing Cloud Role required: admin with privileges to create users and roles

### About this task

- Note:** You can create a limited number of active SFTP user accounts per member ID (MID). For more information, see [Salesforce documentation](#).

### Procedure

1. From a web browser, open your Salesforce Marketing Cloud instance.
2. Log in using your admin credentials.
3. On the page header of your instance, select your profile icon and then select **Setup**.
4. In the **Quick Find** box, enter `f t p` and then select **FTP Accounts**.
5. Select **Create User**.
6. Enter the email address and password for the new user.
7. In the Authentication Options window, select **Select Password** as the authentication method for the user.
8. In the Permissions window, select the permissions to apply to each directory.

**Important:** Each directory inherits the permissions of its subdirectories. Select all the permissions that provide you access to all the folders for viewing, downloading, and managing files.

9. Permit SFTP connections only from a specific IP address by entering the address in the **Allowlist IPs** field.
10. Select **Add**.
11. Repeat step 9 for each IP address that you want to permit.

- Note:** If you don't enter any IP addresses, SFTP connections can be opened from any IP address.

12. In the Folders window, select a home directory for the user.

The user is allowed to access only the selected directory and its subdirectories. You can select the Root folder to see all the directories and subdirectories.

13. Save your changes.  
You can also exclude an SFTP user from password expiration. For more information, see [Salesforce documentation](#).

## Set Up an External FTP File Location in Salesforce Marketing Cloud

Set up a file location to connect to an external FTP site when transferring files. The file location contains the site URL, port, and login details that Salesforce Marketing Cloud uses to access your site.

### Before you begin

Role required: admin

**Procedure**

1. In your Salesforce Marketing Cloud instance, navigate to **Setup**.
2. In the **Quick Find** box, enter `file` and then select **File Locations**.
3. Select **Create**.
4. In the Properties section, fill in the fields.

**File location properties**

Field	Description
Name	A unique name that you can recognize when you create an activity in Salesforce Marketing Cloud.
External Key	A unique key that identifies the file location when using the API.
Description	Details to identify the file location when you create an activity in Salesforce Marketing Cloud.

5. Select **Enhanced FTP Site Import Directory** as the location type.
6. Save the file.


**Related topics**

- [Integrate Salesforce Marketing Cloud using basic authentication](#)
- [Integrate Salesforce Marketing Cloud using OAuth 2.0](#)

**Integrating with SAP SuccessFactors**

Integrating your Software Asset Management application with the SAP SuccessFactors application enables you to track your software subscriptions and to reclaim unused licenses.

**Important:**

You must request and install the following applications from [ServiceNow Store](#) :

- SaaS License Management
- SuccessFactors Spoke
- Software Asset Management integration with SuccessFactors

- If your installed SAP SuccessFactors spoke version is 3.1.5 or lower, follow these steps:
  1. [Set up basic authentication for SAP SuccessFactors](#)
  2. [Create an SAP SuccessFactors connection](#)
  3. [Create an SAP SuccessFactors integration profile](#)
- If your installed SAP SuccessFactors spoke version is 4.0.0 or higher, follow these steps:
  1. [Register OAuth application in SuccessFactors](#)
  2. [Upload the JKS certificate in your ServiceNow instance](#)
  3. [Register SuccessFactors as an OAuth provider](#)
  4. [Create the SAML2 assertion producer record](#)

5. Create credential record for the OData API
6. Create connection record for the OData API
7. Create an SAP SuccessFactors integration profile

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the SAP SuccessFactors application	Authentication scopes
Download subscriptions	admin	None
Pull user activity	admin	None
Reclaim subscription	admin	None

**Set up basic authentication for SAP SuccessFactors**

Set up basic authentication to enable access to the SAP SuccessFactors API.

**Before you begin**

SAP SuccessFactors Role required: admin

**Procedure**

1. Log in to the SAP SuccessFactors instance using your admin credentials.
2. On the page header of your instance, select **Home > Admin Center**.
3. Create a group to assign API access permissions to.

**Tip:** Include only non-admin users in this group, as admin users automatically have access to the SuccessFactors API.

- a. In the **Tool Search** field of the Admin Center, search for and select **Manage Permission Groups**.
- b. On the Permission Group dialog box, enter a name for the permission group in the **Group Name** field.
- c. In the Choose Group Members section, specify the users or user groups that you want to include in this permission group by adding them to a People Pool.

People Pools allow you to specify the sets of users or user groups that you want to include or exclude for a permission group. You can either include all users and user groups in a single People Pool or group them into different People Pools. For example, you can create different People Pools for each department or office location within your organization.

To add users or user groups to a People Pool, select an identification category, such as **Username**, and then enter each user or user group in the corresponding text box. Each entry must be separated by a comma.

You can apply multiple identification categories to a single People Pool by clicking **Add another category**. You can also add additional People Pools by clicking **Add another People Pool**.

- d. **Optional:** In the Exclude these people from the group section, specify the users or user groups that you want to exclude from this permission group by adding them to a People Pool.

(Optional) To add users or user groups to a People Pool, select an identification category, such as **Username**, and then enter each user or user group in the corresponding text box. Each entry must be separated by a comma.

You can apply multiple identification categories to a single People Pool by clicking **Add another category**. You can also add additional People Pools by clicking **Add another People Pool**.

- e. Select **Done**.

#### 4. Configure API access permissions for your group.

- a. In the **Tool Search** field of the Admin Center, search for and select **Manage Permission Roles**.
- b. Select **Create New**.
- c. On the Permission Role Detail form, enter a name for the permission role in the **Role Name** field.
- d. **Optional:** Enter a description for the permission role in the **Description** field.
- e. Under Permission settings, select **Permission...**
- f. In the Permission settings dialog box, select **Manage Integration Tools** from the left navigation pane.
- g. Select the **Allow Admin to Access OData API through Basic Authentication** check box.
- h. Select **Employee Central API** from the left navigation pane.
- i. Select the **Employee Central HRIS OData API (editable)** check box.
- j. Select **Done**.  
The dialog box closes and you return to the Permission Role Detail form.
- k. Under the **Grant this role to...** tab, select **Add...** to search for and select the permission groups that you created in step 4.  
Adding this permission group allows the associated users and user groups to access the APIs that are enabled in this permission role.
- l. Select **Save Changes**.

### Create an SAP SuccessFactors connection

Create a connection between your SAP SuccessFactors OData API and your ServiceNow instance.

#### Before you begin

ServiceNow Role required: admin

## Procedure

1. From your ServiceNow instance, navigate to **Process Automation > Flow Designer**.  
The Flow Designer launches in a new tab.
2. Select the **Connections** tab.
3. Select **View Details** for your SuccessFactors\_OData connection.
4. From the list of available connections, search for and select SuccessFactors\_OData.
5. Select **Configure**.
6. In the Configure Connection dialog box, fill in the fields.

### Configure Connection dialog box

Field	Description
Connection Name	Name of the SuccessFactors_OData connection.
Connection URL	OData API URL of your SAP SuccessFactors instance.
User name	Username for your SAP SuccessFactors admin account. Enter the same username that you used to log in to your SAP SuccessFactors instance in <a href="#">Set up basic authentication for SAP SuccessFactors</a> .
Password	Password for your SAP SuccessFactors admin account. Enter the same password that you used to log in to your SAP SuccessFactors instance in <a href="#">Set up basic authentication for SAP SuccessFactors</a> .

7. Select **Configure Connection**.

### Register OAuth application in SuccessFactors

Enable client certificate authentication for the outbound communication from SAP Master Data service by generating the `keystore.jks` and `keystore.cer` files.

### Before you begin

Role required: admin

## Procedure

1. Create a JKS certificate by using any one of the following methods:
  - Follow the steps in the [Creating Java Keystore\(JKS\) with Private Key and Certificate Chain](#) [topic SAP Help Portal](#).
  - Install Java JDK 8 and Open SSL and execute the following commands in the Terminal:
    - a. `openssl genrsa -out private.key 2048`  
The `private.key` file is generated.
    - b. `openssl rsa -in private.key -pubout -out public.key`  
Extract the public key from key pair type.
    - c. `openssl req -new -x509 -key private.key -out publickey.cer -days 365`

Enter details of the Distinguished Name (DN). The `publickey.cer` file is generated.

```
d. openssl pkcs12 -export -in publickey.cer -inkey private.key
   -out successfactors.p12 -name "successfactors"
```

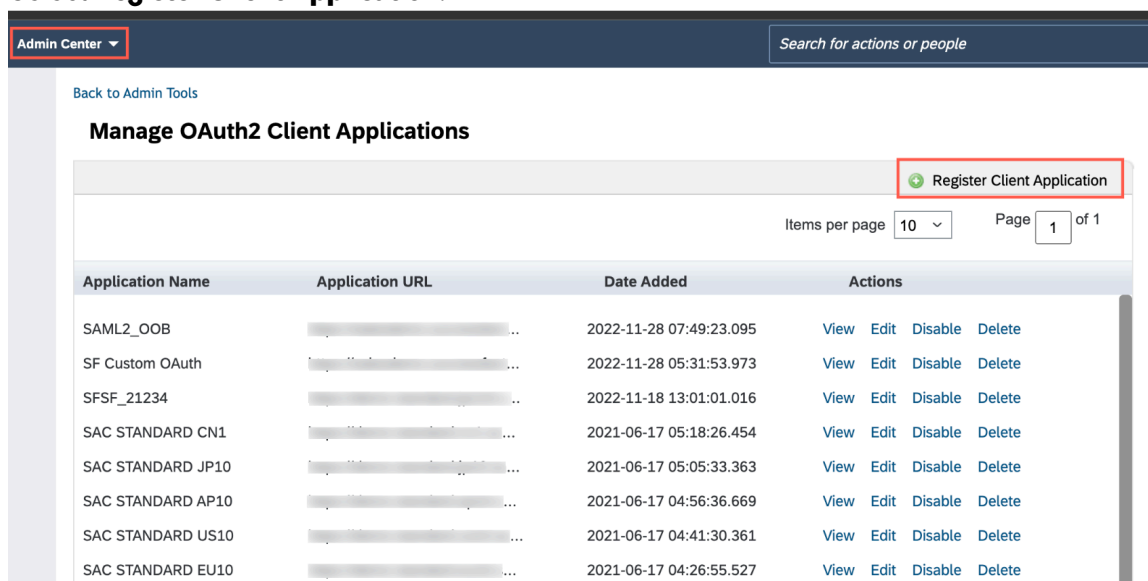
You're prompted for a password. The successfactors.p12 file is generated using the private and public key created in step a and step b.

```
e. keytool -importkeystore -srckeystore successfactors.p12
   -srcstoretype pkcs12 -destkeystore successfactors.jks
```

You're prompted for the destination and source file password. The successfactors.jks file is created using the successfactors.p12 file created in step c.

**Note:** Confirm that you enter the same passwords in steps c and d. For example, if you enter the password as 123456 in step c, you must enter 123456 as password in step d too.

2. Log in to the SuccessFactors account as an admin.
3. Navigate to **Admin Centre** and select **Company Settings**.
4. Select **Manage OAuth2 Client Applications**.
5. Select **Register Client Application**.



6. In the **X.509 Certificate** field, provide the contents of the publickey.cer file (public key) without the headers.

7. Select **Submit**.

### Result

The API Key is generated and displayed.

### What to do next

Copy the API key generated and record the value for later use.

### Upload the JKS certificate in your ServiceNow instance

Enable client certificate authentication for the outbound communication by uploading the JKS certificate in your ServiceNow instance.

**Before you begin**

Role required: admin

**Procedure**

1. Log in to your ServiceNow instance as an admin.

2. Upload the JKS certificate to your ServiceNow instance.

For instructions to upload the JKS certificate, see [Upload a certificate to an](#)

Manage Attachments (1): [private.jks \[rename\]\[download\]](#)

\* Name:  Type:

\* Notify on expiration:  Expires in days:

\* Warn in days to expire:  Key store password:

Active:

Short description:

[Update](#) [Delete](#)

Related Links

[instance](#) [Validate Stores/Certificates](#)

**Register SuccessFactors as an OAuth provider**

Use the API key generated during the client application configuration to register the application as an OAuth provider.

**Before you begin**

Change the application scope to SuccessFactors spoke.

Role required: admin

**Procedure**

1. In your ServiceNow instance, navigate to **System OAuth > Application Registry**.

2. Select **New**.

3. In the form, fill in these fields.

Field	Description
Name	Unique name to identify the certificate. For example, SuccessFactors SAML.
Client ID	Value of the API key you had copied after registering the OAuth client application in SuccessFactors.
Client Secret	<b>Note:</b> Client secret isn't needed to register the application as an OAuth provider. You can provide any value for this field.

Field	Description
Default Grant Type	Default grant type used to establish the token. Select <b>SAML2 Bearer</b> .
Token URL	SuccessFactors OAuth server endpoint URL that includes the Company ID in this format: <code>https://&lt;SuccessFactors_Instance_Name&gt;/oauth/token?company_id=&lt;Company_ID&gt;</code> . For example, <code>https://example.successfactors.eu/oauth/token?company_id=SFCPART123456</code> .

Application Registries  
Successfactor SAML View: OAuth Provider

Update Delete

\* Name: Successfactor SAML

\* Client ID: [Redacted]

\* Client Secret: [Redacted]

OAuth API Script: [Redacted]

Logo URL: [Redacted]

\* Default Grant type: SAML2 Bearer

\* Refresh Token Lifespan: 8,640,000

Public Client:

Application: SuccessFactors Spoke

Accessible from: All application scopes

Active:

Authorization URL: [Redacted]

\* Token URL: [Redacted]

Token Revocation URL: [Redacted]

Redirect URL: [Redacted]

Use mutual authentication:

Send Credentials: In Request Body (Form URL-Encod)

Comments: [Redacted]

**4. Select Submit.**

**Create the SAML2 assertion producer record**

Create a SAML2 assertion record to generate the SAML2 assertion and exchange the assertion for the access tokens with the provider.

**Before you begin**

Change the application scope to SuccessFactors spoke.

Role required: admin

**Procedure**

**1. Create a SAML2 assertion producer record in your instance.**

**a. Navigate to All > System OAuth > SAML2 Assertion Producers.**

**b. Select New.**

**c. On the form, fill these values.**

Field	Description
Name	Unique name to identify the SAML2 assertion producer record. For example, <code>Successfactor SAML OAuth</code> .
Issuer	Unique identifier for the assertion issuing entity. Provide the ServiceNow instance URL.
Subject NameID	User name to log in to the SuccessFactors instance. For example, <code>sfadmin</code> .
Audience	Intended audience for the assertion. Enter the value, <code>www.successfactors.com</code> .
Recipient	Intended recipient for the assertion. Enter URL in this format, <code>https://&lt;SuccessFactors - Instance - Name&gt;/oauth/token</code> .

<
☰ SAML2 Assertion Producer  
Successfactor SAML OAuth
⌵ ⌵ ⋮

\* Name

\* Issuer

\* Subject NameID

\* Signing Algorithm

\* NameID Format

\* Audience

\* Recipient

Application

\* Expiry Interval (sec)

d. Select and hold (or right-click) the form header and select **Save**.

e. Under the **SAML2 Assertion Keystores** tab, select **New**.

f. On the form, fill these values.

Field	Description
Name	Unique name to identify the SAML2 assertion keystore record. For example, <code>successfactors</code> .
Signing Key Alias	Alias of key entry stored in the Keystore used to sign the assertion. For example, <code>successfactors</code> .

Field	Description
Signing Key Password	Password of the key entry stored in the keystore used to sign the assertion.
Signing Keystore	Required X.509 certificate record. Select the X.509 certificate record that you had earlier created. For more information, see <a href="#">Upload the JKS certificate in your ServiceNow instance.</a>

SAML2 Assertion Keystore  
sap\_successfactor

\* Name: sap\_successfactor

\* Signing Key Alias: 1

\* Signing Key Password: .....

\* Signing Keystore: SAP SF SAML Cert

\* Assertion Producer: Successfactor SAML OAuth

Update Delete

**g.** Select **Submit**.

**h.** Navigate to **All > System OAuth > SAML2 Assertion Producers**.

**i.** Open the SAML2 assertion producer record that you had created. For example, **Successfactor SAML OAuth**.

**j.** Under the **SAML2 Assertion Attributes** tab, select **New**.

**k.** On the form, fill these values.

Field	Description
Name	Name to identify the SAML2 assertion attribute record. Enter <code>api_key</code> .
Type	Type of the <b>Value</b> field. Select <b>String</b> .
Value	API key generated after the OAuth client application is created in SuccessFactors.

SAML2 Assertion Attribute  
api\_key

\* Name: api\_key

\* Type: string

Value: [Empty field]

Application: SuccessFactors Spoke

Assertion Producer: Successfactor SAML OAuth

Update Delete

**l.** Select **Submit**.

**2.** Associate the SAML2 assertion producer with the application registry record.

- a. Navigate to **System OAuth > Application Registry**.
- b. Open the application registry record that you had created.  
For example, **SuccessFactors OAuth Reg**. For more information about creating the application registry, see [Register SuccessFactors as an OAuth provider](#).
- c. Under the **OAuth Entity Profiles** tab, open the default OAuth entity profile record.  
For example, **Successfactor SAML default\_profile**.
- d. For the **Assertion Producer** field, select the SAML2 assertion producer record you had created.  
For example, **Successfactor SAML**

- e. Select **Update**.

### Create credential record for the OData API

Create a connection record for the OData API in SuccessFactors. The SuccessFactors spoke connection and credential alias uses these connections to perform actions in SuccessFactors.

### Before you begin

Role required: admin

### Procedure

1. Navigate to **All > Connections & Credentials > Credentials**.
2. Click **New**.  
The system displays the message **What type of Credentials would you like to create?**
3. Select **OAuth 2.0 Credentials**.  
An empty OAuth 2.0 Credentials form is displayed.
4. On the form, fill these values.

Field	Value required
Name	Name to uniquely identify the record. For example, enter <code>SAML_SuccessFactors_OData_Cred</code> .
OAuth Entity Profile	OAuth entity profile record that is associated with the OAuth application registry you had created. For example, <code>Successfactor SAML default_profile</code> .  For more information about creating the application registry, see <a href="#">Register SuccessFactors as an OAuth provider</a> .
Active	Option to actively use the credential record.

Field	Value required
Order	Order to apply this credential. For example, enter 100.

5. Click **Submit**.

**Result**

The credential record to authorize actions using the OData API is created.

**Create connection record for the OData API**

Create a connection record for the OData API in SuccessFactors. The SuccessFactors spoke connection and credential alias uses these connections to perform actions in SuccessFactors.

**Before you begin**

Role required: admin

**Procedure**

1. Navigate to **All > Connections & Credentials > Connection & Credential Aliases**.
2. Open for the record for **SuccessFactors OData**.  
For example, **SuccessFactors\_OData**.
3. From the **Connections** tab, click **New**.  
The system displays an empty HTTP(s) Connection form.
4. On the form, fill these values.

**HTTP(s) Connection form**

Field	Description
Name	Name to uniquely identify the record. For example, SAML_SuccessFactors_OData_Conn.
Credential	Credential record you created for the OData API. For example, SAML_SuccessFactors_OData_Cred.
Connection URL	SuccessFactors service root URL in this format: https://<SuccessFactors_Instance_Name>/odata/v2. For example, https://apisalesdemo2.successfactors.eu/odata/v2.
Active	Option to actively use the connection record.

5. Click **Submit**.

**Result**

The connection record for the OData API in SuccessFactors is created.

**Create an SAP SuccessFactors integration profile**

Create an SAP SuccessFactors integration profile to track software subscriptions and optimize licensing for your SAP SuccessFactors applications.

**Before you begin**

The Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) must be installed from the [ServiceNow Store](#).

Change the application scope to **Global**.

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you're using Software Asset Workspace, the option to create the SuccessFactors integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>SuccessFactors Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>SuccessFactors</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Value
Display Name	Name of the integration profile. For example, <code>SuccessFactors Integration</code> .
Connection & Credential	Connection and credential alias for SAP SuccessFactors. This field populates automatically.
Status	<p>Status of the integration profile.</p> <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>

Field	Value
Profile Type	Type of integration profile. This field is automatically set to SuccessFactors Subscription.

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to SuccessFactors Download Subscriptions Subflow.
4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to SuccessFactors Update User Activity Subflow.
5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to SuccessFactors Reclaim Subscription Subflow.
6. Select **Save**.  
Your ServiceNow instance creates a draft integration profile. The integration profile uses the SuccessFactors Download Subscriptions, SuccessFactors Update User Activity, and SuccessFactors Reclaim Subscription subflows to retrieve user data from the SAP SuccessFactors application.

The **Connection & Credential** field appears and is automatically set to **sn\_successfactors.SuccessFactors\_OData**.

7. Generate and add the SAP SuccessFactors user login report to your integration profile. This report is required for retrieving the last activity date of your SAP SuccessFactors users. You must generate and add the latest version of this report every time you want to update the last activity date of your SAP SuccessFactors users in the Software Subscriptions [samp\_sw\_subscription] table.
  - a. Log in to your SAP SuccessFactors instance using the admin credentials.
  - b. On the page header of your instance, select **Home > Admin Center**.
  - c. On the page header of the Admin Center, select **Reporting**.
  - d. Select **New** to create a report.
  - e. When prompted to select the type of report that you want to create, select **Report - Table > Select**.
  - f. Under **How would you like your data to be structured?**, select **Single Domain**.
  - g. Under **What data would you like to start with?**, select **Login Data**.
  - h. Click **Select**.  
The Creating Login Data report page opens.
  - i. On the **General Info** tab, fill in the fields.

**General Info tab**

Field	Description
Domain	Domain from which you're retrieving data. This field is automatically set to <b>Login Data</b> .
Report Name	Name of the report.

Field	Description
Description	Description of the report.
Report Priority	Priority of the report.
Remove Styling	Deselect this check box.

**j.** On the **People** tab, select **Refine criteria**.

**k.** In the Define Team dialog box, fill in the fields.

**Define Team dialog box**

Field	Description
Team Manager	Manager of the team for which you want to create this report. Select <b>Logged In User</b> .
Team Reporting Type	Type of report that you want to create for the team. Select <b>Other Filters</b> . When you select this report type, you can define report scopes to filter the user groups that you want to include in the report. See <a href="#">step 14</a> for more details.
Include inactive users	Option to include all inactive team members in the report. Leave this option unselected.

**i.** Select **OK**.

The dialog box closes and you return to the **People** tab.

**m. Optional:** In the Define Report Scope section of the **People** tab, select the **Division**, **Department**, and **Location** report scopes to define filter criteria for the user groups that you want to include in the report.

By default, all filter criteria for these report scopes are enabled.

**n.** On the **Columns** tab, select **+ Select Columns** to specify the data columns that you want to include in the report.

You can sort, group, or rearrange the columns as needed.

**o.** Select the **Last Login** and **User Sys ID** check boxes so that the first column is Last Login and the second column is User Sys ID on the report.

**p. Optional:** On the **Configuration** tab, specify whether you want your data columns to display data in either the date only or the date and time format.


For each applicable data column, select either **Date** (date only) or **Timestamp** (date and time). After you select the format for each data column, select **OK**.

**q.** On the **Filters** tab, select filters to refine the data that is displayed on the report.

**r.** Select **Refine Criteria > Employee Login Detail > Last Login**.

A pop-up displays with Define last login filter.

**s.** Select **By Rule > Add rule** tab.

- t. From the drop-down list, select the **Greater than** option.
  - u. Enter the date from when you want to generate the report.  
You must select a date not older than a couple of weeks to keep the file size within allowed limits.
  - v. Select **Done** after you select the filters.
  - w. Select **Generate**.
  - x. In the Download section of the generated report, select **Excel** to export the report as an Excel file.
- Note:** The Excel file must not be greater than 5 MB.
- y. Return to your ServiceNow instance and navigate to **SaaS License > Administration > Direct Integration Profiles**.
  - z. Select your SAP SuccessFactors integration profile.
  - aa. On the Integration Profile form header, select the Manage Attachments icon ().
  - ab. In the Attachments dialog box, select **Choose file** to locate and select your user login report.
  - ac. After the report uploads successfully, close the dialog box to return to the integration profile form.
8. After the form reloads, select **Publish**.
9. In the Publish Confirmation dialog box, select **OK**.

**Note:**

By default, the activity job runs every one hour and deletes the file attached to the integration profile as part of the clean-up. If the file isn't found, the activity job fails indicating no new attachment. The job failure has no impact on the already updated last activity.

If you plan to attach the file once everyday or once a week, you can update the run time of the **SAM - Refresh Success Factors Activity** scheduled job accordingly. You can also run this job on demand whenever you attach a file.

You must attach a file every time for the job to run because SAP SuccessFactors does not have an API for activity data pull.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

**i Important:** Child aliases and alias overrides aren't supported for the **SuccessFactors Update User Activity** subflow because this subflow doesn't use REST steps directly where aliases are required.

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Slack

Integrating your Software Asset Management application with the Slack application enables you to track your software subscriptions and reclaim unused licenses.

The ServiceNow Slack integration supports the Slack Enterprise Grid plan. This plan enables you to connect multiple workspaces across your organization.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

Process	Required user role in the Slack application	Authentication scopes
Download subscriptions	Org Owner	admin
Pull user activity	Org Owner	admin
Reclaim subscription	Org Owner	admin

### Create a Slack Enterprise Grid application

Create a Slack Enterprise Grid application to manage and connect multiple workspaces across your organization.

#### Before you begin

Role required: Refer to the [Minimal user permissions](#) table.

## Procedure

1. From a web browser, open [Slack](#).
2. Sign in using your Slack credentials.
3. Go to the [Slack platform](#).
4. On the page header of the Slack platform, select **Your Apps**.
5. On the Your Apps page, select **Create New App**.
6. Select **From Scratch**.  
The Name app and choose workspace dialog box opens.
7. In the dialog box, enter an application name in the **App Name** field.
8. From the Development Slack Workspace list, select the workspace that you want the application to belong to.
9. Select **Create App**.  
The Slack platform creates the application and then redirects you to the Basic Information page. Use this page to view and configure application settings.
10. On the Basic Information page, expand the App Credentials section and then copy the values in the **Client ID** and **Client Secret** fields.  
Save them in a secure location for later use.
11. Expand the Add features and functionality section and then select **Permissions**.
12. On the OAuth & Permissions page, configure the permissions that enable the interactions between the application and the Slack API.
  - a. In the Redirect URLs section, add the URL of the OAuth provider that you want to redirect users to after authentication.
    - i. Select **Add New Redirect URL**.
    - ii. When prompted, enter `https://<instance-name>/oauth_redirect.do`, where `<instance-name>` is the name of your ServiceNow instance.
    - iii. Select **Add**.
    - iv. Select **Save URLs**.
  - b. In the User Token Scopes section, add the admin OAuth scope to the application.  
  
The OAuth scopes limit the level of access that the application has to your users, channels, and workspaces. For more information on Slack OAuth scopes, see [OAuth Permission scopes](#).
    - i. Select **Add an OAuth Scope**.
    - ii. When prompted, select **admin** from the OAuth Scope list.  
  
This OAuth scope enables the application to administer your workspace.
 

**Note:** The **Description** field for the OAuth scope populates automatically.
13. Activate your application.
  - a. From the left navigation pane, navigate to **Settings > Manage Distribution**.
  - b. Under Share Your App with Other Workspaces, expand the Remove Hard Coded Information section.

- c. Verify that your application doesn't contain any hard-coded information, such as OAuth tokens.
- d. After verification, select the **I've reviewed and removed any hard-coded information** check box.
- e. Verify that you have completed all other sections.
- f. Select **Activate Public Distribution**.

### Create a Slack workspace application

Create a Slack application on each workspace that you want to track user activity on.

#### Before you begin

Role required: Refer to the [Minimal user permissions](#) table.

#### Procedure

1. From a web browser, open [Slack](#).
2. Sign in using your Slack credentials.
3. Go to the [Slack platform](#).
4. On the page header of the Slack platform, select **Your Apps**.
5. On the Your Apps page, select **Create New App**.
6. Select **From Scratch**.  
The Name app and choose workspace dialog box opens.
7. In the dialog box, enter an application name in the **App Name** field.
8. From the Development Slack Workspace list, select the workspace that you want the application to belong to.
9. Select **Create App**.  
The Slack platform creates the application and then redirects you to the Basic Information page. Use this page to view and configure application settings.
10. On the Basic Information page, expand the App Credentials section and then copy the values in the **Client ID** and **Client Secret** fields.  
Save them in a secure location for later use.
11. Expand the Add features and functionality section and then select **Permissions**.
12. On the OAuth & Permissions page, configure the permissions that enable interactions between the application and the Slack API.
  - a. In the Redirect URLs section, add the URL of the OAuth provider that you want to redirect users to after authentication.
    - i. Select **Add New Redirect URL**.
    - ii. When prompted, enter `https://<instance-name>/oauth_redirect.do`, where `<instance-name>` is the name of your ServiceNow instance.
    - iii. Select **Add**.
    - iv. Select **Save URLs**.
  - b. In the User Token Scopes section, add the admin OAuth scope to the application.

The OAuth scopes limit the level of access that the application has to your users, channels, and workspaces. For more information on Slack OAuth scopes, see [OAuth Permission scopes](#).

- i. Select **Add an OAuth Scope**.
- ii. When prompted, select **admin** from the OAuth Scope list.

This OAuth scope enables the application to administer your workspace.

**Note:** The **Description** field for the OAuth scope populates automatically.

- 13. In the OAuth Tokens & Redirect URLs section of the OAuth & Permissions page, select **Install App to Workspace**.
- 14. Select **Allow**.  
Slack creates the application for the specified workspace.
- 15. Repeat steps 4 through 13 for each workspace on which you want to create an application.

### Create a Slack Enterprise connection

Create a connection between the Slack Enterprise Grid application and your ServiceNow instance. This connection enables your instance to retrieve user data from your application.

#### Before you begin

Role required: sam\_integrator or admin

#### Procedure

- 1. From your ServiceNow instance, navigate to **Process Automation > Flow Designer**.  
The Workflow Studio launches in a new tab.
- 2. Select the **Connections** tab.
- 3. Select **View Details** for your Slack Enterprise connection.
- 4. From the list of available connections, locate Slack Enterprise and then select **Configure**.
- 5. In the Configure Connection dialog box, fill in or verify the following fields.

#### Configure Connection dialog box

Field	Value
Connection Name	Name of the Slack Enterprise connection. This field populates automatically.
Name	Name of your Slack Enterprise credentials. This field populates automatically.
OAuth Client ID	Client ID that is assigned to your Slack Enterprise Grid application. Enter the same client ID that you copied in <a href="#">Create a Slack Enterprise Grid application</a> .
OAuth Client Secret	Client secret that is assigned to your Slack Enterprise Grid application. Enter the same client secret that you copied in <a href="#">Create a Slack Enterprise Grid application</a> .
OAuth Redirect URL	Redirect URL for your Slack Enterprise Grid application. This field populates automatically.

- 6. Select **Configure and Get OAuth Token**.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

7. On the Authorize App dialog box, verify if the Enterprise Grid workspace is available on the top-right list.
8. If the Enterprise Grid workspace is available, select the Enterprise Grid workspace.
9. If the Enterprise Grid workspace isn't available,
  - a. Select **Add another workspace**.
  - b. Enter the Enterprise Grid workspace URL.
  - c. Select **Continue**.  
You get redirected to the Authorize App dialog box.
  - d. Select **Allow**.  
The OAuth access token becomes available for authorizing your Enterprise connection.

### Create a Slack workspace connection

Create a connection between your Slack workspaces and your ServiceNow instance. This connection enables your instance to retrieve user data from your workspaces.

#### Before you begin

Role required: sam\_integrator or admin

#### About this task

Create a separate connection for each of your Slack workspaces.

#### Procedure

1. From your ServiceNow instance, navigate to **Process Automation > Flow Designer**.  
The Workflow Studio launches in a new tab.
2. Select the **Connections** tab.
3. Select **Add Connection** for your Slack Enterprise connection.
4. In the Create Connection dialog box, fill in or verify the following fields.

#### Create Connection dialog box

Field	Value
Connection Name	Name of the Slack workspace connection. For example, <code>Slack - Workspace - 1</code> .
Name	Name of your Slack workspace credentials. For example, <code>Slack - Workspace - 1</code> .
OAuth Client ID	Client ID that is assigned to your Slack workspace application. Enter the same client ID that you copied in <a href="#">Create a Slack workspace application</a> .
OAuth Client Secret	Client secret that you assigned to your Slack workspace application. Enter the same client secret that you copied in <a href="#">Create a Slack workspace application</a> .

Field	Value
OAuth Redirect URL	Redirect URL for your Slack workspace application. This field populates automatically.

**5. Select Create and Get OAuth Token.**

**i Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

**6. In the Authorize App dialog box, select Allow.**

The OAuth access token becomes available for authorizing your Slack workspace connection.

**7. Repeat steps 3 through 6 for each workspace that which you want to connect.**

**8. Return to your ServiceNow instance to associate your Slack workspace connections with the instance.**

**a. Navigate to Slack > Slack Workspace Tokens.**

**b. Select New.**

**c. On the Slack Workspace Tokens form, fill in the following fields.**

**Slack Workspace Tokens form**

Field	Value
Connection Alias	Name of your Slack workspace connection. Enter the same connection name that you entered in <a href="#">step 4</a> .
Workspace Name	The name of the workspace to which your Slack application belongs.
Slack App	Name of your Slack workspace application. Enter the same application name that you entered in <a href="#">Create a Slack workspace application</a> .

**d. Select Submit.**

**e. Repeat steps a through d for each workspace connection that you want to associate with your instance.**

**Create a Slack integration profile**

Create a Slack integration profile to track software subscriptions and optimize licensing for your Slack applications.

**Before you begin**

To create a Slack integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you're using Software Asset Workspace, the option to create the Slack integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Slack Enterprise Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Slack Enterprise</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Value
Display Name	Name of the integration profile. For example, <i>Slack</i> Integration.
Connection & Credential	Connection and credential alias for Slack. This field populates automatically.
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <i>Draft</i>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <i>Published</i>.</li> </ul>
Profile Type	Type of integration profile. This field is automatically set to <i>Slack Enterprise Subscription</i> .

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to *Slack Download Subscriptions Subflow*.
4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to *Slack Update User Activity Subflow*.

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to *Slack Reclaim Subscription Subflow*.
6. Select **Save**.  
Your ServiceNow instance creates a draft integration profile. The integration profile uses the Slack Download Subscriptions, Slack Update User Activity, and Slack Reclaim Subscription subflows to retrieve user data from the Slack application.  
  
The **Connection & Credential** field appears and is automatically set to **sn\_slack\_ah\_v2.Slack\_Enterprise**.
7. After the form reloads, select **Publish**.  
The Publish Confirmation dialog box opens.
8. In the dialog box, select **OK**.

**Note:** To optimize memory and avoid performance issues in your Slack flow, you can turn off the flow engine reporting level by navigating to **System Properties > All Properties** and selecting the *com.snc.process\_flow.reporting.level* system property. On the System Property page, set the **Value** to OFF and then select **Update**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with SmartRecruiters

Integrating your Software Asset Management application with the SmartRecruiters application enables you to track your software subscriptions and deactivate stale users. The reclamation

flow deactivates only the users' access. The reclamation flow does not affect the subscription cost because SmartRecruiters is not priced based on the number of users.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

Process	Required user role in the SmartRecruiters application	Authentication scopes
Download subscriptions	admin	None
Pull user activity	admin	None
Reclaim subscription	admin	None


### Generate a SmartRecruiters API key

Generate an API key for authenticating SmartRecruiters API requests.

#### Before you begin

SmartRecruiters Role required: admin

#### Procedure

1. Log in to [SmartRecruiters](#)  account by using your admin credentials to generate an API key.
2. On the page header of the SmartRecruiters portal, select your profile icon and then select **Settings/Admin**.
3. Under Company Settings, locate the Administration section and then select **Apps & Integrations**.
4. Select the **CREDENTIALS** tab and then select **NEW CREDENTIAL**.
5. When prompted to select the type of credential that you want to generate for your applications, select **API key**.
6. Select **Next**.
7. Enter a name for your API key in the **Credentials name** field.
8. Enter a description for your API key in the **Description** field.
9. Select **Generate**.  
SmartRecruiters automatically generates and displays your API key.
10. Copy your API key and save it in a secure location for later use.

### Create a SmartRecruiters connection

Create a connection between your SmartRecruiters applications and your ServiceNow instance so that your instance can retrieve user data from your applications.

#### Before you begin

ServiceNow Role required: admin

#### Procedure

1. Navigate to **All > Process Automation > Flow Designer**.
2. In the Flow Designer, select the **Connections** tab.
3. Locate your SmartRecruiters connection and then select **Add Connection**.
4. In the dialog box, fill in the fields.

**Create Connection dialog box**

Field	Description
Connection Information	
Connection Name	Name of the SmartRecruiters connection. This field populates automatically.
Connection URL	URL for the connection. This field is automatically set to <code>https://api.smartrecruiters.com</code> .
Credential Information	
API Key	API key for your SmartRecruiters applications. Enter the same API key that you generated in <a href="#">Generate a SmartRecruiters API key</a> .

**5. Select Create Connection.**

**Create a SmartRecruiters integration profile**

Create a SmartRecruiters integration profile to track software subscriptions and usage. Identify users that no longer require access to SmartRecruiters and deactivate their access.

**Before you begin**

The Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) must be installed from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you're using Software Asset Workspace, the option to create the SmartRecruiters integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>SmartRecruiters Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> </ol>

Interface	Action
	<p><b>c.</b> Select <b>SmartRecruiters</b> from the drop-down list.</p> <p><b>d.</b> Select <b>Continue</b>.</p>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Display Name	Name of the integration profile. For example, <code>SmartRecruiters Integration</code> .
Connection & Credential	Connection and credential alias for the SmartRecruiters spoke. This field is automatically set to <code>sn_smartrec_spoke.SmartRecruiters</code> .
Status	Status of the integration profile. If you have not published the integration profile, this field is automatically set to <b>Draft</b> . If you have already published the integration profile, this field is automatically set to <b>Published</b> .
Profile Type	Type of integration profile. This field is automatically set to <b>SmartRecruiters Subscription</b> .

- 3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to SmartRecruiters Download Subscriptions.
- 4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to SmartRecruiters Update User Activity Subflow.
- 5. **Optional:** In the **Analyze user activity from** field, select the date and time from which you want to start to analyze user activity.

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

- 6. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to SmartRecruiters Reclaim Subscription.
- 7. Select **Save**.  
Your ServiceNow instance creates a draft integration profile. The integration profile uses the SmartRecruiters Download Subscriptions, SmartRecruiters Update User Activity, and SmartRecruiters Reclaim Subscription subflows to retrieve user data from the SmartRecruiters application.
- 8. After the form reloads, select **Publish**.

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
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Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Smartsheet

Integrating your Software Asset Management application with the Smartsheet application enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the Smartsheet application	Authentication scopes
Download subscriptions	admin	None
Pull user activity	admin	None
Reclaim subscription	admin	None

### Create a Smartsheet API access token


Create an API access token for authenticating Smartsheet API requests.

#### Before you begin

Smartsheet Role required: admin

#### Procedure


1. From a web browser, open [Smartsheet](#).
2. Log in using your Smartsheet credentials.

3. On the side navigation bar, select the account icon (  ) and then select **Apps & Integrations**.
4. In the Personal Settings dialog box, select **API Access**.
5. Under Manage API Access Tokens, select **Generate new access token**.
6. When prompted, enter a name for your API access token in the **API Access Token Name** field and then select **OK**.  
Smartsheet automatically generates and displays your API access token. For security purposes, this API access token appears only once.
7. Copy your API access token and save it in a secure location for later use.
8. Select **OK**.

### Create a Smartsheet integration profile

Create a Smartsheet integration profile to track software subscriptions and optimize licensing for your Smartsheet applications.

#### Before you begin

To create a Smartsheet integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#) .

ServiceNow Role required: sam\_integrator or admin

#### About this task

If you're using Software Asset Workspace, the option to create the Smartsheet integration profile in Core UI is inactive.

#### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Smartsheet Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Smartsheet</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

#### Integration Profile form

Field	Description
Display Name	Name of the integration profile.  For example, Smartsheet Integration.

Field	Description
Connection & Credential	Connection and credential alias for the Smartsheet spoke. This field is automatically set to <b>sn_smrtsheet_spoke.Smartsheet</b> .
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile Type	Type of integration profile.  This field is automatically set to <b>Smartsheet Subscription</b> .

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **Smartsheet Download Subscriptions Subflow**.
4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to **Smartsheet Update User Activity Subflow**.

**i Important:** To enable detailed event tracking, procure an Event Reporting add-on from Smartsheet.

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**i Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **Smartsheet Reclaim Subscription Subflow**.
6. Select **Save**.  
Your ServiceNow instance creates a draft integration profile. The integration profile uses the Smartsheet Download Subscriptions, Smartsheet Update User Activity, and Smartsheet Reclaim Subscription subflows to retrieve user data from the Smartsheet application.
7. Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field and then selecting **Open Record** in the record preview.
8. On the Connection & Credential Aliases form, select the **Create New Connection & Credential** related link.
9. In the dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Name	Name of the connection.
Connection URL	This field is automatically set to <code>https://api.smartsheet.com</code> .

Field	Description
	<p><b>Note:</b> Based on regions, replace the Connection URL with these respective URLs:</p> <ul style="list-style-type: none"> <li>○ Smartsheet Gov: <a href="https://api.smartsheetgov.com/">https://api.smartsheetgov.com/</a></li> <li>○ Smartsheet Regions Europe: <a href="https://api.smartsheet.eu/">https://api.smartsheet.eu/</a></li> <li>○ Smartsheet Regions Australia: <a href="https://api.smartsheet.au/">https://api.smartsheet.au/</a></li> </ul>
API Key	<p>API key for your Smartsheet application.</p> <p>Enter an API key in the <code>api-access-token</code> format, where <code>&lt;api-access-token&gt;</code> is the API access token that you created in Smartsheet.</p>

**10. Select Create.**

You automatically return to the integration profile.

**11. Select Publish.**

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

**Integrating with SurveyMonkey**

Integrating your Software Asset Management application with SurveyMonkey application enables you to track your software subscriptions and to reclaim unused licenses.

The SaaS License Management SurveyMonkey integration supports the SurveyMonkey Enterprise and Enterprise Platinum plans as API support is available for only these plans.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the SurveyMonkey application	Authentication scopes
Download subscriptions	admin	<ul style="list-style-type: none"> <li>• View Groups</li> <li>• View Users</li> </ul>
Pull user activity	admin	View Groups

### Create a private SurveyMonkey application

Create a private SurveyMonkey application for creating, tracking, and analyzing surveys within your organization.

#### Before you begin


SurveyMonkey Role required: Refer to the [Minimal user permissions](#) table.

#### About this task

##### **i Note:**

To avoid rate-limiting issues, create a private SurveyMonkey application for each ServiceNow instance.

#### Procedure

1. From a web browser, open the [SurveyMonkey API Developer portal](#) .
2. Sign in using your admin credentials.
3. On the page header of the API Developer portal, select **My Apps**.
4. On the My Apps page, select **Add a New App**.
5. In the APP CREATION dialog box, enter a name for the application in the **App Nickname** field.
6. Under the Select an App Type section, select **Private App**.
7. Select **Create App**.  
The dialog box closes and then the overview of the newly created application opens.
8. In the Details section of the application overview, copy the values in the **Client ID** and **Secret** fields.  
Save them in a secure location for later use.
9. Go to the application settings by selecting the **SETTINGS** tab.
10. In the Settings section of the application settings, enter the URL of the OAuth provider that users are redirected to after authentication in the **OAuth Redirect URL** field.  
Enter `https://instance.servicenow.com/oauth_redirect.do`, where `<instance>` is the name of your ServiceNow instance.
11. Select **Submit Changes**.
12. In the Scopes section of the application settings, select the **View Groups** and **View Users** scopes to enable your application to access group and user information.
13. Select **Update Scopes**.
14. At the top of the application settings, select **Deploy**.

### Create a SurveyMonkey integration profile

Create a SurveyMonkey integration profile to track software subscriptions and optimize licensing for your SurveyMonkey applications.

#### Before you begin

To create a SurveyMonkey integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

#### About this task

If you're using Software Asset Workspace, the option to create the SurveyMonkey integration profile in Core UI is inactive.

#### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>SurveyMonkey Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>SurveyMonkey</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

#### Integration Profile form

Field	Description
Display Name	Name of the integration profile. For example, SurveyMonkey Integration.
Connection & Credential	Connection and credential alias for the SurveyMonkey spoke. This field is automatically set to <b>sn_sv_monkey_spoke.surveyMonkey</b> .
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile Type	Type of integration profile. This field is automatically set to <b>SurveyMonkey Subscription</b> .

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **SurveyMonkey Download Subscriptions Subflow**.
4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to **SurveyMonkey Update User Activity Subflow**.

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

5. Select **Save**.  
Your ServiceNow instance creates a draft integration profile. The integration profile uses the SurveyMonkey Download Subscriptions and SurveyMonkey Update User Activity subflows to retrieve user data from the SurveyMonkey application.
6. Open the connection & credential aliases record by selecting the preview icon (i) next to the **Connection & Credential** field and then selecting **Open Record** in the record preview.
7. On the Connection & Credential Aliases form, select the **Create New Connection & Credential** related link.
8. In the Create Connection and Credential dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Name	Name of the connection.
OAuth Client ID	Client ID that is assigned to your SurveyMonkey application.
OAuth Client Secret	Client secret that is assigned to your SurveyMonkey application.
OAuth Redirect URL	URL of the OAuth provider that users are redirected to after authentication. This field populates automatically based on the OAuth redirect URL that you specified in <a href="#">Create a private SurveyMonkey application</a> .

9. Select **Create and Get OAuth Token**.  
  
**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.
10. In the Authorize App dialog box, sign in using the same SurveyMonkey credentials that you used to create your SurveyMonkey application.
11. Select **Allow**.  
The dialog box closes and then you automatically return to the integration profile form.
12. Select **Publish**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Tableau Cloud

Integrating your Software Asset Management application with the Tableau Cloud application enables you to track your software subscriptions and to reclaim stale licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.


#### Minimal user permissions

Process	Required user role in the Tableau Cloud application	Authentication scopes
Download subscriptions	site administrator	None
Pull user activity	site administrator	None
Reclaim subscription	site administrator	None

### Register a Tableau Cloud application

Register a Tableau Cloud application through the Tableau Cloud admin portal.

#### Before you begin

- Activate the Tableau spoke. For more information, see [Tableau spoke](#) .
- Tableau Cloud Role required: site administrator

## Procedure

Use one of the following authentication types to validate ServiceNow instance requests with Tableau Cloud.

- Personal Access Token (PAT)
- JSON Web Token (JWT)

**a.** Validate ServiceNow instance requests with Tableau Cloud using the PAT authentication type.

- i.** Log in to the Tableau Cloud account using admin credentials.
- ii.** Select your profile icon.
- iii.** Select **My Account Settings**.
- iv.** Scroll down to the **Personal Access Tokens** section on your profile page.
- v.** In the text field, provide a token name.

For example, Test 1.

**vi.** Select **Create Token**.

The Personal Access Token is generated with a Token name and Secret.

**vii.** To copy the Personal Access Token Secret, select **Copy Secret**.

### Important:

Keep the Personal Access Token Secret at a secure place. You would need it when you create a connection record for Tableau.

**b.** Validate ServiceNow instance requests with Tableau Cloud using the JWT authentication type.

- i.** Log in to the Tableau Cloud account using admin credentials.
- ii.** Select your profile icon.
- iii.** From the left-pane, select **Settings**.
- iv.** Select the **Connected Apps** tab.
- v.** On the Connected Apps page, select the **Direct Trust** option from the **New Connected Apps** drop-down list.
- vi.** In the **Create Connected App** dialog box, fill in the Connected app name, Access level, and Domain allow list details.
- vii.** Select **Create**.

The Connected App that you created gets displayed on the Connected Apps page. By default, the Connected App is inactive.

**viii.** To enable the Connected App, select the ellipsis icon ( **⋮** ) next to the Connected App name and then select **Enable**.

The status of the Connected App shows as enabled.

**ix.** Select the Connected App name.

Keep the Secret ID and Secret value at a secure place. You would need it when you create a connection record for Tableau.

- x. To copy the Client ID, select **Copy Client ID**.

Keep the Client ID at a secure place. You would need it when you create a connection record for Tableau.

### Create a Tableau Cloud integration profile

Create an integration profile to track software subscriptions and optimize licensing for the Tableau Cloud service.

#### Before you begin

To create a Tableau Cloud integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: admin or sam\_integrator

#### About this task

If you're using the Software Asset Workspace, the option to create the integration profile in Core UI is inactive.

#### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Tableau Cloud</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>Select <b>New</b>.</li> <li>Select <b>Tableau Cloud</b> from the drop-down list.</li> <li>Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

#### Integration profile form

Field	Value
Display name	Name of the integration profile. For example, <code>Tableau integration</code> .
Connection and Credential	Connection and credential alias for#Tableau Cloud. This field is automatically set to <code>sn_tableau_spoke.TableauCloud</code> .
Status	Status of the integration profile.

Field	Value
	<ul style="list-style-type: none"> <li>○ If you haven't published the integration profile, this field is automatically set to <b>#Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>#Published</b>.</li> </ul>
Profile type	Type of integration profile. This field is automatically set to Tableau Cloud Subscription.
Download Subscription Subflow	The <b>Subflow</b> field is automatically set to <b>Tableau Cloud Download Subscriptions</b> .
Reclaim Subscription Subflow	The <b>Subflow</b> field is automatically set to <b>Tableau Cloud Reclaim Subscription</b> .

**3. Select Save.**

A draft integration profile is created. The integration profile uses the Tableau Cloud Download Subscriptions subflow to retrieve user data from the Tableau Cloud application.

**4. Open the connection & credential aliases record by selecting the preview icon (🔍) beside the **Connection & Credential** field.**


**5. Select Open Record** in the record preview.


**6. Select the Create New Connection & Credential** related link.

**7. On the form, fill in the fields.**

**Create Connection and Credential form**

Field	Description
Please Enter the Connection Information	
Connection Name	Name of the connection.  This field is automatically set to <i>Tableau Cloud Connection</i> .
Connection URL	The URL used for connecting to the server on which Tableau Cloud is installed. For example, <code>https://&lt;server&gt;.online.tableau.com/api/</code> .
Content URL	The permanent name of the site to sign in to. The content URL appears in the URL path of Tableau content in your browser address bar after the Tableau Server URL.  mySite is the content URL in the following example: <code>http://&lt;server or cloud URL&gt;/#/site/mySite/explore</code> .
Please Enter the Credential Information	

Field	Description
<p>Select the Personal Access Token (PAT) or JSON Web Token (JWT) authentication type. The fields change based on the authentication type that you select.</p>	
<p>Fields for the PAT authentication type</p>	
Token Name	<p>The Token name that you provided while registering the Tableau Cloud application by using the PAT authentication type.</p> <p>For more information, see <a href="#">Register a Tableau Cloud application</a>.</p>
Token Secret	<p>The Token secret that you copied while registering the Tableau Cloud application by using the PAT authentication type.</p> <p>For more information, see <a href="#">Register a Tableau Cloud application</a>.</p>
Expiry Interval (sec)	<p>Life span of the generated Personal Access Token (PAT).</p> <p>Default value: 14400 sec</p> <div style="background-color: #e1f5fe; padding: 5px; border: 1px solid #ccc;"> <p> <b>Important:</b> You mustn't modify the value of this field.</p> </div>
<p>Fields for the JWT authentication type</p>	
Secret ID	<p>The Secret ID that you copied while registering the Tableau Cloud application by using the JWT authentication type.</p> <p>For more information, see <a href="#">Register a Tableau Cloud application</a>.</p>
Secret Value	<p>The Secret value that you copied while registering the Tableau Cloud application by using the JWT authentication type.</p> <p>For more information, see <a href="#">Register a Tableau Cloud application</a>.</p>
Username	<p>User name, that is, email address of the authenticated Tableau Cloud user.</p>
Client ID	<p>The Client ID that you copied while registering the Tableau Cloud application by using the JWT authentication type.</p>
Expiry Interval (sec)	<p>Life span of the generated JSON Web Token (JWT).</p> <p>Default value: 3600 sec</p>

Field	Description
	 <b>Important:</b> You mustn't modify the value of this field.

8. Select **Create**.

9. Return to the integration profile and select **Publish**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Trello

Integrating your Software Asset Management application with the Trello service enables you to track your software subscriptions and to reclaim unused licenses.

For more information about the Trello service, see [the Trello Developer guide](#) .

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Trello application	Authentication scopes
Download subscriptions	Product admin	None
Pull user activity	Product admin	None
Reclaim subscription	Product admin	None

**Generate Trello API key and token**

Generate a Trello API key and token to get access to the Trello portal.

**Before you begin**

Trello Role required: Refer to the [Minimal user permissions](#) table.

Verify that you have a managed user account and Atlassian admin access.

**Procedure**

1. Go to [Trello](#).
2. Log in as an enterprise admin.
3. Go to [Developer API Keys](#).
4. Copy the API key from Personal Key on the Developer API keys page.
5. In the following link, replace {YourAPIKey} with the API key that you copied in the last step and open the link.  
`https://trello.com/1/authorize?expiration=never&scope=read,write,account&response_type=token&name=ServerTo`  
 For example, if your API key is 123xyz, then open the following link- `https://trello.com/1/authorize?expiration=never&scope=read,write,account&response_type=token&name=ServerTo`  
 The MyPersonalToken page appears and asks if you want to give access to your account.
6. Select **Allow**.  
 An API token is generated. Copy this API token and store it securely.

**Create a Trello connection**

Set up your ServiceNow instance to add the Trello API key and API token.

**Before you begin**

ServiceNow Role required: admin

**Procedure**

1. Log in to your ServiceNow instance.
2. Navigate to **Process Automation > Flow Designer**.
3. Select the **Connections** tab.
4. Locate the Trello Alias connection alias and select **View Details**.
5. Configure the Trello spoke.

- If you're configuring the spoke for the first time, select **Configure**.
- If you aren't configuring the spoke for the first time, select **Edit**.

**6.** On the form, fill in the fields.

**Edit Connection form**

Field	Description
Connection Name	Name to identify the connection record.
Connection URL	Enter the URL as <code>https://api.trello.com/</code> .
API Key	The API key that you copied from the Trello portal.
API Token	The API token that you copied from the Trello portal.

**7.** Select **Configure Connection**.

**Create a Trello integration profile**

Create an integration profile to track software subscriptions and optimize licensing for the Trello service.

**Before you begin**

To create a Trello integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: admin or sam\_integrator and sn\_trello\_spoke.trello\_admin

**About this task**

If you're using Software Asset Workspace, the option to create the Trello integration profile in Core UI is inactive.

**Procedure**

**1.** Navigate to the integration profile.

Interface	Action
<b>Core UI</b>	<p><b>a.</b> Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</p> <p><b>b.</b> Select <b>New</b>.</p> <p><b>c.</b> Select <b>Trello Enterprise Integration Profile</b>.</p>
<b>Software Asset Workspace</b>	<p><b>a.</b> Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</p> <p><b>b.</b> Select <b>New</b>.</p> <p><b>c.</b> Select <b>Trello Enterprise</b> from the drop-down list.</p> <p><b>d.</b> Select <b>Continue</b>.</p>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Display Name	Name of the integration profile.  For example, <b>Trello Integration</b> .
Status	Status of the integration profile.  <ul style="list-style-type: none"> <li>○ If you haven't published the integration profile, this field is automatically set to <b>#Draft</b>.</li> <li>○ If you've already published the integration profile, this field is automatically set to <b># Published</b>.</li> </ul>
Profile Type	This field is automatically set to <b>Trello Enterprise Subscription</b> .
Download Subscription Subflow	This field is automatically set to <b>Trello Download Subscriptions</b> .  You can view events performed by individual users up to one year prior to the current date. For more information, see <a href="#">Review a software reclamation rule</a> .  <p><b>Note:</b> Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.</p>
Reclaim Subscription Subflow	This field is automatically set to <b>Trello Reclaim Subscription</b> .

3. Select **Save**.

4. After the Trello form is saved, select **Publish**.

**What to do next**

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

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- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Workday

Integrating your Software Asset Management application with the Workday applications enables you to track your software subscriptions.

With this integration, you can track software subscriptions for the following Workday applications:

- Workday Human Capital Management
- Workday Financial Management

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

#### Minimal user permissions

Process	Required user role in the Workday application	Authentication scopes
Download subscriptions	User having Worker Data: Public Worker Reports Domain Security Policy	None

### Configure permissions in Workday

To set up the Workday integration successfully, perform this procedure in Workday.

#### Before you begin

Role required: Users having roles such as Security Admin, Integration Admin, Integration Auditor, who can create Integration System Users and assign required security policies.

#### Procedure

1. Register an Integration System User.

**i Note:** While filling out account information details, you must select the **Do Not Allow UI Sessions** check box.

2. Create a security group and assign it to the Integration System User.

- a. In **Action**, navigate to **Security Group > Maintain Domain Permissions for Security Group** and provide the following permission:

**Domain security policy permissions**

Operation	Domain Security Policy	Functional Areas
Get Only	Worker Data: Current Staffing Information	Staffing
Get Only	Worker Data: Workers	Staffing

**Note:** Confirm that the domain security policies are activated for the security group using the active pending security policy changes.

**Result**

The new credentials for this Integration System User would be used to configure the connection in the ServiceNow instance.

**Create a Workday integration profile**

Create a Workday integration profile to track software subscriptions and optimize licensing for your Workday applications.

**Before you begin**

Role required: admin, sam\_admin, sam\_integrator

Install the latest Workday HR spoke. For more information about the latest version, see the **Spoke version** section in [Workday HR Spoke](#).

**About this task**

If you're using Software Asset Workspace, the option to create the Workday integration profile in Core UI is inactive.

**Procedure**

- 1. Navigate to the integration profile.

Interface	Action
<b>Core UI</b>	<ul style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Workday Integration Profile</b>.</li> </ul>
<b>Software Asset Workspace</b>	<ul style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Workday</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ul>

- 2. On the form, fill in the fields.

**Integration Profile form**

Field	Description
Integration Profile	
Display name	Name of the integration profile. For example, <i>Workday integration</i> .
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you haven't published the integration profile, this field is automatically set to <b>#Draft</b>.</li> <li>○ If you've already published the integration profile, this field is automatically set to <b>#Published</b>.</li> </ul>
Profile type	Type of integration profile. This field is automatically set to <b>Workday Subscription</b> .
Connection Setup	
Connection Details	<ul style="list-style-type: none"> <li>○ If the connection details exist, this field is already populated.</li> <li>○ If the connection details don't exist, you must create them.</li> </ul>
SOAP Username	User name of the Integration system user created while <a href="#">configuring permissions in Workday</a> . <div style="background-color: #e1f5fe; padding: 5px; margin-top: 10px;"> <p><b>Important:</b> Include the tenant suffix in the username. For example, <code>username@&lt;tenant&gt;</code>.</p> </div>
SOAP Password	Password of the Integration system user created while <a href="#">configuring permissions in Workday</a> .
Download Subscription Subflow	
Subflow	This field is automatically set to <b>Workday Download Subscriptions</b> .

**3.** If connection details don't exist, create the connection details.

Interface	Action
<b>Core UI</b>	In the <b>Connection Details</b> field, select the search icon (🔍).
<b>Software Asset Workspace</b>	Select the <b>Connection details</b> link.

**a.** Select **New**.

**b.** On the form, fill in the fields.

**Connection Details**

Field	Description
Base URL	Workday SOAP API URL with the tenant name in the following format: <code>https://&lt;workday_host_url&gt;/ccx/service/&lt;workday_tenant_name&gt;</code> .
Version	The SOAP API version, for example, <code>v33.2</code> .
Webservice Type	Should be set to <b>SOAP</b> .

**c. Select Submit.**


A record is created and added in the **Connection Details** field.

**d. Optional:** Review the connection details by selecting the new integration profile and selecting the lookup icon  in the **Connection details** field.

**4.** Create a SOAP user name and password when you don't have these credentials automatically populated.

**i Note:** Only an admin role can create or update the SOAP user name and password.

Interface	Action
<b>Core UI</b>	<p><b>a.</b> Navigate to <b>All &gt; System Web Services &gt; SOAP Security Policies</b>.</p> <p><b>b.</b> Select <b>All</b> in the top menu bar.</p> <p><b>c.</b> Select <b>WorkdayHR</b>.</p>
<b>Software Asset Workspace</b>	Select the <b>SOAP username profile</b> link.

**a.** On the Soap Security Policy form, select the lookup icon  in the **WS-Security Username Profile** field.

**b.** Select **New**.

**c.** On the WS-Security Username Profiles (Outbound) form, fill in the name, user name, and password for the integration profile.

**d.** Select **Submit**.

**5.** Select **Save**.

**6.** Under the **FSE worker calculation** tab, activate the worker categories covered by your contract by setting the value of **Active** to **true** and entering the FSE percentage.

**7. Optional:** If worker categories are listed in your contract but not available in the FSE worker calculation tab, add a new worker category.

**a.** In the **FSE worker calculation** tab, select **New**.

**b.** On the form, fill in the fields.

**Workday FSE worker calculation**

Field	Description
Worker Category	The worker category listed in your contract.
FSE Percentage	The FSE percentage for the worker category that you added. Full Service Equivalent (FSE) is the method by which the subscriptions are calculated.
Integration profile	The Workday integration profile that you created.
Active	Option to make the worker category active.

c. Select **Submit**.

8. Define the mapping of the newly created worker category.

a. Select the **Worker category** tab and select **New**.

b. On the form, fill in the fields:

**Workday worker category**

Field	Description
Worker Type	The type of worker, either Employee or Contingent.
Employee/Contingent worker type	The type of Employee or Contingent worker.
Time Type	Indicates whether the worker is full-time or part-time.
Worker Category	The worker category that you created.
Integration profile	The Workday integration profile that you created.
Active	Option to make the mapping active.

c. Select **Submit**.

9. Activate the list of modules that are defined in your contract.

a. Select the **Modules** tab.

b. Open the module record.

c. Set the **Active** field to **True**.

d. Select **Save**.

10. Verify that there is at least one active record in all the tabs for your contract: FSE worker calculation, Worker category, and Modules, before publishing the connection.

11. Select **Publish**.

## What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

## Integrating with Workplace from Facebook

Integrating your Software Asset Management application with the Workplace from Facebook application enables you to track your software subscriptions and reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Workplace from Facebook application	Authentication scopes
Download subscriptions	System admin	<ul style="list-style-type: none"> <li>• Read group membership</li> <li>• Manage work profiles</li> </ul>
Pull user activity	System admin	<ul style="list-style-type: none"> <li>• Read group</li> <li>• Read group membership</li> <li>• Read group content</li> <li>• Read All messages</li> <li>• Read Knowledge Library content</li> </ul>
Reclaim subscription	System admin	Provision User Accounts

**Create a Workplace from Facebook integration profile**

Create an integration profile to track software subscriptions and optimize licensing for the Workplace from Facebook application.

**Before you begin**

To create a Workplace from Facebook integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: admin or sam\_integrator

**About this task**

If you're using Software Asset Workspace, the option to create the Workplace from Facebook integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Workplace from Facebook Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> </ol>

Interface	Action
	<p><b>c.</b> Select <b>Workplace from Facebook</b> from the drop-down list.</p> <p><b>d.</b> Select <b>Continue</b>.</p>

2. On the form, fill in the fields.

**Integration profile form**

Field	Value
Display name	<p>Name of the integration profile.</p> <p>For example, Workplace from Facebook integration.</p>
Connection and Credential	<p>Connection and credential alias for #Workplace from Facebook.</p> <p>This field is automatically set to <b>sn_fb_wp_spoke.FB_Workplace_Alias</b>.</p>
Status	<p>Status of the integration profile.</p> <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>#Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>#Published</b>.</li> </ul>
Profile type	<p>Type of integration profile.</p> <p>This field is automatically set to Workplace from Facebook Subscription.</p>

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **Workplace from Facebook Download Subscriptions Subflow**.

4. On the **Calculate Activity Subflow** tab, verify that the **Subflow** field is set to **Workplace from Facebook Update User Activity Subflow**.

You can also select the date and time that you want to analyze user activity from in the Analyze user activity from field. By default, you can analyze user activity up to 60 days prior to the current date and view events performed by individual users from the time you create this profile.

**i Note:** Software Asset Management pulls the events from the time that you start analyzing user activity irrespective of the profile creation date.

You can modify this value in the Last activity threshold field of your software reclamation rules. For more information, see [Review a software reclamation rule](#).

5. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **Workplace from Facebook Reclaim Subscription**.

6. Select the preview icon (📄) next to the **Connection & Credential** field and select **Open Record** in the record preview to open the connection & credential aliases record.
7. On the **Connection & Credential Aliases** form, select **FB\_Workplace\_Credentials** under the **Credential** column in the **Connections** list.
8. On the **Workplace from Facebook Credentials** form, select **Install on your Workplace**.  
You get redirected to the [Workplace sign-up/sign-in](#) #page.
9. Log in to your #Workplace from Facebook account using your credentials.  
The **Add ServiceNow Spoke to Workplace** pop-up window gets displayed.
10. Select **Add to Workplace**.
11. Select **Done**.  
You are redirected back to your #ServiceNow #instance and the relevant fields are updated.
12. Return to the integration profile and select **Publish**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Zendesk

Integrating your Software Asset Management application with the Zendesk application enables you to track your software subscriptions and to reclaim unused licenses.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Zendesk application	Authentication scopes
Download subscriptions	Light Agent	None
Pull user activity	Light Agent	None
Reclaim subscription	admin	None

**Create a Zendesk OAuth client**

Create an OAuth client for authenticating Zendesk API requests.

**Before you begin**

Zendesk Role required: admin

**Procedure**

1. From a web browser, open [Zendesk](#).
2. Log in using your admin credentials.
3. On the left navigation menu of the Zendesk Agent Workspace, select the Admin icon (⚙️).
4. Go to the Admin Center from the Admin page and from the Admin menu, navigate to **Apps and Integrations > API**.  
The Zendesk API page opens.
5. Select the **OAuth Clients** tab and then select **Add OAuth client**.
6. On the form, fill in the fields.

**Create a new OAuth client form**

Field	Description
Client name	Name of the OAuth client.
Description	Brief description of the OAuth client.
Company	Name of the company whose data the OAuth client grants access to through the Zendesk API. The company name is displayed during authentication of your Zendesk API requests.  This field populates automatically based on the company that your Zendesk account is associated with. However, you can modify the company name as needed.
Logo	Logo that is displayed during authentication of your Zendesk API requests.  Select the green square to locate and select the logo that you want to display.
Unique identifier	Unique identifier for the OAuth client. This field populates automatically based on the OAuth client name that you specified in the <b>Client name</b> field. However, you can modify the unique identifier as needed.

Field	Description
	<b>Note:</b> The unique identifier is used only in the Zendesk code.
Client kind	This field must be set to <b>Confidential</b> . Confidential authentication clients run on secure servers, where their credentials can be kept safe.
Redirect URLs	URL of the OAuth provider that users are redirected to after authentication. Enter <code>https://instance.service-now.com/oauth_redirect.do</code> , where <code>&lt;instance&gt;</code> is the name of your ServiceNow instance.

7. Select **Save**.
8. On the dialog box, select **OK**.  
The dialog box closes and the form reloads.
9. Copy the value from the **Secret** field.  
Save the Secret value in a secure location for later use.

### Create a Zendesk connection

Create a connection between your Zendesk applications and your ServiceNow instance so that your instance can retrieve user data from your applications.

### Before you begin

ServiceNow Role required: admin

### Procedure

1. From your ServiceNow instance, navigate to **Process Automation > Flow Designer**.  
The Flow Designer launches in a new tab.
2. Select the **Connections** tab.
3. Locate your Zendesk connection and then select **Configure**.
4. In the dialog box, fill in the fields.

### Create Connection dialog box

Field	Description
Connection Information	
Connection Name	Name of the Zendesk connection. This field populates automatically.
Connection URL	URL for the connection. Enter <code>https://&lt;subdomain&gt;.zendesk.com</code> , where <code>&lt;subdomain&gt;</code> is your organization subdomain.
Credential Information	
OAuth Client ID	Unique identifier for your Zendesk OAuth client. Enter the same unique identifier that you specified in <a href="#">Create a Zendesk OAuth client</a> .

Field	Description
OAuth Client Secret	Secret that is assigned to your Zendesk OAuth client. Enter the same secret that you copied in <a href="#">Create a Zendesk OAuth client</a> .
OAuth Redirect URL	URL of the OAuth provider that users are redirected to after authentication. This field populates automatically based on the redirect URL that you specified in <a href="#">Create a Zendesk OAuth client</a> .

**5. Select Create and Get OAuth Token.**

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

**6. On the Zendesk OAuth authorization dialog box, select Authorize.**

The OAuth access token becomes available for authorizing your Zendesk connection.

**Create a Zendesk integration profile**

Create a Zendesk integration profile to track software subscriptions and optimize licensing for your Zendesk applications.

**Before you begin**

To create a Zendesk integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

**About this task**

If you're using Software Asset Workspace, the option to create the Zendesk integration profile in Core UI is inactive.

**Procedure**

**1. Navigate to the integration profile.**

Interface	Action
Core UI	<ul style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Zendesk Integration Profile</b>.</li> </ul>
Software Asset Workspace	<ul style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Zendesk</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ul>

**2. On the form, fill in the fields.**

### Integration Profile form

Field	Description
Display Name	Name of the integration profile. For example, Zendesk Integration.
Connection & Credential	Connection and credential alias for the Zendesk spoke. This field is automatically set to <b>sn_zendesk_spoke.Zendesk</b> .
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you have not published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you have already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Profile Type	Type of integration profile.  This field is automatically set to <b>Zendesk Subscription</b> .

3. On the **Download Subscription Subflow** tab, verify that the **Subflow** field is set to **Zendesk Download Subscriptions**.

You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule](#).

**i Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

4. On the **Reclaim Subscription Subflow** tab, verify that the **Subflow** field is set to **Zendesk Reclaim Subscription**.

5. Select **Save**.

Your ServiceNow instance creates a draft integration profile. The integration profile uses the Zendesk Download Subscriptions and Zendesk Reclaim Subscription subflows to retrieve user data from the Zendesk application.

6. After the form reloads, select **Publish**.

### What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.


- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

### Integrating with Zoom

Integrating your Software Asset Management application with the Zoom service enables you to track your software subscriptions and to reclaim unused licenses.

With this integration, you can retrieve and analyze licensing information for the following Zoom applications:

- Zoom Regular account (not a Master / Master-sub account) for Meetings
- Zoom Regular account (not a Master / Master-sub account) for Webinar

For additional information about Zoom, see [Zoom Developer Documentation](#) .

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Zoom application	Authentication scopes
Download subscriptions	View or edit user information (e.g. assigning licenses and groups to users): View	<ul style="list-style-type: none"> <li>• user:read:list_users:admin</li> <li>• user:read:settings:admin</li> </ul>
Pull user activity	View detailed usage reports for the account: View	<ul style="list-style-type: none"> <li>• report:read:user:admin</li> </ul> <div data-bbox="1045 598 1380 934" style="border: 1px solid black; padding: 5px;"> <p><b>i Note:</b> If your installed Software Asset Management - SaaS License Management version is 14.0.4 or lower, use this scope. You mustn't use the meeting:read:list_meetings:admin scope.</p> </div> <ul style="list-style-type: none"> <li>• meeting:read:list_meetings:admin</li> </ul> <div data-bbox="1045 1039 1380 1375" style="border: 1px solid black; padding: 5px;"> <p><b>i Note:</b> If your installed Software Asset Management - SaaS License Management version is higher than 14.0.4, use this scope. You must not use the report:read:user:admin scope.</p> </div> <ul style="list-style-type: none"> <li>• webinar:read:list_webinars:admin</li> </ul>
Reclaim subscription	View or edit user information (e.g. assigning licenses and groups to users): Edit	<ul style="list-style-type: none"> <li>• user:update:settings:admin</li> <li>• user:update:user:admin</li> <li>• user:delete:user:admin</li> </ul>

**Create a Zoom application**

Create an application in the Zoom App Marketplace.

**Before you begin**

Zoom Role required: Zoom for developers: Edit

## Procedure

1. Navigate to [Zoom App Marketplace](#) and sign in to your account.
2. Select **Develop > Build App**.
3. In the **Select how the app is managed** section on the Basic Information page, select the **Admin-managed** option.
4. Select **Save**.
5. In the App Credentials section, obtain the Client ID and Client Secret. Copy and save these values in a secure location for later use.

**Note:** Your Client ID and Client secret are sensitive. Don't share them.

6. Enter `https://instance.service-now.com/oauth_redirect.do` in the **OAuth Redirect URL** and **OAuth Allow Lists** fields, where *instance* is the name of your ServiceNow instance.

7. Select the **Scopes** tab on the left navigation menu.

8. Add the following scopes for enabling the integration to get a list of users, track meeting and webinar activity for users, and reclaim unused subscriptions.

- user:read:list\_users:admin
- user:read:settings:admin
- report:read:user:admin

**Note:** If your installed Software Asset Management - SaaS License Management version is 14.0.4 or lower, use this scope. You mustn't use the meeting:read:list\_meetings:admin scope.

- meeting:read:list\_meetings:admin

**Note:** If your installed Software Asset Management - SaaS License Management version is higher than 14.0.4, use this scope. You mustn't use the report:read:user:admin scope.

- webinar:read:list\_webinars:admin
- user:update:settings:admin
- user:update:user:admin
- user:delete:user:admin

## Create a Zoom integration profile

Create an integration profile to track software subscriptions and optimize licensing for the Zoom service.

### Before you begin

To create a Zoom integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

### About this task

If you're using Software Asset Workspace, the option to create the Zoom integration profile in Core UI is inactive.

**Procedure**

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; Direct Integration Profiles.</b></li> <li>Select <b>New.</b></li> <li>Select <b>Zoom Integration Profile.</b></li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles.</b></li> <li>Select <b>New.</b></li> <li>Select <b>Zoom</b> from the drop-down list.</li> <li>Select <b>Continue.</b></li> </ol>

2. On the form, fill in the fields.

**Integration Profile form**

Field	Value
Display name	Name of the integration profile. For example, Zoom Integration
Client Id	Client ID for the OAuth application created in the SaaS admin account in <a href="#">step 5.</a>
Redirect url	This value is automatically populated.
Client secret	Password related with the client ID created in the SaaS admin account in <a href="#">step 5.</a>
Profile type	Type of integration profile. This value is automatically set to <i>Zoom Subscription.</i>
Analyze user activity from	You can choose to start analyzing data from the current date or from up to 30 days in the past. Choosing a date in the past enables you to detect stale subscriptions without waiting in real time because you can see subscriptions that haven't been used recently. Because choosing a date in the past increases the amount of data that is analyzed, it could take several hours for you to be able to view the results.

3. Select **Submit.**
4. On the integration profile, select the **Get OAuth Token** related link and follow the steps to get an OAuth token.

**Note:** For the role required to perform this step, refer to the [Minimal user permissions](#) table.

**Result**

You can view events performed by individual users up to one year prior to the current date. For more information, see [Review a software reclamation rule.](#)

**Note:** Software Asset Management pulls the events from the time that you start downloading user subscriptions irrespective of the profile creation date.

## What to do next

After the integration connects, your ServiceNow instance automatically creates software models, reclamation rules, and software subscriptions that are refreshed daily.

If you want to set up multiple integration profiles with unique connections, create child aliases to manage different configurations and settings for each integration profile. For more information, see [Create a child alias to set up multiple integration profiles](#).

Review all automatically generated reclamation rules to reclaim user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software.

- For more information on creating software entitlements in the Software Asset Management Core UI, see [Create entitlements in Software Asset Management classic](#).
- For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#).
- For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

- For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#).
- For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

## Integrate with SSO providers

Integrate with a Single Sign-On (SSO) provider to view software usage for all connected SSO applications.

Download a list of all your applications, users, and groups. Track user login data for all connected applications and reclaim unused licenses. Leverage usage data to forecast future licensing needs and cut back on unused licenses at renewal.

### Integrating with Azure AD

You can integrate your ServiceNow instance with Microsoft Azure Active Directory (AD) to view software usage for all connected SSO applications.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

**Minimal user permissions**

Process	Required user role in the Microsoft Azure AD application	Authentication scopes
<ul style="list-style-type: none"> <li>• Download users</li> <li>• Download groups</li> <li>• Download group memberships</li> </ul>	Application developer	<ul style="list-style-type: none"> <li>• User.Read.All</li> <li>• GroupMember.Read.All</li> <li>• Application.Read.All</li> </ul>
Download applications	Application developer	<ul style="list-style-type: none"> <li>• User.Read.All</li> <li>• GroupMember.Read.All</li> <li>• Application.Read.All</li> </ul>
<ul style="list-style-type: none"> <li>• Connect applications</li> <li>• Update connected applications</li> </ul>	<ul style="list-style-type: none"> <li>• Global reader/Reports reader/ Security/ Administrator/Security operator/Security reader</li> <li>• Application developer</li> </ul>	<ul style="list-style-type: none"> <li>• AuditLog.Read.All</li> <li>• User.Read.All</li> <li>• GroupMember.Read.All</li> <li>• Application.Read.All</li> </ul>
Reclaim subscriptions	User Administrator	User.ReadWrite.All


**Create a Microsoft Azure AD application**

Create an app in the Microsoft Azure AD portal to integrate with the ServiceNow AI Platform.

**Before you begin**

Microsoft Azure AD Role required: Refer to the [Minimal users permission](#) table.

**Procedure**

1. From the Azure portal, access Microsoft Azure AD.
2. Create a Microsoft Azure AD application.
  - See [Create a Microsoft Azure AD application](#)  for detailed instructions on registering and configuring an application.
  - a. In the **Redirect URI** field, enter `https://<instance-name>.service-now.com/oauth_redirect.do`, where <instance-name> is the name of your ServiceNow instance.
  - b. Record the application (client) ID and directory (tenant) ID to register the app as a third-party OAuth provider on your ServiceNow instance.
  - c. Create a client secret and save the correct value (not the Client secret ID) to register the app as a third-party OAuth provider on your ServiceNow instance.

d. Add permissions to access the Microsoft Graph API.

Permission	Type
AuditLog.Read.All	Delegated
User.Read.All	Delegated
User.ReadWrite.All	Delegated
GroupMember.Read.All	Delegated
Application.Read.All	Delegated

For more information, see [Add permissions to access web APIs](#).

e. Grant admin consent to your application.

For more information, see [Understanding API permissions and admin consent UI](#).

### Create an Azure AD integration profile

Create an Azure AD integration profile in your ServiceNow instance.

#### Before you begin

To create an Azure AD integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

#### About this task

**Note:** Starting with version 7.0.0 of Software Asset Management - SaaS License Management and version 3.1.0 of the Microsoft Azure AD spoke, your ServiceNow instance creates a separate Azure AD connection for each Azure AD integration profile that you create. Each connection runs independently of each other, enabling your instance to support multiple independent Azure AD integration profiles.

If you're using Software Asset Workspace, the option to create the Microsoft Azure AD integration profile in Core UI is inactive.

### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; SSO Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Microsoft Azure AD Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; SSO integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> </ol>

Interface	Action
	<p><b>c.</b> Select <b>Microsoft Azure AD Integration Profile</b> from the drop-down list.</p> <p><b>d.</b> Select <b>Continue</b>.</p>

2. In the **Display name** field, enter a name for the integration profile.

The remaining fields are automatically populated when you submit the form.

**i Note:** The SSO integration is created using a directory integration. The directory integration pulls SSO applications, users, and group data that are associated with your SSO integrations. For more information, see [Viewing SSO subscription information](#).

If you already have a Microsoft Azure AD directory integration, the SSO integration uses your existing directory integration. Otherwise, a Microsoft Azure AD directory integration is automatically created.

3. Select **Submit**.

4. Select the **Create New Connection & Credential** related link.

**i Note:** If you have installed Software Asset Workspace, open the Connection and credential record and select the **Create New Connection & Credential** related link.

5. On the form, fill in the fields.

**Create Connection and Credential form**

Field	Value
Auth URL	https://login.microsoftonline.com/<directory-id>/oauth2/v2.0/authorize, where<directory-id> is the directory (tenant) ID from the Azure portal.
Token URL	https://login.microsoftonline.com/<directory-id>/oauth2/v2.0/token, where<directory-id> is the directory (tenant) ID from the Azure portal.
Revoke token URL	https://login.microsoftonline.com/<directory-id>/oauth2/v2.0/revoke, where<directory-id> is the directory (tenant) ID from the Azure portal.
OAuth Client ID	Application (client) ID for the application you created in the Azure portal.
OAuth Client Secret	Client secret for the application you created in the Azure portal.
OAuth Redirect URL	https://<instance-name>.service-now.com/oauth_redirect.do, where <instance-name> is the name of your ServiceNow instance. This value is automatically populated.

6. Select **Create and Get OAuth Token**.

You would get redirected to the Azure portal. For the role required to perform this step, refer to the [Minimal users permission](#) table.

7. In the pop-up window, sign in to your account with Azure AD admin credentials.

**8. Select Publish.**

Scheduled jobs and directory jobs download a list of all your applications, users, and groups. For more information, see [Viewing SSO subscription information](#). View the status of your jobs in the Scheduled Job Results and Directory Job Results related lists of the integration profile. Software models are automatically created for applications with an **External Catalog ID** that matches an **Identifier** in the Subscription Product Definitions [samp\_sw\_subscription\_product\_definition] table.

**Result**

After you publish the integration profile and connect applications to the profile, you can view events performed by individual users up to 60 days prior to the current date. For more information, see [Review a software reclamation rule](#).

**Connect SSO apps**

Connect a Single Sign-On (SSO) app to view all users and groups with access to the app. Track user login data and reclaim unused licenses.

**Before you begin**

Role required: sam\_integrator or admin

**About this task**

- Note:** For Microsoft Azure AD, the **Assignment required** toggle button on the application configuration page controls the access of the application by users.
  - If the **Assignment required** toggle button is set to **Yes**, you must assign this application to the Microsoft Azure AD users and related applications and services. After you assign the application, Microsoft Azure AD users, associated applications, and services can access it.
  - If the **Assignment required** toggle button is set to **No**, all users can log in to the application. The associated applications and services can also obtain an access token to this service.

SaaS License Management offers direct integrations with select applications. Direct integrations provide the most robust usage data. For a list of available direct integrations, see [Integrate with SaaS applications](#). If you have a direct integration for an app, connecting the same app in an SSO integration creates duplicate subscription records in your ServiceNow instance. If you connect an SSO app and later decide to create a direct integration for that app, disconnect the app before creating a direct integration.

- Note:** If you're using Software Asset Workspace, the option to navigate to the SSO application in the Core UI is inactive.

**Procedure**

1. Navigate to the application.

Interface	Action
Core UI	Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; SSO Applications</b> .
Software Asset Workspace	Navigate to <b>License operations &gt; User Subscriptions &gt; SSO integration profiles</b> .

**2.** Select the application that you want to connect.

For Software Asset Workspace, select the **SSO Applications** tab.

**3.** If the **Software model** field is empty, add a software model for the app.

An app must have a software model before you can connect it. Software models are automatically created for apps with an **External Catalog ID** that matches an **Identifier** in the Subscription Product Definitions [samp\_sw\_subscription\_product\_definition] table. For all other apps, you can create a software model manually. For more information, see [Create software models in Software Asset Management classic](#).

**4.** Select a date for the **Analyze last activity from** field.

You can choose to start analyzing login data for individual users and applications from the current date or from up to 60 days in the past. The default value is 30 days. Choosing a past date enables you to detect stale subscriptions without waiting in real time because you can see subscriptions that haven't been used recently. Because choosing a date in the past increases the amount of data that is analyzed, it might take you longer to be able to view the results.

**5.** Select **Save**.

**6.** Select **Connect**.

 **Tip:** You can also connect multiple apps simultaneously from the **SSO Applications** list.

In the Core UI interface, select the apps using the check box on the side of the list. At the bottom of the list, select the **Actions on selected rows** drop-down menu and then select **Connect**. If some apps don't have a software model, the **Connect** action shows that not all apps are connected. For example, **Connect (1 of 4)** shows that only 1 of the four apps you selected are connected. Add software models to connect the remaining apps.

## Result

After the SSO application connects, your ServiceNow instance automatically creates users, groups, subscriptions, and reclamation rules that are refreshed daily.

- If the **Assignment required** toggle button is set to **Yes** for an application in the Microsoft Azure AD portal, the subscription is created only for users assigned to that specific application.
- If the **Assignment required** toggle button is set to **No** for an application in the Microsoft Azure AD portal, the subscription is created for all Microsoft Azure AD users.

## What to do next

Review all automatically generated reclamation rules to meet your specifications for reclaiming user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software. For more information on creating software entitlements in the Software Asset Management classic application, see [Create entitlements in Software Asset Management classic](#). For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#). For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance. For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#). For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

## Integrating with Okta

You can integrate your ServiceNow instance with Okta to view software usage for all connected SSO applications.

**i Important:** Minimize security risks and protect information by granting access only to the necessary user or API permissions.

### Minimal user permissions

Process	Required user role in the Okta application	Authentication scopes
Download users	Read-only administrator	okta.users.read
<ul style="list-style-type: none"> <li>Download groups</li> <li>Download group memberships</li> </ul>	Read-only administrator	okta.groups.read
Download applications	Read-only administrator	<ul style="list-style-type: none"> <li>okta.apps.read</li> <li>okta.logs.read</li> </ul>
Connect applications	Read-only administrator	okta.logs.read
Update connected applications	Read-only administrator	<ul style="list-style-type: none"> <li>okta.apps.read</li> <li>okta.logs.read</li> </ul>
Reclaim subscriptions	Application administrator	okta.apps.manage

## Create an Okta application

Create an Okta application that you can integrate with the ServiceNow AI Platform.

### Before you begin

Okta Role required: Refer the [Minimal user permissions](#) table.

See [Administrator roles and permissions](#) for more details on Okta admin roles and [Scopes and supported endpoints](#) for more details on Okta OAuth scopes.

### Procedure

1. From a web browser, log in to the [Okta administrator console](#).
2. Create an Okta application with OAuth 2.0 functionality.

See [Create an OAuth 2.0 app for Okta](#) for detailed instructions.

Keep the following points in mind when you're creating your Okta application:

- In the **Login redirect URI** and **Logout redirect URI** fields, enter `https://<instance-name>.service-now.com/oauth_redirect.do`, where *<instance-name>* is the name of your ServiceNow instance.
- Copy the values in the **Client ID** and **Client Secret** fields. Save them in a secure location for later use.
- Grant the following scopes to your Okta OAuth 2.0 application:

- okta.groups.read
  - okta.apps.read
  - okta.users.read
  - okta.logs.read
  - okta.apps.manage
- Select the **Refresh Token** check box under the **Client acting on behalf of a user** Grant type on the Okta portal.

**Note:** Verify that the refresh token works for your Okta OAuth 2.0 application by reviewing the scopes configured in your ServiceNow instance. For more detailed guidance on configuring scopes and troubleshooting refresh token issues, see the knowledge base article [KB2500208](#).

### Create an Okta integration profile

Create an Okta integration profile in your ServiceNow instance.

#### Before you begin

To create an Okta integration profile, request the Software Asset Management - SaaS License Management plugin (sn\_sam\_saas\_int) from the [ServiceNow Store](#).

ServiceNow Role required: sam\_integrator or admin

#### About this task

**Note:** Starting with version 7.0.0 of Software Asset Management - SaaS License Management and version 4.1.2 of the Okta spoke, your ServiceNow instance creates a separate Okta connection for each Okta integration profile that you create. Each connection runs independently of each other, which enables your instance to support multiple independent Okta integration profiles.

If you're using Software Asset Workspace, the option to create the Okta integration profile in Core UI is inactive.

#### Procedure

1. Navigate to the integration profile.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Software Asset &gt; SaaS License &gt; SSO Integration Profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Okta Integration Profile</b>.</li> </ol>
Software Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>License operations &gt; User Subscriptions &gt; SSO integration profiles</b>.</li> <li>b. Select <b>New</b>.</li> <li>c. Select <b>Okta</b> from the drop-down list.</li> <li>d. Select <b>Continue</b>.</li> </ol>

2. On the form, fill in the fields.

### SSO Integration Profile form

Field	Description
Display name	Name of the integration profile. For example, Okta Integration.
Status	<p>Status of the integration profile.</p> <ul style="list-style-type: none"> <li>○ If you haven't published the integration profile, this field is automatically set to <b>Draft</b>.</li> <li>○ If you've already published the integration profile, this field is automatically set to <b>Published</b>.</li> </ul>
Directory integration	<p>A reference to the directory integration profile, which is used to pull the active directory users, groups, and group memberships of an organization.</p> <ul style="list-style-type: none"> <li>○ If a directory integration record for Okta exists, you can select the existing record.</li> <li>○ If a directory integration record for Okta doesn't exist, a new record is created when you save or submit this form.</li> </ul>
Profile type	<p>Type of the integration profile.</p> <p>This field is automatically set to <b>Okta</b>.</p>
Connection & Credential	<p>Reference to the connection and credential alias that is used in the directory and SSO integration.</p> <ul style="list-style-type: none"> <li>○ If a directory integration record exists and you select it in the directory integration field, this field is automatically set to the connection and credential alias of the directory integration record.</li> <li>○ If a directory integration value doesn't exist, this field is automatically populated.</li> </ul>
Create Okta subscriptions	<p>Option for creating a direct integration profile to view Okta subscriptions after this integration profile is published.</p> <p>Default value: False</p>

3. Select **Submit**.

4. Open the Create Connection and Credential dialog box.

Interface	Action
<b>Core UI</b>	Select the <b>Create New Connection &amp; Credential</b> related link on the SSO integration profile form.
<b>Software Asset Workspace</b>	<ol style="list-style-type: none"> <li>Selecting the preview icon (i) next to the <b>Connection &amp; Credential</b> field</li> <li>Select <b>Open Record</b> in the record preview.</li> <li>On the Connection &amp; Credential Aliases form, select the <b>Create New Connection &amp; Credential</b> related link.</li> </ol>

5. In the dialog box, fill in the fields.

**Create Connection and Credential dialog box**

Field	Description
Name	Name of the connection. For example, Okta Connection.
Connection URL	URL for the connection. Enter <code>https://&lt;yourOktaDomain&gt;.com</code> , where <code>&lt;yourOktaDomain&gt;</code> is your organization domain.
Authorization URL	URL of the OAuth authorization endpoint. Enter <code>https://&lt;yourOktaDomain&gt;.com/oauth2/v1/authorize</code> , where <code>&lt;yourOktaDomain&gt;</code> is your organization domain.
Token URL	URL of the OAuth endpoint that retrieves and refreshes access tokens. Enter <code>https://&lt;yourOktaDomain&gt;.com/oauth2/v1/token</code> , where <code>&lt;yourOktaDomain&gt;</code> is your organization domain.
Token Revocation URL	URL of the OAuth endpoint that revokes access tokens. Enter <code>https://&lt;yourOktaDomain&gt;.com/oauth2/v1/revoke</code> , where <code>&lt;yourOktaDomain&gt;</code> is your organization domain.
OAuth Client ID	Client ID that is assigned to your Okta application.
OAuth Client Secret	Client secret that is assigned to your Okta application.
OAuth Redirect URL	URL of the OAuth provider that users are redirected to after authentication. This field is automatically set to <code>https://&lt;instance-name&gt;.service-now.com/oauth_redirect.do</code> , where <code>&lt;instance-name&gt;</code> is the name of your ServiceNow instance.

6. Select **Create and Get OAuth Token**.

**Note:** You must sign in using the same credentials as the user with the required role. For the role required to perform this step, refer to the [Minimal user permissions](#) table.

7. Select **Publish**.

**Result**

Both scheduled jobs and directory jobs download a list of all applications, users, groups, and software subscriptions that are associated with your Okta application. View the status of your job in the **Scheduled Jobs Results** and **Directory Job Results** tabs of your integration profile. Software Asset Management automatically creates software models for applications with an external catalog ID that matches an **Identifier** in the Subscription Product Definitions [samp\_sw\_subscription\_product-definition] table.

**What to do next**

If you've selected the **Create Okta subscriptions** check box and this integration profile is published, a direct integration profile for Okta gets created. You can navigate to the direct integration profile by selecting the **Direct integration profile** link in the information message.

After you've navigated to the direct integration profile, you can view Okta subscriptions by selecting the **Software Subscriptions** tab. For more information, see [Okta SSO direct integration profile](#).

**Warning:**

When your OAuth token expires, your Okta integration profile displays an error message indicating that you must get a new OAuth token. Select the link in the error message to get the new OAuth token.

Don't delete the OAuth 2.0 credential record that is associated with the connection record for your Okta integration profile. If you delete the OAuth 2.0 credential record, you won't be able to get a new OAuth token after your current OAuth token expires.

After you publish the integration profile and connect applications to the profile, you can view events performed by individual users up to 60 days prior to the current date. For more information, see [Review a software reclamation rule](#).

**Okta SSO direct integration profile**

Okta SSO direct integration profile helps you manage Okta user licenses by creating subscriptions for Okta users while setting up an Okta SSO integration.

**OKTA SSO Direct Integration Profile**

Field	Description
Display name	Name of the integration profile.
Status	Status of the integration profile. This field is automatically set to <b>Published</b> .
Profile type	Type of integration profile. This field is automatically set to <b>Okta Subscription</b> .
Download Subscription Subflow	
Subflow	This field is automatically set to <b>Okta Download Subscriptions</b> .

**Connect SSO applications**

Connect an SSO application to monitor all the users and groups who have access to that application. You can also track user login data and reclaim unused licenses.

**Before you begin**

ServiceNow Role required: sam\_integrator or admin

**About this task**

ServiceNow<sup>®</sup> SaaS License Management offers direct integrations with some applications. Direct integrations provide the most comprehensive usage data. For a list of available direct integrations, see [Integrate with SaaS applications](#).

If you have already created a direct integration for an application, then connecting the same application in an SSO integration creates duplicate subscription records in your ServiceNow instance. You should only use the direct integration. If you connect an application in an SSO integration, but you later want to create a direct integration for that application, then disconnect the application before creating the direct integration.

## Procedure

1. Navigate to **All > SaaS License > SSO Applications**.

2. Select the application that you want to connect.

3. If the **Software model** field is empty, add a software model for the application.

Before you can connect an application, it must be associated with a software model.


ServiceNow® Software Asset Management automatically creates software models for applications with an external catalog ID that matches an **Identifier** in the Subscription Product Definitions [samp\_sw\_subscription\_product\_definition] table. For all other applications, you can create a software model manually. For detailed instructions, see [Create software models in Software Asset Management classic](#).

4. Select the date that you want to analyze the last activity from in the **Analyze last activity from** field.

You can start analyzing login data for individual users and applications from the current date or from up to 60 days prior. The default value is 30 days. If you select a date prior to the current date, it may take longer for results to appear due to the amount of data that you want to analyze.

After you submit a value in the **Analyze last activity from** field, the field becomes read-only.

5. Select **Connect**.

 **Tip:** To connect multiple applications simultaneously, select the check box for each application that you want to connect in the SSO Applications list. Select the Actions on the selected row menu and then select **Connect**. If any applications aren't associated with a software model, the name of the **Connect** menu item is updated to indicate that only some of the applications will be connected. For example, a **Connect (1 of 4)** menu item indicates that only 1 of the four apps that you selected will be connected. Add software models to the remaining applications to proceed with the connections.

## What to do next

After the SSO application connects, your ServiceNow instance automatically creates users, groups, subscriptions, and reclamation rules that are refreshed daily. If you delete a user, application, group, or group membership from the Okta Developer Console, the changes are reflected on your ServiceNow instance.

Review all automatically generated reclamation rules to ensure that they meet your specifications for reclaiming user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track used software against owned software. For more information on creating software entitlements in the Software Asset Management classic application, see [Create entitlements in Software Asset Management classic](#). For more information on creating software entitlements in the Software Asset Workspace, see [Create entitlements in workspace](#). For more information on creating software entitlements using the Software Asset Management Playbook, see [Create entitlements using the guided walk-through](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance. For more information on running reconciliation in the Software Asset Management classic application, see [Run software reconciliation](#). For more information on running reconciliation in the Software Asset Workspace, see [Run software reconciliation in the workspace](#).

## Create a child alias to set up multiple integration profiles

Create a child alias to set up multiple integration profiles with unique connections and manage different configurations for each integration profile.

### Before you begin

Role required: admin or sam\_integrator

### Procedure

**1.** Create an integration profile.


For more information about creating an integration profile, see [Integrate with SaaS applications](#).

**2.** Open the connection & credential record set on the integration profile.

If the **Parent Alias** field on an alias is empty, then the alias is a parent. If the field is filled, then the alias is a child of the alias specified in the **Parent Alias** field.

- If the record is a parent alias, select the **Child Aliases** tab.
- If the record is a child alias, select the **Parent Alias** record and then select the **Child Aliases** tab.

**3.** Select **New**.

 **Tip:** If the **New** button isn't visible, change the scope to the respective application of the alias from the application scope.

**4.** Reload the Connection & Credential Aliases page.

**5.** On the new child alias form that opens up, provide a name of your choice for the alias.

**6.** Select **Submit**.

**7.** Open the child alias record that you created, select **Create New Connection & Credential**.


**8.** Configure the connection and credential in the same way that you have done for the parent integration.

**9.** After the connection is configured, return to the integration profile and then select the newly created child alias on the **Connection & Credential** field.

**10.** Select **Save** and publish the integration profile.

## Viewing your SaaS and SSO subscriptions

View a list of all subscriptions for your SaaS and Single Sign-On (SSO) applications.

 **Important:** You can view your SaaS and SSO subscriptions in both the Software Asset Management Core UI and the Software Asset Workspace. This topic provides details on viewing your subscriptions in the Software Asset Management Core UI application. For more information on viewing your subscriptions in the Software Asset Workspace, see [SaaS overview dashboard in workspace](#).

To view subscriptions for all SaaS and SSO applications, navigate to **All > SaaS License > All User Subscriptions**.

### Software Subscriptions list

Column	Description
Display name	The software publisher and product for the subscription.

### Software Subscriptions list (continued)

Column	Description
User principle name	The user's email address for the subscription.
Software Model	The software model for the subscription.
Subscription profile	The direct integration profile for the subscription. This field is empty if the subscription is from an SSO integration.
Subscription type	Classifies the subscription as a software subscription or an SSO subscription.

**Note:** You can add the **Subscription assigned** column to view the date a user was given access to an app. For SSO subscriptions, this field is empty if the user has access to the app through a group membership.

You can also view all subscriptions for an application in the Software Subscriptions related list on the software model.

### Viewing SSO subscription information

You can view information about the Single Sign-On (SSO) applications, SSO users, and SSO groups that are associated with your SSO integrations.

**Important:** You can view information about your SSO applications, users, and groups in both the Software Asset Management Core UI and Software Asset Workspace. The following sections provide details on viewing this information in the Software Asset Management classic application. For details on viewing this information in the Software Asset Workspace, see [License operations view](#).

### Viewing SSO integration information

To view the applications, users, and groups for an SSO integration, navigate to **All > SaaS License > Administration > SSO Integration Profiles** and then select a profile. The related lists provide information about the integration.

#### SSO Integration Profile related lists

List	Description
SSO Applications	All SSO applications.
Directory Users	All SSO users.
Directory Groups	All SSO groups.
Scheduled Jobs	<p><i>SAM - SSO &lt;sso-provider&gt; download applications</i> scheduled job that downloads all SSO apps. The job runs when the SSO integration profile is published, and then runs daily.</p> <p>The <i>SAM - SSO &lt;sso-provider&gt; update connected applications</i> scheduled job downloads users, groups, and</p>

### SSO Integration Profile related lists (continued)

List	Description
	subscriptions for SSO apps. The job runs daily and whenever an app is connected.
Scheduled Job Results	Status of the scheduled jobs.
Directory Jobs	<p>The <i>&lt;ssoprovider&gt; - Download Group Membership</i> directory job that downloads group memberships for all users. The job runs when the SSO integration profile is published, and then runs daily.</p> <p>The <i>&lt;ssoprovider&gt; - Download Users</i> directory job downloads all users. The job runs when the SSO integration profile is published, and then runs daily.</p> <p>The <i>&lt;ssoprovider&gt; - Download Groups</i> directory job downloads all groups for all users. The job runs when the SSO integration profile is published, and then runs daily.</p> <p><b>Note:</b> On upgrading to Microsoft Entra ID spoke 4.3 version, the <i>Microsoft Azure AD - Download Group Membership</i> directory job won't be executed for existing Microsoft Azure AD SSO or Directory integrations. This directory job also won't be created for new Microsoft Azure AD SSO or Directory integrations. Instead, the <i>Microsoft Azure AD - Download Groups</i> directory job downloads all groups and group memberships configured on Microsoft Azure AD.</p>
Directory Job Results	Status of the directory jobs.

### Viewing SSO application information

To view the users, groups, and reclamation candidates for an application, navigate to **All > SaaS License > SSO Applications** and select an application. The related lists show information for the application. For viewing the SSO application information in Software Asset Workspace, see [View SSO applications in workspace](#).

#### SSO Applications

List	Description
SSO Application Users	All users that have direct access to the application, but not through membership in a group.

### SSO Applications (continued)

List	Description
SSO Application Groups	All groups that have access to the application.
SSO Subscriptions	<p>Total number of subscriptions for the application. A user may have both direct access to an app and have access through a group. But the user's access counts as only one subscription so as only one record in the SSO Subscriptions list.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Add the <b>SSO application role</b> column to see how the user is granted access to the application. If the value is a group, then the user has access through membership in that group. If the value is the user's name, then the user has direct access to the application. User subscriptions can't be reclaimed in Software Asset Management if the user has access to the application through a group membership. To reclaim the subscription, remove the user from the group in the Azure AD portal and set the reclamation candidate state to <b>Closed Complete</b>.</li> <li>• When SSO subscriptions are created through SSO application groups, the <b>Subscription assigned</b> value is empty. When the subscriptions are created through SSO Application Users, the <b>Subscription assigned</b> value shows the date of when the subscription is assigned to the user. After you upgrade to the Software Asset Management - SaaS License Management 13.1.0 version or later, the existing <b>Subscription assigned</b> values for the subscriptions that were created through SSO application groups turns empty.</li> </ul>
Reclamation Candidates	Subscriptions that don't meet the usage requirements that are defined by the reclamation rule for the application.

### Data synchronization with SSO providers

If you delete a user, group, or app in the Azure AD portal or in the Okta Developer Console, then the corresponding records in Software Asset Management are deleted when the daily scheduled jobs run. If you revoke a user's access to an application in the Azure AD portal or in

the Okta Developer Console, either directly or indirectly by removing them from a group, then the corresponding user subscription record is deleted when the daily scheduled jobs run.


## SaaS License Connections


Creating a custom integration helps you connect the Software Asset Management application with a SaaS application that doesn't have an existing integration in SaaS License Management.

The low-code framework uses ServiceNow® Integration Hub and ServiceNow® Flow Designer to connect with a SaaS provider's API endpoints. You can perform the following actions:


- Download a list of all users, view meaningful usage data, and optimize your SaaS spend by reclaiming unused subscriptions.
- Manage your custom SaaS connections along with the base system SaaS connections using Software Asset Management software models and reporting.


## Custom integrations

Install Integration Hub Starter, Standard, Professional, or Enterprise to create a custom integration. For more information about Integration Hub, see [Request IntegrationHub](#) .

There's no charge to install Integration Hub plugins on a non-production instance. You can build a custom integration on a non-production instance that has Integration Hub installed, then bring it into your production environment using an update set. For more information about update sets, see [System update sets](#) . This way, you can validate your custom integrations before putting them in production and you're not charged for an Integration Hub subscription.

**i Important:** You can create custom integrations for subscription-based models using User Subscription as the license metric, and for consumption-based models using SaaS Consumption as the license metric.

Some SaaS applications have existing Integration Hub spokes that you can use to create your custom integration. If there's an existing spoke for the SaaS application that you're integrating with, skip the step to create a custom spoke. If you use an existing spoke, you can use some of its data stream actions. Find out what actions are included with the spoke before creating your own actions. For a list of applications that have Integration Hub spokes, see [IntegrationHub available spokes](#) .

Building a custom integration with SaaS License Connections requires you to track many different values. Use the [SaaS License Connections Worksheet](#)  while researching the SaaS API and building your data stream actions to make sure that you have all the information you need.


### Create a custom spoke


To set up a custom integration in SaaS License Management, create a spoke to connect with a SaaS application.

### Before you begin

Role required: admin


### About this task

If there's already a spoke for the SaaS application that you're integrating with, you can use the existing spoke instead of creating one. For a list of applications that have ServiceNow® Integration Hub spokes, see [IntegrationHub available spokes](#) .

Use ServiceNow® Studio to create a spoke. For more information about Studio, see [ServiceNow Studio](#) .

## Procedure

1. Navigate to **All > System Applications > Studio**.
2. Click **Create Application**.
3. Give your app a name that includes the name of the SaaS application that you're integrating with and a description.  
Keep the auto-filled value for the **Scope** field.
4. Click **Create**.
5. Add the roles `admin`, `sam_developer`, and `delegated_developer`, then click **Continue**.
6. Select the Classic format, then click **Continue**.
7. Click **Done with tables**.
8. To close the session and create your app, click **X**.

 **Tip:** You may have to refresh the page to see your new spoke app in the list of apps.

## What to do next

As you continue building your custom integration, use the spoke to save the following items.

- Connection & Credential alias
- Data stream actions to get users and user activity
- Action to reclaim a user

If you are publishing your custom spoke application on the ServiceNow Store, also use the spoke to save your subflows.

## Create a custom integration profile

Create a custom integration profile to track software subscriptions and optimize stale licenses for any SaaS application.

## Before you begin

Before you create a custom integration profile in your ServiceNow instance, set up a method of authentication in the SaaS application admin or developer account. For example, create an OAuth application or an API token.

- If you create an OAuth application, confirm that you enable the appropriate scopes. The app needs scopes to read users, read user activity, and to modify or delete users. These scopes enable the integration to get a list of users, get user activity, and reclaim unused subscriptions. Record the Client ID and Client secret for the OAuth application. You input these values in your ServiceNow instance.
- If you create an API token, record the value for the API token. You input this value in your ServiceNow instance.

Role required: `sam_integrator` or `admin`

## About this task

If you're using Software Asset Workspace, the option to create the custom integration profile in the Core UI is inactive.




**Procedure**

1. Navigate to the custom integration profile.


Interface	Action
Core UI	<p>a. Navigate to <b>All &gt; SaaS License &gt; Administration &gt; Create New Profile.</b></p> <p>b. Select <b>Custom Integration Profile.</b></p>
Software Asset Workspace	<p>a. Navigate to <b>License operations &gt; User Subscriptions &gt; Direct integration profiles &gt; .</b></p> <p>b. Select <b>New.</b></p> <p>c. Select <b>Custom</b> from the drop-down list.</p> <p>d. Select <b>Continue.</b></p>

2. On the form, fill in the fields.

**Custom Integration Profile form**

Field	Value
Display name	<p>Name of the custom integration profile.</p> <p>For example, the name of the SaaS application that you're integrating with.</p>
Connection & Credential	<p>a. Select the lookup icon (🔍).</p> <p>b. Select <b>New.</b></p> <p>c. On the Connection and Credential Aliases form, fill in the fields:</p> <ul style="list-style-type: none"> <li>▪ Name: Name of your choice. For example, <i>app_alias</i>, where <i>app</i> is the name of the SaaS application that you're integrating with.</li> <li>▪ Application: Spoke for connecting with the SaaS application. This spoke can be an existing Integration Hub spoke or a new spoke that you created. You can change the application in the Developer section of the System Settings .</li> <li>▪ Type: <b>Connection and Credential.</b></li> <li>▪ Connection Type: <b>HTTP.</b></li> <li>▪ Support Multiple Active Connections: Not selected.</li> <li>▪ Default Retry Policy: <b>Default HTTP Retry Policy.</b></li> <li>▪ Configuration Template: If you're using the OAuth authorization code grant type, <b>OAuth Authorization Code</b>. If you're using an API token, <b>Basic Auth with API Key</b>. If you're using another authentication method, create a configuration template. For more information, see <a href="#">Create a configuration template</a>  and <a href="#">Configure a template for OAuth JWT Bearer grant type</a> .</li> </ul> <p>d. Select <b>Submit.</b></p>
Status	Status of the integration profile. The options are <b>Draft</b> and <b>Published</b> . This value is automatically populated.
Profile type	Custom Integration. This value is automatically populated.

3. Select **Save**.

4. Open the Connection & Credential alias record by selecting the preview icon (  ) and then selecting **Open Record**.

5. Select the **Create New Connection & Credential** related link.

- If you're using the OAuth Authorization Code configuration template, fill in the fields.

**Create Connection and Credential form**

Field	Value
Connection URL	Base URL for the API.
Authorization URL	OAuth authorization code endpoint.
Token URL	OAuth endpoint to retrieve and refresh access tokens.
Token Revocation URL	OAuth endpoint to revoke access tokens.
OAuth Redirect URL	<code>https://instance.service-now.com/oauth_redirect.do</code> , where <i>instance</i> is the name of your ServiceNow instance.
Refresh Token Lifespan	<b>8640000</b> .
OAuth Client ID	Client ID that you created in the SaaS application admin or developer account.
OAuth Client Secret	Client secret that you created in the SaaS application admin or developer account.
OAuth Scopes	Scopes that you enabled for your OAuth application in the SaaS application admin or developer account.


- If you're using the Basic Auth with API Key configuration template, fill in the fields.

**Create Connection and Credential form**

Field	Value
Connection URL	URL for your SaaS account.
User Name	Email address of the admin user that created the API token in the SaaS application admin or developer account.
API Key	API token created in the SaaS application admin or developer account.

- If you're using a different method of authentication, the available fields are determined by the configuration template that you created.

6. Select **Create** and grant access for the integration.

 **Tip:** Log in to your SaaS application admin account in a new browser tab to verify that the integration connects to the correct account.

- If the connection is successful, a connection record is created in the Connections related list on the Connection & Credential Alias record.
- If the connection fails, you must delete the connection record, credential record, and application registry record that were created during the attempted connection.
  - a. To delete the connection record, navigate to **Connections & Credentials > Connections** and delete the record for the SaaS application.
  - b. To delete the credential record, navigate to **Connections & Credentials > Credentials** and delete the record for the SaaS application.
  - c. To delete the application registry record, navigate to **System OAuth > Application Registry** and delete the record for the SaaS application.
  - d. Return to the Connection & Credential Alias record for the SaaS application and select the **Create New Connection & Credential** related link to reattempt the connection.

**What to do next**

Create a data stream action to get users and view SaaS related analytics on [SaaS overview dashboard](#).

Reconciliation also runs on your subscriptions as a scheduled job or on-demand. You can view your reconciliation results in the [License Workbench](#) (Software Asset Management classic application) or the [License usage view](#) (Software Asset Workspace). Use these results to determine your license compliance position and to remediate any non-compliance.

**Create a data stream action to get users**

Create a data stream action to get a list of user subscriptions from the SaaS application.

**Before you begin**

If you're using an existing ServiceNow® Integration Hub spoke, find out if it has a data stream action to get a list of users that you can use instead of creating one.

For more information about data stream actions, see [Data Stream actions](#).

Role required: flow\_designer or admin

**Procedure**

1. Navigate to **All > Flow Designer > Designer**.
2. Click **New** and then select **Data Stream**.
3. On the form, fill in the fields.

**Action Properties form**

Field	Value
Name	Name of your choice. For example, <b>Get Users</b> .
Accessible From	<b>All application scopes</b> .
Category	Leave this field empty.
Protection	<b>None</b> .
Application	Spoke app to integrate with the SaaS application. This spoke app can be an existing Integration Hub spoke or a new spoke that you created.

Field	Value
In-Flow Annotation	Leave this field empty.
Description	Description of your choice.

4. Click **Submit**.

5. If the API that you're working with requires user authentication for requests, click **Inputs** in the Action Outline and add inputs for authentication. Examples of common user authentication inputs are admin user id and site name. See the documentation for your chosen API to learn about the requirements for user authentication in your specific case. If the API requires an access token, a *Credential Value* variable is automatically created later. You don't need to add an access token as an input.

When you use your completed data stream action in a subflow, you define what values to pass as these inputs.

6. Click **Request** in the Action Outline.

7. On the form, fill in the fields.

**Request form**

Field	Value
How will you get data	Choose either <b>REST Step</b> or <b>SOAP step</b> . Your choice depends on the API for the SaaS application that you're integrating with.
Enable pagination	Selected.
Run a script before each request	Not selected.

8. Click **Pagination Setup step** in the Action Outline.

9. Define pagination variables based on the query parameters used by the SaaS API.

If you're using offset-based pagination, use the Limit / Offset pagination template to preload the pagination configuration.

**Note:** The value of the reserved `getNextPage` variable determines whether to request another page of results. As long as the `getNextPage` variable is **true**, the action continues to send requests for the next page.

10. Write a **Pagination Variables Script** to update the pagination variables.

The script runs on each request. If you're using a pagination template, adjust the preloaded script as needed.

The following image shows a completed example of the pagination setup step. This example is from the **Get Users** data stream action used in the **Webex Download Subscriptions** subflow.

Pagination Variables

Name	Initial Value	Next Value From	
getNextPage	false	Script	
startFrom	1	Script	
pageSize	10	Script	
total	20	Response Body	

Extract value using  Expression

Pagination Variables Script

```

1 (function paginate(variables, pageResponse) {
2     //Change the limit above to configure results per page.
3
4
5     var startFrom = parseInt(variables.startFrom);
6     var pageSize = parseInt(variables.pageSize);
7
8     variables.startFrom = startFrom + pageSize;
9     variables.startFrom = variables.startFrom.toString();
10
11     variables.getNextPage = (parseInt(variables.startFrom) <= parseInt(variables.total));
12 })(variables, pageResponse);
    
```

**Note:** Pagination variables only support the string data type. To perform math operations, you must convert the value to an integer, perform any required operations, then convert it back to a string.

- Click **SOAP step** or **REST step** in the Action Outline depending on the option that you selected for how you will get data.
- If you selected **SOAP step**, fill in the form as shown.

**SOAP step form**

Field	Value
Connection Details	
Connection	<b>Use Connection Alias.</b>
Connection Alias	Connection alias that you created when you created the integration profile. If you have not yet created an integration profile, follow the steps to <a href="#">create a custom integration profile with a connection alias</a> .
Endpoint	This value is automatically populated when you select the connection alias. It's set to the Connection URL from the HTTP(s) Connection record linked to the alias.
Request Details	
Build Envelope	<b>Manually.</b>
SOAP Action	API request to get a list of all users. See the documentation for your chosen API to select the appropriate request.

Field	Value
SOAP Envelope	<p>XML request message to get a list of all users. See the documentation for your chosen API to learn how to write an XML request message. In general, the header should have your input variables for user authentication as well as the <i>Credential Value</i> variable as the access token. The body should include the request to get a list of all users and your variables from the pagination setup step.</p> <p><b>Note:</b> For an example of a SOAP envelope, see the Get Users data stream action used in the Webex Download Subscriptions subflow.</p>

13. If you selected **REST step**, fill in the form as shown.

**REST step form**

Field	Value
Connection Details	
Connection	<b>Use Connection Alias.</b>
Connection Alias	Connection alias that you created when you created the integration profile. If you have not yet created an integration profile, follow the steps to <a href="#">create a custom integration profile with a connection alias</a> .
Base URL	This value is automatically populated when you select the connection alias. It's set to the Connection URL from the HTTP(s) Connection record linked to the alias.
Request Details	
Build Request	<b>Manually.</b>
Resource Path	Path to the resource. This value gets appended to the Base URL. See the documentation for the API that you're working with to learn how to construct the resource path.
HTTP Method	<b>GET.</b>
Query Parameters	Add parameters for pagination. Set the values as the variables that you created in the pagination setup step.

The following image shows a completed example of the REST step. This example is from the Get Jira Users data stream action used in the Jira Download Subscriptions subflow.

REST step REST {REST}

---

Connection Details ▼

Connection Use Connection Alias ▼

Connection Alias sn\_jira\_spoke.Jira ▼ + ⓘ f(x) ↻

Base URL https://(your-jira-host-url-here)

---

Request Details ▼

Build Request Manually ▼

Resource Path /rest/api/2/user/search ⓘ ↻

HTTP Method GET ▼

Query Parameters

Name	Value
startAt	step>Pagination Setup step>startAt x ⓘ ↻
maxResults	step>Pagination Setup step>maxResults x ⓘ ↻

14. Click **Parsing** in the Action Outline.

15. On the form, fill in the fields.

**Parsing form**

Field	Value
How will you identify each record	<b>JSON/XML Splitter</b>
How will you parse each item into an object	<b>Script Parser</b>

16. Click **Splitter step** in the Action Outline.

17. On the form, fill in the fields.

**Splitter step**

Field	Value
Source Format	Select <b>XML</b> or <b>JSON</b> , depending on the format returned by the API response.
Item Path	Absolute path to a user element in the response message. See the documentation for the API that you're working with for information about the format of the response message. <ul style="list-style-type: none"> <li>○ Example XML item path: /message/body/user</li> <li>○ Example JSON item path: \$.data.user</li> </ul>

18. Click **Outputs** in the Action Outline.

19. Click **Create Output** and edit the variable as shown.

**Action Output**

Label	Name	Type	Mandatory
targetObject	targetObject	Object	No

20. Add child items for *targetObject* based on the user child elements returned in the response message.

For example, an XML response might look like this.

```
<message>
  <body>
    <user>
      <userID>12345</userID>
      <email>email@email.com</email>
      <firstName>Jane</firstName>
      <lastName>Doe</lastName>
      <lastLoginTime>08/13/2019 20:08:16</lastLoginTime>
      <active>TRUE</active>
    </user>
    <user>
      ...
    </user>
  </body>
</message>
```

For this response, add the child items as shown.

**Child items for targetObject**

Label	Name	Type	Mandatory
userID	userID	String	No
email	email	String	No
firstName	firstName	String	No
lastName	lastName	String	No
lastLoginTime	lastLoginTime	String	No
active	active	True/False	No

21. Click **Script Parser step** in the Action Outline.

22. Create a *targetObject* output object for each user element in the response and then map each user child element to a *targetObject* child item.

The parser script is executed for each user element.

**Note:** These examples show the types of elements that are generally contained in a response to a get users request. Do not directly copy these scripts. Use element names from the documentation for the API that you're working with.

Example script that parses an XML response.

```
(function parse(inputs, outputs) {
  var xmlDoc = new XMLDocument(inputs.sourceItem, false);
  outputs.targetObject.userID =
xmlDoc.getNodeText('/user/userID');
  outputs.targetObject.email =
xmlDoc.getNodeText('/user/email');
  outputs.targetObject.firstName =
xmlDoc.getNodeText('/user/firstName');
  outputs.targetObject.lastName =
xmlDoc.getNodeText('/user/lastName');
```

```

    outputs.targetObject.lastLoginTime =
xmlDoc.getNodeText('/user/lastLoginTime');
    outputs.targetObject.active =
xmlDoc.getNodeText('/user/active');
})(inputs, outputs)

```

Example script that parses a JSON response.

```

(function parse(inputs, outputs) {
    var record = JSON.parse(inputs.sourceItem);
    outputs.targetObject.userID = record.userID;
    outputs.targetObject.email = record.email;
    outputs.targetObject.firstName = record.firstName;
    outputs.targetObject.lastName = record.lastName;
    outputs.targetObject.lastLoginTime = record.lastLoginTime;
    outputs.targetObject.active = record.active;
})(inputs, outputs)

```

**23.** To test your data stream action, click **Test**.

- a. View the test results and system logs for details about any errors.  
To view system logs, navigate to **System Logs > System Log > All**.
- b. If your data stream action has errors, make sure that you're using the correct endpoints and that the API requests and responses are structured as expected.

**24.** After verifying that the data stream action is working as expected, click **Publish**.

**Create a subflow to get users**

Create a subflow to add a list of users to the Software Subscription table.

**Before you begin**

This subflow requires a data stream action to get users. For more information, see [Create a data stream action to get users](#).

Role required: flow\_designer or admin

**About this task**

**Note:** For examples of subflows to get users, see the Jira Download Subscriptions and Webex Download Subscriptions subflows.

**Procedure**

1. Navigate to **All > Flow Designer > Designer**.
2. Select **New** and then select **Subflow**.
3. On the form, fill in the fields.

**Subflow Properties form**

Field	Value
Name	Name of your choice.  For example, <b>Application</b> Download Subscriptions, where <b>Application</b> is the name of the SaaS application that you're integrating with.

Field	Value
Application	Software Asset Management - SaaS License Management
Accessible From	Select <b>All application scopes</b> .
Category	Leave this field empty.
Protection	Select <b>None</b> .
In-Flow Annotation	Leave this field empty.
Description	Description of your choice.
Run As	User who initiates session.

4. Select **Submit**.

5. Add an integration profile input.

**Inputs**

Label	Name	Type	Required
Integration profile	integration_profile	Reference.Integration Profile	Yes

6. In the Actions section, select the plus icon and then select **Action** to add a new action.

7. Select the spoke for the SaaS application that you want to integrate with from the list of installed spokes.

**Note:** To add additional spokes to your list of installed spokes, request them on the [ServiceNow Store](#). For a complete list of available spokes, see [IntegrationHub available spokes](#). If there's no existing spoke for the SaaS application that you want to integrate with, you can [create a new spoke](#).

8. Select a data stream action to get users.

9. Define the values to pass for any user authentication inputs for the data stream action.

The data stream action might return users that you don't want to include in your list of user subscriptions. If you perform filtering to exclude some users, add an If flow logic as a child of the get users data stream action.

The amount of filtering required, if any, depends on the application you're integrating with. For example, if the user targetObject has an *active* property, you could add a condition to check that the value is **true** to confirm that the subflow doesn't download deactivated users. An example of filtering used by the Jira Download Subscriptions subflow is that the account type can't be **app** to help prevent the subflow from returning accounts that aren't actual users.

Add conditions to the If flow logic for any required filtering.

- If you're using an If flow logic to filter users, add the *Upsert user subscription using subscription identifier* action from the Software Asset Management spoke as a child of the flow logic.
- If you're not filtering users, add the *Upsert user subscription using subscription identifier* action as a child of the get users data stream action.

This action adds the SaaS application user subscription to the Software Subscription table [samp\_sw\_subscription]. If the subscription is already in the table, the action updates the subscription record.

**10.** Fill in the inputs that are applicable to your integration.

Use values from the data panel to fill in the action inputs. Your ask to the SaaS API might not return data for all the inputs.

**Upsert User Subscription action**


Field	Value
External user id	User id or account id from the user targetObject.  This is generally a numeric, non human-readable value. This value must be unique.
User principal name	Email address from the user targetObject.  If an email address isn't available, use another value such as user name plus user id. This value should be human readable.
Integration profile	Integration profile input that you created for the subflow.
Last Activity	Date of most recent activity from the user targetObject. For example, the last login time.
External created	Account creation date from the user targetObject.  This value helps create better reclamation candidates. A new user might not have any activity yet. If the record shows that the user account was created, a reclamation candidate isn't created for that user because it's a new account rather than an unused account.
Identifier	A unique identifier to identify the integration.  Software models are automatically created for subscription with an identifier that matches an identifier in the Subscription Product Definitions [samp_sw_subscription_product_definition] table.  If an identifier doesn't exist, configure an identifier. For more information, see <a href="#">Configure an identifier</a> .
Additional attributes	This is used to update any other field on the Software Subscriptions [samp_sw_subscription] table that's not mentioned earlier.

**11.** To test your subflow, select **Test**.

- a.** View the test results and system logs for details about any errors.  
To view system logs, navigate to **System Logs > System Log > All**.

**i Note:** The data stream action to get users should retrieve multiple pages of users successfully. Don't write to the Software Subscriptions [samp\_sw\_subscription] table until you verify that the data stream action retrieves all users. To verify, you can make a subflow that consumes the data stream and log the results.

12. After verifying that the subflow is working as expected, select **Publish**.

 **Tip:** You can still edit the subflow after it's published.

**Configure an identifier**

Configure an identifier if it doesn't exist to identify an integration.

**Before you begin**

Role required: sam\_admin

**Procedure**

1. Create a custom product when your product doesn't exist in the Software Product [samp\_sw\_product] table.

a. Select **New**.

b. On the form, fill in the fields.

Field	Description
Publisher	Publisher of the custom product.
Product	Name of the custom product.
Product type	Product type of the custom software product.
Product classification	Official UNSPSC classification.
Subscription software	Option indicating that your product is a subscription-based product.
Ignore installs	Option indicating that the product type is licensable.  This check box is displayed only if you select Product type as Licensable and Subscription software is set to true.
Exclude from content service	Option that indicates that the product will be excluded from the content service.  You must not select this check box.
Active	Option indicating that this product is used or not.

c. Select **Submit**.

2. Create a custom discovery map by creating a custom entitlement definition from the Discovery maps [samp\_custom\_sw\_entitlement\_definition] table.

a. Select **New**.

b. On the form, fill in the fields.

Field	Description
Product	Current software product name. Custom product that you created in <a href="#">step 1</a> .
Version condition	Condition qualifier for the Version field: <ul style="list-style-type: none"> <li>▪ starts with</li> <li>▪ is</li> <li>▪ is anything</li> </ul> Default is <b>is anything</b> .
Version	Version of the software product.  Required if version condition value is starts with or is.
Edition condition	Condition qualifier for the Edition field: <ul style="list-style-type: none"> <li>▪ starts with</li> <li>▪ is</li> <li>▪ is anything</li> </ul> Default is <b>is anything</b> .
Edition	Platform of the software product to use when searching for the normalized discovery model.
Platform	Platform of the software product to use when searching for the normalized discovery model.
Language	Language of the software product to use when searching for the normalized discovery model, which is populated once it has been normalized or added manually.

c. Select **Submit**.

3. Create a custom subscription product definition by creating a custom entitlement definition from the Custom Subscription Product Definitions [samp\_sw\_custom\_subscription\_product\_definition] table.

a. Select **New**.

b. On the form, fill in the fields.

Field	Description
Identifier	Subscription identifier that is related with the custom product.

Field	Description
Subscription integration	List of SaaS and SSO providers that is mapped to subscription products in the Subscription Product Definition [samp_sw_subscription_product_definition] table.  For this scenario, select Custom Integration.
Entitlement definition	Custom discovery map that you created in <a href="#">step 2</a> .
Active	Checkbox indicating the identifier is used or not.

**c. Select Submit.**

**Create a data stream action to get user activity**

Create a data stream action to get user activity from a SaaS application.

**Before you begin**

If you're using an existing ServiceNow® Integration Hub spoke, find out if it has a data stream action to get user activity that you can use instead of creating one.

For more information about data stream actions, see [Data Stream actions](#).

Role required: flow\_designer or admin

**About this task**

Monitor user activity to find software subscriptions that your company is paying for but are not being used. You can reclaim these unused subscriptions to reduce your company's software expenses.

Before creating the data stream action, decide how you want to define meaningful user activity. Meaningful activity can be a combination of user actions. Create a separate data stream action for each user activity metric. For example, the base system Webex Meetings integration defines meaningful activity as hosting a meeting. It uses one data stream action to get the dates of the most recently hosted meetings for all users. If you also wanted the Webex Meetings integration to include logging in as meaningful activity, you would create a second data stream action to get the most recent login times for all users.

Your data stream action to get users may return a user activity metric such as last login time. In this case, you don't need to create a data stream action to get user activity or a subflow to get user activity unless you want to define additional user activity metrics. Make sure that your subflow to get users sets this user activity metric as the **Last activity** input in the **Upsert User Subscription** action.

**Procedure**

1. Navigate to **All > Flow Designer > Designer**.
2. Click **New** and then select **Data Stream**.
3. On the form, fill in the fields.

**Action Properties form**

Field	Value
Name	Name of your choice. For example, <b>Get User Activity</b> .
Accessible From	<b>All application scopes.</b>
Category	Leave this field empty.
Protection	<b>None.</b>
Application	Spoke app to integrate with the SaaS application. This spoke app can be an existing Integration Hub spoke or a new spoke that you created.
In-Flow Annotation	Leave this field empty.
Description	Description of your choice.

4. Click **Submit**.
5. In the Inputs section of the Action Outline, click **Create Input**.
6. Add a look back time input.

**Inputs**

Label	Name	Type	Mandatory
Look back time	look_back_time	Date/Time	Yes

7. If the API that you're working with requires user authentication for requests, add inputs for authentication.  
Examples of common user authentication inputs are admin user id and site name. See the documentation for your chosen API to learn about the requirements for user authentication in your specific case. If the API requires an access token, a *Credential Value* variable is automatically created later. You don't need to add an access token as an input.

When you use your completed data stream action in a subflow, you define what values to pass as these inputs.

8. Click **Request** in the Action Outline.
9. On the form, fill in the fields.

**Request form**

Field	Value
How will you get data	Choose either <b>REST Step</b> or <b>SOAP step</b> . Your choice depends on the API for the SaaS application that you're integrating with.
Enable pagination	Selected.
Run a script before each request	Not selected.

10. Click **Pagination Setup step** in the Action Outline.

**11. Define pagination variables based on the query parameters used by the SaaS API.**

If you're using offset-based pagination, use the Limit / Offset pagination template to preload the pagination configuration.

**Note:** The value of the reserved `getNextPage` variable determines whether to request another page of results. As long as the `getNextPage` variable is **true**, the action continues to send requests for the next page.

**12. Write a Pagination Variables Script to update the pagination variables.**

The script runs on each request. If you're using a pagination template, adjust the preloaded script as needed.

The following image shows a completed example of the pagination setup step. This example is from the Get Users data stream action used in the Webex Download Subscriptions subflow.

1. Pagination Setup step Pagination Setup

---

Pagination Variables

Name	Initial Value	Next Value From
getNextPage	false	Script
startFrom	1	Script
pageSize	10	Script
total	20	Response Body

Extract value using: XML  
 Expression: /message/body/bodyContent/matchingRecords/total

---

Pagination Variables Script

```

1 (function paginate(variables, pageResponse) {
2     //Change the limit above to configure results per page.
3
4
5     var startFrom = parseInt(variables.startFrom);
6     var pageSize = parseInt(variables.pageSize);
7
8     variables.startFrom = startFrom + pageSize;
9     variables.startFrom = variables.startFrom.toString();
10
11     variables.getNextPage = (parseInt(variables.startFrom) <= parseInt(variables.total));
12 })(variables, pageResponse);
    
```

**Note:** Pagination variables only support the string data type. To perform math operations, convert the value to an integer, perform any required operations, then convert it back to a string.

**13. Click SOAP step or REST step in the Action Outline depending on the option that you selected for how you will get data.**

**14. If you selected SOAP, fill in the form as shown.**

**SOAP step form**

Field	Value
Connection Details	

Field	Value
Connection	<b>Use Connection Alias.</b>
Connection Alias	Connection alias that you created when you created the integration profile. If you have not yet created an integration profile, follow the steps to <a href="#">create a custom integration profile with a connection alias</a> .
Endpoint	This value is automatically populated when you select the connection alias. It's set to the Connection URL from the HTTP(s) Connection record linked to the alias.
Request Details	
Build Envelope	<b>Manually.</b>
SOAP Action	API request to get a list of meaningful user activity. For example, the base system Webex Meetings integration defines meaningful user activity as hosting a meeting so that it uses the <code>ListSummaryMeeting</code> request to get a list of all meetings. See the documentation for your chosen API to select the appropriate request.
SOAP Envelope	XML request message to get a list of all users. See the documentation for your chosen API to learn how to write an XML request message. In general, the header should have your input variables for user authentication as well as the <i>Credential Value</i> variable as the access token. The body should include the request to get a list of meaningful user activities, a start date set as the <b>Look back time</b> input, and your variables from the pagination setup step.  <b>Note:</b> For an example of a SOAP envelope, see the Get User Activity data stream action used in the Webex Update User Activity subflow.

15. If you selected **REST**, fill in the form as shown.

**REST step form**

Field	Value
Connection Details	
Connection	<b>Use Connection Alias.</b>
Connection Alias	Connection alias that you created when you created the integration profile. If you have not yet created an integration profile, follow the steps to <a href="#">create a custom integration profile with a connection alias</a> .
Base URL	This value is automatically populated when you select the connection alias. It's set to the Connection URL from the HTTP(s) Connection record linked to the alias.
Request Details	
Build Request	<b>Manually.</b>
Resource Path	Path to the resource. This value gets appended to the Base URL. See the documentation for the API that you're working with to learn how to construct the resource path.

Field	Value
HTTP Method	<b>GET.</b>
Query Parameters	<p>Add parameters for pagination. Set the values as the variables that you created in the Pagination Setup step.</p> <p>Add another parameter for the start date so that the request returns results from the start date to the current date. Set the value as the <b>Look back time</b> input.</p> <p><b>Note:</b> Make sure the <b>Look back time</b> input date/time variable is correctly formatted for the API that you're working with. If you need to reformat or convert to another data type such as a string, you can do this in the action preprocessing script step.</p>

The following image shows a completed example of the REST step. This example is from the Get Audit Log data stream action used in the Jira Update User Activity subflow.

16. Click **Parsing** in the Action Outline.

17. On the form, fill in the fields.

### Parsing form

Field	Value
How will you identify each record	<b>JSON/XML Splitter</b>
How will you parse each item into an object	<b>Script Parser</b>

18. Click **Splitter step** in the Action Outline.

19. On the form, fill in the fields.

### Splitter step form

Field	Value
Source Format	Select <b>XML</b> or <b>JSON</b> depending on the format returned by the API response.
Item Path	Absolute path to a meaningful activity element in the response message. See the documentation for the API that you're working with for information about the format of the response message. <ul style="list-style-type: none"> <li>Example XML item path: <code>/message/body/meeting</code></li> <li>Example JSON item path: <code>\$.data.meeting</code></li> </ul>

20. Click **Outputs** in the Action Outline.

21. Click **Create Output** and edit the variable as shown.

### Action Output

Label	Name	Type	Mandatory
targetObject	targetObject	Object	No

22. Add child items for *targetObject* to store the user email and the date of meaningful activity.

For example, an XML response might look like this.

```
<message>
  <body>
    <meeting>
      <meetingID>12345</meetingID>
      <startDate>08/13/2019 20:08:16</startDate>
      <hostEmail>email@email.com</hostEmail>
    </meeting>
    <meeting>
      ...
    </meeting>
  </body>
</message>
```

For this response, add the child items as shown.

### Child items for targetObject

Label	Name	Type	Mandatory
email	email	String	No
last_activity	last_activity	String	No

23. In the Action Outline, click **Script Parser step**.

24. Create a *targetObject* output object for each meaningful activity element in the response and then map each the activity date and user email to the *targetObject* child items.

The parser script is executed for each user element.

- Note:** These examples show the types of elements that could be contained in a response. Don't directly copy these scripts. Use element names from the documentation for the API that you're working with.

Example script that parses an XML response.

```
(function parse(inputs, outputs) {
    var xmlDoc = new XMLDocument(inputs.sourceItem, false);
    outputs.targetObject.email =
xmlDoc.getNodeText('/meeting/hostEmail');
    outputs.targetObject.last_activity =
xmlDoc.getNodeText('/meeting/startDate');
})(inputs, outputs)
```

Example script that parses a JSON response.

```
(function parse(inputs, outputs) {
    var record = JSON.parse(inputs.sourceItem);
    outputs.targetObject.email = record.hostEmail;
    outputs.targetObject.last_activity = record.startDate;
})(inputs, outputs)
```

**25.** To test your data stream action, click **Test**.

- a. View the test results and system logs for details about any errors.  
To view system logs, navigate to **System Logs > System Log > All**.
- b. If your data stream action has errors, make sure that you're using the correct endpoints and that the API requests and responses are structured as expected.

**26.** After verifying that the data stream action is working as expected, click **Publish**.

### Create a subflow to get user activity

Create a subflow to update the Software Subscription table with each user's most recent activity in the SaaS application.

#### Before you begin

This subflow requires a data stream action to get user activity. For more information, see [Create a data stream action to get user activity](#).

Role required: flow\_designer or admin

#### About this task

- Note:** For examples of subflows to get user activity, see the Jira Update User Activity and Webex Update User Activity subflows.

#### Procedure

1. Navigate to **All > Flow Designer > Designer**.
2. Click **New** and then select **Subflow**.
3. On the form, fill in the fields.

**Subflow Properties form**

Field	Value
Name	Name of your choice. For example, <i>Application</i> Update User Activity, where <i>Application</i> is the name of the SaaS application you're integrating with.
Application	<b>Software Asset Management - SaaS License Management</b>  <b>i Note:</b> If you save the subflow in the Software Asset Management - SaaS License Management application, it's included with your Software Asset Management subscription. If you save the subflow in any other application, you may be charged for ServiceNow® Integration Hub transactions. If you're publishing your custom spoke application on the ServiceNow Store, select your custom app instead.
Accessible From	<b>All application scopes.</b>
Category	Leave this field empty.
Protection	<b>None.</b>
In-Flow Annotation	Leave this field empty.
Description	Description of your choice.
Run As	<b>User who initiates session.</b>

4. Click **Submit**.

5. Add an integration profile input and a look back time input.

**Inputs**

Label	Name	Type	Mandatory
Integration profile	integration_profile	Reference.Integration Profile	Yes
Look back time	look_back_time	Date/Time	Yes

6. In the Actions section, click the plus icon and then click **Action** to add a new action.

7. Select the spoke for the SaaS application that you want to integrate with from the list of installed spokes.

**i Note:** To add additional spokes to your list of installed spokes, request them on the [ServiceNow Store](#). For a complete list of available spokes, see [IntegrationHub available spokes](#). If there's no existing spoke for the SaaS application that you want to integrate with, you can [create a new spoke](#).

8. Select a data stream action to get user activity.

9. Add the **Look back time** subflow input as the value to pass to the **Look back time** input for the data stream action.

10. Define the values to pass for any user authentication inputs for the data stream action.

11. Add the *Update User Activity If Later Using User* action from the Software Asset Management spoke as a child of the get user activity data stream action.

12. Use values from the Data panel to complete the action.

**Update User Activity If Later action**


Field	Value
Last activity	Date of most recent activity from the targetObject.
Integration profile	Integration profile input that you created for the subflow.
External user id	User id or account id from the user targetObject. This id is generally a numeric and non human-readable value. This value must be unique.
User principal name	Email address from the user targetObject. If an email address isn't available, use another value such as user name plus user id. This value should be human readable.

13. If you want to use more than one data stream action to get multiple types of user activity, repeat steps 6 through 12 to add each data stream action to the subflow.

14. Click **Test** to test your subflow.

- a. View the test results and system logs for details about any errors. To view system logs, navigate to **System Logs > System Log > All**.

15. After verifying that the subflow is working as expected, click **Publish**.

 **Tip:** You can still edit the subflow after it's published.

**Create an action to remove a user**

Create an action to deactivate or delete a user account in the SaaS application.

**Before you begin**

If you're using an existing ServiceNow® Integration Hub spoke, find out if it has an action to remove a user that you can use instead of creating one.

Role required: flow\_designer or admin

**About this task**

This action is used to reclaim unused subscriptions to reduce your company's software expenses.

**Procedure**

1. Navigate to **All > Flow Designer > Designer**.
2. Click **New** and then select **Action**.
3. On the form, fill in the fields.

**Action Properties form**

Field	Value
Name	Name of your choice. For example, <b>Remove User</b> .

Field	Value
Accessible From	<b>All application scopes.</b>
Category	Leave this field empty.
Protection	<b>None.</b>
Application	Spoke app to integrate with the SaaS application. This can be an existing Integration Hub spoke or a new spoke that you created.
In-Flow Annotation	Leave this field empty.
Description	Description of your choice.

4. Click **Submit**.

5. In the Inputs section of the Action Outline, click **Create Input**.

6. Add a user ID input.

This is how the action gets the user ID of the user to delete.

**Inputs**

Label	Name	Type	Mandatory
User ID	userID	String	Yes

7. If the API that you're working with requires user authentication for requests, add inputs for authentication.

Examples of common user authentication inputs are admin user id and site name. See the documentation for your chosen API to learn about the requirements for user authentication in your specific case. If the API requires an access token, a *Credential Value* variable is automatically created later so you don't need to add it as an input.

When you use your completed action in a subflow, you define what values to pass as these inputs.

8. Add a **SOAP step** or **REST step** to the action outline.

Your choice will depend on the API for the SaaS application that you're integrating with.

9. If you selected **SOAP**, fill in the form as shown.

**SOAP step form**

Field	Value
Connection Details	
Connection	<b>Use Connection Alias.</b>
Connection Alias	Connection alias that you created when you created the integration profile. If you have not yet created an integration profile, follow the steps to <a href="#">create a custom integration profile with a connection alias</a> .
Endpoint	This value is automatically populated when you select the connection alias. It's set to the Connection URL from the HTTP(s) Connection record linked to the alias.
Request Details	

Field	Value
Build Envelope	<b>Manually.</b>
SOAP Action	API request to delete or deactivate a user. See the documentation for your chosen API to select the appropriate request.
SOAP Envelope	XML request message to delete a user. See the documentation for your chosen API to learn how to write an XML request message. In general, the header should have your input variables for user authentication as well as the <i>Credential Value</i> variable as the access token. The body should include the request to delete a user and the user ID input.  <b>Note:</b> For an example of a SOAP envelope, see the Remove User action used in the Webex Reclaim Subscription subflow.

10. If you selected **REST**, fill in the form as shown.

**REST step form**

Field	Value
Connection Details	
Connection	<b>Use Connection Alias.</b>
Connection Alias	Connection alias that you created when you created the integration profile. If you have not yet created an integration profile, follow the steps to <a href="#">create a custom integration profile with a connection alias</a> .
Base URL	This value is automatically populated when you select the connection alias. It's set to the Connection URL from the HTTP(s) Connection record linked to the alias.
Request Details	
Build Request	<b>Manually.</b>
Resource Path	Path to the resource. This value gets appended to the Base URL. See the documentation for the API that you're working with to learn how to construct the resource path.
HTTP Method	<b>DELETE.</b>
Query Parameters	Add a parameter for user ID. Set the value as the user ID input.

11. Add a **Script step** to the Action Outline for error handling.

- a. For **Required Runtime**, select **Instance**.
- b. Create input variables.

**Input Variables**

Name	Value
response	Response Body output from the SOAP or REST step
status_code	Status Code output from the SOAP or REST step

c. Create output variables.

**Output Variables**

Label	Name	Type	Mandatory
status	status	Choice	Yes
error_message	error_message	String	Yes

d. In the **Script** field, write a script to assign values to the status and error message outputs.

- Use the **status\_code** input to check if there is an error. Set the status output equal to **Error** if there is an error and **Success** if there is no error.
- In cases where there is an error, use the **response** input to get information about the kind of error. Set the **error message** output to a description of the error so that a user can understand what went wrong.

12. In the Action Outline, click **Outputs**.

13. Create output variables.

**Output Variables**

Label	Name	Type	Mandatory
Status	status	Choice	No
Error message	error_message	String	No

14. Assign values to the output variables.

**Output Variables**

Label	Value
Status	<b>status</b> output variable from the script step
Error message	<b>error_message</b> output variable from the script step

15. To test your action, click **Test**.

- a. View the test results and system logs for details about any errors.  
To view system logs, navigate to **System Logs > System Log > All**.
- b. If your action has errors, make sure that you're using the correct endpoints and that the API request is structured as expected.

**i Note:** When testing, remember that this action deactivates a user. Test this action in a sub-production environment. If only a production environment is available, you can create fake users for testing.

16. After verifying that the action is working as expected, click **Publish**.

**Create a subflow to reclaim a user**

Create a subflow to reclaim a user subscription.

**Before you begin**

This subflow requires an action to remove a user. For more information, see [Create an action to remove a user](#).

Role required: flow\_designer or admin

**About this task**

**i Note:** For examples of subflows to reclaim a user, see the Jira Reclaim Subscription and Webex Reclaim Subscription subflows.

**Procedure**

1. Navigate to **All > Flow Designer > Designer**.
2. Click **New** and then select **Subflow**.
3. On the form, fill in the fields.

**Subflow Properties form**

Field	Value
Name	Name of your choice. For example, <i>Application</i> Reclaim Subscription, where <i>Application</i> is the name of the SaaS application you are integrating with.
Application	<b>Software Asset Management - SaaS License Management Integrations.</b>  <b>i Note:</b> If you save the subflow in the Software Asset Management - SaaS License Management Integrations application, it's included with your Software Asset Management subscription. If you save the subflow in any other application, you may be charged for ServiceNow® Integration Hub transactions. If you're publishing your custom spoke application on the ServiceNow Store, select your custom app instead.
Accessible From	<b>All application scopes.</b>
Category	Leave this field empty.
Protection	<b>None.</b>
In-Flow Annotation	Leave this field empty.
Description	Description of your choice.
Run As	<b>User who initiates session.</b>

4. Add an integration profile input and a user subscription input.

**Inputs**

Label	Name	Type	Mandatory
Integration profile	integration_profile	Reference.Integration Profile	Yes
User subscription	user_subscription	Reference.Software Subscription	Yes

5. Add an error message output and a status output.

**Outputs**

Label	Name	Type
Error message	error_message	String
Status	status	String

6. In the Actions section, click the plus icon and then click **Action** to add a new action.

7. In the list of installed spokes, select the spoke for the SaaS application that you're integrating with.

**Note:** To add additional spokes to your list of installed spokes, request them on the [ServiceNow Store](#). For a complete list of available spokes, see [IntegrationHub available spokes](#). If there's no existing spoke for the SaaS application that you want to integrate with, you can [create a new spoke](#).

8. To remove a user, select an action.

a. Define the value to pass as the **User ID** input.

The value that you use depends on the API that you're working with, but it will generally be the **External user ID** or **User principal name** field from the **User subscription** input for this subflow.

b. Define the values to pass for any user authentication inputs for the action.

9. To check if the Remove User action returns an error, add an If flow logic.

10. Add a child flow logic to assign subflow outputs.

**Assign Subflow Outputs**

Name	Data
Error message	Error message output from the Remove User action
Status	failure

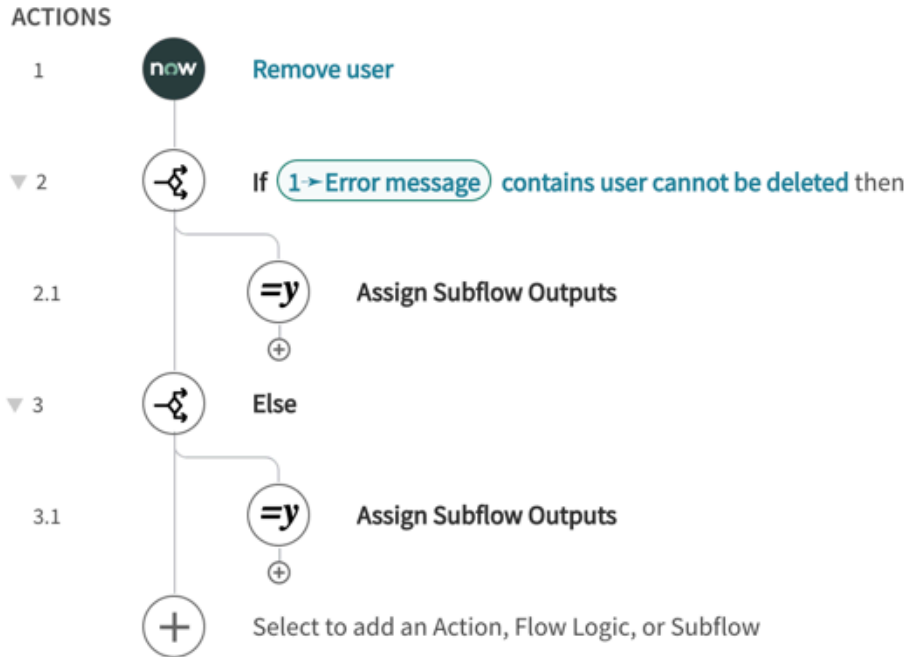
11. Add an Else flow logic at the same level as the If logic for cases when the Remove User action doesn't return an error.

12. Add a child flow logic to assign subflow outputs.

### Assign Subflow Outputs

Name	Data
Status	success

The following image shows a completed example of a subflow to reclaim a user subscription. The example shown is the Webex Reclaim Subscription subflow.



**13.** To test your subflow, click **Test**.

- a. View the test results and system logs for details about any errors. To view system logs, navigate to **System Logs > System Log > All**.

**i Note:** When testing, remember that this subflow deactivates a user. Test this subflow in a sub-production environment. If only a production environment is available, you can create fake users for testing.

**14.** After verifying that the subflow is working as expected, click **Publish**.

**💡 Tip:** You can still edit the subflow after it's published.

### Create a subflow to get license consumption

Create a subflow to add license consumption data to the Subscription Consumption Summaries [sam\_saas\_consumption\_summary] table.

#### Before you begin

This subflow is applicable to any integration that uses the SaaS license connection framework, including custom integrations.

Role required: flow\_designer or admin

## Procedure

1. Navigate to **All > Process Automation > Flow Designer**.  
The Flow Designer launches in a new tab.
2. On the Flow Designer home page, click **New** and then select **Subflow**.  
The Subflow Properties dialog box opens.
3. On the dialog box, fill in the following fields.

### Subflow Properties dialog box

Field	Value
Subflow Name	Name of the subflow. For example, Download License Consumption.
Description	Description of the subflow.
Application	Application scope to which you want the subflow to apply. Set this field to <b>Software Asset Management - SaaS License Management Integrations</b> .  <b>Note:</b> If you save the subflow in the Software Asset Management - SaaS License Management Integrations application scope, it's included with your Software Asset Management subscription. If you save the subflow in any other application scope, you may be charged for ServiceNow® Integration Hub transactions. If you're publishing your custom spoke application on the ServiceNow Store, select your custom application scope instead.
Accessible From	Application scope from which the subflow is accessible. Set this field to <b>All application scopes</b> .
Category	Subflow category. Leave this field empty.
Protection	Read-only protections for your subflow. Set this field to <b>None</b> .
Subflow Annotation	Message that appears under the subflow title in the subflow picker. Leave this field empty.
Run As	Option to specify whether the flow runs as a system user or user who initiates the session. Set this field to <b>User who initiates session</b> .
Run with role(s)	Roles with which this subflow runs.

4. Click **Submit**.  
The Flow Designer creates the draft subflow and then redirects you to the subflow configuration page.
5. From the subflow configuration page, add an integration profile input.
  - a. Under INPUTS & OUTPUTS, click the plus icon (+) to add an input for your subflow.
  - b. In the Inputs section, click the plus icon (+).
  - c. When prompted, enter the following information for your integration profile input.

**Inputs**

Label	Name	Type	Mandatory
Integration profile	integration_profile	Reference.Integration Profile	Yes

- d. Click **Done**.
  
- 6. Add a data stream action for getting license consumption data.
  - a. Under **ACTIONS**, click the plus icon (+) and then select **Action** to add a new action.
  - b. When prompted, select the **Global** spoke from the list of **INSTALLED SPOKES**.
  - c. From the list of Default actions, select **Get <saas-application> Consumption**.
  - d. Click **Done**.
  
- 7. Add an Upsert Consumption action as a child of the Get <saas-application> Consumption action.  
 The Upsert Consumption action uploads license consumption data to the Consumption Summary table on your ServiceNow instance.
  - a. Under the Get <saas-application> Consumption action, click the plus icon (+) and then select **Action**.
  - b. When prompted, select **Software Asset Management** from the list of **INSTALLED SPOKES**.
  - c. From the list of Default actions, select **Upsert Consumption**.  
 The Upsert Consumption action inputs appear.
  - d. From the Product [Software Product] list, search for and select the software product that you are connecting to with your integration.  
 This value must be a reference to the Software Product (samp\_sw\_product) table. If the product does not exist in the table, [add a custom software product](#).
  - e. Use values from the Data panel to fill in the remaining action inputs.  
 Your request to the SaaS API may not return data for all inputs. Fill in the inputs that are applicable to your integration.


**Upsert Consumption action inputs**

Field	Value
Version	Version of the SaaS application.
Edition	Edition of the SaaS application, such as <b>Standard</b> or <b>Enterprise</b> .
Unit of consumption	Unit of measure for the software units that can be consumed.
Total units	Total number of software units that you have purchased across all active entitlements for the software product.
Units consumed	Total number of software units that your users have consumed.
Contract start	Start date of your contract.

Field	Value
Contract end	End date of your contract.

f. Click **Done**.

- Verify that your subflow is working properly by clicking **Test**.  
View the test results and system logs for details about any errors in your subflow. You can view system logs by navigating to **System Logs > System Log > All** in your ServiceNow instance.
- After verifying that the subflow is working as expected, click **Publish**.

 **Tip:** You can still edit the subflow after it's published.

### What to do next

View analytics such as subscription usage, cost, and compliance of your SaaS applications on [SaaS overview dashboard in workspace](#).

### Publish a custom integration profile

Publish a custom integration profile to complete the custom integration.

### Before you begin

Make sure that all actions and subflows are published in ServiceNow® Workflow Studio before adding them to the integration profile.

Role required: sam\_integrator or admin

### Procedure

- Navigate to **All > SaaS License > Administration > All Integration Profiles** and select the custom integration profile that you created.
- In the Download Subscription Subflow form section, select the Download Subscriptions subflow for the SaaS application.
- Click **Publish**.  
A software model is automatically created for the SaaS application. A scheduled job is created to immediately run the Download Subscription Subflow, which adds user subscriptions for the SaaS application to the Software Subscription table [samp\_sw\_subscription].
- In the Calculate Activity Subflow form section, select the Update User Activity subflow for the SaaS application.

 **Note:** The scheduled job to get user subscriptions must finish before you can add the Update User Activity subflow.

- Choose a value for the **Analyze user activity from** field.  
You can choose to start analyzing data from the current date or from up to 60 days in the past. Choosing a date in the past enables you to detect stale subscriptions without waiting in real time because you can see subscriptions that haven't been used recently. Because choosing a date in the past increases the amount of data that is analyzed, it could take several hours for you to be able to view the results.

This value is passed as the **Look back time** input for the subflow to get user activity.

- In the Reclaim Subscription Subflow form section, select the Reclaim Subscription subflow for the SaaS application.
- Click **Save**.

### What to do next

Reclamation rules and stale user reclamation candidates are created automatically after the integration is connected. User subscriptions and reclamation candidates are refreshed daily.

It's important that you review all automatically generated reclamation rules to ensure that they meet your specifications for reclaiming user subscriptions. For more information, see [Review a software reclamation rule](#).

Create software entitlements for the automatically generated software models to track software used against software owned. For more information, see [Create entitlements in Software Asset Management classic](#).

### Create a store app for a custom integration

Publish your custom integration application on the ServiceNow Store to make it available for others to use.

### Before you begin

Role required: admin

### About this task

You must complete these steps so that your custom integration works correctly when other users download it from the ServiceNow Store.

### Procedure

1. Create a fix script in your custom integration application.
 

When a new integration profile is created using your application, the subflows and connection alias you created are automatically linked to the profile through this fix script.

  - a. Navigate to **System Applications > Studio**.
  - b. Select your custom integration application.
  - c. On the Welcome to Studio page, click **+ Create New**.  
The Create Application File dialog box opens.
  - d. On the dialog box, search for and select **Fix Script**.
  - e. Click **Create**.
  - f. On the Fix Script form, fill in the following fields.

#### Fix Script form

Field	Value
Name	Name of the fix script. For example, Custom Integration Fix Script.
Unloadable	Option to create Customer Update [sys_update_xml] records when the fix script runs. Do not select this option.
Application	Your custom integration application. This field is populated automatically.
Before	Option that enables you to run the fix script before installing or upgrading the application. Do not select this option.
Description	Description of the fix script.

- g.** Enter the following script in the **Script** field.  
For the subflows and connection alias, replace the example ids with the real ids. You can find the id in the URL for each item.

```
new
  global.CustomIntegrationProfileUtils().createCustomIntegration({
    name: 'Name', // choose a name for the integration
    downloadSubscriptionSubflow:
      '3a23e189a1400010fa9bed1383c83d38', //replace example id
    updateActivitySubflow:
      '77a66d23e5500010fa9bc9581d0c0f47', //replace example id
    reclamationSubflow:
      'e62b672e39400010fa9b4845e477fe02', //replace example id
    connectionAlias:
      '629ad2bfdb1893005963ff041d961971' //replace example id
  });
```

**Note:** The update activity and reclamation subflows are not required. If you do not include a subflow to update activity, the integration does not get user activity unless your download subscription subflow includes user activity. If you do not include a reclamation subflow, the integration cannot deactivate SaaS user subscriptions.

- h.** Click **Submit**.

- 2.** Create a cross scope privilege record.  
This record allows the fix script you created to access the CustomIntegrationProfileUtils() script include.

- a.** Navigate to **System Applications > Application Cross-Scope Access**.

- b.** Click **New**.

- c.** On the form, fill in the fields.

**Cross scope privilege**

Field	Value
Source Scope	Your custom integration application. This field is populated automatically.  To select a different application, click the Settings (⚙️) icon on the banner frame of your ServiceNow instance. On the System Settings dialog box, select the <b>Developer</b> tab and then choose an application from the <b>Application</b> drop-down list.
Target Scope	Application from which resources are being requested. Click the search (🔍) icon to locate and select the <b>Global</b> application.
Target Name	Name of the script include. Set this field to CustomIntegrationProfileUtils.
Target Type	Type of request. Select <b>Script Include</b> .

Field	Value
Application	Your custom integration application. This field is populated automatically.
Operation	Operation that the script performs on the target scope. Select <b>Execute API</b> .
Status	Authorization for this cross scope privilege record. Select <b>Allowed</b> .

d. Click **Submit**.

**What to do next**

Before you publish your custom integration application on the ServiceNow Store, make sure that your actions and subflows are active, published, and saved in your application.

**Review a software reclamation rule**

Use reclamation rules to cancel user subscriptions that have limited to no activity.

**Before you begin**

Role required: sam\_admin

**About this task**

When you create a direct integration profile or connect an SSO application, a reclamation rule is automatically created for the software. It's important that you review the reclamation rule to verify that it meets your specifications. For more information about the reclamation rules for each application, see [Reclamation rules](#) and [Reclamation rules for Microsoft 365 integration](#).

For SSO subscriptions, the reclamation rule checks for user logins.

**Procedure**

1. Navigate to **All > Software Asset > Administration > Reclamation Rules** and select the reclamation rule that corresponds to your integration profile.
2. On the form, fill in the fields.

**Reclamation Rules form**

Field	Description
Name	Name for the reclamation rule.
Applies to	Item type that the reclamation rule applies to.
Include usage from additional discovery sources	This field appears only when you are reviewing the Microsoft 365 reclamation rule. For more information, see .  When selected, the usage for Microsoft Access and Publisher is considered from additional discovery solutions such as Microsoft SCCM or ACC-V for E3 to E1 optimization.
Notify user	Option for notifying users via email that their accounts will be reclaimed unless they respond with a request to keep the accounts. If a user wants to keep a license, it becomes the responsibility of the manager to approve or reject the removal of the license.
Days before auto-reclamation	If no response is received from the user within the specified number of days, the account is reclaimed.

Field	Description
	<b>Note:</b> This field appears when <b>Notify user</b> is selected.
Subscription Usage Condition	
Last activity threshold	Time limit for no meaningful activity before a user account is added to the list of reclamation candidates. The default value is 60 days for direct integrations and 30 days for SSO applications.

**3. Select Update.**

**What to do next**

View the reclamation candidates that are identified by your reclamation rule and start reclaiming user subscriptions.

**Related topics**

[Reclamation rules for Microsoft 365 integration](#)

**Reclaiming user subscriptions**

You can reclaim unused SaaS and SSO subscriptions to reduce your total software costs.

The process of reclaiming a user subscription is similar to reclaiming a software license in ServiceNow® Software Asset Management. You can reclaim user subscriptions in both the Software Asset Management Core UI and the Software Asset Workspace.

When you’re reclaiming a user subscription, you can determine the status of the associated removal candidate using the following removal candidate states.

**Removal candidate states**

State	Description
Attention Required	<p>The removal candidate requires attention.</p> <p>The state is set to <b>Attention Required</b> when the <b>User</b> field is empty on an automatic removal candidate that has the <b>Notify User</b> option enabled. After the <b>User</b> field is populated, the state automatically changes to <b>Ready</b>.</p> <p>The state can also be set to <b>Attention Required</b> when a reclamation fails. After you resolve the error, the state automatically changes to <b>Ready</b>.</p>
Ready	The removal candidate is ready for reclamation. Select <b>Reclaim</b> to advance the reclamation workflow.
Awaiting User	The user has been sent an email notification to approve or deny the removal request. This state is applicable only if the <b>Notify User</b> option is enabled on the removal candidate.

Removal candidate states (continued)

State	Description
Awaiting Approval	<p>The user must approve or deny the removal request. If the user wants to keep the subscription, the manager then becomes responsible for approving or declining the removal. This state is applicable only if the <b>Notify User</b> option is enabled on the removal candidate.</p>
Awaiting Revocation	<p>The removal candidate is awaiting reclamation.</p> <p>You can manually reclaim the user subscription in the removal candidate by selecting <b>Close Complete</b>. Alternatively, you can reclaim the user subscription through the <b>SAM – Updating Existing Reclamation Candidates</b> weekly scheduled job. When the scheduled job runs, removal candidates that are in the <b>Awaiting Revocation</b> state and have an empty <b>User subscription</b> field are automatically updated to the <b>Closed Complete</b> state.</p> <p>If the <b>User subscription</b> field is empty for a removal candidate that is in any other state, the reclamation workflow is canceled and the state automatically changes to <b>Closed Skipped</b>.</p> <p>The state of a removal candidate with restricted software is automatically set to <b>Awaiting Revocation</b>. The justification is set to <b>Restricted Software</b>.</p>
Closed Complete	<p>The user subscription has been reclaimed.</p>
Closed Skipped	<p>The user subscription hasn't been reclaimed by the removal candidate.</p>
Closed Canceled	<p>The user subscription hasn't been reclaimed by the removal candidate because user activity is detected.</p>

**Warning:** Make sure that users don't lose access to their files when their account is reclaimed. Users can't stop their account from being reclaimed unless the **Notify user** check box is selected on the reclamation rule.

- Reclaiming an Adobe Cloud subscription removes the user's access to the application and the files that they have created.
- Reclaiming an Adobe Workfront account removes the user's access to your Workfront application. The user is no longer allowed to sign in.
- Reclaiming an Aha! account deactivates the account so that you can't log in to the Aha! portal.
- Reclaiming an Asana account deletes the user account. The user can no longer access the Asana projects or workspaces. Content that was created by the user remains accessible to other users and the Admin can reassign the tasks from the Asana dashboard.
- Reclaiming a Box account deletes the account. All the files are moved into a folder in the Box admin account that authenticated the integration.
- Reclaiming a Calendly account removes the account from your organization.
- Reclaiming a Cisco Webex subscription removes the user's access to the specific product. The user can still access all other Cisco Webex products and the free licenses assigned.
- Reclaiming a Confluence Cloud account removes the user from all associated Confluence groups. Although the user can no longer access the Confluence site, all content that was created by the user remains accessible to other users.
- Reclaiming a Dropbox account deletes the account. All the files are moved into a folder in the Dropbox admin account that authenticated the integration. The name of the created folder is the deleted user's email address.
- Reclaiming a Docusign account deletes the account. The Docusign admin can access the user's files through the Docusign admin portal.
- Reclaiming a Google Workspace account deletes the account. All the files are moved from the Google Drive into a folder in the Google Workspace admin account that authenticated the integration. The name of the created folder is the deleted user's email address. All email messages are deleted when the account is reclaimed. To transfer email messages, use the Google data migration service before reclaiming the account.

- Reclaiming a GitHub Enterprise Server account suspends the account. All issues, comments, repositories, gists, and other data that the user created is preserved.

Reclaiming a GitHub Enterprise Cloud account removes the account from all enterprise organizations. If you restore a user membership within three months of reclamation, the user's access to the private forks of your organization repositories is restored.

- Reclaiming a product license from a GoTo user account removes the user's access to that product. Without a license, users can't sign in to the product. If you reclaim all product licenses from a user account, the account is automatically suspended. Suspended users remain on the account but can't sign in to any products.
- Reclaiming a Jira account removes the user from all the associated Jira groups. Although the user can no longer access the Jira site, all content that was created by the user remains accessible to other users.
- Reclaiming a Looker account removes the user's access to Looker. Without an active account, the user can't sign in to the Looker portal. The user's usage history and personal content is retained.

- Reclaiming a Microsoft 365 subscription removes the user's access to the application, associated plans, and services. If user has access to an application through a group membership, reclaiming the subscription removes the user from the group and revoke access to the subscription and its associated plans

## Reclaim user subscriptions in Software Asset Management classic

Reclaim unused SaaS and SSO subscriptions in the Software Asset Management classic application.

### Before you begin

Role required: sam\_user

**i Important:** The SaaS License Management SurveyMonkey integration does not support reclamation through the ServiceNow AI Platform. To reclaim a SurveyMonkey user subscription, you must reassign or delete the user from your SurveyMonkey team directly using the SurveyMonkey admin portal. After the user is removed from your team, you must update the state of the corresponding removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table. See [Reclaim SurveyMonkey user subscriptions in Software Asset Management classic](#) for detailed instructions.

**i Important:** The SaaS License Management monday.com integration does not support reclamation through the ServiceNow AI Platform. To reclaim a monday.com user subscription, you must deactivate the user on your monday.com account. After the user is deactivated, you must update the state of the corresponding removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table. See [Reclaim monday.com user subscriptions in Software Asset Management classic](#) for detailed instructions.

**i Important:** The SaaS License Management Roadmunk integration does not support reclamation through the ServiceNow AI Platform. To reclaim a Roadmunk user subscription, you must deactivate the user on your Roadmunk account. After the user is deactivated, you must update the state of the corresponding removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table. See [Reclaim Roadmunk user subscriptions in Software Asset Management classic](#) for detailed instructions.

### Procedure

1. Navigate to **All > Software Asset > Removal Candidates > Reclamation Candidates**.
2. To reclaim a user subscription that was not automatically identified by a software reclamation rule, create a software removal candidate.  
See [Add a software removal candidate](#) for detailed instructions on how to create a software removal candidate in the Software Asset Management classic application.
3. Reclaim user subscriptions.
  - To reclaim all user subscriptions, click **Reclaim All**.
    - i Note:** Use caution when reclaiming all user subscriptions. Some users may still need their subscriptions even if they have no activity.
  - To reclaim a set of user subscriptions, specify your Search filter criteria and then click **Reclaim All**. For example, you can reclaim all user subscriptions for Adobe InDesign by selecting **Product** from the Search list and then entering \*InDesign.
  - To reclaim an individual user subscription, select a removal candidate and then click **Reclaim** on the Removal Candidate form.

### Result

After you reclaim a user subscription, the subscription record is deleted from the Software Subscriptions [samp\_sw\_subscription] table. The reclamation candidate state is set to **Closed**

**Complete.** If the reclamation fails, the state is set to **Attention Required**. An error message is displayed at the top of the screen with additional details on how to resolve the error.

### Reclaim SurveyMonkey user subscriptions in Software Asset Management classic

Reclaim unused SurveyMonkey subscriptions to reduce your total software costs.

#### Before you begin

SurveyMonkey Role required: admin

ServiceNow Role required: sam\_user


#### About this task

The SaaS License Management SurveyMonkey integration does not support reclamation through the ServiceNow AI Platform. When Software Asset Management creates a removal candidate for your SurveyMonkey integration, you can reclaim the user subscription by removing the associated user directly from your SurveyMonkey team. After you remove the user from your team, you must update the state of the removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table.

#### Procedure

1. Identify removal candidates for your SurveyMonkey integration.
  - a. From your ServiceNow instance, navigate to **Software Asset > SaaS License > Direct Integration Profiles**.
  - b. Select your SurveyMonkey integration profile from the Integration Profiles list.
  - c. On the **Software Models** tab of the Integration Profile form, select the software model that is associated with the integration profile.
  - d. On the Software Model form, select the **Reclamation Candidates** related tab to view the list of available removal candidates.
  - e. Take note of the user principal name for each removal candidate that you want to reclaim the user subscription for.  
Save this information for later use.
2. Remove the associated users from your SurveyMonkey team.

Based on the list of removal candidates that you identified in [step 1](#), you can reclaim user subscriptions by reassigning or deleting the associated users from your SurveyMonkey team.

  - a. From a web browser, open [SurveyMonkey](#) .
  - b. Log in using your admin credentials.
  - c. On the left navigation menu, select **Manage Users**.  
The Manage Users page opens, where you can view the complete list of users in your SurveyMonkey team.
  - d. Click the ellipsis icon (...) for the user that you want to remove from your team.  
You can identify which user you want to remove based on the associated username. The username corresponds directly to the user principal name of each removal candidate that you identified in [step 1](#).

- e. When prompted, select either **Reassign Account** or **Delete Account**.  
Select **Reassign Account** to move the user to another SurveyMonkey team. Select **Delete Account** to deactivate the user completely.
  - f. Repeat steps d and e for each user that you want to remove.
- 3. Return to your ServiceNow instance to update the state of each removal candidate to **Closed Skipped**.**
- a. From your ServiceNow instance, navigate to **SaaS License > Administration > Direct Integration Profiles**.
  - b. Select your SurveyMonkey integration profile from the Integration Profiles list.
  - c. On the **Software Models** tab of the Integration Profile form, select the software model that is associated with the integration profile.
  - d. On the Software Model form, select the **Reclamation Candidates** related tab.
  - e. From the list of available removal candidates, select the removal candidate number (RCCxxxxxx) for a user that you removed from your SurveyMonkey team in [step 2](#).
  - f. On the Removal Candidate form, update the state of the removal candidate by clicking **Closed Skipped**.  
Software Asset Management removes the user subscription from the Software Subscriptions [samp\_sw\_subscription] table and automatically returns you to the Software Model form.
  - g. Repeat steps d through f for each user that you removed from your SurveyMonkey team.

### Reclaim monday.com user subscriptions in Software Asset Management classic

Reclaim unused monday.com subscriptions to reduce your total software costs.

#### Before you begin

monday.com Role required: admin


ServiceNow Role required: sam\_user

#### About this task

The SaaS License Management monday.com integration doesn't support reclamation through the ServiceNow AI Platform. When Software Asset Management creates a removal candidate for your monday.com integration, you can reclaim the user subscription by deactivating the associated user on your monday.com account. After you deactivate the user, you must update the state of the removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table.

#### Procedure

1. Identify removal candidates for your monday.com integration.
  - a. From your ServiceNow instance, navigate to **All > Software Asset > SaaS License > Direct Integration Profiles**.
  - b. Select your monday.com integration profile from the Integration Profiles list.

- c. On the **Software Models** tab of the Integration Profile form, select the software model that is associated with the integration profile.
  - d. On the Software Model form, select the **Reclamation Candidates** related tab to view the list of available removal candidates.
  - e. Take note of the user principal name for each removal candidate that you want to reclaim the user subscription for.  
Save this information for later use.
- 2.** Deactivate the associated users on your monday.com account.  
Based on the list of removal candidates that you identified in [step 1](#), you can reclaim user subscriptions by deactivating the associated users on your monday.com account.
- a. From a web browser, go to [monday.com](https://monday.com) .
  - b. Log in using your admin credentials.
  - c. At the bottom of the left navigation menu, select your profile icon and then select **Admin**.  
The Admin section opens.
  - d. In the Admin section, select **Users**.  
The **Users** tab of the Users subsection opens. This tab displays the complete list of users on your monday.com account.
  - e. From the list of users, select the ellipsis icon (...) for the user that you want to deactivate.  
You can identify which user you want to deactivate based on the associated user name or email address. The user name or email address corresponds directly to the user principal name of each removal candidate that you identified in [step 1](#).
  - f. When prompted, select **Deactivate user**.
  - g. Repeat steps e and f for each user that you want to deactivate.
- 3.** Return to your ServiceNow instance to update the state of each removal candidate to **Closed Skipped**.
- a. From your ServiceNow instance, navigate to **SaaS License > Administration > Direct Integration Profiles**.
  - b. Select your monday.com integration profile from the Integration Profiles list.
  - c. On the **Software Models** tab of the Integration Profile form, select the software model that is associated with the integration profile.
  - d. On the Software Model form, select the **Reclamation Candidates** related tab.
  - e. From the list of available removal candidates, select the removal candidate number (RCCxxxxxx) for a user that you deactivated in [step 2](#).
  - f. On the Removal Candidate form, update the state of the removal candidate by selecting **Closed Skipped**.
  - g. Close the **Removal Candidate** tab.
- 4.** Verify the user deletion from the monday.com portal.

- a. Run the *Refresh Monday.com subscriptions* scheduled job.
- b. Verify the user deletion in the Software Subscriptions [samp\_sw\_subscription] table.

## Reclaim Roadmunk user subscriptions in Software Asset Management classic

Reclaim unused Roadmunk subscriptions to reduce your total software costs.

### Before you begin

Roadmunk Role required: Account Admin

ServiceNow Role required: sam\_user


### About this task

The SaaS License Management Roadmunk integration does not support reclamation through the ServiceNow AI Platform. When Software Asset Management creates a removal candidate for your Roadmunk integration, you can reclaim the user subscription by deactivating the associated user on your Roadmunk account. After you deactivate the user, you must update the state of the removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table.

### Procedure

1. Identify removal candidates for your Roadmunk integration.
  - a. From your ServiceNow instance, navigate to **All > Software Asset > SaaS License > Direct Integration Profiles**.
  - b. Select your Roadmunk integration profile from the Integration Profiles list.
  - c. On the **Software Models** tab of the Integration Profile form, select the software model that is associated with the integration profile.
  - d. On the Software Model form, select the **Reclamation Candidates** related tab to view the list of available removal candidates.
  - e. Take note of the user principal name for each removal candidate that you want to reclaim the user subscription for.  
Save this information for later use.
2. Deactivate the associated users on your Roadmunk account.

Based on the list of removal candidates that you identified in [step 1](#), you can reclaim user subscriptions by deactivating the associated users on your Roadmunk account.

  - a. From a web browser, open [Roadmunk](#) .
  - b. Log in using your Account Admin credentials.  
The Roadmunk dashboard opens.
  - c. On the left navigation menu of the Roadmunk dashboard, click your profile icon and then select **Account Settings**.  
Your account settings open.
  - d. On the page header of your account settings, select the **Users** tab.

This tab displays the complete lists of users on your Roadmunk account, including collaborators, reviewers, and inactive users.

- e. Click the **Active** toggle button for every user that you want to deactivate.  
You can determine which users you want to deactivate based on the email address that is associated with each user. The email address corresponds directly to the user principal name of each removal candidate that you identified in [step 1](#).

- f. Click **Save**.

The users are deactivated and added to the list of inactive users.


- Note:** By default, the Roadmunk Download Subscriptions subflow within the ServiceNow SaaS License Management Roadmunk integration downloads all users in your Roadmunk account, including both active and inactive users. To download only the active users in your account, you must download your Roadmunk User Report and then attach it to the Roadmunk integration profile on your ServiceNow instance. See step 7 of [Create a Roadmunk integration profile](#) for detailed instructions.

### 3. **Optional:** Delete deactivated users from your Roadmunk account.

If a deactivated user is no longer part of your organization or team, you can delete the user from your Roadmunk account.

**Warning:** Users are deleted permanently. Proceed with caution, as users cannot be restored once deleted.

- a. On the same **Users** tab of your Roadmunk account settings, select **INACTIVE USERS**.  
The list of inactive users opens.

- b. Click the Remove icon () for the user that you want to delete.  
The removal confirmation dialog box opens.

- c. On the dialog box, click **Delete**.  
The user is deleted from your account and all roadmaps are unassigned from the user.

- Note:** The user is not notified about being deleted from your account. Any comments that either mention or are made by the user are updated to indicate that the user has been deleted. All roadmaps that are owned by the user are retained in your account and can be managed by any Account Admin. You can view these roadmaps at any time in the All Roadmaps list on the Roadmaps homepage. If the user is invited back to Roadmunk under the same email address, you must manually reassign these roadmaps to the user.

- d. Repeat steps b and c for each user that you want to delete.

### 4. Return to your ServiceNow instance to update the state of each removal candidate to **Closed Skipped**.

- a. From your ServiceNow instance, navigate to **SaaS License > Administration > Direct Integration Profiles**.

- b. Select your Roadmunk integration profile from the Integration Profiles list.

- c. On the **Software Models** tab of the Integration Profile form, select the software model that is associated with the integration profile.
- d. On the Software Model form, select the **Reclamation Candidates** related tab.
- e. From the list of available removal candidates, select the removal candidate number (RCCxxxxxx) for a user that you deactivated in [step 2](#).
- f. On the Removal Candidate form, update the state of the removal candidate by clicking **Closed Skipped**.  
Software Asset Management removes the user subscription from the Software Subscriptions [samp\_sw\_subscription] table and automatically returns you to the Software Model form.
- g. Repeat steps d through f for each user that you deactivated on your Roadmunk account.

### Reclaim user subscriptions in the Software Asset Workspace

Reclaim unused SaaS and SSO subscriptions in the Software Asset Workspace.

#### Before you begin

To reclaim user subscriptions in the Software Asset Workspace, you must request and activate the Software Asset Workspace (com.sn\_sam\_workspace) plugin. See [Request Software Asset Management](#) for more details on requesting and activating the Software Asset Workspace (com.sn\_sam\_workspace) plugin.

Role required: sam\_user

**i Important:** The SaaS License Management SurveyMonkey integration does not support reclamation through the ServiceNow AI Platform. To reclaim a SurveyMonkey user subscription, you must reassign or delete the user from your SurveyMonkey team directly using the SurveyMonkey admin portal. After the user is removed from your team, you must update the state of the corresponding removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table. See [Reclaim SurveyMonkey user subscriptions in the Software Asset Workspace](#) for detailed instructions.

**i Important:** The SaaS License Management monday.com integration does not support reclamation through the ServiceNow AI Platform. To reclaim a monday.com user subscription, you must deactivate the user on your monday.com account. After the user is deactivated, you must update the state of the corresponding removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table. See [Reclaim monday.com user subscriptions in the Software Asset Workspace](#) for detailed instructions.

**i Important:** The SaaS License Management Roadmunk integration does not support reclamation through the ServiceNow AI Platform. To reclaim a Roadmunk user subscription, you must deactivate the user on your Roadmunk account. After the user is deactivated, you must update the state of the corresponding removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table. See [Reclaim Roadmunk user subscriptions in the Software Asset Workspace](#) for detailed instructions.

## Procedure

1. From your ServiceNow instance, navigate to **Software Asset > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.
2. To reclaim a user subscription that was not automatically identified by a software reclamation rule, create a software removal candidate.  
See [Add a software removal candidate in workspace](#) for detailed instructions on how to create a software removal candidate in the Software Asset Workspace.
3. From the left navigation menu of the Software Asset Workspace, select **License usage**. The License usage view opens.
4. In the License usage view, select the **Removal candidates** tab.
5. Reclaim user subscriptions.
  - To reclaim all user subscriptions, click **Reclaim All**.

**Note:** Use caution when reclaiming all user subscriptions. Some users may still need their subscriptions even if they have no activity.

- To reclaim an individual user subscription, select a removal candidate and then click **Reclaim** on the Removal Candidate form.

## Result

After you reclaim a user subscription, the subscription record is deleted from the Software Subscriptions [samp\_sw\_subscription] table. The reclamation candidate state is set to **Closed Complete**. If the reclamation fails, the state is set to **Attention Required**. An error message is displayed at the top of the screen with additional details on how to resolve the error.

## Reclaim SurveyMonkey user subscriptions in the Software Asset Workspace

Reclaim unused SurveyMonkey subscriptions to reduce your total software costs.

### Before you begin

To reclaim user subscriptions in the Software Asset Workspace, you must request and activate the Software Asset Workspace (com.sn\_sam\_workspace) plugin. See [Request Software Asset Management](#) for more details on requesting and activating the Software Asset Workspace (com.sn\_sam\_workspace) plugin.

SurveyMonkey Role required: admin


ServiceNow Role required: sam\_user

### About this task

The SaaS License Management SurveyMonkey integration does not support reclamation through the ServiceNow AI Platform. When Software Asset Management creates a removal candidate for your SurveyMonkey integration, you can reclaim the user subscription by removing the associated user directly from your SurveyMonkey team. After you remove the user from your team, you must update the state of the removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table.

## Procedure

1. Identify removal candidates for your SurveyMonkey integration.
  - a. From your ServiceNow instance, navigate to **Software Asset > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.

- b.** From the left navigation menu of the Software Asset Workspace, select **License usage**. The License usage view opens.
  - c.** On the **Publishers** tab of the License usage view, select **SurveyMonkey** from the list of available publishers. The SurveyMonkey publisher overview opens.
  - d.** Select the **Removal Candidates** related list to view the list of available removal candidates.
  - e.** Take note of the removal candidates that you want to reclaim the user subscription for. Save this information for later use.
- 2.** Remove the associated users from your SurveyMonkey team. Based on the list of removal candidates that you identified in [step 1](#), you can reclaim user subscriptions by reassigning or deleting the associated users from your SurveyMonkey team.
- a.** From a web browser, open [SurveyMonkey](#) .
  - b.** Log in using your admin credentials.
  - c.** On the left navigation menu, select **Manage Users**. The Manage Users page opens, where you can view the complete list of users in your SurveyMonkey team.
  - d.** Click the ellipsis icon (...) for the user that you want to remove from your team.
  - e.** When prompted, select either **Reassign Account** or **Delete Account**. Select **Reassign Account** to move the user to another SurveyMonkey team. Select **Delete Account** to deactivate the user completely.
  - f.** Repeat steps d and e for each user that you want to remove.
- 3.** Return to your ServiceNow instance to update the state of each removal candidate to **Closed Skipped**.
- a.** From your ServiceNow instance, navigate to **Software Asset > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.
  - b.** From the left navigation menu of the Software Asset Workspace, select **License usage**. The License usage view opens.
  - c.** On the **Publishers** tab of the License usage view, select **SurveyMonkey** from the list of available publishers. The SurveyMonkey publisher overview opens.
  - d.** Select the **Removal Candidates** related list.
  - e.** From the list of available removal candidates, select the removal candidate number (RCCxxxxxx) for a user that you removed from your SurveyMonkey team in [step 2](#).

- f. On the Removal Candidate form, update the state of the removal candidate by clicking **Closed Skipped**.  
Software Asset Management removes the user subscription from the Software Subscriptions [samp\_sw\_subscription] table.
- g. Close the tab for the Removal Candidate form.
- h. Repeat steps e through g for each user that you removed from your SurveyMonkey team.

### Reclaim monday.com user subscriptions in the Software Asset Workspace

Reclaim unused monday.com subscriptions to reduce your total software costs.

#### Before you begin

To reclaim user subscriptions in the Software Asset Workspace, you must request and activate the Software Asset Workspace (com.sn\_sam\_workspace) plugin. See [Request Software Asset Management](#) for more details on requesting and activating the Software Asset Workspace (com.sn\_sam\_workspace) plugin.

monday.com Role required: admin


ServiceNow Role required: sam\_user

#### About this task

The SaaS License Management monday.com integration doesn't support reclamation through the ServiceNow AI Platform. When Software Asset Management creates a removal candidate for your monday.com integration, you can reclaim the user subscription by deactivating the associated user on your monday.com account. After you deactivate the user, you must update the state of the removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table.

#### Procedure

1. Identify removal candidates for your monday.com integration.
  - a. From your ServiceNow instance, navigate to **Software Asset > Software Asset Workspace**.  
The Software Asset Workspace launches in a new tab.
  - b. From the left navigation menu of the Software Asset Workspace, select **License usage**.  
The License usage view opens.
  - c. On the **Publishers** tab of the License usage view, select **monday.com Ltd.** from the list of available publishers.  
The monday.com Ltd. publisher overview opens.
  - d. Select the **Removal Candidates** related list to view the list of available removal candidates.
  - e. Take note of the removal candidates that you want to reclaim the user subscription for.  
Save this information for later use.
2. Deactivate the associated users on your monday.com account.  
Based on the list of removal candidates that you identified in [step 1](#), you can reclaim user subscriptions by deactivating the associated users on your monday.com account.

- a. From a web browser, go to [monday.com](https://monday.com) .
  - b. Log in using your admin credentials.
  - c. At the bottom of the left navigation menu, select your profile icon and then select **Admin**.  
The Admin section opens.
  - d. In the Admin section, select **Users**.  
The **Users** tab of the Users subsection opens. This tab displays the complete list of users on your monday.com account.
  - e. From the list of users, select the ellipsis icon (...) for the user that you want to deactivate.
  - f. When prompted, select **Deactivate user**.
  - g. Repeat steps e and f for each user that you want to deactivate.
- 3. Return to your ServiceNow instance to update the state of each removal candidate to **Closed Skipped**.**
- a. From your ServiceNow instance, navigate to **Software Asset > Software Asset Workspace**.  
The Software Asset Workspace launches in a new tab.
  - b. From the left navigation menu of the Software Asset Workspace, select **License usage**.  
The License usage view opens.
  - c. On the **Publishers** tab of the License usage view, select **monday.com Ltd.** from the list of available publishers.  
The monday.com Ltd. publisher overview opens.
  - d. Select the **Removal Candidates** related list.
  - e. From the list of available removal candidates, select the removal candidate number (RCCxxxxxx) for a user that you deactivated in [step 2](#).
  - f. On the Removal Candidate form, update the state of the removal candidate by selecting **Closed Skipped**.
  - g. Close the **Removal Candidate** tab.
- 4. Verify the user deletion from the monday.com portal.**
- a. Run the *Refresh Monday.com subscriptions* scheduled job.
  - b. Verify the user deletion in the Software Subscriptions [samp\_sw\_subscription] table.

### Reclaim Roadmunk user subscriptions in the Software Asset Workspace

Reclaim unused Roadmunk subscriptions to reduce your total software costs.

#### Before you begin

To reclaim user subscriptions in the Software Asset Workspace, you must request and activate the Software Asset Workspace (com.sn\_sam\_workspace) plugin. See [Request Software Asset](#)

**Management** for more details on requesting and activating the Software Asset Workspace (com.sn\_sam\_workspace) plugin.


Roadmunk Role required: Account Admin

ServiceNow Role required: sam\_user

### About this task

The SaaS License Management Roadmunk integration does not support reclamation through the ServiceNow AI Platform. When Software Asset Management creates a removal candidate for your Roadmunk integration, you can reclaim the user subscription by deactivating the associated user on your Roadmunk account. After you deactivate the user, you must update the state of the removal candidate to **Closed Skipped** so that the user subscription is removed from the Software Subscriptions [samp\_sw\_subscription] table.

### Procedure

1. Identify removal candidates for your Roadmunk integration.
  - a. From your ServiceNow instance, navigate to **Software Asset > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.
  - b. From the left navigation menu of the Software Asset Workspace, select **License usage**. The License usage view opens.
  - c. On the **Publishers** tab of the License usage view, select **Roadmunk** from the list of available publishers. The Roadmunk publisher overview opens.
  - d. Select the **Removal Candidates** related list to view the list of available removal candidates.
  - e. Take note of the removal candidates that you want to reclaim the user subscription for. Save this information for later use.
2. Deactivate the associated users on your Roadmunk account. Based on the list of removal candidates that you identified in [step 1](#), you can reclaim user subscriptions by deactivating the associated users on your Roadmunk account.
  - a. From a web browser, open [Roadmunk](#) .
  - b. Log in using your Account Admin credentials. The Roadmunk dashboard opens.
  - c. On the left navigation menu of the Roadmunk dashboard, click your profile icon and then select **Account Settings**. Your account settings open.
  - d. On the page header of your account settings, select the **Users** tab. This tab displays the complete lists of users on your Roadmunk account, including collaborators, reviewers, and inactive users.
  - e. Click the **Active** toggle button for every user that you want to deactivate.
  - f. Click **Save**.

The users are deactivated and added to the list of inactive users.


**Note:** By default, the Roadmunk Download Subscriptions subflow within the ServiceNow SaaS License Management Roadmunk integration downloads all users in your Roadmunk account, including both active and inactive users. To download only the active users in your account, you must download your Roadmunk User Report and then attach it to the Roadmunk integration profile on your ServiceNow instance. See step 7 of [Create a Roadmunk integration profile](#) for detailed instructions.

**3. Optional:** Delete deactivated users from your Roadmunk account.

If a deactivated user is no longer part of your organization or team, you can delete the user from your Roadmunk account.

**Warning:** Users are deleted permanently. Proceed with caution, as users cannot be restored once deleted.

**a.** On the same **Users** tab of your Roadmunk account settings, select **INACTIVE USERS**. The list of inactive users opens.

**b.** Click the Remove icon () for the user that you want to delete. The removal confirmation dialog box opens.

**c.** On the dialog box, click **Delete**. The user is deleted from your account and all roadmaps are unassigned from the user.

**Note:** The user is not notified about being deleted from your account. Any comments that either mention or are made by the user are updated to indicate that the user has been deleted. All roadmaps that are owned by the user are retained in your account and can be managed by any Account Admin. You can view these roadmaps at any time in the All Roadmaps list on the Roadmaps homepage. If the user is invited back to Roadmunk under the same email address, you must manually reassign these roadmaps to the user.

**d.** Repeat steps b and c for each user that you want to delete.

**4.** Return to your ServiceNow instance to update the state of each removal candidate to **Closed Skipped**.

**a.** From your ServiceNow instance, navigate to **Software Asset > Software Asset Workspace**. The Software Asset Workspace launches in a new tab.

**b.** From the left navigation menu of the Software Asset Workspace, select **License usage**. The License usage view opens.

**c.** On the **Publishers** tab of the License usage view, select **Roadmunk** from the list of available publishers. The Roadmunk publisher overview opens.

**d.** Select the **Removal Candidates** related list.

**e.** From the list of available removal candidates, select the removal candidate number (RCCxxxxxx) for a user that you deactivated in [step 2](#).

- f. On the Removal Candidate form, update the state of the removal candidate by clicking **Closed Skipped**.  
Software Asset Management removes the user subscription from the Software Subscriptions [samp\_sw\_subscription] table.
- g. Close the tab for the Removal Candidate form.
- h. Repeat steps e through g for each Roadmunk user that you deactivated.

## Disconnect SSO apps

Disconnect an SSO application to stop viewing subscription information for the app, or before creating a direct integration for the app.

### Before you begin

Role required: sam\_integrator


### About this task

SaaS License Management offers direct integrations with select applications. Direct integrations provide the most robust usage data. For a list of available direct integrations, see [Integrate with SaaS applications](#). If you have a connected SSO app and want to replace it with a direct integration, disconnect the app before creating the direct integration to avoid creating duplicate subscription records for the app.

When an app is disconnected, all SSO subscriptions for the app are deleted and any open reclamation candidates are set to Closed Skipped.

### Procedure

1. Navigate to **All > SaaS License > SSO Applications**.
2. Click the application you want to disconnect.
3. Click **Disconnect**.

 **Tip:** You can also disconnect multiple apps at once from the **SSO Applications** list. Select the apps using the check box on the left side of the list. At the bottom of the list, click the **Actions on selected rows** drop down menu and then click **Disconnect**.

## Delete an integration profile

If your company stops using a SaaS application or SSO provider, you can delete the integration profile.


To delete an integration profile, navigate to the integration profile record and click **Delete**. The sam\_integrator role is required to delete integration profiles.

## Direct integrations

When you delete a direct integration profile, all subscriptions, scheduled jobs, and consumption summaries for the integration are also deleted. Open reclamation candidates are updated to Closed Skipped. Reclamation rules are not deleted.

## SSO integrations

When you delete an SSO integration profile, all SSO applications, subscriptions, and scheduled jobs for the integration are also deleted. Open reclamation candidates are updated to Closed Skipped. Reclamation rules are not deleted.

An SSO integration is created using a directory integration. When you delete an SSO integration profile, the directory integration (including directory jobs, directory users, and directory groups) is not deleted. Before deleting a directory integration, make sure it is not being used by additional connections, such as [Microsoft Azure AD integration for new hire onboarding](#) . The `sn_remote_dir_sync.admin` role is required to delete directory integrations.

## Subscription identifiers for SaaS and SSO applications

Use the SaaS License Management application to view, manage, and resolve subscription identifiers for your SaaS and SSO applications.

Subscription identifiers uniquely identify your SaaS and SSO applications. Each subscription identifier is associated with a discovery map and software model that help to normalize the software that is installed in your environment. You can use this information to track your software subscriptions and understand your license positions.

### Manage updated subscription identifiers

Keep your SaaS and SSO license positions accurate and up to date by managing the updated subscription identifiers that are detected by the ServiceNow AI Platform.

### Before you begin

Role required: `sam_integrator` or `admin`

### About this task

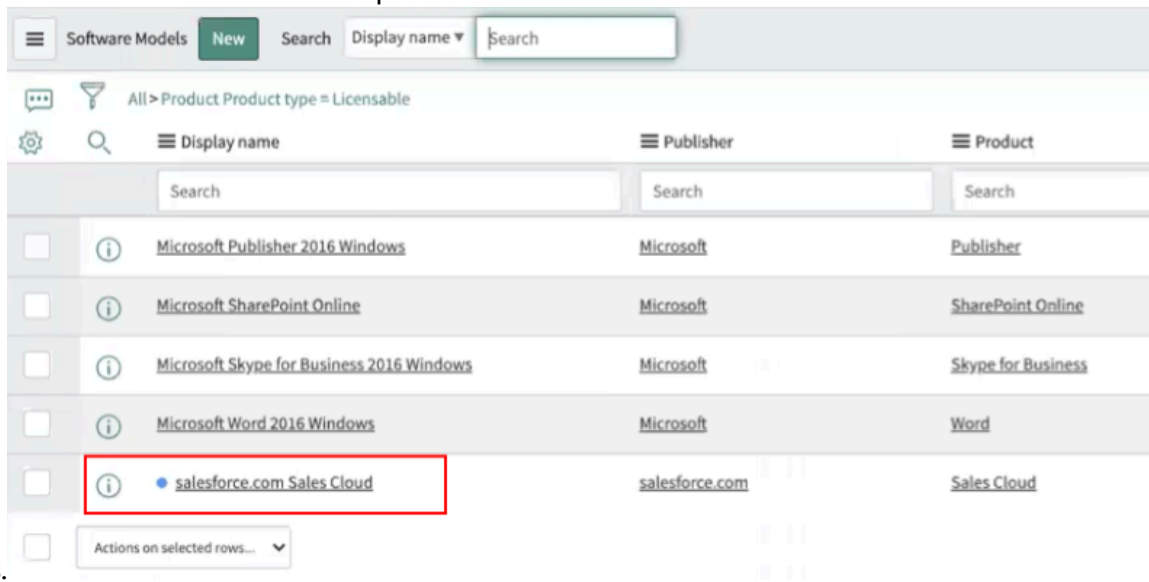
When a SaaS or SSO provider updates an existing subscription identifier, the ServiceNow AI Platform automatically detects and pushes the changes to your ServiceNow instance through weekly content updates. Changes include the product name, edition, version, platform, and language. Your instance uses this information to update subscription identifiers on existing software models, which can help prevent the creation of multiple software models for the same subscription software.

Subscription identifiers update either automatically or manually depending on the associated software model type. If a subscription identifier is associated with an auto-generated software model, it updates automatically. If a subscription identifier is associated with a customized software model, you must update it manually using software model suggestions. Software model suggestions identify changes to your existing subscription identifiers. You can use this information to determine whether you need to update your customized software models based on the latest subscription identifiers. For example, if a SaaS provider updates the product name for an application, the software model suggestions identify both the current and updated values of the product name. If the changes are correct, you can accept the software model suggestions to update your software model with the latest product name.

## Procedure

1. Navigate to **All > SaaS License > Software Models**.
2. Select a software model that is marked with a dot.

A dot indicates that there are discrepancies between the associated subscription identifier and data that is provided in the latest content



updates.

- On the Software Model form, open the software model suggestions by clicking the warning icon (⚠) next to the **Display name** field. The Software Model Suggestions dialog box opens.
- In the dialog box, view the **Suggested discovery map** field to verify that your software model is using the discovery map for the updated subscription identifier. This field is read-only. However, you can click the preview icon (ⓘ) to view additional information about the discovery map.
- Verify the changes to the subscription identifier.

The Software Model Suggestions dialog box displays both the current and updated values of all subscription identifier fields. Although these fields are read-only, you can compare the values to understand how the subscription identifier has changed. Use this information to determine whether the changes are correct and should be applied to your software model.

### Subscription identifier fields

Field	Description
Suggested publisher	Updated software publisher.
Publisher	Current software publisher.
Suggested product	Updated software product name.
Product	Current software product name.
Suggested Version condition	Updated qualifier that you can use to compare the value of the software model <b>Version</b> field against the value of the discovery model <b>Version</b> field. Your instance uses qualifiers such as <b>is</b> or <b>is anything</b> to determine whether your discovered software applies to the software model.
Version condition	Current qualifier that you can use to compare the value of the software model <b>Version</b> field against the value of the discovery model <b>Version</b> field. Your instance uses qualifiers such as <b>is</b> or <b>is anything</b> to determine whether your discovered software applies to the software model.

Field	Description
Suggested version	Updated software version.
Version	Current software version.
Suggested Edition condition	Updated qualifier that you can use to compare the value of the software model <b>Edition</b> field against the value of the discovery model <b>Edition</b> field. Your instance uses qualifiers such as <b>is</b> or <b>is anything</b> to determine whether your discovered software applies to the software model.
Edition condition	Current qualifier that you can use to compare the value of the software model <b>Edition</b> field against the value of the discovery model <b>Edition</b> field. Your instance uses qualifiers such as <b>is</b> or <b>is anything</b> to determine whether your discovered software applies to the software model.
Suggested edition	Updated software edition.
Edition	Current software edition.
Suggested Platform condition	Updated qualifier that you can use to compare the value of the software model <b>Platform</b> field against the value of the discovery model <b>Platform</b> field. Your instance uses qualifiers such as <b>is</b> or <b>is anything</b> to determine whether your discovered software applies to the software model.
Platform condition	Current qualifier that you can use to compare the value of the software model <b>Platform</b> field against the value of the discovery model <b>Platform</b> field. Your instance uses qualifiers such as <b>is</b> or <b>is anything</b> to determine whether your discovered software applies to the software model.
Suggested platform	Updated platform on which you can install or run the software.
Platform	Current platform on which you can install or run the software.
Suggested Language condition	Updated qualifier that you can use to compare the value of the software model <b>Language</b> field against the value of the discovery model <b>Language</b> field. Your instance uses qualifiers such as <b>is</b> or <b>is anything</b> to determine whether your discovered software applies to the software model.
Language condition	Current qualifier that you can use to compare the value of the software model <b>Language</b> field against the value of the discovery model <b>Language</b> field. Your instance uses qualifiers such as <b>is</b> or <b>is anything</b> to determine whether your discovered software applies to the software model.
Suggested language	Updated language in which you want to run the software.
Language	Current language in which you are running the software.

**6. Accept or reject the changes.**

- If the changes are correct, click **Accept** to update the software model with the suggested field values.
  - If the changes are not correct, click **Reject** to ignore the suggested field values. The software model continues to use the existing subscription identifier.
- You automatically return to the Software Model form.

**7. Click **Update** to save your changes and clear the software model suggestions.**

## Resolve unrecognized subscription identifiers

Maintain accurate license positions for your subscription software by resolving unrecognized subscription identifiers that are detected by the ServiceNow AI Platform.

### Before you begin

Role required: admin

### About this task

The ServiceNow AI Platform marks a subscription identifier as unrecognized when it is not associated with a software model. By associating the unrecognized subscription identifier with a software model, you can track subscription usage for the associated subscription software.

### Procedure

1. **Optional:** Send unrecognized subscription identifiers back to the ServiceNow content team by opting in to the Software Asset Management content service.  
When you opt in to the Software Asset Management content service, verify that the **Unrecognized Subscription Identifier** KPI is enabled. See [Enable sharing information with Software Asset Management content service](#) for detailed instructions.
2. Navigate to **SaaS License > Unrecognized Subscription Identifiers**.
3. Select an unrecognized subscription identifier.
4. On the form, fill in the fields.

#### Unrecognized Subscription Identifier form

Field	Value
Subscription identifier	Name of the unrecognized subscription identifier. This field populates automatically.
Software model	Software model that you want to associate with the subscription identifier.
Subscription profiles	Direct integration profiles that are associated with the subscription identifier. This field populates automatically.
Number of subscriptions	Number of subscriptions that are associated with the subscription identifier. This field populates automatically.
Exclude from content service	Option that prevents your ServiceNow instance from sending the unrecognized subscription identifier back to the ServiceNow content team. This option is applicable only if you opted in to the Software Asset Management content service.

5. Click **Update**.

### Result

After the subscription identifier associates with the specified software model, all related software subscriptions automatically update with that software model.

If you opted to share your unrecognized subscription identifier data with ServiceNow, your ServiceNow instance sends the unrecognized subscription identifier back to the ServiceNow content team. The content team can use this information to further research and improve the normalization process.

## Software Spend Detection

Use the ServiceNow Software Spend Detection application to track, analyze, and optimize software spending from imported financial data.

Use Software Spend Detection to optimize software spending.

- Streamline business processes and reduce costs by consolidating software products with similar functionality.
- Reinforce company software purchasing policies by viewing all software purchased in each department.
- Start managing any unmanaged software by creating software models and entitlements with Software Asset Management.

## Request Software Spend Detection

Request Software Spend Detection to track, analyze, and optimize software spending. To access Software Spend Detection, enable the Software Asset Management - Spend Detection (com.sn\_sam\_spend) plugin. This plugin includes demo data.

### Before you begin

Before you can request Software Spend Detection, you must sign the Software Spend Detection legal agreement. For more information about the Software Spend Detection legal agreement, contact your ServiceNow account representative.

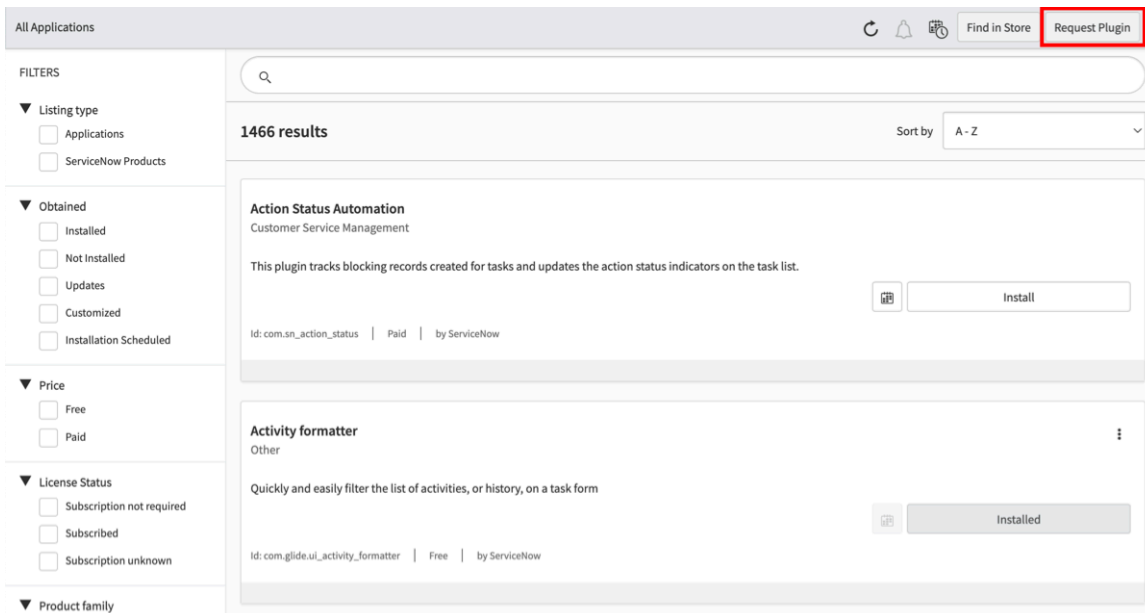
To use Software Spend Detection, you must activate the Software Asset Management Professional (com.snc.samp) plugin on your ServiceNow instance. For more information about activating Software Asset Management Professional, see [Request Software Asset Management](#).

- **Note:** Software Spend Detection is not supported for on-premises users hosting their own ServiceNow instance.

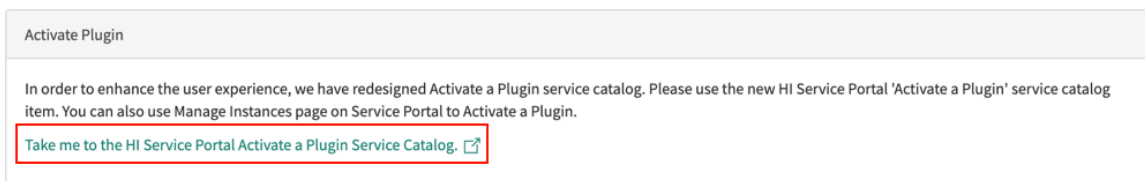
Role required: admin

### Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.
2. On the All Applications page, select **Request Plugin** to open the **Activate Plugin** form on Now Support.



3. On Now Support, select the link to access the Now Support Service Portal Service Catalog.



4. Select your instance.

5. Select **Actions > Activate Plugin**.

6. On the **Activate Plugin** form, provide the following information.

### Activate Plugin form

Field	Description
What is your target instance	Instance on which to activate the plugin.
Which plugin would you like to activate	Name of the plugin to activate.  <b>Note:</b> If the system does not list the plugin you want or if you are activating the plugin on an OEM or on-premise instance, select the <b>Plugin I'm looking for is not listed</b> check box and then enter the name of the plugin.
Select Maintenance Date and Time	The date and time to activate the plugin.

Field	Description
	<p><b>Note:</b> Plugins are activated in two batches, once in the morning and once in the evening, on every business day in the US Pacific time zone. If the plugin must be activated at a specific time, enter the request in the <b>Reason/Comments</b> field.</p>

### Example

For example, see the following form to activate the CSM Workspace plugin on an instance named My Instance.

#### Activate Plugin form

### 7. Select **Submit**.

For additional details about requesting a plugin, see [Requesting a Plugin from the Service Catalog \[KB0751715\]](#) article in the Now Support Knowledge Base. [↗](#)

## Software Spend Detection Overview dashboard

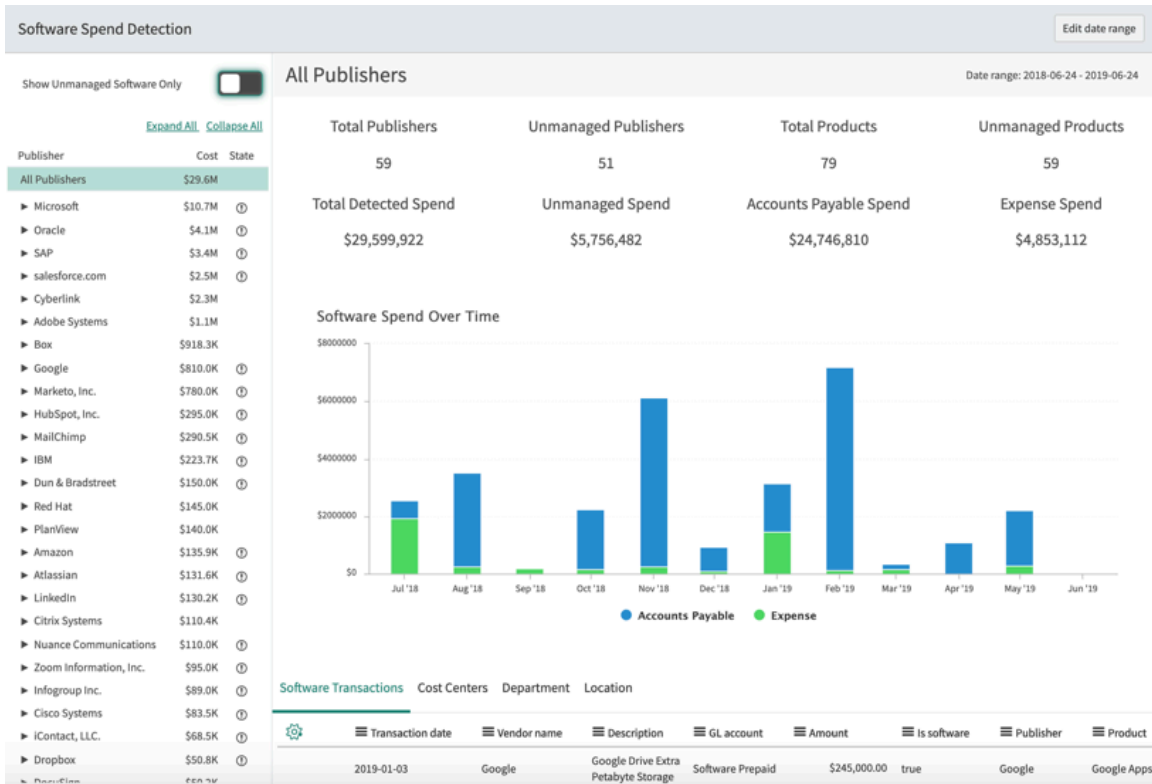
View all software spend from uploaded financial data in the Software Spend Detection Overview dashboard.

Access the Software Spend Detection dashboard by navigating to **Software Spend Detection > Overview**.

Expand a publisher in the left menu bar to see their products. Select a publisher or product to show only those transactions. Select **Edit date range** to filter transactions by date. By default, the dashboard shows all transactions from within the past year. Move your cursor over the Software Spend Over Time graph to view exact spend amounts. You can also view transactions grouped by cost center, department, or location using the tabs at the bottom of the dashboard.

Sharing the dashboard's URL displays your currently selected publisher, product, and date range. To view the applied filters, the URL recipients must already be logged in to their ServiceNow instance.

**Note:** Transactions that aren't labeled with a software publisher aren't included in the dashboard. You can manually update these transactions with a publisher to add them to the dashboard. For more information, see [Manually update transactions](#).



Indicator	Description
Total Publishers	Total number of publishers. This includes publishers automatically detected from imported financial transactions and publishers manually added to transactions.
Unmanaged Publishers	Number of publishers that have unmanaged products.
Total Products	Total number of products. This includes products automatically detected from imported financial transactions and products manually added to transactions.
Unmanaged Products	Number of products that don't have a software model.
Total Detected Spend	Total amount spent on software. This value is equal to Accounts Payable Spend plus Expense Spend.
Unmanaged Spend	Total spend for transactions where the publisher and product are identified but there's no software model for the product. You can create software models and entitlements to start tracking those products and turn unmanaged spend into managed spend.
Accounts Payable Spend	Total spend for transactions where the type is Accounts Payable. These transactions are from an accounting or procurement system.
Expense Spend	Total spend for transactions where the type is Expense. These transactions are from an employee expense system or credit card feed.

Indicator	Description
Software Spend Over Time	Amount spent on software each month.

## Opt in to Content Service

Opt in to Content Service for Software Spend Transactions to get more accurate predictions in Software Spend Detection by sharing financial transaction data with the ServiceNow Content Service team.

### Before you begin

Role required: sam\_admin

### About this task

Opting in to Content Service for Software Spend Transactions means that you agree to have a copy of your financial transaction data securely sent to ServiceNow. Your data is used only to improve future publisher and product predictions when importing data into Software Spend Detection. You can opt out of Content Service at any time.

If you already opted in to Software Asset Management Content Service, you still need to manually enable data sharing for Software Spend Detection by selecting the Software Spend Transactions toggle button on the Content Service Setup page. Software Spend Transactions data sharing is disabled by default.

If you opt in after you've already imported data into Software Spend Detection, data from previous imports is shared as well as data from future imports.

**Note:** If you want to hide the ability to opt in, a user with the admin role can set the `glide.samp.spend_detection_opt_in.enabled` system property to `false`. Setting this value to `false` hides the toggle button used to turn on sharing for software spend transactions. Also, if this property is set to `false` when you're already opted in, your transaction data is no longer shared.

### Procedure

1. Navigate to **All > Software Spend Detection > Administration > Content Service Setup**.
2. Select the check the box to accept the opt-in agreement and then select **Opt-in**.

**Note:** If you already opted in to Content Service through Software Asset Management, you don't see the opt-in screen.

Data sharing for Software Discovery Models, Software Model Lifecycles, Part Numbers and Discovery Maps, and Processor Names KPIs is automatically enabled after opting in. If you don't want to share data for some KPIs, individually disable sharing by selecting the toggle button next to the KPI and then selecting **Save**. For more information about Content Service KPIs, see [Software Asset Management Content Service](#).

3. To turn on sharing for software spend transaction data, select the toggle button next to Software Spend Transactions and then select **Save**.

### What to do next

You can return to the Content Service Setup page to adjust your data sharing settings for each KPI. You can completely opt out by selecting **I would like to opt my company out of the Software Asset Management Content Service Program**. After opting out, you can opt back in at any time.

## Content Service for Software Spend Detection

Opt in to Software Asset Management Content Service for Software Spend Transactions to get more accurate predictions in Software Spend Detection by sharing financial transaction data with the ServiceNow Content Service team.

Opting in to Content Service for Software Spend Transactions means that you agree to have a copy of your financial transaction data securely sent to the ServiceNow Content Service team. ServiceNow uses your data only to improve future publisher and product predictions when importing data into Software Spend Detection. ServiceNow protects all data using the same policies that protect customer instances.

Opting-in shares the following data with ServiceNow:

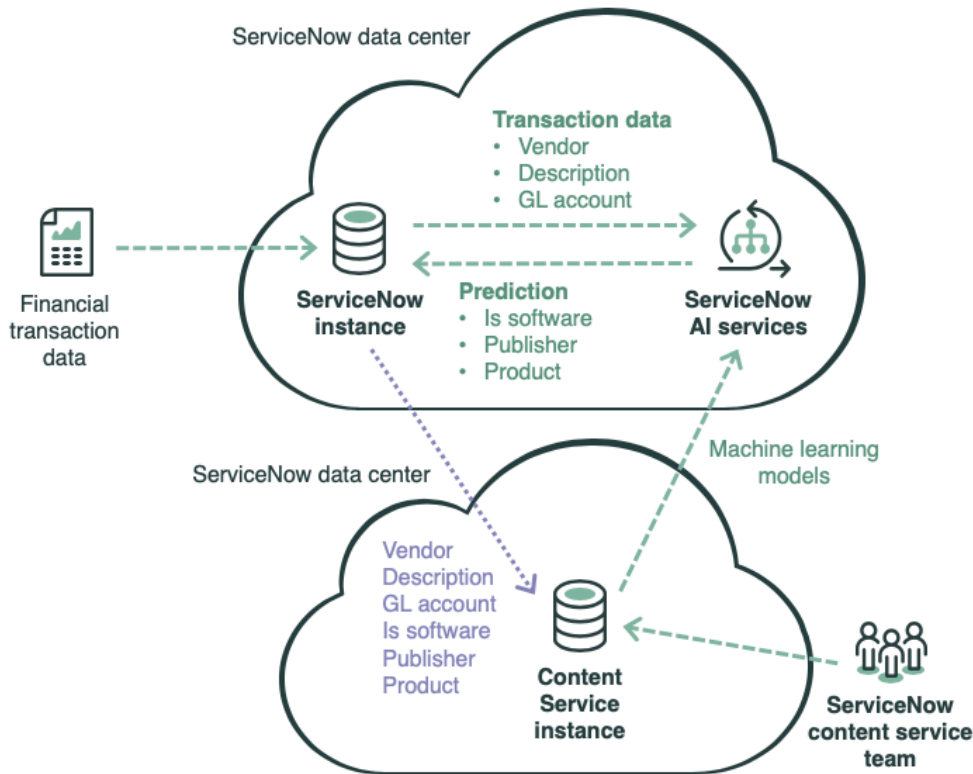
- Vendor name
- Transaction description
- GL account
- Prediction results (Publisher ID, Product ID, Is Software)

Your data is sent anonymously to the Content Service team. Your data isn't linked to any identifiable information, such as company or instance name. Before importing data, it's your responsibility to ensure that the fields **Vendor name**, **Transaction Description**, and **GL account** don't contain any identifiable information such as company or employee names.

The ServiceNow Content Service team uses these data points to improve machine learning models used by ServiceNow Artificial Intelligence (AI) Services. The AI Services are a set of web services that reside within every ServiceNow datacenter. All Software Spend Detection users benefit from continual improvements to ServiceNow AI Services, but users who are opted-in to Content Service benefit the most. ServiceNow AI Services learns how to identify software products and publishers in your transactions that Software Spend Detection previously was not able to identify. This learning improves the functionality for your future imports.

----- All customers using Software Spend Detection

..... Only customers opted-in to Content Service



You can opt out of Content Service at any time. If you opt out, no data from future imports is sent to the ServiceNow Content Service team, but your previously shared data is not deleted. If you would like to participate in Content Service but exclude some transactions from being shared with ServiceNow, you can select the **Exclude from content service** check box on those transaction records.

### Import financial transactions

Import a Microsoft Excel spreadsheet of financial transaction data to start managing software spending.

#### Before you begin

Role required: sam\_spend\_import or sam\_admin

**Note:** Users with the sam\_user role can manually create transaction records by selecting **New** at the top of the All Imported Transactions page.

#### About this task

Your imported data can include all financial transaction data for your company. Software Spend Detection automatically determines whether each transaction is a software purchase. Before importing data, ensure that the fields **Vendor name**, **Transaction Description**, and **GL account** don't contain any identifiable information such as company or employee names. Make any necessary changes to the data before you import. All imported financial transaction data fields are read-only once loaded in your instance.

The import may take several hours when importing large numbers of transactions.

**Note:** Software Spend Detection currently supports transaction data in English only. If you would like to help train ServiceNow artificial intelligence using data in other languages, contact the ServiceNow IT Asset Management product team.

**Procedure**

1. Navigate to **All > Software Spend Detection > Administration > Import Transactions.**
2. Select **Download Template File (.xlsx).**
3. Copy your financial data into the template file.  
The required fields are **Transaction date**, **Vendor name** or **Description**, and **Type**. Fill in as many fields as possible for the most robust results.

**Software Spend Transactions import template**

Field	Description
Transaction date	Required. Transaction date.
Vendor name	Company associated with the transaction. Don't include any identifiable information such as your company or employee names. Provide at least one of vendor name or description.
Description	Description of the purchase. Don't include any identifiable information such as your company or employee names. Provide at least one of vendor name or description.
GL account	General ledger account or expense category. Don't include any identifiable information such as your company or employee names. Optional.
Amount	Transaction amount. Optional.
Type	Required. Select Accounts Payable or Expense. Accounts Payable transactions are from an accounting or procurement system. Expense transactions are from an employee expense system or credit card feed.
Location	Location. Optional.
Cost center	Cost center. Optional.
Department	Department. Optional.
Source	Name of the system that the transaction came from. Optional.
Type detail	Description for the Type field. For Accounts Payable, examples are vendor bill or invoice payment. For Expense, examples are credit card purchase or employee reimbursement. Optional.
External ID	ID of the transaction in the source system. Optional.
Employee ID	Employee ID. Optional.
Employee name	Employee name. Optional.
Employee email	Employee email. Optional.

4. Upload the completed file.
5. Navigate to **Software Spend Detection > Administration > Transaction Import Results** to view information about the import and resolve any import errors.  
When the import is complete, Software Spend Detection begins matching your transactions to software publishers and products. Software Spend Detection also assigns a **0 - 1** value to the **Is software probability**, **Product confidence**, and **Publisher confidence** fields for every

transaction. For example, a value of **.85** for **Publisher confidence** means that Software Spend Detection is 85% sure that it matched the correct publisher to the transaction. When the matching process is complete, you can view the data in the Overview, Overlapping Software, and Software Spend Transactions modules under Software Spend Detection.

**What to do next**

Navigate to **Software Spend Detection > Unnormalized Transactions** to view any transactions that Software Spend Detection wasn't able to match with a software publisher and product. You can manually update these transactions to add a publisher and product. [Opt in to Content Service](#) to improve matching for future imports.

If necessary, you can mass delete all transactions from an import. Navigate to **Software Spend Detection > Administration > Transaction Import Results**, select the import record, and then select **Delete**.

**Manually update transactions**

Manually update imported software transactions that weren't automatically labeled with a software product and publisher to track all software spending.

**Before you begin**

Role required: sam\_user

**About this task**

Sometimes, Software Spend Detection can't match a transaction to a software publisher and product. If Software Spend Detection can identify the publisher but not the product, the transaction is categorized as Unnormalized in the list of products for that publisher in the Software Spend Detection dashboard. The transaction amount is added to the total cost for that publisher. If Software Spend Detection can't identify the publisher, the transaction is added to **Unnormalized Transactions** and is excluded from the Software Spend Detection dashboard. The transaction amount isn't included in any of the spend amounts shown on the dashboard.

**Procedure**

1. Navigate to **All > Software Spend Detection > Unnormalized Transactions**.

**Note:** By default, this list shows only transactions identified as software by Software Spend Detection. To include transactions not identified as software, remove the filter condition **Is software = true**.

Transaction date	Vendor name	Description	GL account	Amount	Is software
2017-08-02	Zoom	Enterprise Subscription	Software Prepaid	\$268,000.00	true
				Sum	\$268,000.00

2. Select a transaction date.
3. Select values for the **Publisher** and **Product** fields.

**Note:** You can create software publishers and products directly from this form by selecting the Lookup using list icon (🔍) next to the field and then selecting **New**.

4. Clear or select the **Is software** check box to indicate if the transaction is a software purchase.

5. Select **Update**.

The transaction is removed from the list of unnormalized transactions and is added to the Software Spend Detection dashboard.

### Installed with Software Spend Detection

User roles and tables are installed with Software Spend Detection. Demo data is available for Software Spend Detection.

### User roles

Role	Description
sam_spend_import	Role required to import financial transaction data into Software Spend Detection. Users with this role can view all modules in Software Spend Detection except <b>Content Service Setup</b> . Users with this role cannot view Software Asset Management.

### Tables

Table	Description
Software Spend Transactions [sam_spend_transaction]	Financial transaction data.
Software Spend Transactions Import [sam_spend_transaction_import]	Import summary table showing number of rows imported and any import errors.
Software Spend Transactions Import [imp_sam_spend_transaction]	Staging table for financial transaction data imports.
Overlapping Software Configuration [sam_sw_overlap_configuration]	List of reports shown on the Overlapping Software dashboard.
Overlapping Software Summary [sam_sw_overlap_summary]	List of software products with spend transactions.

## Software Asset Management administration

Software Asset Management administration tasks include adding custom part number records and custom license metrics. You can also refresh processor definitions and migrate software installations. Software Asset Management content service can be enabled, and migration procedures are also included.

The sam\_admin role is required to configure administrative tasks. However, the sam\_user role can view and read configurations.

Software Asset Management job results show the status of discovery model normalization and software usage import jobs.

Software Asset Job Results records are listed in the navigation path **All > Software Asset > Administration > Job Results** (see table for field descriptions).

**Software Asset Job Result form**

Field	Description
Number	Number of the job result that is generated when the job is run.
Name	Name of the job.
Status	Status of the job.
Created	Date and time job was created.
Updated	Date and time job was updated.

**Enable sharing information with Software Asset Management content service**

Opt in to share unnormalized software installation data from your organization with Software Asset Management Content Service. You can opt out at any time.

**Before you begin**

Role required: sam\_admin

**About this task**

**i Note:** If you are managing a National Security Cloud (NSC) Department of Defense (DOD) Impact Level 5 (IL5) deployment, you cannot share any unnormalized software installation data with ServiceNow even if you opt to participate in the Software Asset Management Content Service. If a software product does not exist in the Software Asset Management Content Library, you can create a software content request for it manually. For detailed instructions, see [Create IT Asset Management content request](#).

**i Important:** If you're using the Software Asset Management application on-premise, you can set up your ServiceNow instance to connect directly to the Content Service. For detailed instructions, see the knowledge base article [KB1585263](#).

**Procedure**

1. Navigate to **All > Software Asset > Administration > Content Service Setup**.
2. Select **Opt-In Agreement** to read the agreement.
3. After reading the agreement, select **Done**.
4. Select the **Yes, I have read and accept the Opt-In Agreement** check box and then select **Opt-In**.  
After you opt in, the Software Discovery Models, Software Product Lifecycles, Part Numbers and Discovery Maps, Processor Names, and Product License Exception Rules KPIs are automatically enabled. The Custom Software Products KPI is automatically disabled.
5. To enable or disable a KPI, select the toggle button next to the KPI and then select **Save**.
6. To opt out, select **I would like to opt my company out of the Software Asset Management Content Service Program** and then select **Opt-Out**.  
The Software Discovery Models, Software Product Lifecycles, Part Numbers and Discovery Maps, Processor Names, Product License Exception Rules, and Custom Software Products are disabled and your unique normalization content is no longer provided to the Software Asset Management content service.

## Related topics

[Software Asset Management Content Service](#)

## Exclude software assets on CIs

You may want to manage software assets installed on a subset of your configuration items in the Software Asset Management application.

### Before you begin

Role required: sam\_admin

### About this task

For example, some of your devices may be leased from a third party and you are not responsible for license compliance for the software on those devices. Or, you may want to start with managing software installed on devices only at a specific location (for example the New York office). Then, you can expand to managing software on devices in other locations. Convey to the Software Asset Management application which devices you want to exclude. The system excludes any software installed on these devices in license compliance calculations.

### Procedure

1. In the Hardware [cmdb\_ci\_hardware] table, add a true/false column, for example, Exclude from SAM [u\_exclude\_from\_sam].
2. Set the value of the Exclude from SAM column to true for devices you don't want to manage installed software for in the application.

**Note:** The default value of the Exclude from SAM column is false. By default, the system manages installed software on all devices.

3. Navigate to **Software Asset > Administration > Properties** and then enter the column name, [u\_exclude\_from\_sam], in the field next to the property **Enter the name of the true/false field added to cmdb\_ci\_hardware table to exclude software installed on selected devices from Software Asset Management.**

Ensure that you enter the column name without the brackets.

Once the scheduled job (SAM – Adjust Installs for excluded CIs) runs, the software installed on devices with the Exclude from SAM column set to true are excluded from the application.

4. To start managing software installs on previously excluded devices in the application, set the value of the Exclude from SAM column for the device to false.

Once the scheduled job (SAM – Adjust Installs for excluded CIs) runs, the system starts managing software installs on these devices.

5. Complete the following steps to start managing the software installs on all previously excluded devices.

**a.** Navigate to **Software Asset > Administration > Properties.**

**b.** Delete the column name [u\_exclude\_from\_sam] from the property

**c.** Select **Save.**

Once the scheduled job (SAM – Adjust Installs for excluded CIs) runs, the system starts managing the software installed on all previously excluded devices.

## Add a custom part number

You can add a custom part number to resolve an entitlement import error that occurs when a part number does not exist in the Software Library.

**Before you begin**

Role required: sam\_admin

**Procedure**

Navigate to **All > Software Asset > Administration > Custom Part Numbers** and create a new record (see table for field descriptions).

**Custom Part Number form**

Field	Description
Publisher part number	Manufacturer product code.
Entitlement definition	Discovery map associated with the part number. <ul style="list-style-type: none"> <li>• Publisher</li> <li>• Product</li> <li>• Version</li> <li>• Edition</li> <li>• Language</li> <li>• Platform</li> </ul>
License type	Specifies whether the rights grant full access to the software or if they are being upgraded from a previous version of the software. <ul style="list-style-type: none"> <li>• Full</li> <li>• Upgrade</li> </ul>
License metric	The license metric that will be used during reconciliation to determine how software rights are consumed.
Exclude from content service	Option that excludes the custom product details from being shared with <a href="#">Software Asset Management Content Service</a> if opted in.

**Add a custom license metric**

You can add a custom license metric to modify the default reconciliation process.

**Before you begin**

Role required:

- to create or modify a custom metric script: sam\_developer
- to read custom metric script: sam\_admin

Role required to create or modify a custom metric script: sam\_developer

**About this task**

Custom license metrics can be created to define specific software calculations not included in the predefined license metrics list. Custom license metrics are useful so reconciliation can

calculate rights per user or device for certain software products and bundles of lesser-known software publishers.

For example, you can create a custom metric to avoid over counting installs for products that are part of an unrecognized bundle.

You can use the Resource Value [samp\_sw\_resource\_value] table to enhance the custom license metric capability by doing a 1:1 calculation between the Units consumed column in the Resource Value [samp\_sw\_resource\_value] table and the Licenses required column in the License Metric Results [samp\_license\_metric\_result] table. You can create your own calculations in your custom license metric scripts and write your own logic to further customize your custom license metric. For information on adding resource values to the Resource Value [samp\_sw\_resource\_value] table, see [Specify resource values for your custom license metrics](#).

Custom metrics can be disabled using the custom license metric [property](#). This feature is enabled by default.

### Procedure

1. Navigate to **All > Software Asset > Administration > Custom License Metrics** and create a new record (see table for field descriptions).

#### Custom License Metric form

Field	Description
License metric	Name of the custom license metric. This name is shown in the <b>License Metric</b> field of software entitlements, and in the license metric results for the software model.
Table Source	Specify if this custom license metric belongs to the Software Installations [cmdb_sam_sw_install] table or the Resource Value [samp_sw_resource_value] table.  <b>Note:</b> If the table specified is the Resource Value table, the following fields: <b>Reconciliation order – allocated</b> , <b>Reconciliation order – unallocated</b> , and <b>Allocation type</b> are not displayed. Additionally, the Calculation Script shows a sample script related to resource value.
Metric group	Custom license metric.
Allocation type	Allocation type of the metric license, per device or per user. <ul style="list-style-type: none"> <li>○ Device</li> <li>○ User</li> </ul>
Description	Description of the custom license metric.
Reconciliation order – allocated	Reconciliation metric rank priority for allocated licenses. Lower rank value takes precedence.

Field	Description
Reconciliation order – unallocated	Reconciliation metric rank priority for unallocated licenses. Lower rank value takes precedence.
Calculation	
Calculation Script	The calculation method for the license metric is script. Specify the reconciliation script.

**2. Select Submit.**

**Custom license metric example script**

The following is an example of a custom license metric script.

**Note:** This example is for demo purposes only and is not meant to be used for actual compliance scenarios.

```
<script><![CDATA[getRightsForDevice();
function getRightsForDevice(){
var rightsForDevice = -1;
var deviceRecord = new GlideRecord('cmdb_ci_computer');
if(deviceRecord.get(entity)){
rightsForDevice = deviceRecord.getValue('disk_space');
}
return rightsForDevice;
}]]></script>
```

**Specify resource values for your custom license metrics**

If you create a custom license metric based on resource values, specify the resource value for each software product that you want to calculate licensing requirements for.

**Before you begin**

Role required: sam\_user

**Procedure**

- 1.** Open the Resource Value [samp\_sw\_resource\_value] table.
  - If you're using the Software Asset Workspace, open the License operations view. From the License operations view, navigate to **Resource value > Resource value**.
  - If you're using the Software Asset Management classic application, navigate to **All > Software Asset > Administration > Resource Value**.
- 2.** Select **New**.
- 3.** On the form, fill in the fields.

**Resource Value form**

Field	Description
Name	Name of the resource value.
Software model	Software model of the software product that the resource value is associated with.
Company	Company of the associated software product.

Field	Description
Location	Physical location of the associated software product.
Units consumed	Total number of resource value units that you are currently consuming of the associated software product. For example, if you are protecting 50 terabytes of data using a data protection software product, set the <b>Units consumed</b> field to 50.
Department	Department that the associated software product is assigned to.
Cost Center	Cost center that is financially responsible for the associated software product.

**4. Save the resource value.**

- If you're using the Software Asset Workspace, select **Save**.
- If you're using the Software Asset Management classic application, select **Submit**.

**Result**

When subsequent reconciliations run, the Software Asset Management application determines the license compliance position of the associated software product by comparing the value of the **Units consumed** field against the value of the corresponding **Licenses required** field in the License Metric Results [samp\_license\_metric\_result] table.

**Refresh processor definitions**

After activating Software Asset Management, refresh processor definitions to normalize processors on servers in the CMDB.

**Before you begin**

Role required: sam\_admin

**About this task**

Refresh processor definitions after activating Software Asset Management and before running reconciliation. Refreshing processor definitions enables CPU types (name of the processor discovered) to be mapped to the correct processor definition.

Refreshing processor definitions can be time consuming when running for the first time. Allocate enough time to complete this task before proceeding.

**Procedure**

Navigate to **All > Software Asset > Administration > Refresh Processor Definitions** and select **Proceed**.

The Processor definitions list is shown.

**Migrate software installations**

If you are using Discovery, run this script after installing the Software Asset Management application to copy previously discovered software installation records from the [cmdb\_software\_instance] table to the [cmdb\_sam\_sw\_install] table, which is used by the Software Asset Management application to store software installation records.

**Before you begin**

Role required: sam\_admin

**About this task**

If you are running Discovery and have used a version of Software Asset Management previously, there is no need to run this script.

When running the Migrate Software Installs script, allow enough time for the process to complete.

**Procedure**

Navigate to **All > Software Asset > Administration > Migrate Software Installs** and select **Proceed**.

The Software Installations list is shown. If the data has already been migrated, a message is shown.

**Revert Software Asset Management customizations**

After installing the Software Asset Management application for the first time, or upgrading from the Software Asset Management Foundation plugin, you need to revert customizations for all features work. The Revert Customizations module in the Software Asset Management application can revert customized files related to Software Asset Management back to the base configurations that were skipped during the installation or upgrade process.

**Before you begin**


Role required: sam\_admin

**About this task**

The Revert Customizations module shows the **Software Asset Skipped Files** list. All customizations and configurations related to Software Asset Management can be reverted to the base application version.

To ensure feature functionality, you must revert customizations after:

- A new installation of the Software Asset Management Professional (com.snc.samp) plugin
- Upgrading from the Software Asset Management Foundation (com.snc.sams) plugin

You can also [revert customizations](#)  using the **System Diagnostics > Upgrade History** navigation.

**Procedure**

1. Navigate to **Software Asset > Administration > Revert Customizations** to view the Software Asset Skipped Files list.
2. Select **Revert** to revert all files with a disposition of **Skipped** to the base application version.
3. Verify that the disposition of all skipped files is **Reverted** in the customization summary. You can also verify the disposition of all skipped files in the Upgrade Details [sys\_upgrade\_history\_log] table and the current OOB version in the Update Versions [sys\_update\_version] table.

**Manage Software Library**

Use the Manage Software Library module to manually upload software library data to on-premise instances (instances not in the cloud to receive automatic Software Library updates). You can also choose to export your normalization content for participation in the Software Asset Management content service.

**Before you begin**

Role required: admin (to enable module), sam\_admin (to manage software library)

Activate the Manage Software Library module to manage Software Library content imports or exports by navigating to **System Definition > Modules**. Ensure that the **Active** column in the Manage Software Library module is set to true.

### About this task

The Manage Software Library module must be activated using the System Definition module for it to be shown in the Software Asset Management administration navigation.

Software Library content data is provided in a zip file. The zip file contains files with consistent file sizes for improved performance. During import, data tables are successfully updated with content from the XML file during a background process.

A worker is an object that performs some work in one or more background threads. To import multiple XML files simultaneously, workers are used. To change the number of workers that run simultaneously, update the following two system properties with the number of workers being used:

- glide.sys.schedulers
- com.snc.samp.recon.max\_workers

To upload an attachment larger than 1 GB, you need to update the *com.glide.attachment.max\_size* system property to reflect the size of the content zip file.

You can also export your data for participation in the [Software Asset Management content service](#) to contribute to the improvement of the normalization service.

### Procedure

1. Navigate to **Software Asset > Administration > Manage Software Library**.

2. To import the Software Library content file:

a. Select **Import Software Library Content File**.

b. Select **Attach Content File** to choose the Software Library content (.zip) file.

c. Select **Run Import**.

In the Import Files related list, track the progress of the import by seeing how many files have been processed and how many are still being processed. All the data in the Import Files related list is stored in the SAMP Import File [samp\_import\_file] table. For a more high level view of the import process, you can also view the Asset Job Logs [asset\_job\_log] table.

3. To export your normalization content:

a. Select **Content Service Opt-In: Export Normalization Content**.

b. Select **Run Export**.

c. When the export status is **Ready for Download**, select **Refresh**.

d. Select the attachment to open or save.

### Software Asset Management references

Use the descriptions provided to help you fill in the Software Asset Management forms.

## Components installed with Software Asset Management Professional

Roles, plugins, and scheduled jobs are installed with the activation of the Software Asset Management Professional application. Demo data is available with this application.

### Scheduled jobs installed

To view the list of scheduled jobs installed with the Software Asset Management Professional application, navigate to your ServiceNow instance, select **All**, and enter `Scheduled jobs` in the application navigator. On the Scheduled jobs page, select the Show/hide filter and in the condition builder, enter the filter condition, `Name starts with SAM`.

### Roles installed

The following roles are installed with the Software Asset Management Professional application.

#### Software Asset Management Professional roles

Role name	Description	Contains roles
Software Asset Management administrator [sam_admin]	This role has full access to the Software Asset Management application. This role is required to import entitlements, manage reclamation rules, run reconciliation, create custom products and pattern normalization rules, set up Content Service, and other administrative features.	<ul style="list-style-type: none"> <li>• sam_user</li> <li>• sam_spend_import</li> <li>• asset</li> <li>• model_manager</li> <li>• contract_manager</li> </ul> <p><b>Note:</b> The sam_spend_import role is installed with Software Spend Detection. The it_demand_user role is no longer automatically installed with <a href="#">PPM Standard</a>.</p>
Software Asset Management user [sam_user]	<p>This role has access to all Software Asset Management features except administrative.</p> <p>If Software Spend Detection is installed, this role has access to all Software Spend Detection features except financial transaction data import and Content Service setup.</p>	<ul style="list-style-type: none"> <li>• pa_viewer</li> <li>• cmdb_read</li> <li>• report_user</li> <li>• sn_remote_dir_sync_reader</li> </ul>
Software Asset Management developer [sam_developer]	Writes scripts on the platform, comparable to the script-writing privileges granted to a sys_admin. Users with this role must be trained ServiceNow administrators.	sam_admin

### Software Asset Management Professional roles (continued)

Role name	Description	Contains roles
SaaS License Management integration administrator [sam_integrator]	Role required to create and manage SaaS integration profiles.	<ul style="list-style-type: none"> <li>• sam_user</li> <li>• connection_admin</li> <li>• flow_operator</li> </ul>
Software Spend Detection import user [sam_spend_import]	Role required to import financial transaction data into Software Spend Detection. Users with this role have access to all Software Spend Detection features except Content Service setup. Users with this role cannot view Software Asset Management without being granted additional roles.	pa_viewer

### Plugins installed

The following plugins are installed with the Software Asset Management Professional application.



### Software Asset Management Professional plugins

Plugin	Location	Description
Activate all Software Asset Management Professional plugins including Software Asset Workspace  com.sn_samp_master_ws	Now Support Service Portal	Requires subscription. Provides the capability to normalize software discovery information, reconcile entitlements with installs, and reclaiming unused software. Provides additional capabilities to reconcile publisher products. Loads the following plugins in one step: <ul style="list-style-type: none"> <li>• Software Asset Management Professional (com.sn_samp_master) plugin</li> <li>• Software Asset Workspace (com.sn_sam_workspace)</li> </ul>
Activate all Software Asset Management Professional plugins  (com.sn_samp_master)	Now Support Service Portal	This plugin is for releases prior to Xanadu. Loads the following Software Asset Management Professional plugins in one step:



Software Asset Management Professional plugins (continued)

Plugin	Location	Description
		<ul style="list-style-type: none"> <li>• Software Asset Management Professional (com.snc.samp) plugin</li> <li>• All publisher pack add-on plugins</li> <li>• Software Asset Management UI Components (com.sn_samp_workbench)</li> </ul> <p><b>Note:</b> To enable SaaS License Management, you must request the Software Asset Management – SaaS License Management (sn_sam_saas_int) plugin separately from the ServiceNow Store. See <a href="#">Request SaaS License Management</a> for information on how to request and activate this plugin.</p>
<p>Software Asset Workspace (com.sn_sam_workspace)</p>	<p>Now Support Service Portal</p>	<p>This plugin is for releases prior to Xanadu. Required to use the Software Asset Workspace, the new user interface of the Software Asset Management application.</p>
<p>Integration – Microsoft SCCM 2012 v2 Software Usage (com.snc.samp_usage_sccm)</p>	<p>Now Support Service Portal</p>	<p>Required to gather software usage data from Microsoft SCCM (System Center Configuration Manager) 2012 v2.</p> <p>Automatically activates the Integration – Microsoft SCCM 2012 v2 (com.snc.integration.sccm2012v2) plugin if not already active.</p>

Software Asset Management Professional plugins (continued)

Plugin	Location	Description
		<p><b>i Important:</b> This plugin will be deprecated in the Tokyo release. If you are integrating with SCCM for the first time, request and install the Service Graph connector for Microsoft SCCM application from the <a href="#">ServiceNow Store</a>  instead. If you have already activated this plugin on your ServiceNow instance, use the Migration Readiness Tool for Service Graph Connector for SCCM store application to prepare your instance for migration to the Service Graph connector. See <a href="#">Service Graph connector for Microsoft SCCM</a>  for more information on the Service Graph connector.</p>
<p>Integration – Microsoft SCCM 2016 Software Usage (com.snc.samp.usage_sccm_2016)</p>	<p>Now Support Service Portal</p>	<p>Required to gather software usage data from Microsoft SCCM (System Center Configuration Manager) 2016.</p> <p>Automatically activates the Integration – Microsoft SCCM 2016 (com.snc.integration.sccm2016) plugin if not already active.</p>

Software Asset Management Professional plugins (continued)

Plugin	Location	Description
		<p><b>i Important:</b> This plugin will be deprecated in the Tokyo release. If you are integrating with SCCM for the first time, request and install the Service Graph connector for Microsoft SCCM application from the <a href="#">ServiceNow Store</a>  instead. If you have already activated this plugin on your ServiceNow instance, use the Migration Readiness Tool for Service Graph Connector for SCCM store application to prepare your instance for migration to the Service Graph connector. See <a href="#">Service Graph connector for Microsoft SCCM</a>  for more information on the Service Graph connector.</p>
<p>Orchestration – Client Software Distribution  (com.snc.orchestration.client_sf_distribution)</p>	<p>Now Support Service Portal</p>	<p>Required to activate ServiceNow® Orchestration application, which enables install and uninstall functionality of software on devices.</p> <p><b>i Note:</b> Users who purchase the Software Asset Management Professional (com.snc.samp) plugin are licensed for software uninstall functionality only, also called software reclamation. Additional licensing is required for software install functionality.</p>
<p>Software Asset Management – SaaS License Management  (sn_sam_saas_int)</p>	<p>ServiceNow Store</p>	<p>Requires the Software Asset Management Professional (com.snc.samp) plugin. Provides integrations to</p>

**Software Asset Management Professional plugins (continued)**

Plugin	Location	Description
	See <a href="#">Request SaaS License Management</a> for information on how to request and activate this plugin from the ServiceNow Store.	manage licenses for SaaS products.
Software Asset Management – Spend Detection (com.sn_sam_spend)	Now Support Service Portal	Requires the Software Asset Management Professional (com.snc.samp) plugin. Provides core capabilities to detect software spend from financial transaction data.
File Signature Normalization (com.snc.file_signature_normalization)	Now Support Service Portal	Required to normalize discovered file signatures while creating installed software records. This plugin also gets activated with File-based Discovery.
Mobile Employee Experience My Asset (com.glide.mobile-employee.myassets)	Now Support Service Portal	Provides the capabilities needed for end users to view assigned assets on a mobile device and to create incidents to request service for these assets.
IT Asset Management Mobile (com.sn_itam_mobile)	Now Support Service Portal	Provides the capabilities for receiving personnel to receive purchased assets on a mobile device.
Publisher pack add-on plugins		
Software Asset Management Professional for Adobe (com.sn_samp_adobe)	Now Support Service Portal	Provides additional capabilities to reconcile Adobe subscription software.
Software Asset Management Professional for Citrix (com.sn_samp_citrix)	Now Support Service Portal	Provides additional capabilities to reconcile Citrix software, such as Virtual Applications and Virtual Desktop.
Software Asset Management Professional for IBM (com.sn_samp_ibm)	Now Support Service Portal	Provides additional capabilities to reconcile IBM products using PVU and RVU license metrics.  This plugin also provides additional capabilities to reconcile Red Hat Enterprise Linux software, such as Red Hat Enterprise Linux Server

**Software Asset Management Professional plugins (continued)**

Plugin	Location	Description
		and Red Hat Enterprise Linux for Virtual Datacenters.
Software Asset Management Professional for Microsoft (com.snc.samp.microsoft)	Now Support Service Portal	Provides additional capabilities to reconcile Microsoft software such as Microsoft SQL Server.
Software Asset Management Professional for Oracle (com.snc.samp.oracle)	Now Support Service Portal	Provides additional capabilities to reconcile Oracle software, such as Oracle DB Server.
Software Asset Management Professional for SAP (com.sn_samp_sap)	Now Support Service Portal	Provides additional capabilities to reconcile SAP named user compliance and optimization.
Software Asset Management Professional for VMware (com.sn_samp_vmware)	Now Support Service Portal	Provides additional capabilities to reconcile VMware software, such as vCenter and vSphere.
Software Asset Management Professional for Engineering Applications (com.sn_samp_eng_app)	Now Support Service Portal	Requires the Software Asset Management Professional (com.snc.samp) plugin. Provides additional capabilities to reconcile engineering applications such as AutoCAD.

**License agreement types**

Types of license agreements determine the product usage rights.

**Agreement types**

The agreement types for the publisher packs.

Publisher pack	Agreement type
Adobe	<ul style="list-style-type: none"> <li>• Generic</li> <li>• Enterprise Term License Agreement (ETLA)</li> <li>• Cumulative Licensing Program (CLP)</li> <li>• Transactional Licensing Program (TLP)</li> <li>• Value Incentive Plan (VIP)</li> </ul>
Citrix	Generic

Publisher pack	Agreement type
Common	<ul style="list-style-type: none"> <li>• Generic</li> <li>• Enterprise License Agreement (ELA)</li> </ul>
Custom	<ul style="list-style-type: none"> <li>• Generic</li> <li>• Enterprise License Agreement (ELA)</li> </ul>
IBM	<ul style="list-style-type: none"> <li>• Generic</li> <li>• Enterprise License Agreement (ELA)</li> <li>• International Program License Agreement (IPLA): No license impact.</li> <li>• IBM Customer Agreement (ICA): No license impact.</li> <li>• IBM Unlimited License Agreement (IULA)</li> </ul>
Microsoft	<ul style="list-style-type: none"> <li>• Generic</li> <li>• Enterprise Agreement</li> <li>• Enterprise Enrollment</li> <li>• Enterprise Subscription Agreement</li> <li>• Microsoft Products and Services Agreement</li> <li>• Open License</li> <li>• Open Value</li> <li>• Open Value Subscription</li> <li>• Select Enrollment</li> <li>• Select License</li> <li>• Select Plus</li> </ul>
Oracle	<ul style="list-style-type: none"> <li>• Generic</li> <li>• Unlimited License Agreement (ULA)</li> </ul>
VMware	<ul style="list-style-type: none"> <li>• Generic</li> <li>• Enterprise License Agreement (ELA)</li> <li>• Enterprise Purchasing Program (EPP): No license impact.</li> <li>• Volume Purchasing Program (VPP): No license impact.</li> </ul>

## Software Asset Management properties

You can set default reconciliation properties such as grouping and reconciliation debugging.

These properties are available for the Software Asset Management application.

To access these properties, navigate to **All > Software Asset > Administration > Properties.**

**Properties for Software Asset Management**

Property	Description
<p>Select the default Group setting for the weekly run of reconciliation</p> <p>com.snc.samp.recon.group</p>	<p>Determines how rights and software installations are grouped during reconciliation.</p> <p>Values (default is <b>None</b>):</p> <ul style="list-style-type: none"> <li>• <b>Company</b></li> <li>• <b>Cost Center</b></li> <li>• <b>Country</b></li> <li>• <b>Department</b></li> <li>• <b>Region</b></li> </ul>
<p>Select the default Subgroup setting for the weekly run of reconciliation</p> <p>com.snc.samp.recon.subgroup</p>	<p>Determines the secondary grouping for rights and software installations during reconciliation.</p> <p>Except for <b>None</b>, group and subgroup values must be different.</p> <p>Values (default is <b>None</b>):</p> <ul style="list-style-type: none"> <li>• <b>Company</b></li> <li>• <b>Cost Center</b></li> <li>• <b>Country</b></li> <li>• <b>Department</b></li> <li>• <b>Region</b></li> </ul>
<p>Run reconciliation with all available custom license metrics</p> <p>com.snc.samp.recon.enablecustommetrics</p>	<p>Enables custom license metrics when running reconciliation.</p> <p>If you have a custom license metric configured, it is not applied when this property is set to <b>No</b>. The default is <b>Yes</b>.</p>
<p>Enable debugging of reconciliation results. Note that enabling debugging will have an impact on performance.</p> <p>com.snc.samp.debug</p>	<p>Enables debugging of reconciliation results to troubleshoot a result. The default is <b>No</b>.</p> <p>Additionally, this property also triggers logging for on-premise import debugging.</p>

Properties for Software Asset Management (continued)

Property	Description
<p>Automatically create software models for all 'licensable' products</p> <p>com.snc.samp.automaticsmrcreation</p>	<p>Automatically creates a software model, in a non-compliant state, for any unlicensed installations, subscriptions, or options (of licensable products) in the Product Results list that do not have an entitlement.</p> <p>The new software model and results are used to show the unlicensed count in the License Position Report.</p> <p><b>Note:</b> For more information on automatically creating software models, see <a href="#">Automatic creation of software models</a>.</p>
<p>Select the level of aggregation for reconciling licenses for Oracle databases and WebLogic servers on VMware</p> <p>com.snc.samp.oracle.reconlevel</p> <p><b>Note:</b> This property is available only if you've activated the Software Asset Management publisher pack for Oracle.</p> <p><b>Note:</b> This property supports domain separation using the domain separation application properties for Software Asset Management. See <a href="#">Set up domain-specific reconciliation properties for Oracle</a> for more details.</p>	<p>Level of aggregation that is used for reconciling Oracle Database and WebLogic Server licenses on VMware virtualization technology. Software Asset Management supports the following aggregation levels:</p> <ul style="list-style-type: none"> <li>• <b>ESX:</b> The <b>ESX</b> aggregation level considers all processor cores on the ESX host.</li> <li>• <b>ESX cluster</b> (default value): The <b>ESX cluster</b> aggregation level considers all processors on every ESX server within a cluster.</li> <li>• <b>vCenter(s):</b> The <b>vCenter(s)</b> aggregation level considers all processor cores on every ESX server.</li> </ul> <p>If you select this aggregation level, licensing calculations are based on the ESXi version that you are using in your VMware virtual environment. See <a href="#">Oracle Database and WebLogic</a></p>

Properties for Software Asset Management (continued)

Property	Description
	<p><a href="#">Server licensing in soft-partitioned environments</a> for more information on the supported ESXi versions.</p>
<p>Use host affinity for reconciling licenses for Oracle databases and WebLogic servers on VMware at the vCenter(s) aggregation level</p> <p>com.snc.samp.oracle.hostaffinityenabled</p> <p><b>i Note:</b> This property is available only if you've activated the Software Asset Management publisher pack for Oracle.</p> <p><b>i Note:</b> This property supports domain separation by using the domain separation application properties for Software Asset Management. See <a href="#">Set up domain-specific reconciliation properties for Oracle</a> for more details.</p>	<p>Enables the Software Asset Management application to account for VM-Host affinity rules when reconciling Oracle Database and WebLogic Server licenses within VMware vCenter Server instances. This property is applicable only if you set the aggregation level for Oracle reconciliation to <b>vCenter(s)</b> in the <b>Select the level of aggregation for reconciling licenses for Oracle databases and WebLogic servers on VMware</b> property.</p> <p>VM-Host affinity rules enable you to specify the physical ESXi hosts on which your virtual machines can run. If provisions are made for VM-Host affinity rules in your Oracle license agreement, you can lower your licensing obligations by accounting for these rules when licensing your Oracle Database and WebLogic servers.</p>
<p>Automatically create software models for all 'not licensable' products</p> <p>com.snc.samp.automaticsmcreation</p>	<p>Automatically creates a software model, in a non-compliant state, for any unlicensed installations (of not-licensable products) in the Product Results list.</p> <p>The new software model is used by Application Portfolio Management.</p> <p>Default is No.</p>
<p>Enter the name of the true/false field added to cmdb_ci_hardware table to exclude software installed on selected devices from Software Asset Management</p>	<p>Excludes the software installed on devices (from the Software Asset Management application) where the</p>

**Properties for Software Asset Management (continued)**

Property	Description
<p>com.snc.samp.exclude_device_flag</p>	<p>Exclude from SAM column is set to true when you enter the column name, exclude_from_sam.</p>
<p>Enter the license period (in days) to be considered during reconciliation, for applications published on Citrix environment</p> <p>com.snc.samp.citrix.app.license.period</p> <p><b>i Note:</b> This property is available only if you've activated the Software Asset Management publisher pack for Citrix.</p>	<p>Indicates the license period (in days) for Citrix applications to be considered during reconciliation. Default is 90 days.</p>
<p>Enter the period (in days) to be considered for peak usage consumption, for engineering applications.</p> <p>com.snc.samp.eng.app.peak.usage.period</p>	<p>Indicates the period (in days) for engineering applications to be considered for peak usage consumption.</p> <p>The default value is 30 days and only a user with the sam_admin role can update this field.</p>
<p>Enter the number of scheduled jobs to run in parallel for reconciliation.</p> <p>com.snc.samp.recon.max_workers</p>	<p>Indicates the number of scheduled jobs that run in parallel to reconciliation. Several scheduled jobs run reconciliation for different publishers simultaneously.</p>
<p>Indicates whether Wide-Net Normalization is enabled on the instance. If enabled, Wide-Net Normalization rules/patterns will be applied on discovery models which have not been fully-normalized by regular package normalization rules</p> <p>com.snc.samp.wide_net_normalization.enabled</p>	<p>Enables wide-net normalization to be performed on discovery models. This property is enabled by default. Wide-net normalization is performed only on discovery models that could not be normalized using content rules.</p> <p>Only users with an admin role can modify the property.</p>
<p>Enable ML Normalization for discovered software.</p> <p>com.snc.samp.enable.ml_normalization</p>	<p>Enables machine learning normalization to be performed on discovery models. This property is enabled by default. Machine learning normalization is performed only on discovery models that could not be normalized using content rules.</p>

Properties for Software Asset Management (continued)

Property	Description
	Only users with an admin role can modify the property.
<p>Enter the threshold period (in days) after which billing data pulled from Cloud is considered old. This affects the license type confidence.</p> <p>com.snc.samp.sam_ci_billing_threshold</p>	<p>Indicates the threshold period, based on the number of days, after which the billing data that is pulled from Cloud Insights is considered old. Cloud Insights is used to determine the license type for SQL Server installed on AWS.</p> <p>The default value is 30 days and this property is activated by default.</p>
<p>Red Hat Enterprise Linux Server for Virtual Datacenters license cost optimization threshold</p> <p><b>Note:</b> This property is available only if you've activated the Software Asset Management publisher pack for IBM.</p>	<p>Determines whether you should use RHEL Server or RHEL for Virtual Datacenters licenses for your RHEL deployment.</p> <p>The default threshold value is 3.2. This value is based on the ratio of the current RHEL Server subscription list price to the current RHEL for Virtual Datacenters subscription list price. If your entitlements contain different pricing for these products, you can calculate this value by dividing your RHEL for Virtual Datacenters subscription price by your RHEL Server subscription price.</p> <p>See <a href="#">Software Asset Management for Red Hat Enterprise Linux</a> for more information about how you can use this threshold value to determine the most optimal license type for your RHEL deployment.</p>
<p>Microsoft Windows Server for Datacenter license cost optimization threshold</p> <p>com.snc.samp.windowserver.license.threshold</p>	<p>Determines whether it is more cost-effective to license the physical hosts or virtual machines (VMs) within your Microsoft Windows Server clusters based on the cost</p>

Properties for Software Asset Management (continued)

Property	Description
<p><b>i Note:</b> This property is available only if you've activated the Software Asset Management publisher pack for Microsoft.</p>	<p>ratio between Microsoft Windows Server Datacenter Edition licenses and Microsoft Windows Server Standard Edition licenses.</p> <p>Based on the current list price of each license type, the default cost ratio value is 4.59. If your entitlements contain different pricing for these license types, you can modify this value by dividing the average price of your Microsoft Windows Server Datacenter Edition licenses by the average price of your Microsoft Windows Server Standard Edition licenses.</p>
<p>Default Region for IBM Devices</p> <p>sn_samp_ibm_lic.default_region</p> <p><b>i Note:</b> This property is available only if you've activated the Software Asset Management publisher pack for IBM and installed the IBM License Compliance for Software Asset Management application. For details on how to install the application, see <a href="#">Request the IBM License Compliance for Software Asset Management application for authorized Software Asset Management provider integrations</a>.</p>	<p>Automatically associates physical hosts with a default region if they are not already associated with one. IBM license usage can be calculated only for physical hosts that are associated with a region.</p> <p>The default value is <b>North America and South America</b>.</p>
<p>Connect to ILMT using</p> <p>sn_samp_ibm_lic.ilmt_api_version</p> <p><b>i Note:</b> This property is available only if you've activated the Software Asset Management publisher pack for IBM.</p>	<p>Indicates which version of the IBM License Metric Tool (ILMT) or BigFix Inventory integration APIs you are using to create a connection between your IBM servers and the ServiceNow AI Platform platform.</p>
<p>Ratio of the entitlement cost of a Microsoft SQL Server Standard with Software Assurance to the cost of Microsoft SQL Server Enterprise with Software Assurance</p> <p>com.snc.samp.sqlserver.standard_sa.to.enterprise_sa.cost.ratio</p> <p><b>i Note:</b> This property is available only if you've activated the Software Asset Management publisher pack for Microsoft.</p>	<p>Determines whether it is more cost-effective to license the physical hosts or virtual machines (VMs) within your Microsoft SQL Server clusters based on the cost ratio between Microsoft SQL Server Standard Edition licenses with Software Assurance and Microsoft</p>

Properties for Software Asset Management (continued)

Property	Description
	<p>SQL Server Enterprise Edition licenses with Software Assurance.</p> <p>Based on the current list price of each license type, the default cost ratio value is 0.25. If your entitlements contain different pricing for these license types, you can modify this value by dividing the price of your Microsoft SQL Server Standard Edition licenses with Software Assurance by the price of your Microsoft SQL Server Enterprise Edition licenses with Software Assurance.</p>
<p>Ratio of the entitlement cost of a Microsoft Software Assurance entitlement to the cost of a Microsoft Non-Software Assurance entitlement</p> <p>com.snc.samp.ms.sa.to.nonsa.cost.ratio</p> <p><b>Note:</b> This property is available only if you've activated the Software Asset Management publisher pack for Microsoft.</p>	<p>Determines whether it is more cost effective to use licenses with or without Microsoft Software Assurance on your Microsoft SQL Server clusters. The Software Asset Management application makes this determination based on the cost ratio between Microsoft SQL Server licenses with Software Assurance and without Software Assurance.</p> <p>Based on the current list price of each license type, the default cost ratio value is 1.25. If your entitlements contain different pricing for these license types, you can modify this value by dividing the price of your Microsoft SQL Server licenses with Software Assurance by the price of your Microsoft SQL Server licenses without Software Assurance.</p>
<p>com.snc.samp.use_lifecycle_approximation</p>	<p>Determines whether to include approximate life cycle dates when generating the life cycle report. This property is enabled by default.</p>

### Properties for Software Asset Management (continued)

Property	Description
	When selected, this property enables generating automatic life cycle dates based on approximation logic that is built on top of publisher provided General Availability dates, publicly available information, and industry averages.
com.snc.samp.manage.published.products	Enables you to publish software products in the phase-wise Software Asset Management implementation and also remove the published software products. The default value of this property is <b>false</b> . By setting the value of this property to <b>true</b> , you can view reports and dashboards only related to the software products that you manage in a phase-wise implementation of Software Asset Management in the following views of the Software Asset Workspace: <ul style="list-style-type: none"> <li>• <a href="#">Software asset overview</a></li> <li>• <a href="#">License usage view</a></li> </ul>

### Discovery models fields

Discovery Models form and related list field descriptions.

### Discovery Models form

Field	Description
Display name	Name of the discovery model as it appears in record lists. This value is generated automatically using the discovered publisher, discovered product, and discovered version.
Normalization status	<b>Status</b> of the normalization process: <ul style="list-style-type: none"> <li>• Normalized</li> <li>• Partially Normalized</li> <li>• Publisher Normalized</li> <li>• Match Not Found</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>Manually Normalized</li> <li>New</li> </ul> <p><b>Note:</b> If a normalization suggestion record exists, a caution icon is shown next to the <b>Normalization status</b> field.</p> <p>The caution icon opens the <a href="#">Normalization Suggestion</a> record for the discovery model.</p>
Publisher	Normalized publisher of the software.
Product	Normalized product name of the software.
Version	Normalized version of the software product.
Discovered publisher	Discovered publisher of the software.
Discovered product	Discovered name of the software.
Discovered version	Discovered version of the software.
Additional Information	
Product type	<ul style="list-style-type: none"> <li>Child: Subcomponent of main software (not licensable).</li> <li>Driver: Software product that controls a device.</li> <li>Licensable: Software product that is licensable.</li> <li>Not Licensable: Software product that is not licensable.</li> <li>Patch: Software product designed to update, fix, or improve an existing computer program.</li> <li>Unknown: Not discovered.</li> </ul> <p>For unknown product types, the product type can be changed to another value.</p> <p>When the product type is changed, the normalization status of the discovery model is updated to Manually Normalized.</p> <p>The reconciliation process only considers software discovery models that are licensable.</p>
Platform	Platforms include: <ul style="list-style-type: none"> <li>Windows</li> <li>macOS</li> <li>UNIX</li> </ul>
Language	Languages include: <ul style="list-style-type: none"> <li>Dutch</li> <li>English</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>• French</li> <li>• German</li> <li>• Italian</li> <li>• Spanish</li> </ul> <p>If discovered, more languages are generated.</p>
Edition	Normalized edition of the software.
Full version	Normalized full version of the software.
Exclude from content service	<p>Option that excludes the software discovery model details from being transferred to the <a href="#">Software Asset Management Content Service</a>.</p> <p>The value is set on the <a href="#">custom product</a> form.</p> <p><b>Note:</b> This field is only shown for custom products when you have opted in to the Software Asset Management Content Service.</p>

### Additional Information section

Field	Description
Product type	<ul style="list-style-type: none"> <li>• Child: Subcomponent of main software (not licensable).</li> <li>• Driver: Software product that controls a device.</li> <li>• Licensable: Software product that is licensable.</li> <li>• Not Licensable: Software product that is not licensable.</li> <li>• Patch: Software product designed to update, fix, or improve an existing computer program.</li> <li>• Unknown: Not discovered.</li> </ul> <p>For unknown product types, the product type can be changed to another value.</p> <p>When the product type is changed, the normalization status of the discovery model is updated to Manually Normalized.</p> <p>The reconciliation process only considers software discovery models that are licensable.</p>
Platform	<p>Platforms include:</p> <ul style="list-style-type: none"> <li>• Windows</li> <li>• macOS</li> <li>• UNIX</li> </ul>
Language	<p>Languages include:</p>

Field	Description
	<ul style="list-style-type: none"> <li>• Dutch</li> <li>• English</li> <li>• French</li> <li>• German</li> <li>• Italian</li> <li>• Spanish</li> </ul> <p>If discovered, more languages are generated.</p>
Edition	Normalized edition of the software.
Full version	Normalized full version of the software.
Exclude from content service	<p>Option that excludes the software discovery model details from being transferred to the <a href="#">Software Asset Management Content Service</a>.</p> <p>The value is set on the <a href="#">custom product</a> form.</p> <p><b>Note:</b> This field is only shown for custom products when you have opted in to the Software Asset Management Content Service.</p>

### Software Installation related list

Field	Description
Display name	Name of the software install as it appears in the record lists.
Publisher	Name of the publisher of the software.
Version	Version of the software.
Installed on	Name of the hardware the software is installed on.

### Software installation fields

Software Installation form and related list field descriptions.

**Note:** This topic describes only the fields that are available on the Software Installation form. For details on all fields that are available on both the Software Installation form and the Software Installation [cmdb\_sam\_sw\_install] table, see [Software Installations Table Attribute Review](#).

### Software Installation form

Field	Description
Display name	Name of the software installation as it appears in the record lists. Can be a combination of the discovered product name and edition.
Discovery model	Software discovery model that represents the installed software.

Field	Description
Publisher	Publisher of the software.
Version	Version of the software.
Edition Override	<p>Override of the software edition setting.</p> <p>For Office 365 subscriptions, this field is set from the software subscriptions record.</p> <p>If the edition for the software was not discovered, you can edit this field to set the edition, if known, so reconciliation can be performed successfully.</p>
Installation tab	
Prod id  <i><b>i</b> Note:</i> This field has been deprecated. However, it still appears on the <b>Installation</b> tab with an empty value.	Unique ID for the product assigned by the manufacturer. Found through discovery.
Install location	Path under which the software is installed.
Install date	Date that the software was installed.
Revision  <i><b>i</b> Note:</i> This field has been deprecated. However, it still appears on the <b>Installation</b> tab with an empty value.	Revision of the software.
Instance key	Unique ID for the instantiation of the software. Automatically generated when the software is installed.
Installed on	Hardware on which the software is installed.
Uninstall string	Identifier used to uninstall the software.
ISO serial number	ISO number of the software.
Reconciliation tab	
Entitlement  <i><b>i</b> Note:</i> This field has been deprecated. However, it still appears on the <b>Reconciliation</b> tab with an empty value.	The entitlement found to use with this installation.
Inferred suite	The inferred suite model this installation belongs to.
Omit from suites	Check box for not counting the software install as a component of a suite during reconciliation.

## Normalization statuses

Description of normalization statuses for discovery models.

When a discovery model is normalized, it is normalized to the version and full version. However, if the discovery model is partially normalized or publisher normalized, then the discovery model won't be updated to full version. If the discovery model is manually normalized, you can decide if you want it normalized to version and full version.

Normalization status can have six different results:

Status	Description
Normalized	<p>A discovery model is fully normalized based on publisher, product, version fields. No fields are editable.</p> <p>Under specific conditions, certain fields that are typically read-only can be edited. If edited, the status changes to <b>Manually Normalized</b>.</p> <p>If only publisher and product fields are discovered, but the product type is Not Licensable, Child, Driver, or Patch, the status is <b>Normalized</b>.</p>
Partially Normalized	<p>A discovery model is partially normalized based on publisher and product fields only. In this case, the version field is editable and once that information is added the normalization status is changed to <b>Manually Normalized</b>.</p>
Publisher Normalized	<p>A discovery model that is partially normalized based on the publisher field alone. In this case, the version and product fields are editable, and once that information is added, the normalization status is changed to <b>Manually Normalized</b>.</p>
Match Not Found	<p>The normalization process could not match any of the three key fields of the discovery model with a rule in the Software Library. In this case, all key fields are editable and once the information is added the normalization status is changed to <b>Manually Normalized</b>.</p> <p><b>Match Not Found</b> status could occur if a normalization rule for the software does not exist.</p> <p>For example, if the organization created custom software specific to the organization.</p>
Manually Normalized	<p>A discovery model is manually normalized when key fields in a <b>New, Match Not Found, Partially Normalized, or Publisher</b></p>

Status	Description
	<b>Normalized</b> discovery model are filled in manually.
New	The software discovery model has not yet run through the normalization process.

### Software model fields

Software Model form and related list field descriptions.

After you fill a software entitlement with the correct PPN, a software model is automatically created. The tabs on the Software Model form, such as Suite Components, Suite Parents, Software Product Lifecycles, Metric Attributes, Downgrade Rights, Product Lifecycles for all Versions, and so on, are populated automatically. However, you can manually add or update the software model details based on your requirements.

### Details tab

This list shows the details of a software model such as the status of the model, product details, licensing, conditions, and product catalog information.

Field	Description
Display name	Name of the model. The system property <i>glide.cmdb_model.display_name.shorten</i> controls how software model display names are generated. Users with the admin role can configure this property.  The default format is publisher + product + version + edition + platform + language.  If the <b>Platform</b> or <b>Language</b> fields aren't set to <b>Anything</b> , the values are appended.
Status	The status of the model. The options are <b>In Production</b> , <b>Retired</b> , and <b>Sold</b> .
Product Details section	
Publisher	Publisher of the software. You can use the lookup list provided.  <b>i Note:</b> Publisher is a reference to the company [core_company] table. Only companies that you're using internally are shown.
Product	Software product name. The same lookup list provided on the Software Discovery Models form. You can create a custom product from the lookup list, if desired.  <b>i Note:</b> If the relationship between the software publisher [samp_sw_publisher] and company [core_company] tables isn't correct, products for that publisher may not be shown.

Field	Description
	If the publisher and product don't exist, you can <a href="#">Add a custom software product in Software Asset Management classic</a> .
Version condition	<p>Condition qualifiers for the <b>Version</b> field.</p> <ul style="list-style-type: none"> <li>• <b>starts with</b></li> <li>• <b>is</b></li> <li>• <b>is anything</b></li> </ul> <p>The default is <b>is anything</b>.</p>
Version	Version of the software product.
Edition condition	<p>Condition qualifiers for the <b>Edition</b> field.</p> <ul style="list-style-type: none"> <li>• <b>starts with</b></li> <li>• <b>is</b></li> <li>• <b>is anything</b></li> </ul> <p>The default is <b>is anything</b>.</p>
Edition	Edition of the software product to use when searching for the normalized discovery model.
Discovery map	<p>A set of conditions that determine which software discovery models get mapped to the software models. Purchased rights are only applied to software discovery models that meet the condition. This matching is important for reconciliation.</p> <p>Discovery models with predefined suites are indicated in the <b>Suite defined</b> field. A value of <b>Yes</b> indicates that the discovery model is a suite parent.</p> <p>You can use the discovery maps provided, or you can choose to specify the condition information directly instead. A user with the sam_admin role can choose to create a custom discovery map.</p> <p>When you select a discovery map, you may encounter a message: Many underlying software models will be created. These might be part of suite components, downgrade rights or next version. Please validate on completion. The message appears only if there are greater than or equal to 50 suite components for the software model and if any of the following conditions are met:</p> <ul style="list-style-type: none"> <li>• A software model doesn't exist for any suite component</li> <li>• A software model doesn't exist for any downgrade rights</li> <li>• A software model doesn't exist for the next version</li> </ul>

Field	Description
	<p><b>i Note:</b> If you change the discovery map in an existing software model, a warning message appears. The warning message informs you that the downgrade rights on the software model and on the related entitlements also change. For example, if you change the discovery map on a software model from DMAP1 to DMAP2, and save the software model, then all the downgrade rights associated with DMAP1 are removed from the software model and the downgrade rights associated with DMAP2 are populated. However, if the value in the <b>Agreement type</b> field in the Software Entitlement form layout is <b>Generic</b>, the downgrade rights for that entitlement don't change.</p> <p>You can verify which discovery models get mapped to the software model by selecting the <b>Show Matching Discovery Models</b> related link in Software Asset Management classic. View the same results in the Software Asset Workspace, by navigating to <b>License operations &gt; Licensing &gt; Software models</b>. Select a software model and then select the <b>Matching Discovery Models</b> related list.</p> <p>If the <b>Publisher</b> and <b>Product</b> fields are empty, the values are automatically populated according to the discovery map.</p>
Next version	<p>Reference to another software model of the same manufacturer, which represents the next version of the product.</p> <p>The next version is defined on the discovery map and is part of the content service. The next version is populated on the software model in either of the two ways:</p> <ul style="list-style-type: none"> <li>• When you create a software model or update the discovery map on a software model, a business rule is triggered when you select <b>Save</b>. The next version is populated if the discovery map has a next version defined for it.</li> <li>• If the content service has the next version specified for the associated discovery map on an existing software model, the next version is populated when the schedule job <i>SAM- Create downgrades/upgrades for a software entitlement</i> runs.</li> </ul> <p><b>i Note:</b> The next version is populated only after the <i>SAM- Create downgrades/upgrades for a software entitlement</i> scheduled job runs weekly.</p> <p>However, if you entered a value in the <b>Next version</b> field, that value isn't overridden.</p>
Product classification	<p>The official United Nations Standard Products and Services Code (UNSPSC) classification.</p> <p>From this release, product classifications have been enhanced with a comprehensive set of UNSPSC codes</p>

Field	Description
	available via the Content Service library. Updates to the UNSPSC codes will also be available via the weekly Content Service library update.
Software Licensing section	
Product type	<p>Product type values include: <b>Child, Driver, Licensable, Not Licensable, Patch, and Unknown.</b></p> <p><b>i Note:</b> The reconciliation process only considers software products that are licensable.</p>
License under management	<p>The option indicating that you want to manage licenses for the specified software. If you clear this option, your software model won't be included in your reconciliation results.</p> <p>This option is selected by default. It's also selected for any software models that have been upgraded.</p> <p>If you upgrade and have software models with this option selected, you can do a bulk update and clear the <b>License Under Management</b> option from any software models you don't want to include in your reconciliation results. When you run reconciliation again, only the software models with the option still selected will display in your results.</p>
Owner	The person responsible for the model.
Unit of consumption	Unit of measure for the software units that can be consumed.
Conditions section	
Condition name	Name of the condition that you want to define for the software model.
Software install condition	<p>Condition to account for only specific software installations during reconciliation. Installs that do not meet the required software install conditions will be included in the reconciliation process. However, these installs are likely to be flagged as unlicensed unless there is another software model that meets the required software install conditions. For example, if you have purchased Microsoft Visual Studio and set up software installation conditions for using Visual Studio only to consume licenses in your non-production environment. You need to create separate software install conditions for each component model under Visual Studio.</p> <p><b>i Note:</b> If you clear the <b>License under management</b> option, the software installations that meet the specified software install conditions are excluded from reconciliation instead.</p> <p>In the Software Asset Management classic application, you can add multiple software install conditions to a single software model using the following options:</p>

Field	Description
	<ul style="list-style-type: none"> <li>• <b>Add Filter Condition:</b> Enables you to specify all the conditions that a software installation must meet to be included in reconciliation.</li> <li>• <b>Add "OR" Clause:</b> Enables you to specify any of the conditions that a software installation can meet to be included in reconciliation.</li> </ul> <p>In the Software Asset Workspace, you can add multiple software install conditions to a single software model using the following options:</p> <ul style="list-style-type: none"> <li>• <b>or:</b> Enables you to specify any of the conditions that a software installation can meet to be included in reconciliation.</li> <li>• <b>and:</b> Enables you to specify all the conditions that a software installation must meet to be included in reconciliation.</li> <li>• <b>+ New condition set:</b> Enables you to specify additional sets of conditions that a software installation can meet to be included in reconciliation.</li> </ul>
<p>Subscription condition</p> <p><b>Note:</b> This field appears only on subscription-based software models, including hybrid software models that contain both software subscriptions and on-premise software installations.</p>	<p>Condition to account for only groups of subscriptions during reconciliation. Only the subscriptions that meet the specified subscription conditions are included in reconciliation. For example, you can set a subscription condition to reconcile subscriptions from only a specific geographic location or business department.</p> <p><b>Note:</b> If you clear the <b>License under management</b> option, the subscriptions that meet the specified software conditions are excluded from reconciliation instead.</p> <p>In the Software Asset Management classic application, you can add multiple subscription conditions to a single software model using the following options:</p> <ul style="list-style-type: none"> <li>• <b>Add Filter Condition:</b> Enables you to specify all the conditions that a subscription must meet to be included in reconciliation.</li> <li>• <b>Add "OR" Clause:</b> Enables you to specify any of the conditions that a subscription can meet to be included in reconciliation.</li> </ul> <p>In the Software Asset Workspace, you can add multiple subscription conditions to a single software model using the following options:</p>

Field	Description
	<ul style="list-style-type: none"> <li>• <b>or</b>: Enables you to specify any of the conditions that a subscription can meet to be included in reconciliation.</li> <li>• <b>and</b>: Enables you to specify all the conditions that a subscription must meet to be included in reconciliation.</li> <li>• <b>+ New condition set</b>: Enables you to specify additional sets of conditions that a subscription can meet to be included in reconciliation.</li> </ul> <p><b>⚠ Warning:</b> You can't add subscription conditions to out-of-the-box software models. You must create a software model to define subscription conditions for the associated subscription software.</p>
General	
Short description	A brief description of the model.
Platform	Platform of the software product to use when searching for the normalized discovery model.  The default is <b>Anything</b> for Windows, macOS, UNIX.
Language	Language of the software product to use when searching for the normalized discovery model, which is populated after it has been normalized or added manually.  The default is <b>Anything</b> .
Asset tracking strategy	Allows to override the way assets are tracked for the model.
Asset tracking unit	Unit of measure for asset.
Cost	The cost of a single unit of the software.
Certified	<p>Indicates if the product associated to this software model is approved or unapproved by TRM.</p> <p>When a enterprise architect adds a product to the TRM library, the product is flagged as either approved or unapproved. When a software model is created for an approved product, this check box is automatically selected.</p> <p>If you create a software model for an unapproved product, the software model is designated as restricted. During the reconciliation process, any software installations associated with unapproved products are identified as removal candidates.</p> <p>If you activate the Application Portfolio Management - TRM (com.snc.apm_trm) plugin for software models that already exist, this check box may or may not be selected depending on whether the product is approved.</p>
Restricted software	Option for restricting software.

Field	Description
	<p>Restricted software identifies software that you shouldn't install in your environment (inappropriate software, or software with vulnerabilities, for example).</p> <p>If the removal candidates don't exist, a scheduled job runs nightly that creates removal candidates for restricted software.</p>
<p>License all installs accessed by clients</p> <p><b>i Note:</b> This field appears only on software models that are associated with <a href="#">client access records</a>, except for Oracle DB Server software models.</p>	<p>Option to license the configuration items (CIs) that the software is installed on, based on conditions that you specify on the software model, such as software install conditions. If any of the associated client access records are unlicensed due to insufficient rights, all CIs remain unlicensed.</p> <p>If you disable this option, only the CIs that have been added to your client access records are licensed. See <a href="#">Add a software client access record in Software Asset Management classic</a> for detailed instructions on how to add CIs to your client access records.</p> <p>If you enable this option after you have already added CIs to your client access records, those CIs are deleted from your records and then subsequently licensed based on the conditions that you specify on the software model.</p>
<p>Database option</p> <p><b>i Note:</b> This field appears only on Oracle Database software models.</p>	<p>Oracle database option or management pack. Each option or pack requires a separate software model. The database option is an identifier for software models.</p> <p>This field is shown when creating software models that meet the following conditions:</p> <ul style="list-style-type: none"> <li>• The <b>Publisher</b> is <b>Oracle</b>.</li> <li>• The <b>Product</b> is <b>DB Server</b>.</li> </ul>
<p>Database option condition</p> <p><b>i Note:</b> This field appears only on Oracle Database software models that are associated with a database option or management pack, as specified in the <b>Database option</b> field.</p>	<p>Condition to account for only the subsets of Oracle Database options or management packs during reconciliation. Only the database options or management packs that meet the specified database option conditions are included in the reconciliation.</p> <p><b>i Note:</b> If you clear the <b>License under management</b> option, the database options or management packs that meet the specified database option conditions are excluded from reconciliation instead.</p> <p>In the Software Asset Management classic application, you can add multiple database option conditions to a single software model using the following options:</p>

Field	Description
	<ul style="list-style-type: none"> <li>• <b>Add Filter Condition:</b> Enables you to specify all the conditions that a database option or management pack must meet to be included in reconciliation.</li> <li>• <b>Add "OR" Clause:</b> Enables you to specify any of the conditions that a database option or management pack can meet to be included in the reconciliation.</li> </ul> <p>In the Software Asset Workspace, you can add multiple database option conditions to a single software model using the following options:</p> <ul style="list-style-type: none"> <li>• <b>or:</b> Enables you to specify any of the conditions that a database option or management pack can meet to be included in the reconciliation.</li> <li>• <b>and:</b> Enables you to specify all the conditions that a database option or management pack must meet to be included in reconciliation.</li> <li>• <b>+ New condition set:</b> Enables you to specify additional sets of conditions that a database option or management pack can meet to be included in reconciliation.</li> </ul>
Apply to subscriptions	Option to apply this software model to only subscription-based software suites. If you don't enable this option, you can apply this software model to only software suites with installed software.
Auto-generate client access for allocations. <p><b>i Note:</b> This field appears only on Oracle Database Server software models.</p> <p><b>i Important:</b> To use this option, you must request the Data Collection for Oracle Global Licensing and Advisory Services application from the ServiceNow Store. See <a href="#">Request Data Collection for Oracle Global Licensing and Advisory Services (GLAS)</a> for more details on the Data Collection for Oracle Global Licensing and Advisory Services application.</p>	Option to automatically generate and manage client access records for Oracle Database Server. If you enable this option, the Software Asset Management application generates and manages client access records based on your latest Oracle Database Server Named User Plus entitlements, the users, and devices that the associated rights are allocated to, and the Oracle database instances that are supported by these users and devices. The Software Asset Management application generates a separate client access record for each supported database instance. <p>If you disable this option after the Software Asset Management application has automatically generated client access records for Oracle Database Server, those client access records are no longer managed and updated automatically. You must manage and update those client access records manually to keep them accurate and up to date.</p> <p>If you enable this option and already have existing client access records for Oracle Database Server, all automatically generated client access records are managed and updated automatically again. However, you must continue to manage and update all manually generated client access records.</p>
Product Catalog	
Catalog Item	Information about the model as it appears in the product catalog and service catalog.

Field	Description
	Information only appears if the model has been published to the product catalog.
Description	Description of the software model as it appears in the product catalog.
Picture	Image of the software logo can be added. This logo appears in the service catalog if the software model is published.
Activity	
Work notes	Notes about the work order task that are visible to all users within your organization.

## Suite Components

This list shows the software suite component details. Software components are the suite children of a software suite parent. For more information, see [Software Asset Management software suites](#).

Field	Description
Allow automated content update	Option enabling ServiceNow to automatically send updated suite definitions to your instance through weekly content updates.
Suite child	The child product or products of the suite. For example, Microsoft Word and Microsoft Excel are child products of Microsoft Office.
Mandatory	Requirement of a suite component. A suite component can be <b>Optional</b> , <b>Always Mandatory</b> , or <b>Mandatory Group</b> .  Set to <b>Always Mandatory</b> if the software must be installed to count the model as a suite.
Suite relationship assumed	Relationship that indicates that multiple software models exist for one or more of the suite components. Therefore, the relationship between suite parent and suite component was assumed.  Review the created suite components to ensure the relationship is correct.
Suite Content Usage	
Inference Option: <b>Number</b> and <b>Percent</b>	<b>Number:</b> Specifies the number of components installed for the suite. Specify a number lesser than or equal to the number of components.  <b>Note:</b> For any new software models being created with suite components, the <b>Number</b> option is selected by default.  <b>Percent:</b> Specifies what percentage of the components must be installed for the suite.

Field	Description
	<p><b>Note:</b> For existing software models with suite components that were using the inference percent, the <b>Percent</b> option is selected by default. However, you can choose to use the <b>Number</b> option.</p> <p>If the system property <i>Use component licenses to optimize compliance when suite licenses run out</i> is set to true, Inference percent specifies a threshold to determine whether the suite or component licensing is optimal.</p>
Allow automated content update	Option for enabling automatic content changes to software models.

### Suite Parents

This list shows the software suite parent details. For more information, see [Software Asset Management software suites](#).

	Description
Suite parent	The parent suites to which the software is assigned. For example, the parent suite for several common Microsoft products is a version of Microsoft Office.
Suite child	
Mandatory	<p>Requirement of a suite component. A suite component can be <b>Optional</b>, <b>Always Mandatory</b>, or <b>Mandatory Group</b>.</p> <p>Set to <b>Always Mandatory</b> if the software must be installed to count the model as a suite.</p>
Suite relationship assumed	<p>Relationship that indicates that multiple software models exist for one or more of the suite components, therefore the relationship between suite parent and suite component was assumed.</p> <p>Review the created suite components to ensure the relationship is correct.</p>

### Software Product Lifecycles

This list shows the lifecycle information of a software product version. For more information, see the Software Product Lifecycle report section in [Software models and Software entitlements](#).

Field	Description
Publisher	Name of publisher.
Product	Name of the software product.
Version	Licensable version of the software
Edition	Edition of the software.
Full Version	The granular licensable version of the software.
Phase start date	Date the life-cycle phase starts.

Field	Description
Lifecycle type	<p>The product life cycle type values include:</p> <ul style="list-style-type: none"> <li>• <b>Internal:</b> The life cycle date is specific to the customer (for example, based on their internal policy, based on a custom contract/ agreement with the publisher).</li> <li>• <b>Publisher:</b> The life cycle date comes from publisher sources and is not specific to a customer.</li> </ul>
Risk	<p>The risk level to an organization with regards to the lifecycle phase. For example, the risk for the end of support phase for a publisher maybe moderate or the end of life phase maybe high.</p> <p>Risk type values include:</p> <ul style="list-style-type: none"> <li>• <b>Very High</b></li> <li>• <b>High</b></li> <li>• <b>Moderate</b></li> <li>• <b>Low</b></li> <li>• <b>None</b></li> </ul>
Lifecycle phase	<p>Lifecycle phase values include:</p> <ul style="list-style-type: none"> <li>• <b>Pre Release:</b> Date the software was pre-released.</li> <li>• <b>General Availability:</b> Date the software became generally available to the market.</li> <li>• <b>Upgrade</b></li> </ul> <p><b>Note:</b> Only shown when the <b>Lifecycle type</b> field is Internal.</p> <ul style="list-style-type: none"> <li>• <b>End of Support:</b> Date by which the software will not be enhanced by the publisher.</li> </ul> <p>This value corresponds to the Mainstream Support end date for Microsoft according to its <a href="#">Fixed Lifecycle Policy</a>.</p> <ul style="list-style-type: none"> <li>• <b>End of Extended Support:</b> Date by which the publisher will no longer provide any support or updates to the software.</li> </ul> <p>This value corresponds to the Extended Support end date for Microsoft according to its <a href="#">Fixed Lifecycle Policy</a>.</p>

Field	Description
	<ul style="list-style-type: none"> <li>• <b>End of Life:</b> Date by which the software will no longer be manufactured by the publisher.</li> </ul> <p><b>Note:</b> This value isn't applicable for Microsoft because it follows the fixed lifecycle policy providing mainstream support and extended support. For more information, see <a href="#">Fixed Lifecycle Policy</a>.</p>
Active	<p>Indicates if the lifecycle is to be considered or not while evaluating the risk of the software.</p> <p><b>Note:</b> By default, only active life cycles are displayed.</p>
Source	<p>Source of the lifecycle. If the record is created manually, it's set to <b>Internal</b>. If it's created automatically, the field is set to ServiceNow.</p>
Description	<p>Description of the software product lifecycle.</p>

## Software Entitlements

This list shows the entitlement terms of your software license. For more information, see the Software entitlements section in [Software models and Software entitlements](#).

Field	Description
Display name	<p>Automatically generated name based on the software model display name.</p>
License metric	<p>License metric for the license group that the software license is counted against when reconciliation is run. The options for license metric change based on the Metric group field. For more information, see <a href="#">Software license metrics</a>.</p>
Metric group	<p>Metric group based on the Software Model field. Each metric group has a set of license metrics that are specific to the software publisher.</p>
License type	<p>The type determines whether the rights grant full access to the software or if they're being upgraded from a previous version of the software.</p> <p>The following are the various license types:</p> <ul style="list-style-type: none"> <li>• Perpetual</li> <li>• Perpetual + Software Assurance</li> <li>• Software Assurance</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>• Subscription</li> <li>• Step-up</li> <li>• Subscription Step-up</li> </ul>
Active rights	Number of rights granted for this entitlement.
Purchased rights	Number of rights purchased for this entitlement.
Total cost	Total cost of the entitlement calculated from the unit cost.

## Override License Costs

This list shows the override license cost information for your software entitlements.

Field	Description
Software Model	The software model that the software entitlement belongs to.
Metric Group	The metric group the software entitlement belongs to.
License Metric	The license metric specified for the software entitlement.
License Cost	Cost of the license.
License & Maintenance Cost	<p>Cost of the license combined with cost of the maintenance license.</p> <p>Specify a license cost or a license and maintenance cost, to override the true-up cost during reconciliation. If no values are specified in the <b>License Cost</b> or <b>License &amp; Maintenance Cost</b> fields, the software entitlement cost is used for true-up cost calculations.</p> <p><b>Note:</b> For SaaS licenses, only the license cost applies. The license &amp; maintenance cost does not apply.</p>
The following fields appear when the value selected in the License Metric field is Employee.	
Active	Indicates whether the license cost is to be considered for true-up cost calculations.
Lower limit	The minimum number of employees that the licenses are required for.
Upper limit	The maximum number of employees that the licenses are required for.

## Software Model Results

This list shows the software model results associated with the license metric results.

Field	Description
Status	<p>Status of the software model. Possible values are Compliant and Not Compliant.</p> <p>Select the <b>Status</b> field to open the corresponding Software Model Results record, where you can view more in-depth information about the software model result. See <a href="#">View software model results</a> for detailed descriptions of each field on the Software Model Results form.</p>
Agreement type	<p>Agreement type is set on the software entitlement.</p> <ul style="list-style-type: none"> <li>• Common: Generic, Enterprise License Agreement (ELA)</li> <li>• IBM: Generic, Enterprise License Agreement (ELA), International Program License Agreement (IPLA), IBM Customer Agreement (ICA), Unlimited Level Agreement (ULA)</li> <li>• Microsoft: Generic, Enterprise License Agreement (ELA)</li> <li>• Oracle: Generic, Unlimited Level Agreement (ULA)</li> <li>• VMware: Generic, Enterprise License Agreement (ELA), Enterprise Purchasing Program (EPP), Volume Purchasing Program (VPP)</li> </ul> <p><b>i Note:</b> If the agreement type is Enterprise Level Agreement or Unlimited Level Agreement, the <b>Status</b> is Compliant even if there are unlicensed installations or unlicensed subscriptions.</p>
Unlicensed installs	Number of unlicensed software installations that are not covered by any entitlements.
True-up cost	Estimated cost of remediating unlicensed installations based on the lowest number of rights needed (rights needed * average price per right from entitlements). The lowest cost from Purchase Rights remediation options.
Over-licensed amount	Estimated cost of rights not being used. The sum of the Over Licensed amount from the True-up value costs.
Potential savings	
Group	Group specified on which to run reconciliation. Values include None, Country, Department, Company, Region, and Cost Center.
Subgroup	Subgroup specified on which to run reconciliation. Values include None, Country, Department, Company, Region, and Cost Center.

## Metric Attributes

This list shows the metric attributes information of a software model.

Field	Description
Software model	Software model associated with the metric attributes.

Field	Description
Metric group	Grouping for the software metric.  If you have optional publisher packs installed that the software applies to, those options are shown. Otherwise, the metric group value is <b>Common</b> .
License metric	The license metric that the software license is counted against when reconciliation is run (per user, per device, for example).
Description	Attribute type description that is based on the license metric value.
Attribute	Attribute type for reconciling entitlement license metrics. For more information on each attribute type, see <a href="#">Software model metric attributes</a> .
Attribute value	Value of the attribute (integer).
Attribute value is unlimited	Option for setting the attribute as unlimited.

## Vendor Catalog Items

This list shows you the details of the software models associated with a vendor. For more information, see [Vendor catalog items](#).

Field	Description
Name	Name of the catalog item.
Product ID	Item identification number assigned by your organization.
Short Description	A brief description of the item.
Vendor Price	The price at which the item is available in the vendor catalog. If the vendor offers a discount, the vendor price reflects the discounted price.
Rank tier	Displays the overall ranking for this vendor's products and services.

## Client Access

This list shows a client access record details of the users or devices that are accessing a particular version of your server software using a client access license (CAL).

Field	Description
Name	Name of the client access record. Select a name to open the corresponding client access record, where you can view more in-depth information about the record, such as the users or devices that the associated client access licenses (CALs) are assigned to and the configuration items (CIs) that the associated server software is installed on. See <a href="#">Add a software client access record in Software Asset Management classic</a> for more information on client access records in the

Field	Description
	Software Asset Management classic application. See <a href="#">Create a software client access record in workspace</a> for more information on client access records in the Software Asset Workspace.
Count	<p>Number of unique users or devices that are granted access to the associated server.</p> <p><b>Note:</b> If you are using a Citrix software model and User/Device CAL type, the <b>Count</b> field is based on the number of user/device licenses that are assigned to your users or shared devices.</p>
Type	<p>Type of CAL that is associated with the client access record.</p> <ul style="list-style-type: none"> <li>• <b>User CAL:</b> Licenses each user that accesses the associated server, regardless of the number of devices that each user is using to access the server.</li> <li>• <b>Device CAL:</b> Licenses each device that accesses the specified server, regardless of the number of users that are using each device to access the server.</li> <li>• <b>User/Device CAL:</b> Licenses each user or device that accesses the associated server.</li> </ul> <p><b>Note:</b> If you are using a Citrix software model, the User/Device CAL type is based on the user/device licenses that are assigned to your users or shared devices.</p> <ul style="list-style-type: none"> <li>• <b>Reserved Hourly Average Sensor:</b> This metric counts the number of unique active endpoints per clock-hour and averages them over a rolling 28-day period. The count of Reserved Hourly Average Sensor Licenses resets at the start of each clock-hour.</li> <li>• <b>Sensor Subscription:</b> This metric calculates license usage by averaging endpoint counts over four consecutive weeks. Weekly endpoint counts are based on the total number of endpoints consumed in the previous seven days.</li> </ul> <p><b>Note:</b> The Reserved Hourly Average Sensor and Sensor Subscription license metrics are applicable only for CrowdStrike and are available with Xanadu Patch 6 and Software Asset Management - SaaS License Management (sn_sam_saas_int) 14.0.7 version onwards. If you are on any version for Xanadu below Patch 6, refer <a href="#">KB1801232</a>.</p>
Cost Center	Cost center of the users or devices that are granted access to the associated server.
Department	Business department of the users or devices that are granted access to the associated server.
Location	Geographic location of the users or devices that are granted access to the associated server.
Company	Company of the users or devices that are granted access to the associated server.

## Software Subscriptions

This list shows the available subscriptions for a software application.

Field	Description
Display name	Software publisher and product for the subscription.
User principal name	The user's email address for the subscription.
Software model	The software model for the subscription.
Last activity	The last date when this subscription was last used.
Subscription profile	Profile that is associated with the subscription identifier.

## Downgrade Rights

This list shows the downgrade rights information of a software model. For more information, see [Downgrade Rights](#).

Field	Description
Parent software model	Parent (or the topmost hierarchy) of the software model.
Software model	Software model associated with the downgrade rights. Based on the parent software model that you select, the related software models appear in the list. For example, if you select Microsoft SQL Server 2012 Standard as the parent software model, only Microsoft -related software models appear in the list.
Source	Source of the downgrade rights. If the record is created manually, it's set to <b>Internal</b> . If it's created automatically, the field is set to ServiceNow.
Active	<p>Option that indicates if the downgrade rights on the software model are active or not. If needed, you can deactivate the downgrade rights. Only the active downgrade rights appear in the field. To see all the downgrade rights, remove the Active condition from the filter.</p> <p>If you deactivate a downgrade right on a software model, the change is propagated to the related software entitlement downgrade rights, irrespective of the source of the downgrade right. You cannot deactivate the downgrade right on a software model and keep the downgrade right activated on the software entitlement.</p>

Field	Description
	<p>To deactivate a downgrade right, double-click the field to display the toggle button, select <b>false</b>, and then select the Save icon (✔).</p> <ul style="list-style-type: none"> <li>• <b>false</b>: deactivates the downgrade right on the software model and on the related software entitlements.</li> <li>• <b>true</b>: reactivates the downgrade right on the software model and on the related software entitlements.</li> </ul>

### Matching Discovery Models

This list shows the discovery maps that match the software publisher and product fields of the software model.

Field	Description
Display name	Name of the discovery model. This value is generated automatically using the discovered publisher, discovered product, and discovered version.
Normalization status	Status of the normalization process: <ul style="list-style-type: none"> <li>• Normalized</li> <li>• Partially Normalized</li> <li>• Publisher Normalized</li> <li>• Match Not Found</li> <li>• Manually Normalized</li> <li>• New</li> </ul>
Publisher	Normalized publisher of the software.
Product	Normalized product name of the software.
Version	Normalized version of the software product.
Edition	Normalized edition of the software.

### Product Lifecycles for all Versions

This list shows the life cycle for all versions of the software product.

Field	Description
Publisher	Name of the publisher.
Product	Name of the software product.
Version	Licensable version of the software.
Full version	The granular licensable version of the software.

Field	Description
Edition	Edition of the software.
Lifecycle phase	<p>Life-cycle phase values include:</p> <ul style="list-style-type: none"> <li>• <b>Pre Release:</b> Date the software was pre-released.</li> <li>• <b>General Availability:</b> Date the software became generally available to the market.</li> <li>• <b>Upgrade</b> <ul style="list-style-type: none"> <li>• <b>Note:</b> Only shown when the <b>Lifecycle type</b> field is Internal.</li> </ul> </li> <li>• <b>End of Life:</b> Date by which the software will no longer be manufactured by the publisher. <ul style="list-style-type: none"> <li>• <b>Note:</b> This value isn't applicable for Microsoft because it follows the fixed life-cycle policy providing mainstream support and extended support. For more information, see <a href="#">Fixed Lifecycle Policy</a>.</li> </ul> </li> <li>• <b>End of Support:</b> Date by which the software will not be enhanced by the publisher. <p>This value corresponds to the Mainstream Support end date for Microsoft according to its <a href="#">Fixed Lifecycle Policy</a>.</p> </li> <li>• <b>End of Extended Support:</b> Date by which the publisher will no longer provide any support or updates to the software. <p>This value corresponds to the Extended Support end date for Microsoft according to its <a href="#">Fixed Lifecycle Policy</a>.</p> </li> </ul>
Lifecycle type	<p>The product life cycle type values include:</p> <ul style="list-style-type: none"> <li>• <b>Internal:</b> The life cycle date is specific to the customer (for example, based on their internal policy, based on a custom contract/agreement with the publisher).</li> <li>• <b>Publisher:</b> The life cycle date comes from publisher sources and is not specific to a customer.</li> </ul>
Source	Source of the life cycle.

Field	Description
	<ul style="list-style-type: none"> <li>• If the record is created manually, this value set to Internal.</li> <li>• If the record is created automatically, the field is set to ServiceNow.</li> </ul>
Description	Description of the software product life cycle.
Phase start date	Date the life-cycle phase starts.
Risk	<p>The risk level to an organization with regards to the life-cycle phase. For example, the risk for the end of support phase for a publisher maybe moderate or the end of life phase maybe high.</p> <p>Risk type values include:</p> <ul style="list-style-type: none"> <li>• Very High</li> <li>• High</li> <li>• Moderate</li> <li>• Low</li> <li>• None</li> </ul>
Active	<p>Indicates if the life cycle is to be considered or not while evaluating the risk of the software.</p> <p><b>Note:</b> By default, only active life cycles are displayed.</p>

### Software model metric attributes

Software model metric attributes and related list field descriptions.

### Metric attributes

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
Maximum installs per right		True	The number of installs each right can license.	Per Named Device	Common
Minimum cores per processor	8	False	<p>The number of core rights that must be applied to a physical processor or set of vCores.</p> <p><code>Licensable cores =</code></p>	Per Core (with CAL)	Microsoft

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
			Processors * Max (Minimum cores per processor, Cores)		
Minimum cores per VM	8	False	The number of core rights that must be applied to a virtual machine (VM).	Per Core (with CAL)	Microsoft
Maximum active OSEs per server	2	False	The maximum number of Operating System Environments (OSEs) allowed to run software on a physical server.  Licenses required = (Licensable OSEs/ Maximum active OSEs per server) * Licensable cores	Per Core (with CAL)	Microsoft
Minimum cores per server	16	False	The number of core rights that must be applied to a physical server.  Licensable cores = Max (Processors * Max (Minimum cores per processor, Cores), Minimum cores per server)	Per Core (with CAL)	Microsoft

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
Maximum installs per OSE	1	False	<p>The maximum number of installs allowed within one of a server's OSEs.</p> <p>Licenses required = (Licensable installs per OSE / Maximum installs per OSE) * Licensable cores</p>	Per Core (with CAL)	Microsoft
Minimum cores per processor	1	False	The number of core rights that must be applied to a physical processor.	Per Core	Common
Maximum size of instance on cloud	8	False	<p>Oracle Database Standard Edition, Oracle Database Standard Edition One and Oracle Database Standard Edition 2 have maximum limits on the size of the instances to which they're deployed on Oracle Authorized Cloud Environments such as Microsoft Azure and AWS. Oracle Database Enterprise Edition doesn't have any maximum limits on the size of the instances</p>	Per Processor	Oracle

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
			to which it's deployed to on Oracle Authorized Cloud Environments such as Microsoft Azure and AWS.		
Maximum number of sockets per server	2	False	Oracle Database Standard Edition, Oracle Database Standard Edition One and Oracle Database Standard Edition 2 may only be licensed on servers that have a value less than the maximum number of sockets.	Per Processor	Oracle
Maximum installs per right		True	The maximum number of installs each right can license.	Per Named User	VMware
Maximum installs per right		True	The maximum number of installs each right can license.	Per Named User	IBM
Maximum installs per right		True	The maximum number of installs each right can license.	Per Named User	Common
Maximum VMs per right	2	False	For RHEL Server, this is the number of VMs running on a physical host that each subscription can license.	Per Socket-pair	Red Hat

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
			<p>A single VM running on a host needs one subscription.</p> <p>For RHEL for Virtual Datacenters, this is the number of VMs that can be licensed with one subscription for each socket-pair on the physical host.</p>		
Maximum sockets per right	2	False	The number of sockets on the physical host each subscription can license. A single socket host needs one subscription.	Per Socket-pair	Red Hat
Maximum processors per right	2	False	<p>The maximum number of physical processors each right can license.</p> <p>Licenses required = Processors / Maximum processors per right</p>	Per Processor	Microsoft
Maximum active OSEs per server	2	False	<p>The maximum number of OSEs allowed to run software on a physical server.</p> <p>Licenses required = Licensable OSEs / Maximum</p>	Per Processor	Microsoft

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
			active OSEs per server		
Maximum installs per OSE	1	False	The maximum number of installs allowed within one of the server's OSEs.  Licenses required = Licensable installs per OSE / Maximum installs per OSE	Per Processor	Microsoft
Maximum installs per OSE	1	False	The maximum number of installs allowed within one of the server's OSEs.  Licenses required = Licensable installs per OSE	Server (Per Instance)	Microsoft
Maximum installs per right	1	False	The maximum number of installs each right can license.	Per Application Instance	VMware
Maximum installs per right		True	The maximum number of installs each right can license.	Per OSI	VMware
Minimum NUPs	5	False	If licensed by Named User Plus (NUP), then both Oracle Database Standard Edition and Oracle Database Standard	Named User Plus	Oracle

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
			Edition One require a minimum of five NUP licenses each.		
Minimum NUPs for WebLogic on-premise deployments	10	False	The minimum number of users required to be licensed for programs accessing a processor. This attribute is used for reconciling entitlements with an Oracle NUP license metric for Oracle WebLogic Standard and WebLogic Enterprise deployed on-premise. For WebLogic Standard, the attribute counts occupied sockets and for WebLogic Enterprise, the attribute counts processor cores.	Named User Plus	Oracle
Maximum number of sockets per server	2	False	Oracle Database Standard Edition, Oracle Database Standard Edition One and Oracle Database Standard Edition 2 may only be licensed on servers that have a value less than the maximum number of sockets.	Named User Plus	Oracle

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
Minimum users per processor	25	False	The minimum number of users allowed to access a physical processor. This metric attribute is applicable for both on-premise and Oracle Authorized Cloud Environments such as Microsoft Azure and AWS.	Named User Plus	Oracle
Minimum NUPs on cloud	10	False	If licensed by NUP, Oracle Database Standard Edition 2 requires a minimum of 10 NUP licenses per 8 vCPUs on Oracle Authorized Cloud Environments such as Microsoft Azure and AWS.	Named User Plus	Oracle
Maximum size of instance on cloud	8	False	Oracle Database Standard Edition, Oracle Database Standard Edition One and Oracle Database Standard Edition 2 have maximum limits on the size of the instances to which they're deployed on Oracle Authorized Cloud Environments	Named User Plus	Oracle

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
			such as Microsoft Azure and AWS. Oracle Database Enterprise Edition doesn't have any maximum limits on the size of the instances to which it's deployed to on Oracle Authorized Cloud Environments such as Microsoft Azure and AWS.		
Minimum NUPs for WebLogic cloud deployments	10	False	The minimum number of users required to be licensed for programs accessing a vCPU. This attribute is used for reconciling entitlements with an Oracle NUP license metric for Oracle WebLogic Standard and WebLogic Enterprise on Oracle Authorized Cloud Environments such as AWS or Azure Cloud. For the Standard edition, a minimum of 10 NUP licenses are required per 8 vCPUs on either AWS or Azure Cloud. For the	Named User Plus	Oracle

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
			Enterprise edition, if hyper-threading is enabled then 10 NUP licenses are required per 2 vCPUs, and if hyper-threading is not enabled then 10 NUP licenses are required per vCPU.		
Minimum NUPs per server	10	False	If licensed by NUP, Oracle Database Standard Edition 2 requires a minimum of 10 NUP licenses per server.	Named User Plus	Oracle
Maximum cores per processor		True	One license is required per CPU up to the physical core per CPU maximum. If a CPU has more physical cores than the maximum, additional CPU licenses are required.  Licenses required = Processors * (Cores / Maximum cores per processor)	Per Processor	IBM
Maximum cores per processor		True	One license is required per CPU up to the physical core per CPU maximum. If a CPU has more physical	Per Processor	Citrix

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
			<p>cores than the maximum, additional CPU licenses are required.</p> <p>Licenses required = Processors * (Cores/Maximum cores per processor)</p>		
Maximum cores per processor	32	False	<p>Effective April 2, 2020, VMware requires one license for up to 32 physical cores. If a CPU has more than 32 cores, additional CPU licenses are required.</p> <p>Licenses required = Processors * (Cores/Maximum cores per processor)</p>	Per Processor	VMware
Maximum cores per processor		True	<p>One license is required per CPU up to the physical core per CPU maximum. If a CPU has more physical cores than the maximum, additional CPU licenses are required.</p> <p>Licenses required = Processors * (Cores/Maximum</p>	Per Processor	Common

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
			cores per processor)		
Maximum installs per right		True	The maximum number of installs each right can license.	Per Device	Adobe
Maximum installs per right		True	The maximum number of installs each right can license.	Per Device	IBM
Maximum installs per right		True	The maximum number of installs each right can license.	Per Device	Microsoft
Maximum installs per right		True	The maximum number of installs each right can license.	Per Device	Citrix
Maximum installs per right		True	The maximum number of installs each right can license.	Per Device	Common
Maximum installs per right		True	The maximum number of installs each right can license.	Per Device	VMware
Minimum cores per VM	4	False	The number of core rights that must be applied to a virtual machine.	Per Core	Microsoft
Minimum cores per processor	4	False	The number of core rights that must be applied to a physical processor or set of vCores.	Per Core	Microsoft
Maximum installs per right		True	The maximum number of installs each right can license.	Per User	Adobe

Attribute	Attribute value	Attribute value is unlimited	Description	License metric	Metric group
Maximum installs per right		True	The maximum number of installs each right can license.	Per User	Microsoft
Maximum installs per right		True	The maximum number of installs each right can license.	Per User	IBM
Maximum installs per right		True	The maximum number of installs each right can license.	Per User	Citrix
Maximum installs per right		True	The maximum number of installs each right can license.	Per User	Common

### Software entitlement fields

Software Entitlement form and related list field descriptions.

### Software Entitlement form

**i Note:** From the Xanadu release, the Database option column no longer exists in the Software Entitlement [alm\_license] and the Override License Cost [samp\_override\_license\_cost] tables. If you customized your form view prior to the Xanadu release to include the database option column, then you get to see the Database option in the software entitlement form.

Field	Description
Display name	Automatically generated name based on the software model display name.
Asset tag	Serial number and the bar code used for tracking the asset.
Publisher part number	<p>Publisher part number (PPN) from the Software Product Definitions lookup list of predefined software that may have already been purchased.</p> <p>You can edit this field in existing entitlements.</p> <p>When you select a publisher part number, you may encounter a message: Many underlying software models are being created. These might be part of suite components, downgrade rights or next version. Please validate on completion. The message appears only if there are greater than or equal to 50 suite components for the software model and if any of the following conditions are met:</p>

Field	Description
	<ul style="list-style-type: none"> <li>• A software model doesn't exist for any suite component</li> <li>• A software model doesn't exist for any downgrade right</li> <li>• A software model doesn't exist for the next version</li> </ul> <p><b>Note:</b> If a software model exists for the publisher part number, the <b>Software model</b> field is automatically populated. Otherwise, the software model is automatically created for you directly from this form. If there are multiple software models created with the same discovery map conditions, the software model must be selected manually.</p>
Software model	<p>The software model to match the entitlement.</p> <p><b>Note:</b> A warning message is shown if the publisher part number isn't associated with the publisher and product for the software model. You can either change the software model, or save the entitlement as is.</p> <p>You can edit this field in existing entitlements.</p>
Agreement type	<p>Based on the agreement type that you select, downgrade rights are automatically generated.</p> <p><b>Note:</b> If you select any of the following agreement types, the status of the entitlement is Compliant even if you have unlicensed installations:</p> <ul style="list-style-type: none"> <li>• <b>Enterprise Agreement</b></li> <li>• <b>Enterprise Enrollment</b></li> <li>• <b>Enterprise Subscription Agreement</b></li> <li>• <b>Enterprise Subscription Enrollment</b></li> <li>• <b>Enterprise License Agreement (ELA)</b></li> <li>• <b>Enterprise Term License Agreement (ETLA)</b></li> <li>• <b>Server and Cloud Enrollment (SCE)</b></li> <li>• <b>Unlimited License Agreement (ULA)</b></li> </ul>
License type	<p>The type determines whether the rights grant full access to the software or if they're being upgraded from a previous version of the software.</p> <p>The following are the various license types:</p> <ul style="list-style-type: none"> <li>• Perpetual</li> <li>• Perpetual + Software Assurance</li> <li>• Software Assurance</li> <li>• Subscription</li> <li>• Step-up</li> <li>• Subscription Step-up</li> </ul>

Field	Description
	<p><b>Note:</b> After you upgrade to the Xanadu release and a content update is performed, if the content update changes the license type of a specific PPN from Step-up to Subscription Step-up, all entitlements associated with that PPN will be updated to Subscription Step-up entitlements.</p> <p>The default value for SaaS entitlements is <b>Subscription</b>.</p> <p>For more information about the license types and their impact on software reconciliation, see <a href="#">Impact of different license types on software reconciliation</a>.</p>
Metric group	<p>This field is automatically populated based on the <b>Software Model</b> field. Each metric group has a set of license metrics that are specific to the software publisher.</p> <p><b>Note:</b> If this field is set to <b>Consumption</b> or <b>Subscription</b>, the <b>License type</b> field is automatically set to <b>Subscription</b>.</p>
License metric	<p>License metric for the license group that the software license is counted against when reconciliation is run. The options for license metric change based on the <b>Metric group</b> field.</p> <p>For more information, see <a href="#">Software license metrics</a>.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>The default value for SaaS entitlements is <b>User Subscription</b>.</li> <li>For SaaS Consumption, the spend in the License Metric Results (samp_license_metric_result) gets calculated for the current subscription period only, which isn't the total cost of the entitlement. For example, if the Purchased rights are 100, the Unit cost is \$1, the License type is Subscription, the Subscription period is Monthly, and the Start date and End date are set to a period of 2 months, then the Total cost would be \$200. But since the consumption is reconciled for the current subscription period, the spend in the License Metric Results shows as \$100.</li> </ul>
Unlimited license	<p>Indicates that the entitlement being created is an unlimited license.</p>
Subscription period	<p>Billing frequency for your software subscription. The options are <b>Monthly</b>, <b>Quarterly</b>, <b>Annually</b>, and <b>Entire Subscription Period</b>. The <b>Entire Subscription period</b> option indicates that you're required to pay only after throughout the entire duration of your subscription.</p> <p>If you select <b>Monthly</b>, <b>Quarterly</b>, or <b>Annually</b>, you must specify the time period during which the subscription is valid in the <b>Start date</b> and <b>End date</b> fields. If you select <b>Entire Subscription Period</b>, only the <b>Start date</b> field is required.</p> <p>This field appears only if you select <b>Subscription</b> or <b>Subscription Step-up</b> from the License type list.</p>
Start date	<p>Start date of your subscription, maintenance entitlement, or SA service.</p>


Field	Description
	This field appears only if you select <b>Subscription, Perpetual + Maintenance, Maintenance, Perpetual + Software Assurance, Software Assurance, Step-up,</b> or <b>Subscription Step-up</b> from the License type list.
End date	<p>End date of your subscription, maintenance entitlement, or SA service.</p> <p>After the end date is reached, the maintenance flag is cleared and the state is retired if <b>Software Assurance</b> was specified as the <b>License type</b>.</p> <p>This field appears only if you select <b>Subscription, Perpetual + Maintenance, Maintenance, Perpetual + Software Assurance, Software Assurance, Step-up,</b> or <b>Subscription Step-up</b> from the License type list.</p>
Rights per license pack	<p>Number of rights associated with each pack that is purchased for Microsoft products that use Per Core or Per Core with CAL licenses.</p> <p>For Microsoft products, the licenses are available in packs. For example, SQL server core licenses are available in packs of two.</p>
Number of packs	<p>Number of packs for Microsoft products that use Per Core or Per Core with CAL licenses.</p> <p>You can edit this field in an existing entitlement. If you change the value in this field, the <b>Purchased rights</b> field is automatically updated.</p>
Purchased rights	<p>Number of rights that you're purchasing.</p> <p>You can edit this field in an existing entitlement. If you change the value in the this field, the expense line item is automatically updated.</p> <p><b>Note:</b> If you have specified a Microsoft Per Core or Microsoft Per Core with CAL license type, this field is automatically populated. This value is based on the value entered in the <b>Rights per license pack</b> field multiplied by the value in the <b>Number of packs</b> field.</p>
Active rights	<p>Number of rights to be granted for this entitlement.</p> <p><b>Note:</b> If an enterprise contract is attached to the license, the <b>Active rights</b> field isn't shown.</p>
Allocations available	<p>Number of user or device allocations that haven't been created for an entitlement.</p> <p>Allocations available = (number of active rights) - (sum of all allocation quantities).</p>
Unit cost	<p>Unit cost of the software.</p> <p><b>Note:</b> Required for total cost and savings calculations on the <a href="#">Software Asset Management dashboard</a>.</p>
Total cost	Total cost of the entitlement calculated from the unit cost.
Total units	Total number of software units that you've purchased for this entitlement.

Field	Description
	This field appears only if the <b>Metric group</b> field is set to <b>Consumption</b> .
Unrestricted consumption	<p>If selected, license consumption isn't limited to the entities listed in the consumption rule. Any entity can consume rights, but the entities in the consumption rules have rights reserved for them. The reserved rights come from the license pool column.</p> <p><b>Note:</b> This check box can only be selected if all existing consumption rules have a license pool. Any new consumption rule must define a pool as well.</p>

### General tab

Field	Description
Serial number	Unique number assigned for identification of the asset.
Owned by	User or department with financial ownership of the asset. The asset owner can be different than the manager.
State	<p>Current state of the asset. Values include <b>On order</b>, <b>In stock</b>, <b>In transit</b>, <b>In use</b>, <b>Consumed</b>, <b>In maintenance</b>, <b>Retired</b>, <b>Missing</b>, and <b>Build</b>.</p> <p><b>Note:</b> When you start creating an entitlement, its initial status is <b>Build</b>. After you publish the entitlement, the status changes to <b>In use</b>.</p> <p>If the state is <b>Retired</b>, the <b>Active rights</b> field is set to <b>0</b>.</p> <p>For entitlements with a <b>Subscription</b> license duration, the <b>State</b> field is automatically updated based on the <b>Start date</b> and <b>End date</b> fields.</p>
Substate	<p>More details about the software license stage. The available substate settings depend on the state selected in the <b>State</b> field.</p> <p>For example, if you select the <b>Retired</b> state, the substate options available are <b>Disposed</b>, <b>Sold</b>, <b>Donate</b>, and <b>Vendor credit</b>.</p>
Active maintenance	<p>Indicates if Subscription, SA, or maintenance is activated on the entitlement. If the entitlement has an active SA, subscription, or maintenance associated with it, the check box is automatically selected. If an entitlement initially had subscription, SA or maintenance activated on it and subscription, SA or maintenance is no longer active, the check box is automatically cleared.</p> <p>If you upgrade from a previous release to the Xanadu release, this check box is automatically selected for your existing entitlements that have an active SA, subscription, or maintenance associated with them.</p>
Company	Company that this asset belongs to.
Location	Where the license is used. For example, you can specify a site, country, or region.
Department	Department of the person <b>Assigned to</b> this software license.

## Financial tab

Field	Description
Vendor	Company that the asset was purchased from.
Invoice number	Invoice that the asset was billed under.
Request line	Request line linked to the asset.
Purchased	The date the entitlement was purchased. This date is considered when reconciliation runs as Microsoft has updated its licensing rules for dedicated hosts on AWS and Microsoft Azure.   <b>Note:</b> The purchased date is also visible when importing entitlements.
Opened	Date that the request was opened.
GL account	General ledger account number associated with the asset.
Cost center	Cost center financially responsible for the asset.


## Contracts tab

When [importing software entitlements](#), use the **Contract number** column on the downloadable template to link the contracts to the entitlements. Since the **Contract number** is a reference field, the system first searches for matches to existing contracts, so enter existing contract numbers. If no matching contract number is found, entitlement import errors are generated.

You should be able to create the contract from the error, enabling for the creation of the entitlement and the appearance of the contract on the entitlement form in the Contracts related list. You can also skip the contract creation process and still create the entitlement, but without a contract.

Field	Description
Lease contract	Contract that applies to the asset.
Warranty expiration	Expiration date of the warranty.
Support group	Group that supports incidents related to the asset.
Supported by	Individual that supports incidents related to the asset.

## User Allocations tab

 **Note:** This tab appears only if you're using a user-based license metric, such as Per User or User CAL.

Field	Description
Assigned condition	Condition to account for only user allocations during reconciliation. Only user allocations that meet the specified conditions are included in the reconciliation.

Field	Description
Assigned to	User that the associated rights are allocated to.  <b>Note:</b> If you're using a client access record to track and manage the users that are accessing your server software, this field displays the name of each user that you assigned the associated client access licenses (CALs) to. See <a href="#">Add a software client access record in Software Asset Management classic</a> for detailed instructions on how to assign CALs to users in the Software Asset Management classic application. See <a href="#">Create a software client access record in workspace</a> for detailed instructions on how to assign CALs to users in the Software Asset Workspace.
Quantity	Number of rights that are allocated to the user.
License key	Unique license key that is allocated to the user.

### Device Allocations tab

**Note:** This tab appears only if you're using a device-based license metric, such as Per Device or Device CAL.

Field	Description
Allocated condition	Condition to account for only device allocations during reconciliation. Only device allocations that meet the specified conditions are included in reconciliation.
Assigned to	Device that the associated rights are allocated to.  <b>Note:</b> If you're using a client access record to track and manage the devices that are accessing your server software, this field displays the name of each device that you assigned the associated client access licenses (CALs) to. See <a href="#">Add a software client access record in Software Asset Management classic</a> for detailed instructions on how to assign CALs to devices in the Software Asset Management classic application. See <a href="#">Create a software client access record in workspace</a> for detailed instructions on how to assign CALs to devices in the Software Asset Workspace.
Quantity	Number of rights that are allocated to the device.
License key	Unique license key that is allocated to the device.

### Related Entitlements tab

**Note:** This tab appears only if your software entitlement is linked to a related entitlement.

Field	Description
Related Entitlement	Related entitlement that you want to link to your software entitlement.

Field	Description
License type	License type that is associated with the related entitlement.
Active rights	Number of rights that you want to grant to the related entitlement.
Software Entitlement	Software entitlement that you're linking the related entitlement to.
<p><b>i Note:</b> This field appears only in the Software Asset Workspace. This field doesn't appear in the Software Asset Management classic application.</p>	

### Upgraded Entitlements tab

Field	Description
From Entitlement	<p>The entitlement from which rights are upgrading. Multiple upgrade entitlements are supported.</p> <p>You can upgrade previously owned rights for a particular version of software to a newer version (for example, Microsoft Office Professional Plus 2013 to Microsoft Office Professional Plus 2016).</p> <p><b>i Note:</b> This field is available when <b>Upgrade</b> is selected from the <b>License type</b> field.</p> <p>The rights from entitlements that you're upgrading from get deactivated when you upgrade because they're moved to the new entitlement.</p>
Number of rights	Number of rights to upgrade.

### Activities tab

Field	Description
Work notes	Work notes for the asset.

### Downgrade Rights related list

Field	Description
Software entitlement	Software entitlement with which the downgrade is associated.
Software model	Software model corresponding to the downgrade right.
Active	Indicates if the downgrade rights on the software entitlement are active or not. If needed, you can deactivate the downgrade rights. Only the active downgrade

Field	Description
	<p>rights appear in the list. To see all the downgrade rights, remove the Active condition from the filter.</p> <p>If you deactivate a downgrade right on a software model, the change is propagated to the related software entitlement downgrade rights; irrespective of the source of the downgrade right.</p> <p>To deactivate a downgrade right, double-click the field to display the toggle button. Select false and select the Save icon (✔).</p> <ul style="list-style-type: none"> <li>• false: Deactivates the downgrade right on the software model and on the related software entitlements.</li> <li>• true: Deactivates the downgrade right on the software model and on the related software entitlements.</li> </ul>
Order	Order of the downgrade. If necessary, you can edit this field.
Start date	Start date of the downgrade.
End date	End date of the downgrade.

### Entitlement Consumption Rules

**Note:** This tab appears for all publishers except Workday. Additionally, the tab appears for all license metrics except the following:

- Resource Value Unit (RVU)
- Resource Value Unit (RVU) Full Capacity
- Resource Value Unit (RVU) Sub-capacity
- Authorized User Value Unit
- Employee User Value Unit
- External User Value Unit
- Employee

Field	Description
Software entitlement	The software entitlement that the consumption is linked to.
Consumption rule	The consumption rule linked to the entitlement.
License pool	License pool associated with the consumption rule. For details on license pools, see <a href="#">Reconciliation of licenses across global entities</a> .

### License Key related list

Field	Description
Is allocated	Option that indicates that the license key has been allocated.
License key	License key value. Must be unique for an entitlement.
Software entitlement	Software entitlement associated with the license key.

## Software model results license metric results fields

Software model results License Metric Results form and related list field descriptions. You can access this form through the License Metric Results related list in your software model results.

### License Metric Results form

Two license metric results are generated if a software model has two entitlements, one with a perpetual SA license type and the other with a subscription license type. One license metric result where active maintenance is true and the other where the active maintenance is false. In such a scenario, two license position reports are generated, one with active maintenance true and the other one with active maintenance false.

Field	Description
License metric	Name of the license metric that the software license is counted against when reconciliation runs.
Software model result	Software model result associated with the license metric results.
Group	Group on which reconciliation was run.
Subgroup	Subgroup on which reconciliation was run.
Rights owned	Sum of all active rights from entitlements that share a license metric.
Rights used	Sum of rights used during reconciliation (allocated + not allocated and installed).
Rights available	Sum of rights not used during reconciliation (rights owned – rights used).
Over-licensed amount	Estimated cost of unused rights.
<b>Right Allocations</b>	
Allocated in use	Rights that are allocated and are used to license installations.
Not allocated in use	Number of rights that are used to license installations, but not allocated.  When this value is greater than 0, two remediation options (Create Allocations and Remove Unallocated Installs) are automatically created for each unique license metric in the software model that meets this requirement, except User CAL and Device CAL.
Allocated not in use	Rights that are allocated but are not being used to license any installations.  <b>i Note: Allocated not in use</b> reflects rights that are wasted because the user or device for which these rights have been allocated do not have the software installed.

Field	Description
	When this value is greater than 0, a Remove Allocations remediation option is automatically created for each unique license metric in the software model that meets this requirement.
Not allocated	Number of rights that have not been allocated (rights owned – allocated regardless of whether installed or not).
Allocations needed	Number of allocations needed for compliance. Only used for Per Named User and Per Named Device license metrics.

### Rights Used By related list

Field	Description
Used by	<p>User or device that is using the rights.</p> <p><b>i Note:</b> If your rights are associated with client access records, the <b>Used by</b> field displays the name of each client access record that is using those rights. Select a client access record name to view the corresponding breakdown of users or devices that are using the associated rights. See <a href="#">Add a software client access record in Software Asset Management classic</a> for more information on client access records in the Software Asset Management classic application. See <a href="#">Create a software client access record in workspace</a> for more information on client access records in the Software Asset Workspace.</p>
Rights used	Sum of rights used during reconciliation (allocated + not allocated and installed).
Allocated in use	Rights that are allocated and are used to license installations.
Not allocated in use	<p>Number of rights that are used to license installations, but not allocated.</p> <p>When this value is greater than 0, two remediation options (Create Allocations and Remove Unallocated Installs) are automatically created for each unique license metric in the software model that meets this requirement, except User CAL and Device CAL.</p>
Allocated not in use	<p>Rights that are allocated but are not being used to license any installations.</p> <p><b>i Note: Allocated not in use</b> reflects rights that are wasted because the user or device for which these rights have been allocated do not have the software installed.</p> <p>When this value is greater than 0, a Remove Allocations remediation option is automatically created for each unique license metric in the software model that meets this requirement.</p>
Nontransferable rights	Remaining rights from a core pack that cannot be used to license any additional devices. Nontransferable rights are available only for Microsoft Per Core and Microsoft Per Core with (CAL).
Allocations needed	Number of allocations needed for compliance. Only used for Per Named User and Per Named Device license metrics.

## Rights Needed By related list

Field	Description
Rights needed by	<p>Unlicensed user or device that requires rights.</p> <p><b>Note:</b> If rights are needed to cover unlicensed users or devices in an associated client access record, the <b>Rights needed</b> field displays the name of the client access record that requires those additional rights. Select the client access record name to view the corresponding breakdown of unlicensed users or devices that require rights. See <a href="#">Add a software client access record in Software Asset Management classic</a> for more information on client access records in the Software Asset Management classic application. See <a href="#">Create a software client access record in workspace</a> for more information on client access records in the Software Asset Workspace.</p>
Rights needed	Number of rights that are required to cover the unlicensed user or device.

## Licensed Installs related list

**Note:** This related list is not available for SAP license metrics.

Field	Description
Display name	Name of the software installation.
Publisher	Publisher of the software.
Version	Version of the software.
Discovery model	Software discovery model for the installed software.
Installed on	Hardware on which the software is installed.
Assigned to	User or device to which the software is assigned.

## Downgrades/Upgrades related list

**Note:** This related list is not available for SAP license metrics.

Field	Description
Software model	Software model that is available for upgrade or downgrade.
Rights used	Sum of rights used during reconciliation (allocated + not allocated and installed).
Allocated in use	Rights that are allocated and are used to license installations.
Not allocated in use	<p>Number of rights that are used to license installations, but not allocated.</p> <p>When this value is greater than 0, two remediation options (Create Allocations and Remove Unallocated Installs) are automatically created for each unique license</p>

Field	Description
	metric in the software model that meets this requirement, except User CAL and Device CAL.
Allocated not in use	<p>Rights that are allocated but are not being used to license any installations.</p> <p><b>i Note: Allocated not in use</b> reflects rights that are wasted because the user or device for which these rights have been allocated do not have the software installed.</p> <p>When this value is greater than 0, a Remove Allocations remediation option is automatically created for each unique license metric in the software model that meets this requirement.</p>
Allocations needed	Number of allocations needed for compliance. Only used for Per Named User and Per Named Device license metrics.

### SAP System Users related list

**i Note:** This related list is available only for SAP named user license metrics.

Field	Description
Display name	Identifier containing the SAP user ID and SAP client.
User	Full name of the SAP user.
SAP user id	Unique identifier for the SAP user.
Email	Email address of the SAP user.
First name	First name of the SAP user.
Last name	Last name of the SAP user.
User type	Type of SAP user.
License type	Named user type value assigned to the SAP user.
Named user type	Normalized named user type of the SAP user.
Optimized named user type	Optimized named user type of the SAP user.
SAP client	Organizational subunit to which the SAP user belongs.

### Licensed Subscriptions related list

Field	Description
Display name	Identifier containing the publisher and product of the software subscription.
User	Name of the subscription user.
User principal name	Email address of the subscription user.
Software model	Software model for the subscription software.
Subscription profile	Direct integration profile for the subscription software.

Field	Description
Subscription type	Type of subscription.

### Software subscription fields

Software subscription form fields, their descriptions, and the SaaS integrations for which these fields are populated.

Some of the fields in the Software subscription table get populated for specific SaaS integrations while some get populated for all SaaS integrations.

#### Software subscription form fields

Field	Description	Is pulled from the portal?	SaaS integration
Display name	Name of the subscription downloaded from the SaaS portal.	Yes	All SaaS integrations
Publisher	The publisher for the subscription.	Yes	All SaaS integrations
Product	The software product for the subscription.	Yes	All SaaS integrations
Version	Version of the software product.	Yes	All SaaS integrations
Edition	Edition of the software product.	Yes	All SaaS integrations
Software model	A standardized version of a software product for the subscription. The software model is automatically created for SaaS integrations.	No (Automatically created by ServiceNow)	All SaaS integrations
User	The ServiceNow user record in the User [sys_user] table representing a real person within an organization. In general, the User table is populated through the Active directory integration in the organization.		All SaaS integrations
User principal name	A unique identifier for a user in the SaaS portal. This is typically the email address of the user in the SaaS portal.	Yes	All SaaS integrations
Last activity	The date when the subscription record was last active.  For Microsoft 365 products, this field is populated	Yes	All SaaS integrations except CrowdStrike and Docusign

**Software subscription form fields (continued)**

Field	Description	Is pulled from the portal?	SaaS integration
	from the Software Usages [samp_sw_usage] table and Microsoft 365 Apps Usage Reports [samp_m365-apps-usage-report] table. This field determines usage-based optimization recommendation.		
Inactive days	Number of days for which a user's subscription has been inactive.  This field is visible on the Software Subscriptions form when the <b>Last activity</b> field isn't empty. Inactive days are calculated using the value in the <b>Last activity</b> field.	No (Automatically determined)	All SaaS integrations except CrowdStrike
Subscription profile	Display name of the integration profile.	No (Automatically created by ServiceNow)	All SaaS integrations
Licensable software model	Name of the software model relevant for licensing purposes.	No (Automatically determined)	All SaaS integrations
Subscription identifier	A unique technical identifier provided by the SaaS provider, such as a service plan ID, that indicates the specific product or plan a user is subscribed to. This identifier allows ServiceNow to correctly map the subscription to the corresponding software model.  For example, identifiers like VISIOCLIENT and ENTERPRISEPACK map to specific products such as Microsoft Visio Plan 2 and Office 365 E3, respectively.	Yes	All SaaS integrations
Inferred suite	The inferred suite model that this software subscription belongs to.	No (Automatically determined)	Microsoft 365 integration
Discovered user	The record in the Discovered User	No (Automatically determined)	All SaaS integrations

**Software subscription form fields (continued)**

Field	Description	Is pulled from the portal?	SaaS integration
	[samp_discovered_user] table that represents a user identity discovered from an external system.		
Active	Indicates if the subscription record is active.	No (Automatically determined)	All SaaS integrations
Is reconciled	Indicates whether the SaaS subscription has been reconciled.  This field is populated after reconciliation is run.	No (Automatically determined)	All SaaS integrations
License metric result	License metric result of the software product that is populated after reconciliation. For more information on license metric results, see <a href="#">Software reconciliation results</a> .	No (Automatically determined)	All SaaS integrations
Product result	Product result of the software product that is populated after reconciliation. For more information on product results, see <a href="#">Software reconciliation results</a> .	No (Automatically determined)	All SaaS integrations
Software model result	Software model result of the software product that is populated after reconciliation. For more information on software model results, see <a href="#">Software reconciliation results</a> .	No (Automatically determined)	All SaaS integrations
Unlicensed subscription	Indicates whether the subscription remains unlicensed after reconciliation due to insufficient available licenses. This field is updated with a true or false value to reflect the licensing status.	No (Automatically determined)	All SaaS integrations

**Entitlement import error fields**

Entitlement Import Error form and related list field descriptions.

## Entitlement Import Error form

Field	Description
Error status	<p>Status of the entitlement. An error record can have either of the two statuses:</p> <ul style="list-style-type: none"> <li>Manually fixed: when all the errors in the error record are corrected and the entitlement is successfully created.</li> <li>Needs review: the error record is created and you need to review and correct the errors.</li> </ul>
Reason	Reason the imported entitlement couldn't be added to the Entitlement list.
Asset tag	Serial number and the bar code used for tracking the asset.
Publisher part number	<p>Publisher part number from the Software Product Definitions lookup list of predefined software that may have already been purchased.</p> <p>When you select a publisher part number, you may encounter a message: Many underlying software models are being created. These might be part of suite components, downgrade rights or next version. Please validate on completion. The message appears only if there are greater than or equal to 50 suite components for the software model and if any of the following conditions are met:</p> <ul style="list-style-type: none"> <li>A software model does not exist for any suite component</li> <li>A software model does not exist for any downgrade right</li> <li>A software model does not exist for the next version</li> </ul> <p><b>i Note:</b> If a software model exists for the publisher part number, the <b>Software model</b> field is automatically populated. Otherwise, the software model is automatically created for you directly from this form. If there are multiple software models created with the same discovery map conditions, the software model must be selected manually.</p>
Software model	<p>The software model to match the entitlement.</p> <p><b>i Note:</b> A warning message is shown if the publisher part number is not associated with the publisher and product for the software model. You can either change the software model, or save the entitlement as is.</p>
License type	<p>License type. Whether the rights grant full access to the software or if they are being upgraded from a previous version of the software.</p> <p>When the type is <b>Upgrade</b>, the Upgraded Entitlements related list is shown. The upgrade license type is used to specify the entitlements you are upgrading.</p> <p>This field becomes read-only after the form has been submitted.</p> <p><b>i Note:</b> For SaaS entitlements, keep the default value (<b>Full</b>).</p>
Metric group	This field is automatically populated based on the <b>Software Model</b> field. Each metric group has a set of license metrics that are specific to the software publisher.

Field	Description
License metric	<p>License metric for the license group that the software license is counted against when reconciliation is run. The options for license metric change based on the <b>Metric group</b> field. The default value for SaaS entitlements is <b>User Subscription</b>.</p> <p>For more information, see <a href="#">Software license metrics</a>.</p> <p><b>Note:</b> Use the Envelopes license metric only for DocuSign entitlements.</p>
Rights per license pack	Rights associated with each pack that is purchased for Microsoft Per Core or Microsoft Per Core with CAL licenses.
Number of packs	Number of packs for Microsoft Per Core or Microsoft Per Core with CAL licenses.
Purchased right	<p>Number of rights that you are purchasing.</p> <p><b>Note:</b> If you've specified a Microsoft Per Core or Microsoft Per Core with CAL license type, this field is automatically populated. This value is based on the values entered in the <b>Rights per license pack</b> field multiplied by the value in the <b>Number of packs</b> field.</p>
Agreement type	<p>Based on the agreement type that you select, downgrade rights are automatically generated.</p> <p><b>Note:</b> If the agreement type is <b>Enterprise License Agreement</b> or <b>Unlimited Level Agreement</b>, the <b>Status</b> is Compliant even if there are unlicensed installations.</p> <ul style="list-style-type: none"> <li><b>Generic:</b> Downgrade rights are not automatically populated. If you change the agreement type on an existing software entitlement from <b>Generic</b> to any other type (for example <b>CLP</b>), the downgrade rights are automatically populated.</li> <li>Any agreement type other than Generic: Downgrade rights are automatically populated. If you change the agreement type on an existing software entitlement from an agreement type other than <b>Generic</b> (for example, <b>ELTA</b>) to <b>Generic</b>, the downgrade rights that were already populated are not deleted or deactivated.</li> </ul>
Purchased rights	Number of rights that you are purchasing.
Oracle options	Oracle options related to the entitlement.
Contract number	Contract number for the entitlement.

### Reference software related list


Field	Description
Publisher	Name of the software publisher.
Product	Name of the product.

Field	Description
Version	Version of the software product.
Edition	Edition of the software product.
Language	Language of the software product to use when searching for the normalized discovery model, which is populated once it has been normalized or added manually.
Platform	Platform of the software product to use when searching for the normalized discovery model.

### General related list

Field	Description
Owned by	User or department with financial ownership of the asset. The asset owner can be different than the manager.
PO number	Purchase order number.
Company	Company that this asset belongs to.
Location	Where the license is used. For example, a specific site, country, or region.
Department	Department of the person <b>Assigned to</b> this software license.

### Financial related list

Field	Description
Vendor	Company that the asset was purchased from.
Unit cost	Unit cost of the software.   <b>Note:</b> Required for total cost and savings calculations on the <a href="#">Software Asset Management dashboard</a> .
GL account	General ledger account number associated with the asset.
Cost center	Cost center financially responsible for the asset.

### Entitlement import error actions

Entitlement Import Error form action descriptions.

### Entitlement Import Errors actions

Action	Description
Import	Option that saves the Entitlement Import Error record. After you save the record, you remain on the Entitlement Import Error form, so you can easily save the form between actions  Upon saving, all values are reevaluated and the form is updated.

Action	Description
	<p>For example, if both the publisher part number and software model fields are missing, once a known publisher part number is added and the form is saved, the <b>Software model</b> field is filled in automatically.</p> <p><b>i Note:</b> Because the form is reevaluated after each save, changes made to one entitlement may cause an error for another entitlement, such as a <b>Duplicate entry</b>.</p> <p>When all required fields are filled in and the form is saved, an entitlement record is created and the error status is changed to Fixed.</p>
Create PPN	<p>Part number for custom software.</p> <p>If you are importing entitlements using the Software Asset Management workspace application, on selecting <b>Create PPN</b>, you are taken to the Custom Part Numbers list view page. Select <b>New</b> to create a new publisher part number.</p> <p>If you are importing entitlements using the Software Asset Management classic application, on selecting <b>Create PPN</b>, the Create Discovery Map for Publisher Part Number dialog box appears. Select a product name in the <b>Product</b> field and select <b>Submit</b> to create a custom discovery map which is automatically associated with the publisher part number.</p>
Create duplicate entitlement	<p>Duplicate entitlement records cause an import error. Select <b>Create duplicate entitlement</b> to override the error and create an entitlement for the duplicate record.</p> <p><b>i Note:</b> This action only appears if there is an entitlement that already exists and a duplicate entitlement is being created.</p>

## Impact of different license types on software reconciliation

Each license type has entitlements and conditions outlined on the entitlement form, and more importantly, these license types have a significant impact on the Software Asset Management (SAM) reconciliation process.

### License types and their impact on software reconciliation

License type	Description	Publisher applicability	Impact on licensing or reconciliation in SAM
Perpetual	A one-time purchase license that enables indefinite use of the software without any ongoing or recurring payments.	All	This license grants indefinite use but doesn't include maintenance rights, so benefits such as new version access, version upgrades, Bring your own license (BYOL) benefits, and technical support from the software publisher aren't available. To receive maintenance/

**License types and their impact on software reconciliation (continued)**

License type	Description	Publisher applicability	Impact on licensing or reconciliation in SAM
Perpetual + Software Assurance	<p>A perpetual license combined with Software Assurance (SA) from Microsoft offers a comprehensive Volume Licensing program with these benefits:</p> <ul style="list-style-type: none"> <li>• New version rights: Upgrade eligible Microsoft product licenses to the latest version at no additional cost.</li> <li>• License mobility: Deploy certain server applications on-premises or in the cloud without additional licenses.</li> <li>• Unlimited virtualization: License the physical host for products such as Windows Server Datacenter Edition, enabling an unlimited number of virtual machines.</li> <li>• Virtual layer licensing: License individual virtual machines, reducing overall licensing costs.</li> </ul>	Microsoft	<p>SA benefits, you must associate maintenance/SA entitlements with the Perpetual license.</p> <p>Software Asset Management automatically applies the Software Assurance benefits. For more information, see <a href="#">Software license maintenance</a>.</p>
Subscription	For subscription-based products like Jira, Microsoft 365, and Adobe Creative Cloud, as well as non-subscription products	All (subscription products)	License compliance is primarily driven by user subscriptions pulled from the subscription portal, such as Jira and

License types and their impact on software reconciliation (continued)

License type	Description	Publisher applicability	Impact on licensing or reconciliation in SAM
	using subscription licenses, such as Windows and SQL Server.		Microsoft 365. It also applies to non-subscription products like Windows Server and SQL Server, which can receive Software Assurance benefits.
Perpetual + Maintenance	Perpetual + Maintenance is similar to Perpetual + Software Assurance, but it includes a maintenance agreement that provides access to software updates, patches, and sometimes support for a specified duration. This license type applies to non-Microsoft publishers such as Oracle and VMware.	All	Software Asset Management automatically applies the Software maintenance benefits. For more information, see <a href="#">Software license maintenance</a> .
Upgrade	A licensing option that enables upgrading from a lower-tier edition to a higher-tier edition, such as Standard to Enterprise, without purchasing a new full license.	All	You can upgrade a lower edition of software, such as SQL Server Standard, to a higher edition, such as SQL Server Enterprise. Use the <b>Upgraded Entitlements</b> tab in the Software Entitlement form to link related versions of your software under active maintenance and your upgrades. For more information, see <a href="#">Software entitlement fields</a> .
Software Assurance	Software assurance entitlement that provides Microsoft customers with software assurance benefits. However,	Microsoft	Software Asset Management doesn't reconcile software assurance entitlements unless they're linked to

**License types and their impact on software reconciliation (continued)**

License type	Description	Publisher applicability	Impact on licensing or reconciliation in SAM
	it must be linked to a base perpetual license to activate the entitlements.		base perpetual licenses. Confirm that software assurance entitlements are related to base perpetual entitlements for correct reconciliation.
Maintenance	Maintenance entitlement that provides benefits to non-Microsoft customers. However, it must be linked to a base perpetual license to activate the entitlements.	All	Software Asset Management doesn't reconcile only maintenance entitlement unless they're linked to base perpetual licenses. Therefore, make sure to relate the maintenance entitlement to base perpetual entitlements for correct reconciliation.
Step-up	A licensing option that enables upgrading from a lower-tier edition of a product to a higher-tier edition, such as Standard to Enterprise, without needing to purchase a full new license.	All	If you're covered under Microsoft Software Assurance, you can upgrade a lower edition of software, such as SQL Server Standard, to a higher edition, like SQL Server Enterprise. Use the <b>Upgraded Entitlements</b> tab in the Software Entitlement form to link related versions of your software under active maintenance and your upgrades. For more information, see <a href="#">Software entitlement fields</a> .
Subscription Step-up	Similar to a step-up license, this license type applies to subscription-based licenses, enabling upgrades to higher-	All (subscription products)	Same as step-up licenses, but for subscription software only.

### License types and their impact on software reconciliation (continued)

License type	Description	Publisher applicability	Impact on licensing or reconciliation in SAM
	tier editions within the subscription term.		

#### Related topics

[Software license maintenance](#)

[Software entitlement fields](#)

### Publisher optimizations for SAP

View licensing optimizations for SAP by selecting **SAP** from the **Publisher** drop-down list.

**i Important:** To view recommended licensing optimizations for SAP, you must activate the **Software Asset Management Professional for SAP plugin (com.sn\_samp\_sap)** on your ServiceNow instance.

Report	Source	Description
Inactive users	SAP System Users [samp_sap_system_user]	SAP system users who last logged in over 90 days ago.
System users without a named user assignment	SAP System Users [samp_sap_system_user]	SAP system users without a named user assignment.
Locked out licensed SAP users	SAP System Users [samp_sap_system_user]	Locked SAP users consuming a license.
Licensed non dialog users	SAP System Users [samp_sap_system_user]	SAP non-dialog users with a named user assignment.
Un-used engines	License Metric Results [samp_license_metric_result]	Number of SAP engines that haven't been used, but have active software entitlements.
Digital access usage by client/system	SAP Digital Access [samp_sap_digital_access]	Total count of Digital Access licenses consumed, grouped by the SAP client.
Digital access usage by document type	SAP Digital Access [samp_sap_digital_access]	Total count of Digital Access licenses consumed, grouped by the document type created.

### Publisher optimizations for Red Hat

View licensing optimizations for Red Hat by selecting **Red Hat** from the **Publisher** drop-down list.

**i Important:** To view recommended licensing optimizations for Red Hat, you must activate the Software Asset Management Professional for Software Asset Management Professional for IBM plugin (com.sn\_samp\_ibm) on your ServiceNow® instance.

Report	Source	Description
Potential savings by optimizing licenses	Potential Savings by Optimizing Licenses [samp_license_optimization_summary]	<p>Potential cost savings for licenses on your physical hosts and clusters that are based on recommended license optimizations.</p> <p><b>i Note:</b> This report is available only for on-premise Red Hat Enterprise Linux (RHEL) licenses.</p> <p>Select the report to view details about the recommended license optimizations and associated cost savings for each host or cluster. License optimizations include the recommended license, recommended rights, and recommended spending.</p>

### Publisher optimizations for Microsoft

View licensing optimizations for Microsoft by selecting **Microsoft** from the **Publisher** drop-down list.

**i Important:** To view the recommended licensing optimizations for Microsoft, you must activate the Software Asset Management Professional for Microsoft plugin (com.snc.samp.microsoft) on your ServiceNow® instance. To view the recommended licensing optimizations for your Microsoft 365 subscriptions, you must also request and install the Software Asset Management - SaaS License Management application from the [ServiceNow Store](#).

Report	Source	Description
Microsoft 365 subscription details	<ul style="list-style-type: none"> <li>Active and inactive subscriptions: Software Subscriptions [samp_sw_subscription]</li> </ul>	Number of active, inactive, and unassigned user subscription details for Microsoft 365, Office 365, and

Report	Source	Description
<p><b>i Note:</b> This report appears only if you request and install the Software Asset Management - SaaS License Management application.</p>	<ul style="list-style-type: none"> <li>Unassigned subscriptions: Purchased Subscription Details [samp_purchased_subscription_details]</li> </ul>	<p>Power BI products, which are grouped by software models.</p> <p>Select a data point to view more details about the user subscriptions for a software model.</p> <ul style="list-style-type: none"> <li>Select the <b>Active subscriptions</b> bar to view the active user subscriptions, where the last activity date is equal to or less than 90 days.</li> <li>Select the <b>Inactive subscriptions</b> bar to view the inactive subscriptions, where the last activity date is empty or was before 90 days.</li> <li>Select the <b>Unassigned subscriptions</b> bar to view the number of available rights or user subscriptions that are unassigned.</li> </ul>
<p>Microsoft 365 potential savings by type</p> <p><b>i Note:</b> This report appears only if you request and install the Software Asset Management - SaaS License Management application.</p>	<p>Removal Candidate [samp_sw_reclamation_candidate]</p>	<p>Potential monthly savings for your Microsoft 365 and Office 365 licenses that are based on recommended downgrade, double license, and consolidate candidates. This report displays potential savings for the last 12 months.</p> <p>Select any bar to view more details about the recommended downgrade or dual license candidates for a given month.</p> <ul style="list-style-type: none"> <li>Select the <b>Downgrades</b> bar to view the list of candidates that can be downgraded to a previous version of Microsoft 365 and Office 365.</li> <li>Select the <b>Double Licensed Users</b> bar to view the list of candidates with both Microsoft 365 and its applications (Office 365, Enterprise Mobility +Security (EMS), Windows) subscriptions.</li> </ul>

Report	Source	Description
		<ul style="list-style-type: none"> <li>• Select the <b>Consolidate</b> bar to view the list of Microsoft 365 consolidate subscriptions reclamation candidates.</li> </ul>
<p>Microsoft 365 optimization recommendations</p> <p><b>Note:</b> This report appears only if you request and install the Software Asset Management - SaaS License Management application.</p>	<p>Removal Candidate</p> <p>[samp_sw_reclamation_candidates]</p>	<p>Number of licenses per month that can be downgraded or reclaimed based on recommended downgrade, dual license candidates. This report displays data for the last 12 months.</p> <p>Select any bar to view more details and act on the recommended downgrade, double licensed, or consolidate candidates for a given month.</p> <ul style="list-style-type: none"> <li>• Select the <b>Downgrades from Office 365 E5 to E3</b> bar to view the list of candidates that can be downgraded from Office 365 E5 to Office 365 E3. Select a candidate from the list to downgrade the associated license.</li> <li>• Select the <b>Downgrades from Office 365 E3 to E1</b> bar to view the list of candidates that can be downgraded from Office 365 E3 to Office 365 E1. Select a candidate from the list to downgrade the associated license.</li> <li>• Select the <b>Downgrades from Microsoft 365 E5 to E3</b> bar to view the list of candidates that can be downgraded from Microsoft 365 E5 to Microsoft 365 E3.</li> <li>• Select the <b>Downgrades from Microsoft 365 E3 to F3</b> bar to view the list of candidates that can be downgraded from Microsoft 365 E3 to Microsoft 365 F3.</li> </ul>

Report	Source	Description
		<ul style="list-style-type: none"> <li>• Select the <b>Consolidate</b> bar to view the list of consolidated Microsoft 365 optimization candidates.</li> </ul>
<p>On-Premises potential savings by optimizing licenses</p>	<p>Potential Savings by Optimizing Licenses</p> <p>[samp_license_optimization_summary]</p>	<p>Potential cost savings for licenses on your physical hosts and clusters based on recommended licensing optimizations.</p> <p><b>i Note:</b> This report is available only for the following Microsoft license types:</p> <ul style="list-style-type: none"> <li>• Per core licenses for Microsoft SQL Server and Microsoft BizTalk Server</li> <li>• Per core (with CAL) licenses for Microsoft Windows Server, Microsoft Core Infrastructure Server, and Microsoft System Center</li> </ul> <p>Select the report to view details about the recommended licensing optimizations and associated cost savings for each host or cluster. Licensing optimizations include the recommended license, recommended rights, and recommended spending.</p>
<p>On-Premise optimization realized savings</p>	<p>Microsoft Core License Optimization Reports</p> <p>[samp_ms_optimization_report]</p>	<p>Cost savings that you have achieved for licenses on your physical hosts and clusters based on recommended licensing optimizations.</p>

Report	Source	Description
		<p><b>Note:</b> This report is available only for the following Microsoft license types:</p> <ul style="list-style-type: none"> <li>• Per core licenses for Microsoft SQL Server and Microsoft BizTalk Server</li> <li>• Per core (with CAL) licenses for Microsoft Windows Server, Microsoft Core Infrastructure Server, and Microsoft System Center</li> </ul> <p>Select the report to view details about the cost savings that you have achieved for each host or cluster.</p>
<p>Microsoft 365 portal available subscription details</p> <p><b>Note:</b> This report appears only if you request and install the Software Asset Management - SaaS License Management application.</p>	<p>Purchased Subscription Details</p> <p>[samp_purchased_subscription_details]</p>	<p>Number of licenses that are available on the Microsoft portal per subscription.</p> <p>Select a bar to view details about the purchased subscription details such as software model, product, purchased rights, assigned rights, available rights, and subscription profile.</p>

**Related topics**

[Reclamation rules for Microsoft 365 integration](#)

**Publisher optimizations for Adobe**

View licensing optimizations for Adobe by selecting **Adobe** from the **Publisher** drop-down list.

**i Important:** To view the recommended licensing optimizations for Adobe, you must activate the Software Asset Management Professional for Adobe plugin (com.sn\_samp\_adobe) on your ServiceNow instance. In addition, you must request and install the Software Asset Management - SaaS License Management Integrations application from the ServiceNow Store [🔗](#).

Report	Source	Description
Creative Cloud user activity as per subscription	Software Subscriptions [samp_sw_subscription]	<p>Number of user subscriptions per month with meaningful activity. This report displays data for all of your Adobe Creative Cloud All Apps subscriptions for the last 12 months.</p> <p>Select any data point to view the last activity date of user subscriptions with meaningful activity for a given subscription type.</p>
Creative Cloud potential savings by type	Removal Candidate [samp_sw_reclamation_candidate]	<p>Potential monthly savings for your Adobe Creative Cloud All Apps licenses that are based on low usage, double licensed users, and consolidated subscriptions. This report displays potential savings for the last 12 months.</p> <ul style="list-style-type: none"> <li>• <b>Low usage:</b> The Adobe Creative Cloud applications not being used for more than 60 days.</li> <li>• <b>Dual licensed users:</b> A user having subscription through both Adobe Creative Cloud All Apps and individual Adobe Creative Cloud applications.</li> <li>• <b>Consolidated subscriptions:</b> A user having multiple individual Adobe applications (greater than 3 by default) and all these subscriptions are consolidated to one Adobe Creative Cloud All Apps subscription.</li> </ul>

Report	Source	Description
Inactive user subscriptions	Software Subscriptions [samp_sw_subscription]	Number of inactive user subscriptions in the User [sys_user] table of your ServiceNow instance based on the user status.
Unresolved user subscriptions	Software Subscriptions [samp_sw_subscription]	Number of users not having a record in the User [sys_user] table of your ServiceNow instance.

**Related topics**

[Integrating with Adobe Cloud](#)

**Microsoft Core License Optimization Reports fields**

Field descriptions for the Microsoft Core License Optimization Reports [samp\_ms\_optimization\_report] table.

**Microsoft Core License Optimization Reports [samp\_ms\_optimization\_report] table**

Field	Description
Product	Microsoft software product that you are optimizing licensing for.
Cluster/Host Type	Indicates whether the recommended licensing optimization applies to a cluster or a standalone physical host.
Virtualization Technology	Virtualization technology that you are using to run virtual machines (VMs) within the cluster or on the standalone physical host.
Cluster/Host Reference	Cluster or standalone physical host that the recommended licensing optimization applies to.
Host Affinity Configured	Indicates if host affinity rules are configured for the cluster.  <b>i Note:</b> Host affinity rules are applicable to clusters only. If the <b>Cluster/Host Type</b> field is set to <b>Cluster</b> , this field can be set to either <b>true</b> or <b>false</b> . If the <b>Cluster/Host Type</b> field is set to <b>Standalone Host</b> , this field is automatically set to <b>false</b> .
Number of Hosts	Number of physical hosts. If the <b>Cluster/Host Type</b> field is set to <b>Standalone Host</b> , this field is set to <b>1</b> . If the <b>Cluster/Host Type</b> field is set to <b>Cluster</b> , this field is set to the total number of physical hosts within the cluster.
Host Cores	Number of cores within each CPU that is assigned to your physical hosts. If the <b>Cluster/Host Type</b> field is set to <b>Standalone Host</b> , this field is set to the number of cores within each CPU that is assigned to the standalone physical host. If the <b>Cluster/Host Type</b> field is set to <b>Cluster</b> , this field is set to the number of cores within each CPU that is assigned to a physical host within the cluster.
Number of VMs	Number of VMs within the cluster or on the standalone physical host.
VM Cores	Number of virtual cores within each virtual CPU (vCPU) that is assigned to your VMs. If the <b>Cluster/Host Type</b> field is set to <b>Standalone Host</b> , this field

**Microsoft Core License Optimization Reports [samp\_ms\_optimization\_report] table (continued)**

Field	Description
	is set to the number of virtual cores within each vCPU that is assigned to the VMs on the standalone physical host. If the <b>Cluster/Host Type</b> field is set to <b>Cluster</b> , this field is set to the number of virtual cores within each vCPU that is assigned to the VMs within the cluster.
Number of VMs with software installations	Number of VMs that the Microsoft software product is installed on.
Host Core Licenses Required	Number of rights that are required for licensing either the physical hosts within the cluster or the standalone physical host.
VM Core Licenses Required	Number of rights that are required for licensing the VMs within the cluster or on the standalone physical host.
Current License Consumption	Type of license and total number of rights that you are currently consuming.
Current License Consumption Layer	Layer on which you are currently consuming rights. The options are <b>Physical</b> , <b>Virtual</b> , and <b>Physical/Virtual</b> .
Recommended License Consumption	Type of license and total number of rights that you are recommended to consume.
Recommended License Consumption Layer	Layer on which you are recommended to consume rights. The options are <b>Physical</b> , <b>Virtual</b> , and <b>Physical/Virtual</b> .
Conservative License Consumption	Conservative way to consume rights without applying any licensing optimizations. For example, you can consume rights for your Microsoft Windows Server Data Center or Microsoft SQL Server Enterprise licenses on the host layer.
Conservative License Cost	Total license cost based on the conservative license consumption.
Recommended License Cost	Total license cost based on the recommended license consumption and license consumption layer.
Current License Cost	Total license cost based on the current license consumption and license consumption layer.
Recommended License Applied	Indicates if the recommended licensing optimization has been implemented on the cluster or standalone physical host.
Licensing Status	Licensing status of the cluster or standalone physical host. The options are <b>Licensed</b> and <b>Unlicensed</b> .
Has Allocation	Indicates if you have enough rights to allocate to the cluster or standalone physical host.
Recommendation Details	Summary of the recommended licensing optimization.

**Microsoft Core License Optimization Reports [samp\_ms\_optimization\_report] table (continued)**

Field	Description
Optimization Savings Achieved	Indicates if you have saved money by implementing the recommended licensing optimization.
Optimization Realized Savings	Amount of money that you have saved by implementing the recommended licensing optimization.
Potential Savings	Amount of money that you can save by implementing the recommended licensing optimization.

**Maturity item details**

Fields on the Maturity item details form help you view and update the state and success goal of the maturity item.

**Maturity item details**

Field	Description
Name	Name of the maturity item.
Type	Type of the maturity item. <ul style="list-style-type: none"> <li>• Process</li> <li>• End user</li> <li>• SaaS</li> <li>• Data center</li> <li>• Cloud</li> </ul>
Short description	A brief summary of the maturity item.
Success goal	Success goal associated to the maturity item. For more information about creating a success goal, see <a href="#">Create success goals for Software Asset Management</a> .
State	Current stage of the maturity item. <ul style="list-style-type: none"> <li>• New</li> <li>• Work in Progress</li> <li>• Closed Complete</li> <li>• Closed Skipped</li> </ul>
Maturity level	Current maturity level. <ul style="list-style-type: none"> <li>• Crawl</li> <li>• Walk</li> <li>• Run</li> </ul>

**Maturity item details (continued)**

Field	Description
Suggested maturity level	Suggested maturity level for improved value return of your SAM application. <ul style="list-style-type: none"> <li>• Crawl</li> <li>• Walk</li> <li>• Run</li> </ul>
Start date	The start date of the maturity item.
Completed date	Completed date of the maturity item.
Purpose	Description of the purpose and outcome for the maturity item.
Steps to complete	List of steps of how to accomplish the purpose of the maturity item.
Work notes	Notes about the maturity item, which are visible to all users within your organization.

**Maturity stages of your Software Asset Management program**

The maturity of your Software Asset Management program is divided into three stages such as Crawl, Walk, and Run.

**Maturity stages**

Stage	Description
Crawl	Begin your Software Asset Management journey, such as implementing or developing a new Software Asset Management program. At this stage, you can establish a healthy Configuration Management Database (CMDB), identify tools to discover data, and establish processes and roles. You can focus on End-user computing or SaaS integrations for which licensing isn't complex.
Walk	Begin establishing processes, procedures, policies, resources, and tools to execute on the roadmap of the Software Asset Management program. You can automate the manual processes and procedures, which you've established during the Crawl stage. Move to more complex licensing models in datacenter environments, Bring your own license (BYOL) use cases, and additional SaaS publishers. You can consider additional governance and cost control through software metering and reclamation, identify overlapping software, and rightsize software estate through compliance results.

### Maturity stages (continued)

Stage	Description
Run	Establish and use mature, standardized, and automated processes and procedures for centralized software assets tracking and system management. You use the standard catalog and onboarding process for new catalog items in the purchasing process. Provide software to end users through automated on-demand mechanisms and rightsize your software spend. You must also be evaluating processes and establishing Software Asset Management goals regularly.

### SAM Success Goal Details

Fields on the SAM Success Goal Details help you create success goals for tracking the success of the Software Asset Management application in your instance.

#### SAM Success Goal Details

Field	Description
Number	A unique identifier of the success goal.
Title	The title for the success goal.
Status	Status of the success goal. By default, the success goal is in draft status.
Category	The category the success goal belongs to.
Vendor	Vendor or publisher associated to the success goal.
Goal Type	Defines the metrics of your goal. <ul style="list-style-type: none"> <li>• Savings</li> <li>• Count</li> </ul>
Goal Description	A detailed explanation of the success goal.
Group	The group the goal is to be assigned to.
Owner	The user from the group the goal is assigned to.
Projected Start Date	The projected start date for the success goal.
Projected End Date	The projected end date for the success goal.
Actual Start Date	The actual start date of the success goal.
Actual End Date	The actual end date of the success goal.
Projected Savings	Anticipated savings from the success goal.  This field is visible only when you set the <b>Goal Type</b> as <b>Savings</b> .

### SAM Success Goal Details (continued)

Field	Description
Actual Savings	The actual savings from the success goal.  This field is visible only when you set the <b>Goal Type</b> as <b>Savings</b> .
Projected Count	Anticipated count from the success goal.  This field is visible only when you set the <b>Goal Type</b> as <b>Count</b> .
Actual Count	The actual count from the success goal.  This field is visible only when you set the <b>Goal Type</b> as <b>Count</b> .
Achievement Description	A description of how the success goal was achieved.

### SAM Success Activity

Fields on the SAM Success Activity form help you create success activities to track the success of your created goals.


#### SAM Success Activity

Field	Description
Number	A unique identifier of the success activity.
Success Goal	The success goal that the activity is being associated to.
State	The current state of the success activity. Choose from the following options: <ul style="list-style-type: none"> <li>• Pending</li> <li>• Open</li> <li>• Closed Complete</li> <li>• Closed Incomplete</li> <li>• Closed Skipped</li> </ul>
Assignment group	The group this activity is assigned to.
Assigned to	A particular person in the assigned group.
Short description	A short description of the success activity.
Description	A detailed description of the success activity.
Work notes	Notes relating to the success activity.

## SaaS detection report

Use the SaaS detection report to discover and manage all SaaS applications accessed via a browser and configured within the ServiceNow® Agent Client Collector for Visibility - Content (ACC-VC) product. The SaaS applications that can be managed through this report can be paid or free ones.

**i Important:** To view the SaaS detection report, you must do the following:

- Request and install version 14.0.9 or later of the Software Asset Management -SaaS License Management application from the [ServiceNow Store](#) . For more information, see [Request SaaS License Management](#).
- Install the Agent Client Collector for Visibility - Content (ACC-VC) product version 1.3.0 or later.

This report helps you manage your shadow IT spend more effectively by viewing all the users who access these applications, the usage of these applications, and how long each application has been used.

**i Note:** By default, the SaaS detection report displays data from the past 90 days.

To view this report, navigate to **Software Asset Workspace > License usage > Reports**.

The SaaS detection report includes domain-separated data when Domain Support - Domain Extensions Installer (com.glide.domain.msp\_extensions.installer) and Performance Analytics - Domain Support (com.snc.pa.domain\_support) are activated.

### SaaS detection

Field	Description
Product	The name of the SaaS application that is being discovered.
Publisher	Publisher of the SaaS application.  Publisher is a reference to the Software Publishers [samp_sw_publisher] table.
Is monitored	Indicates whether ACC-VC is monitoring the product or not.  <ul style="list-style-type: none"> <li>• If the product is monitored by the ACC-VC application, the Is monitored column value shows as true.</li> <li>• If the product isn't monitored by the ACC-VC application, the Is monitored column value shows as false.</li> </ul>
Is managed	Indicates whether the product is managed or unmanaged.

**SaaS detection (continued)**

Field	Description
	<ul style="list-style-type: none"> <li>• If a software model exists for a product, the Is managed column value shows as true.</li> <li>• If a software model doesn't exist for a product, the Is managed column value shows as false.</li> </ul>
URL(s)	URL or multiple URLs for your SaaS application.
Total users	<p>Total number of users who have accessed the product.</p> <p>Select the value in this column to view more information about the users in the User Usage Data table.</p>
Last accessed time	The time when the product was last accessed by a user.
Total accessed time	Total duration for which the product has been accessed by its users.

**User Usage Data**

Field	Description
Discovered user	User referenced from the Discovered Users [samp_discovered_user] table.
User	User accessing the application.
Device	Device or CI from which the user accessed the application.
Cost center	Allotted cost center of the user in an organization.
Department	Department of the user in an organization.
Total accessed time	Total duration for which the application has been accessed by a user.
Last accessed time	Last time when the application was accessed by a user.

**Reclamation rules**



Reclamation rules define the minimum amount of time for which a subscription must be used. If the subscription doesn't have any activity within a specified time limit, it's added to the list of reclamation candidates.

For each direct integration, the user activity is defined differently. Only one of the listed activities is required to occur within the specified time limit, not all of them.

Direct integration	Activity
Adobe Cloud	Any user activity
Aha!	User login  <b>Note:</b> The analysis period is 60 days.
Asana	<ul style="list-style-type: none"> <li>• Tasks created</li> <li>• Tasks completed</li> <li>• Subtasks created</li> <li>• Subtasks completed</li> <li>• Assigning tasks or subtasks</li> <li>• Moving tasks or subtasks between projects</li> <li>• Comments added to tasks or subtasks</li> <li>• Story created</li> </ul>
Box	<ul style="list-style-type: none"> <li>• User login</li> <li>• Any file activity, including 60 actions such as create, edit, delete, share, upload, or download</li> </ul>
Calendly	Schedule an event
Confluence Cloud	Create or update a space, page, blog post, comment, or attachment
Docusign	Subscription assigned date
Dropbox	<ul style="list-style-type: none"> <li>• User login</li> <li>• Any file activity, including 60 actions such as create, edit, delete, share, upload, or download</li> </ul>
Google Workspace	<p><b>Google Drive and Google Docs</b></p> <p>Any file activity, such as create, edit, delete, upload, download, or sync</p> <p><b>Gmail</b></p> <p>Any email activity, such as read, create, edit, send, or delete</p>
GitHub	<ul style="list-style-type: none"> <li>• Create a commit comment</li> <li>• Create a Git branch or tag</li> <li>• Delete a Git branch or tag</li> <li>• Fork a repository</li> <li>• Create or update a Wiki page</li> <li>• Any issue comment activity, such as create, edit, or delete</li> <li>• Any issue activity, such as open, close, reopen, assign, unassign, label, or unlabel</li> </ul>

Direct integration	Activity
	<ul style="list-style-type: none"> <li>• Any repository collaborator activity, such as editing the collaborator access permissions</li> <li>• Make a private repository public</li> <li>• Any pull request activity, such as open, close, reopen, assign, unassign, review, unlabel, and synchronize</li> <li>• Any pull request review comment activity</li> <li>• Push at least one commit to a repository branch or tag</li> <li>• Any release activity, such as publish or edit</li> <li>• Any sponsorship listing activity</li> <li>• Star a repository</li> </ul>
GoTo	<p><b>GoToMeeting</b> Host a meeting</p> <p><b>GoToWebinar</b> Host a webinar or meeting</p> <p><b>GoToConnect</b> Make a call using a GoToConnect line</p>
Jira Software	<ul style="list-style-type: none"> <li>• Create an issue</li> <li>• Comment on an issue</li> <li>• Update a comment on an issue</li> <li>• Activities in the following categories:             <ul style="list-style-type: none"> <li>○ Auditing</li> <li>○ Project changes</li> <li>○ Permission changes</li> <li>○ Workflow changes</li> <li>○ Notification changes</li> <li>○ Custom field changes</li> <li>○ Advanced Roadmaps changes</li> </ul> </li> </ul>
Looker	User's last login
Microsoft 365	Any user activity
Microsoft Dynamics 365 and Power Apps	<p>Create or update the following records in Dynamics 365:</p> <ul style="list-style-type: none"> <li>• Common entities             <ul style="list-style-type: none"> <li>○ Account</li> <li>○ Contact</li> <li>○ Goal</li> <li>○ Product</li> <li>○ User</li> </ul> </li> </ul>

Direct integration	Activity
	<ul style="list-style-type: none"> <li>○ Phone Call</li> <li>○ Task</li> <li>○ Letter</li> <li>○ Email</li> <li>○ Appointment</li> <li>○ Fax</li> <li>○ Custom Activities</li> <li>• Sale related entities               <ul style="list-style-type: none"> <li>○ Competitor</li> <li>○ Opportunity</li> <li>○ Invoice</li> <li>○ Order</li> <li>○ Quote</li> <li>○ Account</li> <li>○ msdyn_relationshipinsightsunifiedconfig</li> <li>○ msdyn_relationshipanalyticsmetadata</li> <li>○ Lead</li> </ul> </li> <li>• Customer Service entities               <ul style="list-style-type: none"> <li>○ Case</li> <li>○ Contract</li> <li>○ Queue</li> <li>○ Service entity activity</li> <li>○ Incident</li> </ul> </li> </ul>
Miro	Access or update a board
monday.com	<ul style="list-style-type: none"> <li>• Any board activity, such as create, add or remove a note, add or remove a user, and delete</li> <li>• Any item activity, such as add, edit, duplicate, and delete</li> <li>• User's last login</li> </ul>
PagerDuty	Be on an on-call schedule
Rally	<ul style="list-style-type: none"> <li>• User's last login</li> <li>• Last activity time</li> </ul>
Roadmunk	<ul style="list-style-type: none"> <li>• User login</li> <li>• Add comments to ideas or feedback</li> </ul>

Direct integration	Activity
	<ul style="list-style-type: none"> <li>• Create or update feedback</li> <li>• Archive or restore roadmaps</li> </ul>
<ul style="list-style-type: none"> <li>• <a href="#">Salesforce CRM</a></li> <li>• <a href="#">Salesforce Marketing Cloud</a></li> </ul>	Last activity
<a href="#">SAP SuccessFactors</a>	User login
<a href="#">Slack Enterprise</a>	User login
<a href="#">SmartRecruiters</a>	Any user activity, such as create a job or a job ad.
<a href="#">Smartsheet</a>	User's last activity  For the list of activities, see <a href="#">Event Reporting Reference</a>  .
<a href="#">SurveyMonkey</a>	<ul style="list-style-type: none"> <li>• User login or logout</li> <li>• Update a group name</li> <li>• Add or delete a member</li> <li>• Update the group member type</li> <li>• Create or resend an invite</li> <li>• Create or update a permission</li> <li>• Create or update a shared view</li> <li>• Create or download an export</li> <li>• Update or delete a respondent</li> <li>• Create or delete grant information</li> <li>• Any survey information activity, such as create, delete, copy, update, and transfer</li> <li>• Any collector information activity, such as create, delete, and update</li> </ul>
<a href="#">Tableau Cloud</a>	User login
<a href="#">Trello</a>	User login   <b>Note:</b> The analysis period is 60 days.
<a href="#">Webex</a>	<p><b>Webex Training</b> Host a training</p> <p><b>Webex Events</b> Host an event</p> <p><b>Webex Support Session</b> Host a support session</p> <p><b>Webex Meetings</b> Host a meeting</p>

Direct integration	Activity
	<p><b>Webex Teams</b></p> <ul style="list-style-type: none"> <li>• Send or update messages</li> <li>• Upload a file</li> <li>• Create or update team space memberships</li> </ul>
Workfront	<ul style="list-style-type: none"> <li>• Create or update projects</li> <li>• Create or update tasks</li> <li>• Create or update issues</li> <li>• Create or update portfolios</li> <li>• Create or update programs</li> <li>• Create or update reports</li> <li>• Create or update filters</li> <li>• Create or update documents</li> <li>• Create or update templates</li> <li>• Create or update expenses</li> </ul>
Workplace from Facebook	<ul style="list-style-type: none"> <li>• Create, update, or view a post in a Workplace group.</li> <li>• Comment on a post in a Workplace group.</li> <li>• Send messages in the Workplace.</li> <li>• Create or update a Workplace Knowledge Library category.</li> <li>• Comment on a Workplace Knowledge Library category.</li> <li>• Create a public event in the Workplace community.</li> </ul>
Zendesk	User login
Zoom	<ul style="list-style-type: none"> <li>• Host a meeting</li> <li>• Host a webinar</li> <li>• Last activity</li> </ul>

### Reclamation rules for Microsoft 365 integration

Reclamation rules for Microsoft 365 integration sets the minimum usage threshold for a subscription. If a subscription remains inactive for a specified period, Software Asset Management marks the subscription as a potential reclamation candidate.

Reclamation rule	Justification	Description
<ul style="list-style-type: none"> <li>• Power BI</li> <li>• Exchange Online</li> <li>• SharePoint Online</li> <li>• OneDrive for Business</li> </ul>	Low Usage	If these individual subscriptions show low usage, Software Asset Management recommends reclaiming the low usage subscriptions.

Reclamation rule	Justification	Description
<ul style="list-style-type: none"> <li>Teams</li> <li>Project Online</li> <li>Visio Online</li> <li>Microsoft 365 Copilot</li> </ul>		
<p>Microsoft 365</p>	<ul style="list-style-type: none"> <li>Low Usage                             <ul style="list-style-type: none"> <li><b>Note:</b> Only downgrade use cases related to Microsoft 365 and Office 365 are supported for low usage justification.</li> </ul> </li> <li>Dual license</li> <li>Consolidate Subscriptions                             <ul style="list-style-type: none"> <li><b>Note:</b> The Dual license and Consolidate Subscriptions use cases are applicable to all Microsoft 365 and its applications (Office 365, Enterprise Mobility+Security (EMS), Windows).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li><b>Low usage</b> <p>For example, if a Microsoft 365 E5 subscription including advanced features and capabilities with Power BI isn't being used, Software Asset Management recommends switching to a downgraded Microsoft 365 E3 subscription.</p> </li> <li><b>Dual license</b> <p>For example, both Microsoft 365 E3 and Office 365 E3 subscriptions exist, leading to unnecessary duplicate access to Office applications and additional services already included in Microsoft 365 E3. Software Asset Management recommends reclaiming the Office 365 E3 subscriptions and using the Microsoft 365 E3 subscriptions instead.</p> </li> <li><b>Consolidate Subscriptions</b> <p>For example, if Office 365 Enterprise E5, Windows, and EMS subscriptions exist, Software Asset Management recommends using a single license such as Microsoft 365 Enterprise E5 to cover these multiple products at a lower cost.</p> </li> </ul>

**Related topics**

- [Review a software reclamation rule](#)
- [Evaluating software usage activity for Microsoft 365 subscriptions](#)
- [Publisher optimizations for Microsoft](#)
- [Integrating with Microsoft 365](#)

## Microsoft 365 Apps Usage Reports

Find the last activity date for Microsoft 365 products to determine reclamation candidates.

The values for each field in the Microsoft 365 Apps Usage Reports [samp\_m365\_apps\_usage\_report] table are populated using the Microsoft Graph APIs. The **Last Activity Date** helps in determining reclamation candidates more accurately for the supported Microsoft 365 products, including Microsoft Outlook, Word, PowerPoint, Excel, Teams, and OneNote.

### Microsoft 365 Apps Usage Reports

Field	Description
User Principal Name	Email address of the user.
Last Activity Date	Date the software product was last used.
Last Activation Date	Date on which the software product license was last activated for the user.
Report Period	Number of days for no meaningful activity before a user account is added to the list of reclamation candidates. The default value is 30 days.
Report Refresh Date	Date of the last refresh of the report.
Windows	Indicates usage of Windows with the value True or False.
Mac	Indicates usage of macOS with the value True or False.
Excel (Mac)	Indicates usage of Microsoft Excel on macOS with the value True or False.
PowerPoint (Mac)	Indicates usage of Microsoft PowerPoint on macOS with the value True or False.
Outlook (Mac)	Indicates usage of Microsoft Outlook on macOS with the value True or False.
Word (Mac)	Indicates usage of Microsoft Word on macOS with the value True or False.
OneNote (Mac)	Indicates usage of Microsoft OneNote on macOS with the value True or False.
Teams (Mac)	Indicates usage of Microsoft Teams on macOS with the value True or False.
Excel (Windows)	Indicates usage of Microsoft PowerPoint on Windows with the value True or False.
PowerPoint (Windows)	Indicates usage of Microsoft PowerPoint on Windows with the value True or False.
Outlook (Windows)	Indicates usage of Microsoft Outlook on Windows with the value True or False.
Word (Windows)	Indicates usage of Microsoft Word on Windows with the value True or False.

### Microsoft 365 Apps Usage Reports (continued)

Field	Description
OneNote (Windows)	Indicates usage of Microsoft OneNote on Windows with the value True or False.
Teams (Windows)	Indicates usage of Microsoft Teams on Windows with the value True or False.

### Pricing model for Oracle Java SE Universal

Tier-based monthly subscription price per employee is based on the number of employees directly or indirectly working in an organization.

The Price tier [samp\_price\_tier] table supports the Employee license metric of the Java SE software model and contains read-only values. This table is shipped with the Software Asset Management Professional for Oracle (com.snc.samp.oracle) plugin.

This table populates the override license cost records for Oracle Java. When you're using a custom tier table, you can update the override license cost records associated with the Oracle Java software model. For details, see [Create or update an override license cost record](#).

#### Price tier table

Number of employees	Monthly subscription cost per employee
1-999	\$15
1,000-2,999	\$12
3,000-9,999	\$10.50
10,000-19,999	\$8.25
20,000-29,999	\$6.25
30,000-39,999	\$5.70
40,000-49,999	\$5.25

### Software EOL request fields

Use the Software EOL request form to create a software end of life (EOL) request for software products in your asset estate that are reaching or have reached EOL.

### Software EOL request form

Field	Description
Number	A unique identifier for the EOL request.
Company	Name of the publisher of the software product.
Product	Name of the software product.
Edition	Edition of the software.
Version	Licensable version of the software.

Field	Description
Full version	The granular licensable version of the software.
Justification	Reason for starting the EOL request on the software.
Stage	The stage of the software EOL request. The default stage is <b>Draft</b> . Possible values include: <ul style="list-style-type: none"> <li>• Draft</li> <li>• Open</li> <li>• Analysis</li> <li>• Action initiated</li> <li>• Completed</li> <li>• Cancelled</li> </ul>
Action initiated	The action taken to manage EOL risk. Possible values include: <ul style="list-style-type: none"> <li>• Pending</li> <li>• Remove EOL software</li> <li>• Upgrade</li> <li>• Purchase support</li> <li>• Move to Azure</li> <li>• Accept risk</li> </ul>
Version type	Version type values include: <ul style="list-style-type: none"> <li>• Version (build version)</li> <li>• Full version (main version)</li> </ul> <p><b>Note:</b> You can manage EOL risk either for a version or full version of a software product.</p>
Priority	Priority of the software EOL request.
Assignment group	The group from which an individual is selected to complete the software EOL request.
Assignment to	The individual assigned to complete the software EOL request, who is selected from the <b>Assignment group</b> .
Short description	A brief description of the task.
Description	A detailed description of the task.
Work notes	Information about how the EOL workflow task is resolved.

## Software EOL tasks tab

Field	Description
Number	A unique identifier for the software EOL task.
Name	Name of the software EOL task.
Software EOL request	The identifier of the software EOL request.
Parent	The identifier of the parent task.
State	The state of the software EOL task. The default state is <b>Open</b> .
Action	<p>Indicates the action that you can take after deciding an IT strategy. Possible values include:</p> <ul style="list-style-type: none"> <li>• Remove EOL software: Remove the EOL software product from the asset inventory.</li> <li>• Upgrade: Upgrade to the latest or the supported software version.</li> <li>• Purchase support: Purchase additional support for maintenance.</li> <li>• Move to Azure: Migrate to Microsoft Azure. This action is available only for Microsoft products.</li> <li>• Accept risk: Accept risks associated with the EOL software.</li> </ul> <p>This field appears only when the value selected in the <b>Name</b> field is <b>Decide on IT strategy</b>.</p>
Priority	Priority of the software EOL task.
Assignment group	The group from which an individual is selected to complete the software EOL task.
Assigned to	The individual assigned to complete the software EOL task, who is selected from the <b>Assignment group</b> .
Short description	A brief description of the task.
Description	A detailed description of the task.
Notes	Additional information about the EOL task.
Work notes	Information about how the software EOL task is resolved.

## User device license consumption fields

SAM managers can view the client access license (CAL) usage details for Microsoft Windows Server in the User Device License Consumption table and create CAL records.

The User Device License Consumption [samp\_user\_device\_license\_consumption] table is populated with the CAL usage logging data for the Windows Server. This data comes from ServiceNow Discovery.

Discovery

To learn more about Microsoft usage access logging for CAL, see [Microsoft User Access Logging](#).

For more information on Microsoft specific license metrics, see [Supported Microsoft license types](#).

The User Device License Consumption table is a child table of the Configuration Item [cmdb\_ci] table.

### User Device License Consumption form

Field	Description
Domain	Domain to which the data belongs.
Consumer	User ID or IP address of the client device that is used to access a role or a service.
License category	The functional category of the CAL. This field is populated only when the license is of CAL type. For example, Microsoft supports User CAL, Device CAL, and Per Core (with CAL) license metrics.
Publisher	The publisher of the license consumption record.
Consumer type	Type of consumer license: User or Device
Product name	The name of the product for which the license consumption record is created.
Activity count	The number of times a particular user or device accesses a role or service.
Source	The CI record for license consumption.
Discovery source	Discovery source for which license consumption is evaluated.
Product code	The code of the product for which the license consumption record is created.

### Domain separation and Software Asset Management

Domain separation is supported in Software Asset Management. Domain separation enables you to separate data, processes, and administrative tasks into logical groupings called domains. You can control several aspects of this separation, including which users can see and access data.

## Support level: Enhanced

- Includes all aspects of **Basic** and **Standard** levels of support.
- Data-driven process enables service provider customers to modify business logic that is based on defined use cases. These configurations are UI-based and fail-safe so that configurations by one customer cannot affect another.
- Tenants of the instance must be able to configure minimum viable product (MVP) business logic and data parameters for themselves. This logic and parameters would be expected for the application's normal function.

Sample use case: Tenant-customers of a shared environment must be able to modify the impact, urgency, or priority matrix to set priority within their domain.

For more information on support levels, see [Application support for domain separation](#) .

## Overview

Domain separation support in the product enables service providers to offer managed services for software and hardware asset management to their customers. This feature also caters to large organizations who manage their subsidiaries as independent domains.

## How domain separation works in Software Asset Management

In SAM, domain separation occurs in two stages: data separation and process separation. From the Paris release, both data and process are domain-separated.

Any user with `sam_integrator` role has access to create and modify the SaaS integration profiles. Since users with this role can also access the Oauth application registry (currently not domain-separated, so records across all domains are visible), this `sam_integrator` role should be assigned with caution. The user should be in the service provider organization and satisfy high permissions criteria.

To view logs for domain separation, you need to create a system property titled `asset.log_level` and set its value to `debug`, `trace` or `info`. Based on the value that you set, logs are shown when any scheduled job that extends the `AssetManagementBaseJobscheduled` job runs.

In a domain-separated instance, the content data service (CDS) should populate data in the instance with domain set as **global**.

### **Note:**

The [Recommended practice](#)  is to avoid customizing the base system domain configuration record.

# Multi-Tenant Support for IT Asset Management

Manage the entire IT Asset Management lifecycle for your customers in a shared ServiceNow instance



Complete data and process separation | Tenant admin support



## Service Provider Benefits

- > Accelerate into new markets
  - > Software Asset Management
  - > Hardware Asset Management
- > Provide ITAM as a service:
  - ❖ Contract and entitlement management
  - ❖ Discovery and normalization reporting
  - ❖ Software reconciliation, optimization and licensing expertise
  - ❖ Audit response
  - ❖ Software lifecycle and vulnerability reporting

## Customer Benefits

- > Experts provide best practice services and processes
- > No platform or process ownership required

## Required plugins

- Domain separation extension (com.glide.domain.msp\_extensions.installer)
- Performance Analytics – Domain Support (com.snc.pa.domain\_support)
- SAMP (com.sn\_samp\_master)
- HAMP (store app)

## Other supported plugins

- Service Catalog – Domain Separation (com.glideapp.servicecatalog.domain\_separation)
- Procurement (com.snc.procurement)
- Cost Management (com.snc.cost\_management)
- Contract Management (com.snc.contract\_management)

To learn more, see [Domain separation explained](#), [Contains queries and domain access](#), and [Importance of Default domain](#).

## Related topics

[Domain separation for service providers](#)

## Domain separation and lifecycle reports

There are certain domain separation aspects to consider when running software lifecycle reports.

## Software Asset Management overview

In a domain-separated environment, the software lifecycle report is generated at the level at which the Service Provider (SP) is managing compliance for their customers’ environment. Typically, the level at which reconciliation is run indicates such compliance, and the software lifecycle report is generated at the same level.

The following table shows how the reconciliation should behave. In this example:

- The SP is managing Cisco's software asset management (SAM) program at the Cisco corporate level. That means the lifecycle report must run at the Cisco corporate level.
- The SP is managing Walmart's SAM program for each Walmart division (US and Mexico). That means the lifecycle report must run at the Walmart division level.

Here is the SP hierarchy:


- Cisco Corporate
  - Cisco USA
  - Cisco Mexico
- Walmart Corporate
  - Walmart USA
  - Walmart Mexico

Domain settings (reconciliation/normalization)	Compliance reporting	Lifecycle report level
TOP/Cisco	True	Yes
TOP/Cisco/US	False	
TOP/Cisco/Mexico	False	
TOP/Cisco/Germany	False	
TOP/Walmart	False	
TOP/Walmart/US	True	Yes
TOP/Walmart/Mexico	True	Yes

If the SP sets up software models for Cisco corporate as well as Cisco Mexico, even though their intent is to manage compliance for Cisco at the Cisco Corporate level, the lifecycle report may show duplicate lifecycle records with the same install count.

### Lifecycle report

Model domain		Date		Software Model	Domain
Cisco	SQL Server 2012	2014	10	SQL Server 2012	Cisco
Cisco Mexico	SQL Server 2012	2014	10	SQL Server 2012	Cisco
Walmart USA	SQL Server 2012	2014	5		
Walmart Mexico	SQL Server 2012	2014	20		

To learn more about software lifecycles, see [Create software models in Software Asset Management classic](#). To learn about domain separation path setup, see [Domain separation setup and administration](#) 

## Quick start tests for Software Asset Management

Validate that Software Asset Management still works after you make any configuration change such as apply an upgrade or develop an application. Copy and customize these quick start tests to pass when using your instance-specific data.

Software Asset Management Foundation plugin Software Asset Management quick start tests require activating the Software Asset Management Professional plugin (com.snc.samp). Some quick start tests require activating the following additional plugins.

- Software Asset Management - Spend Detection (com.sn\_sam\_spend)
- Software Asset Management Professional for Microsoft (com.snc.samp.microsoft)
- Software Asset Management Professional for SAP (com.sn\_samp\_sap)
- Software Asset Management Professional for Oracle (com.snc.samp.oracle)
- Software Asset Management - SaaS License Management Integrations (sn\_sam\_saas\_int)

### Software Asset Management test suite

Test	Description	Release version
SAM - Mapping Custom PPN/ DMAP to newly published PPN and Content	Validates the replacement of a custom publisher part number (PPN) with a new Software Asset Management Content Service PPN.	San Diego
SAM - Oracle PaaS BYOL	<ul style="list-style-type: none"> <li>• Validates the addition of the new Serverless Hardware [cmdb_ci_serverless_hardware] table, which stores information about PaaS devices.</li> <li>• Validates the license compliance of Oracle Database servers in Amazon Web Services (AWS) PaaS environments.</li> </ul> <p><b>Note:</b> Requires the Software Asset Management Professional for Oracle (com.snc.samp.oracle) plugin and the CMDB CI Class Models store application.</p>	Rome
SAM - Software Product Lifecycles records on Software Model	Validates that the Software Lifecycle tab on the Software Model form is showing records.	Quebec

Software Asset Management test suite (continued)

Test	Description	Release version
	<p><b>i Note:</b> Requires demo data and the Software Asset Management Professional for Microsoft (com.snc.samp.microsoft) plugin.</p>	
SAM - BYOL	<ul style="list-style-type: none"> <li>• Validates the purchase date on the Software Entitlement form</li> <li>• Validates the addition of newly added column legacy_license on the License Metric Results [samp_license_metric_result] and License Position Report [samp_license_position_report] tables</li> <li>• Validates the addition of newly added columns, cloud_license_type and cloud_license_type_source in the Software Installations [cmdb_sam_sw_install] table</li> </ul> <p><b>i Note:</b> Requires the Software Asset Management Professional for Microsoft (com.snc.samp.microsoft) plugin.</p>	Quebec
SAM - Validate CIS Suites	<p>Validates reconciliation of Core Infrastructure Server (CIS) suites along with downgrade rights.</p> <p><b>i Note:</b> Requires demo data and the Software Asset Management Professional for Microsoft (com.snc.samp.microsoft) plugin.</p>	Paris

**Software Asset Management test suite (continued)**

Test	Description	Release version
SAM - PerCoreForMSCluster	<p>Verifies the reconciliation functionality for Microsoft per core with cluster.</p> <p><b>i Note:</b> Requires the Software Asset Management Professional for Microsoft (com.snc.samp.microsoft) plugin.</p>	Paris
SAM - Validate upgrade/downgrade during Reconciliation for Microsoft publisher	<p>Validates upgrade and downgrade rights during reconciliation for Microsoft products.</p> <p><b>i Note:</b> Requires demo data and the Software Asset Management Professional for Microsoft (com.snc.samp.microsoft) plugin.</p>	Paris
SAM - Generate demand to consolidate SaaS applications	<p>Validates generation and submission of a demand on SaaS applications.</p> <p><b>i Note:</b> Requires the Software Asset Management - Spend Detection (com.sn_sam_spend) plugin and the PPM standard (com.snc.financial_planning_pmo) plugin.</p>	Paris
SAM - Software Model and Software Entitlement checks for SAP Engines	<p>Verifies that the Software Model and Software Entitlement forms change when the product is an SAP engine.</p>	Paris

**Software Asset Management test suite (continued)**

Test	Description	Release version
	<p><b>i Note:</b> Requires the Software Asset Management Professional for SAP (com.sn_samp_sap) plugin.</p>	
SAM - Downgrade Rights on Software Model	Validates that the downgrade rights pushed from the content service are correctly populated on the Downgrade Rights related list on the software model form.	Orlando
SAM - Multi-core pack validation on Software Entitlement	Validates the functionality of new fields for a multi-core pack on software entitlements. <p><b>i Note:</b> Requires the Software Asset Management Professional for Microsoft (com.snc.samp.microsoft) plugin.</p>	Orlando
SAM - Downgrade Rights on Software Entitlement	Validates that the downgrade rights pushed from the content service are correctly populated on the Downgrade Rights related list on the software entitlement form.	Orlando
SAM - Software Spend Transaction	Validates the creation of a Software Spend Transaction. <p><b>i Note:</b> Requires the Software Asset Management - Spend Detection (com.sn_sam_spend) plugin.</p>	Orlando
SAM - Software Model and Software Entitlement	Tests that a user can create a software model and software entitlement and validates those records.	New York
SAM - Software Installation and Discovery Model	Tests that a user can create a software installation and discovery model and validates those records.	New York

**Software Asset Management test suite (continued)**

Test	Description	Release version
SAM - Software Entitlement Creation Using Custom PPN	Creates a custom software product, a custom DMAP for the custom product, a custom Part Number for the custom DMAP, a software entitlement using the custom Part Number, and verifies that a software model is automatically created.	New York
SAM - Software Model Checks for SAP Named Users	Tests that the software model form changes when the publisher is SAP and the product is Named Users.  <b>Note:</b> Requires the Software Asset Management Professional for SAP (com.sn_samp_sap) plugin.	New York
SAM - Software Model Checks for SaaS	Tests that the Software Model form changes when a SaaS product is selected.  <b>Note:</b> Requires the Software Asset Management - SaaS License Management Integrations (sn_sam_saas_int) plugin.	New York
SAM - Validate Fields on SaaS Software Products	Tests that the <b>Subscription software</b> and <b>Ignore installs</b> fields are present on the Software Product form.  <b>Note:</b> Requires the Software Asset Management - SaaS License Management Integrations (sn_sam_saas_int) plugin.	New York

**Related topics**

[Quick start tests](#) 

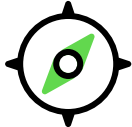



# Hardware Asset Management

The ServiceNow® Hardware Asset Management (HAM) application is a licensable application that on activation provides advanced workflow, automation, and mobile capabilities to maintain your assets.

Watch this short video for an introduction to the Hardware Asset Management application.

[https://player.vimeo.com/video/995199429?badge=0&autoplay=0&player\\_id=0&app\\_id=58479](https://player.vimeo.com/video/995199429?badge=0&autoplay=0&player_id=0&app_id=58479)

**Note:** Beginning with the ServiceNow AI Platform® Washington DC release, we will provide limited support for the Hardware Asset Management Core UI interface. While it remains active in your instance, including when you upgrade to a new ServiceNow AI Platform release, we encourage you to move to the new workspace experience. For more information, see [KB1584544](#), [Hardware Asset Workspace](#) and [Next Experience UI](#).

<p>Explore</p>  <p>Learn the key features and business value that the Hardware Asset Management application offers.</p>	<p>Configure</p>  <p>Activate Hardware Asset Management supporting plugins and assign roles.</p>
<p>Use</p>  <p>Use the Hardware Asset Management to efficiently manage your hardware assets.</p>	<p>Reference</p>  <p>Improve your business processes and practices by visualizing actionable data.</p>

Visit the [ServiceNow Store](#) website to view all the available apps and for information about submitting requests to the store. For cumulative release notes information for all released apps, see the [ServiceNow Store version history release notes](#).

## Learn

[What is Hardware Asset Management?](#)

## Exploring Hardware Asset Management

Learn more about Hardware Asset Management by reviewing the benefits that it can provide for different users in your organization.

## Hardware Asset Management overview

Hardware Asset Management enables you to track and manage the end-to-end life-cycle of all your organizational assets such as hardware and consumables. You can simplify every stage of the asset life-cycle with prescriptive workflows and tasks. Asset tagging, assigning ownership, and location tracking of the asset mitigate the risk of asset loss. Hardware Asset Management can also identify unapproved hardware assets and ensure compliance with established policies and regulations of your organization.

## Hardware Asset Management benefits

Benefit	Feature	Users
Manage your asset life-cycle and keep the asset records accurate and up-to-date through an intuitive, centralized, and single-pane view of the hardware asset estate that directs you to critical Hardware Asset Management priorities and activities.	Hardware Asset Workspace	Executives/ Application owners/ Asset managers/ Inventory users
Leverage mobile devices to receive assets into stockrooms and conduct on-site audits for accurate inventory checks.	Mobile asset scanning	Asset managers/ Asset administrators/ Inventory administrators
Streamline your asset life-cycle with pre-built and guided workflows of Hardware Asset Management.	Asset life-cycle automation	Asset managers/ Asset administrators
Automate Return Merchandise Automation (RMA) processes for assets to be returned, replaced, or repaired.	Return Merchandise Authorization	Asset managers/ Inventory administrators
Manage a complex group of assets as a single parent record.	Asset bundles	Asset managers/ Asset administrators
Automate the process of reclaiming assets assigned to a departing employee.	Asset reclamation	Employees/Asset managers/ Inventory administrators
Manage asset donation to charity organizations with workflow.	Asset donation	Employees/Asset managers/ Inventory managers
Operate stockrooms with greater precision by linking assets to pallets and tracking assets at the aisle and space level.	Pallets for inventory	Asset managers/ Inventory administrators
Handle all loaner asset requests and make sure of the timely preparation and deployment of loaner assets.	Loaner assets	Employees/ Inventory administrators
Automate the ordering, asset tagging, and delivery of your employees' hardware asset refresh requests.	Zero Touch Refresh	Employees/Asset managers/ Inventory administrators
Track shipments by creating connections to carriers via APIs.	Shipment carrier integration	Administrators/ Asset managers/ Inventory administrators

Benefit	Feature	Users
Automate and create hardware asset records before they are received.	<a href="#">Advanced Shipment Notification (ASN)</a>	Administrators
Request hardware products to be used in the organization, onboard the product, and define the TRM life-cycle phases.	<a href="#">Manage onboarding of hardware products using Application Portfolio Management</a>	Enterprise architects/ Application owners
Get defective hardware assets in a stockroom repaired quickly using the Repair flow.	<a href="#">Repair flow</a>	Asset managers
Locate and pick the assets in your stockroom efficiently by using the ServiceNow Mobile Agent application.	<a href="#">Inventory picking for Hardware Asset Management</a>	Inventory users
Track asset movement from the receiving bay of the inventory to the designated space within the stockroom using the Asset put away task.	<a href="#">Managing inventory by putting away assets in the stockroom drop-off location</a>	Inventory users
Enable hardware asset requests to be fulfilled with minimal intervention.	<a href="#">Zero Touch request flow</a>	Employees/ External providers/ Catalog administrators

## Using Guided Setup to implement Hardware Asset Management

Hardware Asset Management Guided Setup provides a sequence of tasks that help you configure Hardware Asset Management on your ServiceNow instance. To open Hardware Asset Management guided setup, navigate to **App > Guided Setup**. For more information about using the Guided Setup interface, see [Using guided setup](#).

## Hardware Asset Management subscription

The ServiceNow platform uses a licensing method where your organization is charged for using the IT Asset Management application- ServiceNow Hardware Asset Management.

**Note:** You must install Hardware Asset Management from [ServiceNow Store](#) to help you automate tasks and simplify work.

Get the most out of your asset data to save time and resources with the following prescriptive workflows or features.

- [Hardware Asset Workspace](#)
- [Hardware Asset dashboard](#)
- [Hardware Model Normalization](#)
- [Content lookup portal](#)
- [Asset life-cycle automation](#)
  - [Hardware asset refresh](#)
  - [Hardware disposal](#)
  - [Loaner asset order or asset reservations](#)
  - [Return Merchandise Authorization](#)
  - [Asset lease expiration](#)

- Leased asset return
- Asset bundles
- Advanced shipment notifications (ASN)
- Asset donation
- Zero Touch Refresh
- Automated asset tasks such as deploy, swap, and retire
- Mobile
  - Asset inventory audit
  - Asset disposal scanning
- Asset integration - Shipping carrier
- Pallet assets
- Asset Management Executive Dashboard
- Contract management and renewal
- Hardware Asset dashboard
- Content lookup portal
- HAM Guided Setup
- Zebra RFID integration
- Service locations
- Distribution channels support for Stockroom
- Indoor Mapping capability for Hardware Asset
- Hardware Asset Management Maturity
- Asset Total Cost of Ownership
- Asset Warranty integration with Lenovo
- Repair flow
- Inventory picking
- Zero Touch request flow
- Put away assets in the stockroom drop-off location

The following base system features of Core Asset Management are provided with ServiceNow IT Service Management (ITSM) and Customer Service Management (CSM) product.

- Asset and model records
- Stockrooms
- Transfer orders
- Purchase orders
- Contracts
- Mobile asset receiving
- Mobile - My Assets

For more information, see [Asset Management](#)  and [Manage Hardware Asset Management subscriptions](#).

### Hardware Asset Management licensing

Hardware Asset Management (HAM) licensing enables you to choose the Hardware Asset Management resource categories that you want to use. You can save money by paying only for those categories that you use, and not for categories that you don't use.

Only the resource categories that are opted in are counted toward the Subscription Units.

**Note:** By default for a particular resource category, the normalization functions for its associated models and the asset actions for its associated assets don't work. If you want to use the normalization functions and asset actions, you have to opt in that resource category.

For more information about opting in or out of the HAM license resource categories, see [Opt-in or opt-out of HAM license resource categories](#).

Based on the usage of model categories, the ServiceNow HAM license is divided into resource categories. There are different types of resource categories. Different assets fall under different categories as well. Make sure you opt in the correct and required categories. An asset represented in the Asset [alm\_asset] table and which meets the criteria for each managed IT resource type such as Server, End User Computers, Network Gear, and Mobile Device, is counted toward a Subscription Unit based on the predefined ratio of number of assets to subscription units.

**Note:** Resource categories in HAM are associated with certain entitlements. For example, the Computer resource category is shown only if the computer entitlement is available in the HAM license. On an on-premise ServiceNow instance, the entitlements aren't downloaded. However, you can store your HAM entitlement details by using the `sn_ham_active_entitlements` system property. You can update this system property with a comma separated list of entitlements for which you have access.

The comma separated entitlements should be updated in the following format:

- End User Computers- ham\_computer\_license
- Mobile Device- ham\_mobiledevice\_license
- Servers- ham\_server\_license
- Network Gear- ham\_networkgear\_license
- Monitors- ham\_monitor\_license
- Storage- ham\_storage\_license
- Printer- ham\_printer\_license
- Telecom Network Inventory- ham\_tni\_license

### HAM license resource categories

*The Subscription unit ratio is the ratio of the number of assets to the number of subscription units. For example, the subscription unit ratio of End User Computers is 4:1, where 4 assets require a single unit of license. If 1 license costs \$100, then 4 computer assets cost \$100 and 8 computer assets cost \$200.*

Resource category	Subscription unit ratio	Model category
End User Computers	4:1	Computer


**HAM license resource categories**

The Subscription unit ratio is the ratio of the number of assets to the number of subscription units. For example, the subscription unit ratio of End User Computers is 4:1, where 4 assets require a single unit of license. If 1 license costs \$100, then 4 computer assets cost \$100 and 8 computer assets cost \$200.

(continued)

Resource category	Subscription unit ratio	Model category
Servers	1:1	Any server such as the following: <ul style="list-style-type: none"> <li>• AIX Server</li> <li>• ESX Server</li> <li>• HPUX Server</li> <li>• Linux server</li> <li>• Netware Server</li> <li>• OS/X Server</li> <li>• Server</li> <li>• Solaris Server</li> <li>• Unix Server</li> <li>• Windows Server</li> </ul>
Network Gear	5:1	<ul style="list-style-type: none"> <li>• Network gear</li> <li>• IP Switch</li> <li>• IP Router</li> </ul>
Mobile Device	10:1	Mobile Device
Telecom Network Inventory	1:1	<ul style="list-style-type: none"> <li>• Card</li> <li>• Network Interface</li> <li>• Logical connection</li> <li>• Physical connection</li> <li>• Telco equipment</li> </ul>
Unclassified hardware	1:1	Hardware
Monitors	15:1	Monitor
Storage	3:1	Storage Device
Printers	10:1	Printer

**i Note:** Unclassified hardware, Monitors, Storage, and Printers are available with Hardware Asset Management version 10.1.0 and later only when you upgrade to HAM license version 5.0.

To access Hardware Asset Management features for Telecommunications Network Inventory, you should install the Telecommunications Network Inventory application and opt-in to the Telecom Network Inventory resource category. For more information, see [Telecommunications Network Inventory integration with Hardware Asset Management](#) .

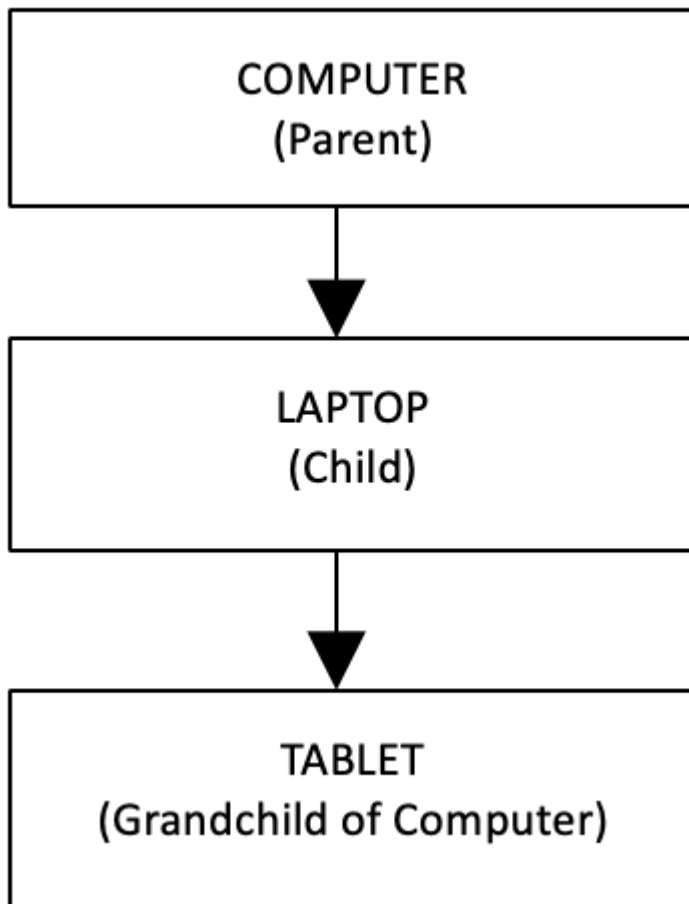
## HAM Licensing for custom model categories

HAM provides some model categories out-of-the-box. Any model category that you create is considered as custom model category. When you upgrade to the Hardware Asset Management license released in Washington DC and later releases, any asset with a custom model category can access the Hardware Asset Management features and workflows only if any of the following conditions hold good:

- The custom model category of the asset belongs to the hierarchy of opted-in model categories.
- The parent model category of a custom model category is associated with a licensable and opted-in resource category.

**i Note:** If you are on any HAM license version released before Hardware Asset Management license version 4, the assets with custom model categories can access Hardware Asset Management features and workflows even if they aren't associated with an opted-in and licensable resource category. Also, the custom model categories aren't counted toward a Subscription Unit.

From Hardware Asset Management version 10.1.2 and 11.0.1 onward, even if you are on a license version released before Hardware Asset Management license version 4, you can enable HAM licensing for custom model categories by using the `sn_hamp.enable_custom_category_licensing` system property. By default, the value of this system property is set to **false**. When you set the `sn_hamp.enable_custom_category_licensing` system property to **true**, custom model category assets are excluded from HAM workflows unless the parent of the custom model category is an opted-in and licensable category.

**Example for hierarchy of model categories**

In the example, the Computer model category is associated with the custom model categories Laptop and Tablet. Note the following about the custom model categories:

- When you opt in Computers, both Laptop and Tablet are also counted toward a Subscription Unit under the End User Computers resource category. Also, these custom model categories can access Hardware Asset Management features and workflows.
- When you opt out Computers, both Laptop and Tablet are also opted-out and these custom model categories can't access Hardware Asset Management features and workflows.

**i Note:** A model category that belongs to a licensable resource category and has a parent model category is licensed only under its associated resource category. For example, the Monitor model category that's associated with the licensable Monitors resource category and that has Computer as its parent, is licensed only under Monitors.

Assets with the following model categories are excluded from accessing Hardware Asset Management features and workflows:

- Any model category that is a child of an opted-out resource category.
- Any model category that is a child of model categories such as printer and storage device. This exclusion is only in Hardware Asset Management version 10.0.0.

**Note:** The existing model categories such as printer, consumables, and storage devices continue to access the Hardware Asset Management features only with Hardware Asset Management version 10.0.0 and earlier.

From Hardware Asset Management version 10.1.0 onward, the resource categories like Printers, Monitors, Storage, and Unclassified hardware are licensed and available only when you upgrade to HAM license version 5.0. You must opt in these resource categories to access the Hardware Asset Management features. When you opt in these resource categories, all their child model categories can also access the HAM features and workflows.

After you upgrade to HAM license version 5.0, the printers, monitors, storage devices, and Unclassified hardware assets that were created in the earlier versions wouldn't be able to access the Hardware Asset Management features by default. You should explicitly opt in these resource categories.

- Any other custom model category without a parent category.

### Licensing framework for Hardware Asset Management solutions

Manage the subscription units purchased and consumed by your organization for all the Hardware Asset Management solutions with the improved HAM licensing framework. When more than one Hardware Asset Management solution is activated on a ServiceNow instance, any licensable and opted-in resource category is licensed only under one solution.

The licensed solutions like Hardware Asset Management integration with Zero Touch Mobility and Hardware Asset Management integration with Telecommunications Network Inventory install the Hardware Asset Management on your ServiceNow instance.

Each Hardware Asset Management solution supports some default resource categories that can avail Hardware Asset Management features and workflows.

### Resource categories for Hardware Asset Management solutions

Application/Solution	Supported resource categories
Hardware Asset Management integration with Zero Touch Mobility	Mobile Device
Hardware Asset Management integration with Telecommunications Network Inventory	<ul style="list-style-type: none"> <li>• Telecom Network Inventory</li> <li>• Server</li> <li>• Network Gear</li> </ul>
Hardware Asset Management	<ul style="list-style-type: none"> <li>• End User Computers</li> <li>• Mobile Device</li> <li>• Server</li> <li>• Network Gear</li> <li>• Printers</li> <li>• Monitors</li> </ul>

### Resource categories for Hardware Asset Management solutions (continued)

Application/Solution	Supported resource categories
	<ul style="list-style-type: none"> <li>Storage</li> <li>Unclassified hardware</li> </ul>

HAM licensing is based on the subscription unit ratio defined for each resource category. You can opt in and pay for only those resource categories that you want to use. For more information, see [Hardware Asset Management licensing](#).

### License prioritization for Hardware Asset Management solutions

**i Important:** The HAM license prioritization feature is available with Hardware Asset Management version 10.1.0 and later.

When you activate all the Hardware Asset Management solutions on your ServiceNow instance and opt-in all resource categories, consider the following:

- A resource category is licensed only under one application based on the application priority that is defined in the HAM licensing framework.
- The application priority is set based on the licensing cost and is in the following order:
  1. Hardware Asset Management integration with Zero Touch Mobility
  2. Hardware Asset Management integration with Telecommunications Network Inventory
  3. Hardware Asset Management
- Mobile Device is licensed under Hardware Asset Management integration with Zero Touch Mobility.
- Telecom Network Inventory, Servers, and Network Gear are licensed under Hardware Asset Management integration with Telecommunications Network Inventory.
- End User Computers is licensed under Hardware Asset Management.

### Licensing model for HAM solutions

Resource category	Subscription Unit Ratio	HAM integration with Zero Touch Mobility	HAM integration with Telecommunications Network Inventory	Hardware Asset Management	Licensed under
Mobile	10:1	Installed	Resource category isn't available	Installed	Zero touch Mobility
Server	1:1	Resource category isn't available	Installed	Installed	Telecommunications Network Inventory
Network gear	5:1	Resource category	Installed	Installed	Telecommunications Network Inventory

**Licensing model for HAM solutions (continued)**

Resource category	Subscription Unit Ratio	HAM integration with Zero Touch Mobility	HAM integration with Telecommunications Network Inventory	Hardware Asset Management	Licensed under
		isn't available			
Telecom Network Inventory	1:1	Resource category isn't available	Installed	Installed	Telecommunications Network Inventory
End User Computers	4:1	Resource category isn't available	Resource category isn't available	Installed	Hardware Asset Management

You can view the subscription details of your Hardware Asset Management application and solutions using the ITAM License Report. For more details, see [View the license report for the Hardware Asset Management application](#).

**Related topics**

[Hardware Asset Management integration with Zero Touch Mobility](#)

[Telecommunications Network Inventory integration with Hardware Asset Management](#) 

**Hardware Asset Workspace**

The Hardware Asset Workspace is the intuitive and streamlined user interface of the Hardware Asset Management application to manage your hardware assets.

** Note:**

You must activate the Asset Management Workspace (sn\_itam\_workspace) plugin along with the Hardware Asset Management (sn\_hamp) to use the Hardware Asset Workspace.

The Hardware Asset Workspace is a unified medium with multiple views that help you manage your assets efficiently. The views provide you with visibility into all the important aspects of your assets, such as dashboards on Normalization and Stockroom, Asset count by model, life cycle state, model category, and overall performance of assets.

The Hardware Asset Workspace contains the following views:

- **Hardware asset overview:** View important actions and quick links to active tasks. Also, get a 360-degree view of the asset estate for a snapshot of assets by model type, life cycle state, and asset value.
- **Asset analytics:** Manage resources efficiently by tracking the Total Cost of Ownership (TCO) of assets.
- **DaaS provider view:** Manage the assets of the customers of Device as a Service (DaaS) providers.

** Note:** Hardware Asset Management for Device as a Service (com.sn\_daas\_ham) must be installed to access this view.

- **Inventory:** View details of the entire asset inventory and stockrooms that enable you to perform inventory tasks.
- **Asset estate:** View the asset functions and maintain accurate hardware and consumable records.
- **Model management:** View details of different types of models being managed across hardware, software, consumables, and bundles.
- **Content lookup portal for Hardware Asset Management:** View data related to hardware products stored in the Hardware Asset Management Content Service.
- **Procurement view:** View and manage details of all ongoing procurement activities.
- **Contract management:** View and manage all hardware and software contracts.
- **Success portal:** Track the progress of your Hardware Asset Management (HAM) application with success goals, assign activities to track the success of your goals, and mature your HAM program with predefined maturity items.
- **Asset operations:** View asset operations related to inventory, shipment, procurement, hardware asset normalization, contracts, Zero Touch Refresh, and Success goals.

### Hardware asset overview

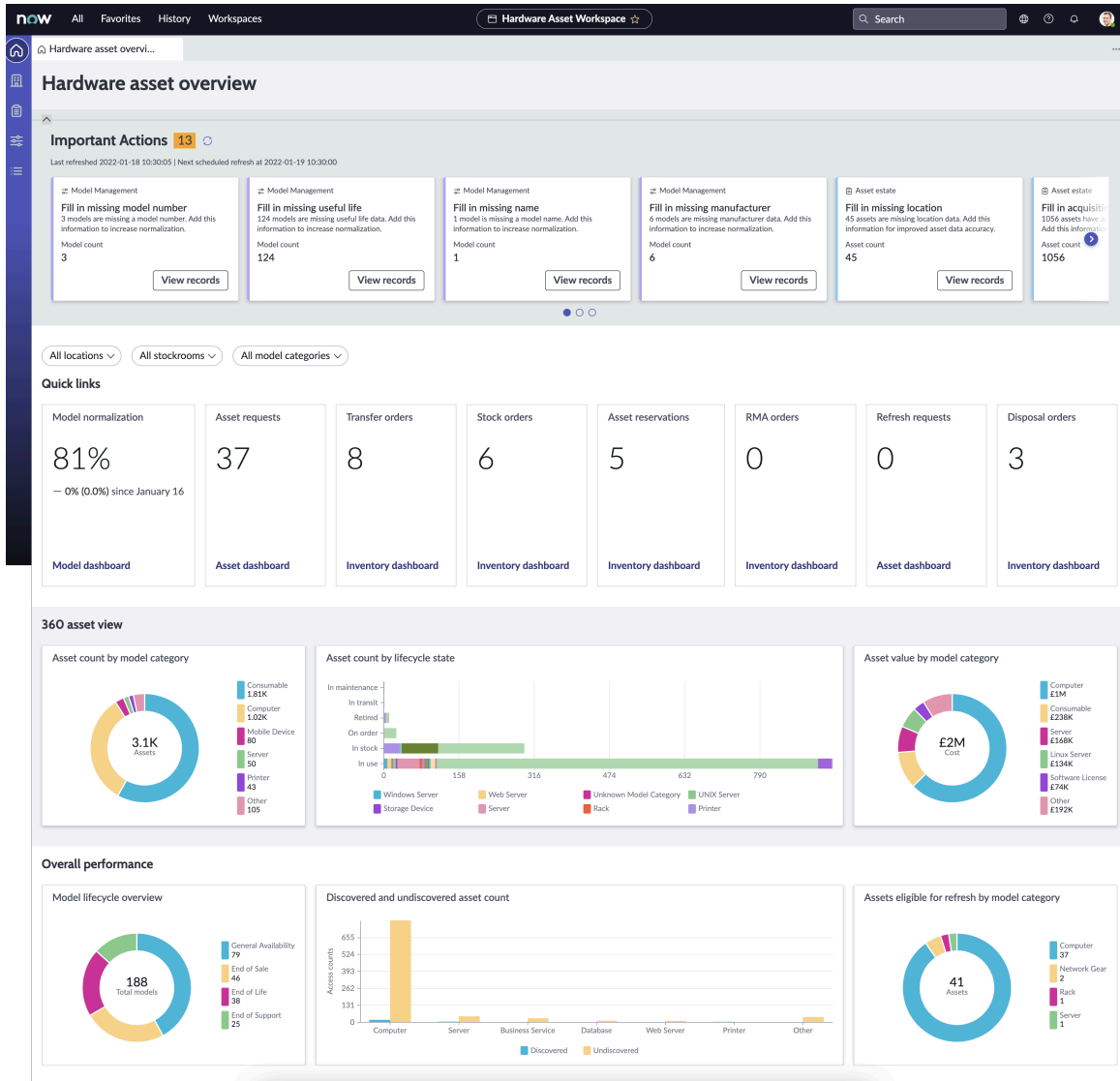
Enhance your Hardware Asset Management experience by using the modernized and user-friendly Hardware asset overview view. The Hardware asset overview is a simplified and intuitive environment that helps you use the application more effectively by reducing complexity.

Use the Hardware asset overview view to:

- Act on discrepancies such as when an asset is missing PO number, model number, asset function, or manufacturer.
- Navigate to specific dashboards on asset functions such as Model normalization, Asset requests, Transfer orders, Stock orders, Asset reservations, RMA orders, Refresh requests, and Disposal orders.
- View the 360 asset view section displaying Asset counts by model category and lifecycle state, and asset value by model category.
- View the overall performance section displaying the Model lifecycle overview of all the assets, Discovered and undiscovered asset count, and Assets eligible for refresh by model category.

Select any widget or chart to view detailed information and take appropriate actions. You can also use **Location**, **Stockroom**, and **Model category** lists to filter your results.

# Hardware asset overview



## Quick links

Widget or chart	Description
Model normalization	Percentage of hardware and consumable models that are normalized.
Asset requests	Number of requested items where the item's model is hardware, consumable, or bundle.
Transfer orders	Number of active transfer orders.
Stock orders	Number of requested hardware inventory stock order items.
Asset reservations	Number of active loaner asset orders.
RMA orders	Number of open RMA orders.
Refresh requests	Number of open hardware assets refresh order requests.
Disposal orders	Number of open hardware disposal orders.

### 360 asset view

Widget or chart	Description
Asset count by model category	Number of assets grouped by the model category such as Consumable, Computer, and Mobile Device.
Asset count by lifecycle state	Number of assets grouped by the lifecycle state such as Retired, In use, and In stock.
Asset value by model category	Cost of assets grouped by the model category such as Software License, Consumable, and Server.

### Overall performance

Widget or chart	Description
Model lifecycle overview	Overview of model lifecycle grouped by the lifecycle phase such as End of support, End of Life, General Availability, and End of Sale.
Discovered and undiscovered asset count	Comparison of the number of discovered and undiscovered assets grouped by model category. Undiscovered assets are the assets that are not discovered at all or not discovered within one month.
Assets eligible for refresh by model category	Number of assets that have already expired or the current day is the expiry date, and are eligible for a refresh.

### Load reports on Hardware asset overview

You can load charts or widgets that fetch a huge set of asset records on demand instead of loading them along with the page. This approach enables you to reduce the loading time for the Hardware asset overview page.

The system property

`sn_itam_workspace.asset_overview.enable_lazy_loading` provides you with an option to either selectively load reports you want to view or load reports concurrently with the page. By default, this system property is set to **False**. When this system property is enabled on your ServiceNow instance, you can view reports by using the **Load report** option.

## Load reports on Hardware asset overview

The screenshot displays the 'Hardware asset overview' page in ServiceNow. At the top, there's a navigation bar with 'servicenow', 'All', 'Favorites', 'History', 'Workspaces', and a search bar. Below this, the page title 'Hardware asset overview' is shown. A section titled 'Important Actions' (21) lists five tasks: 'Fill in missing location' (65 assets), 'Fill in acquisition method' (1277 assets), 'Fill in PO number' (693 assets), 'Unmatched RFID tags' (5 tags), and 'Fill in missing information' (59 assets). Each task has a 'View records' button. Below this are filters for 'All locations', 'All stockrooms', and 'All model categories'. A 'Quick links' section shows seven metrics: Model normalization (94%), Asset requests (5), Transfer orders (23), Stock orders (14), Asset reservations (10), RMA orders (2), and Refresh requests (2). The '360 asset view' section contains three report load buttons: 'Asset count by model category', 'Asset count by lifecycle state', and 'Asset value by model category'. The 'Overall performance' section contains three more report load buttons: 'Model lifecycle overview', 'Discovered and undiscovered asset count', and 'Assets eligible for refresh by model category'.

### Related topics

[Analytics and Reporting Solutions for Hardware Asset Management](#)

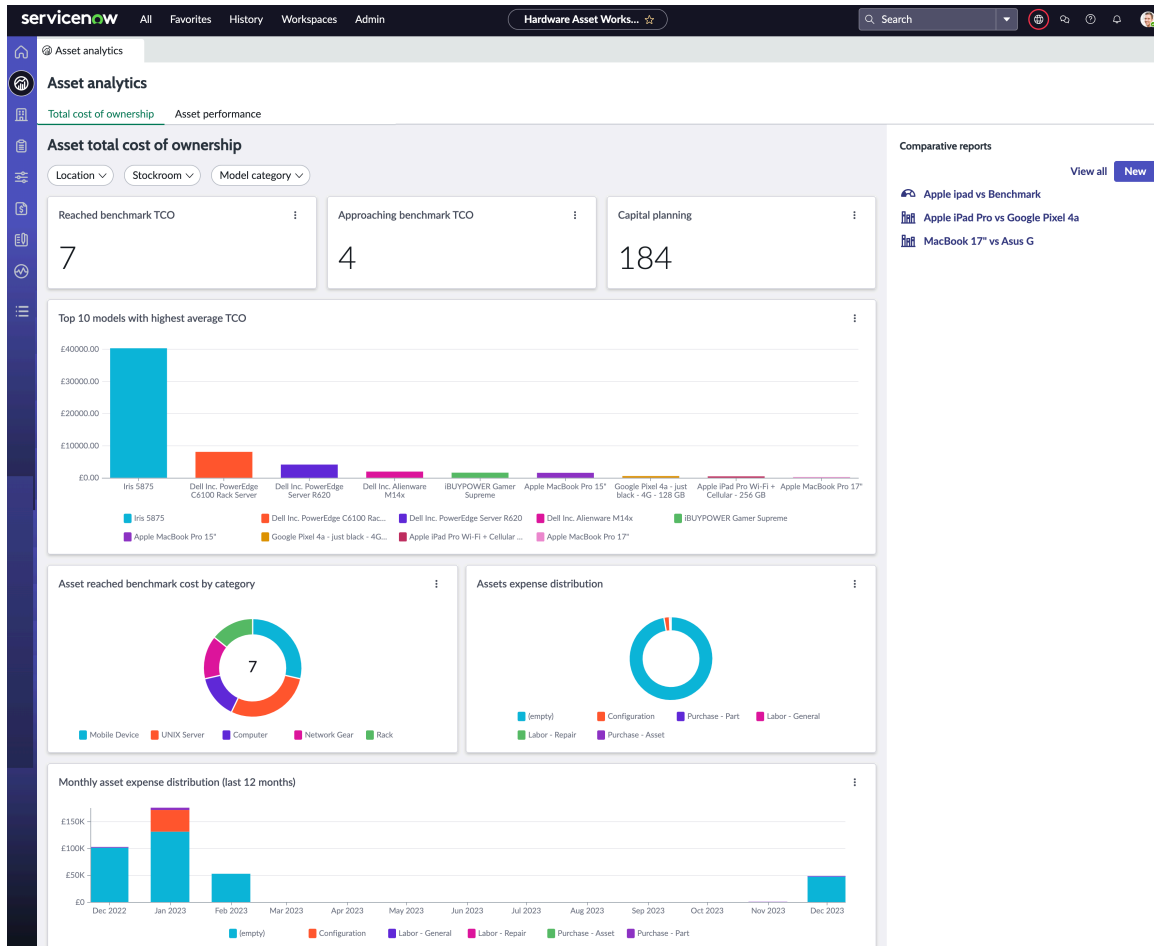
### Asset analytics view

Use the Asset analytics view to get a detailed view of all your hardware assets, the total cost of ownership (TCO) of your assets, and the asset performance.

### Total cost of ownership

For more information about the TCO of your assets, see [Asset Total Cost of Ownership for Hardware Asset Management](#).

**Important:** The Asset Analytics view is available with Hardware Asset Management 10.0.0 version or later.



You can filter and narrow down your results by selecting a location, stockroom, and model category.

**Note:**

TCO reports support domain separation when Domain Extension Installer (com.glide.domain.msp\_extensions.installer) and Domain Support (com.snc.pa.domain\_support) plugins are activated.

**Asset total cost of ownership**

Field	Description
Reached benchmark TCO	The number of assets that have their TCO more than or equal to the benchmark cost.
Approaching benchmark TCO	<p>The number of assets that have their TCO more than or equal to the benchmark threshold but less than the benchmark cost.</p> <p>The TCO benchmark threshold percentage is set to 75% of the TCO benchmark cost by default.</p> <p>For example, if you have set the benchmark as \$1000 and the asset cost has reached \$750, the asset is considered to be approaching the benchmark TCO.</p>

**Asset total cost of ownership (continued)**

Field	Description
	Use the system property <code>sn_itam_common.asset_tco_benchmark_threshold</code> to update the benchmark threshold percentage.  For more information about the hardware asset field values, see <a href="#">Asset record fields</a> .
Capital planning	Number of assets for capital planning. The Assets for capital planning are assets that are not retired and their current life cycle phase is true.
Top 10 models with highest average TCO	Top 10 models that have the highest average asset TCO in a 12-month duration.
Asset reached benchmark cost by category	Number of assets whose asset TCO has reached benchmark cost based on model category.
Assets expense distribution	Costs incurred on your assets based on the expense categories such as labor, shipment, and purchase.
Monthly asset expense distribution (last 12 months)	Monthly initial and operational costs of your assets over the last 12 months.

**Comparative reports**

View the most recently created TCO reports in this section.

You can also create a report by selecting **New** in the Comparative reports section. For more information, [Create a TCO report in Hardware Asset Workspace](#).

**Asset performance**

**i Important:** The Asset performance tab is available with Hardware Asset Management version 13.0.0 and later.

The Asset performance tab provides details on the average values of the following key performance indicators (KPIs):

- Availability
- Mean time between failures (MTBF)
- Mean time to repair (MTTR)

**i Note:** For more details on calculation of KPIs, see [Asset performance reports in the Hardware Asset Workspace](#).

By default, the **Model category** filter is applied to the KPI reports. To further narrow down and focus on specific data, you can also select any one of the following filters:

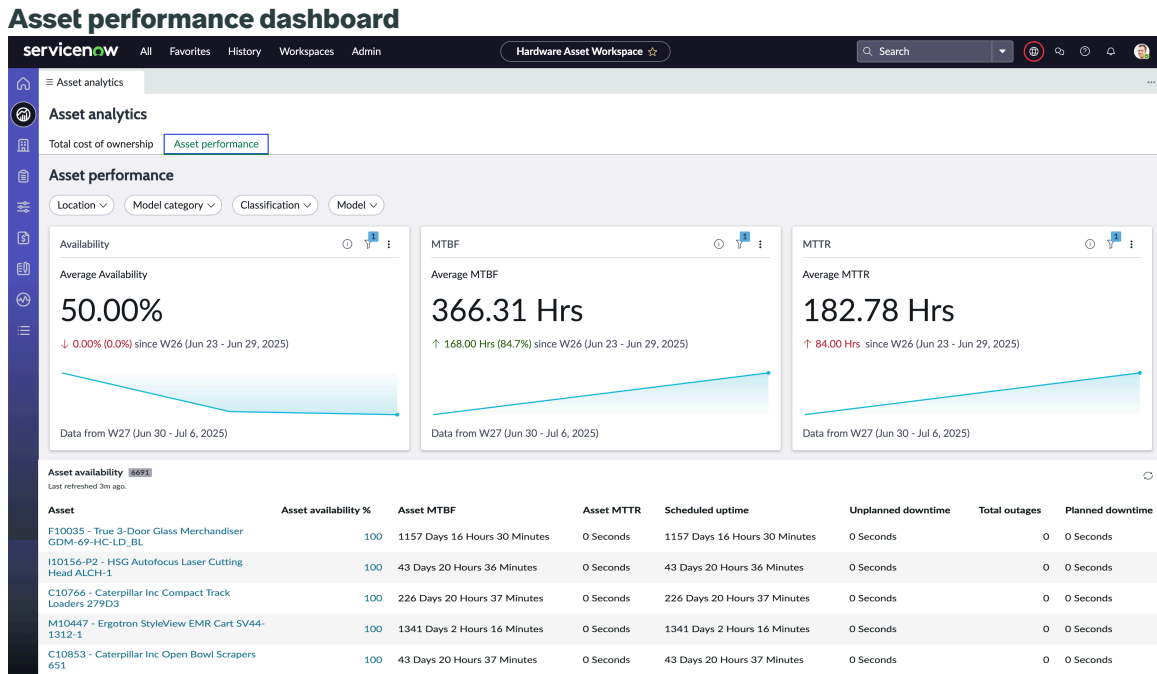
- **Domain**
- **Location**

- **Classification**
- **Model**

**Note:** You can apply a maximum of two filters to any KPI report.

You can see a weekly trend of the average KPI values in the report. The Asset Availability list provides KPI details for all hardware assets that are tracked. The average KPI values are calculated based on the assets in this list.

When you select any KPI report, the **KPI Details** page appears. This page enables you to explore the information within that KPI. You can set targets you want to achieve and also set signals to notify you of any significant changes in the KPI.



Widget	Description
Availability	Average availability percentage of all hardware assets that are tracked, calculated by dividing the total asset availability percentage by the number of assets listed in the Asset availability report.
MTBF	Average MTBF of all hardware assets that are tracked, calculated by dividing the total Asset MTBF by the number of assets listed in the Asset availability report.
MTTR	Average MTTR of all hardware assets that are tracked, calculated by dividing the total Asset MTTR by the number of assets listed in the Asset availability report.
Asset availability	Report that lists the availability and other related KPIs of all hardware assets that are tracked.

### DaaS provider view

The DaaS provider view in the Hardware Asset Workspace is an intuitive interface of the Device as a Service application to manage the assets of the customers of DaaS providers.

**Note:** You must activate the following plugins to access the DaaS provider view:

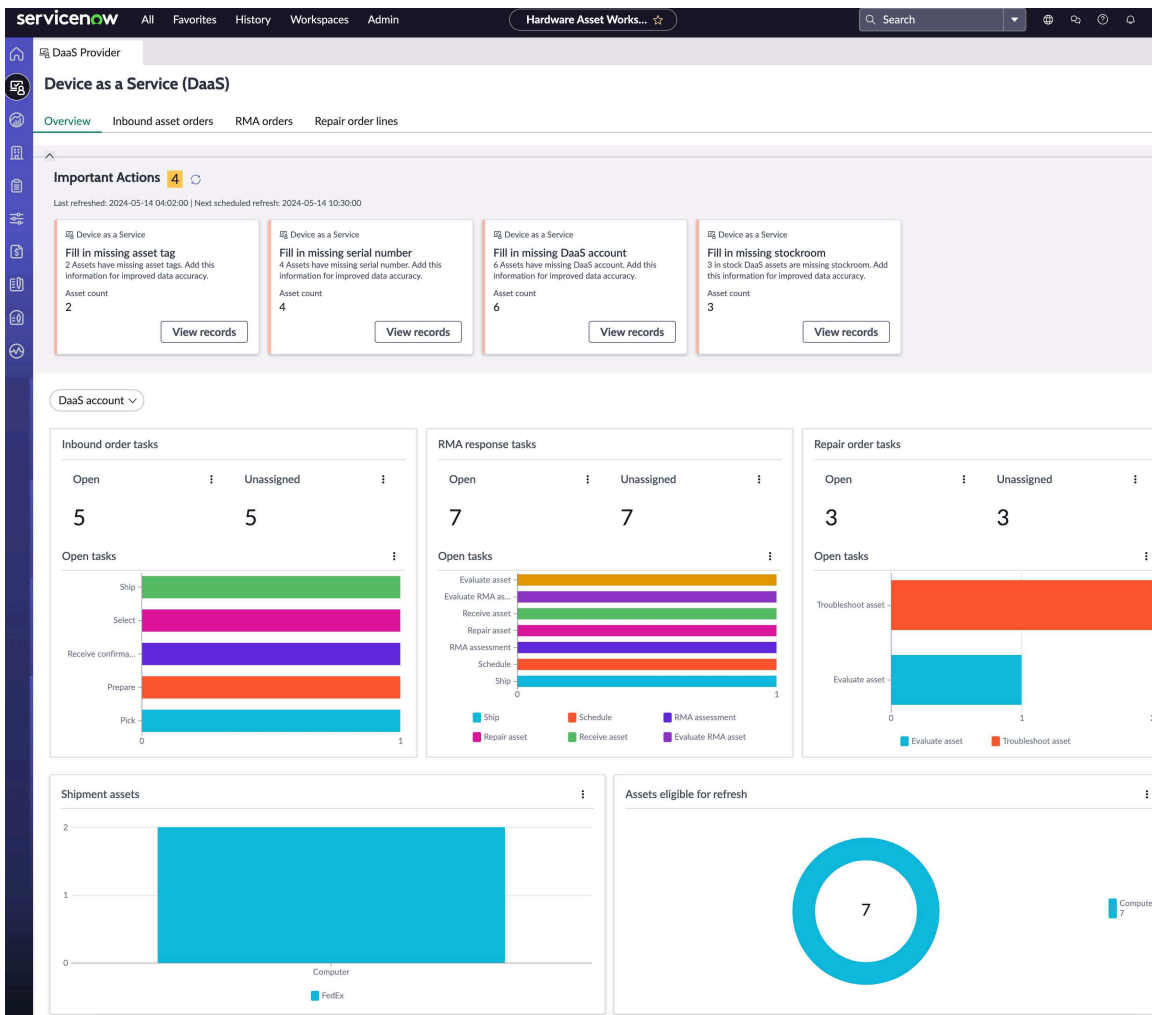
- Hardware Asset Management application (sn\_hamp)
- Hardware Asset Workspace (sn\_itam\_workspace)
- Hardware Asset Management for Device as a Service (com.sn\_daas\_ham)

For more information about the DaaS feature, see [Device as a Service](#).

Use the DaaS provider view to perform the following:

- Act on discrepancies such as assets missing serial number, stockroom, or DaaS accounts.
- Select a DaaS account for which you want to view the records such as open or unassigned tasks, shipment status, and the number of assets that are eligible for refresh.
- Create and manage [inbound asset orders](#), [RMA response orders](#), and [repair order lines](#) for the DaaS assets of your customers.

Select any widget or chart to view detailed information and take appropriate actions on the assets that are marked as DaaS assets or dedicated to accounts.



Widget/Chart	Description
Important Actions	

Widget/Chart	Description
Fill in missing asset tag	Action to be performed on the assets that have missing asset tag.
Fill in missing serial number	Action to be performed on the assets that have missing serial number.
Fill in missing DaaS account	Action to be performed on the assets that have missing DaaS accounts.
Fill in missing stockroom	Action to be performed on the assets that have missing stockroom information.
DaaS account	Customer of the DaaS provider whose data is being referenced.
Inbound order tasks	<ul style="list-style-type: none"> <li>• Open tasks: Number of open tasks in each stage of the Inbound asset order flow.</li> <li>• Unassigned tasks: Number of unassigned tasks in each stage of the Inbound asset order flow.</li> </ul> <p>The Inbound order flow includes the following stages:</p> <ul style="list-style-type: none"> <li>• Select</li> <li>• Pick</li> <li>• Prepare</li> <li>• Ship</li> <li>• Receive confirmation</li> </ul> <p>For more information, see <a href="#">Managing inbound asset orders for DaaS assets</a>.</p>
RMA response tasks	<ul style="list-style-type: none"> <li>• Open tasks: Number of open tasks in each stage of the RMA response order flow.</li> <li>• Unassigned tasks: Number of unassigned tasks in each stage of the RMA response order flow.</li> </ul> <p>The RMA response order flow includes the following stages:</p> <ul style="list-style-type: none"> <li>• Evaluate asset</li> <li>• Schedule shipment</li> <li>• Receive confirmation</li> <li>• Repair asset</li> <li>• Schedule refresh</li> </ul> <p>For more information, see <a href="#">Managing RMA response orders for DaaS assets</a>.</p>

Widget/Chart	Description
Repair order tasks	<ul style="list-style-type: none"> <li>• <b>Open tasks:</b> Number of open tasks in each stage of the repair order flow.</li> <li>• <b>Unassigned tasks:</b> Number of unassigned tasks in each stage of the repair order flow.</li> </ul> <p>The repair order flow includes the following stages:</p>
Shipment assets	Open shipment tasks in RMA response order or Inbound asset order flow.
Assets eligible for refresh	Number of assets that are eligible for refresh, which have surpassed the refresh date.

### Inventory view

Use the Inventory view in the Hardware Asset Workspace to view the inventory functions such as Asset audits and Disposal orders and to take any inventory-related actions.

Use the following tabs to view the inventory functions and take appropriate actions:

- **Overview:** View various inventory data, such as the number of open hardware requests from stock, RMA request lines, and open transfer orders.
- **All stockrooms:** View, create, and manage stockrooms.
- **Asset audits:** Perform scheduled or blind audits of asset stockrooms and other locations such as offices or data centers.
- **Disposal orders:** Create and manage a disposal order for hardware or consumable assets that have reached their end of life cycle or are no longer functional.
- **Loaner asset orders:** View all the Loaner asset orders and take appropriate actions.
- **RMA orders:** View all the RMA orders and take appropriate actions.
- **RMA line items:** View all the RMA line items and take appropriate actions.
- **Transfer orders:** Create transfer orders, view existing transfer orders, and take appropriate actions.
- **Donation orders:** View the list of asset donation orders.
- **Repair orders:** View the list of repair orders submitted for repair of assets with your stockroom. You can also create repair orders.

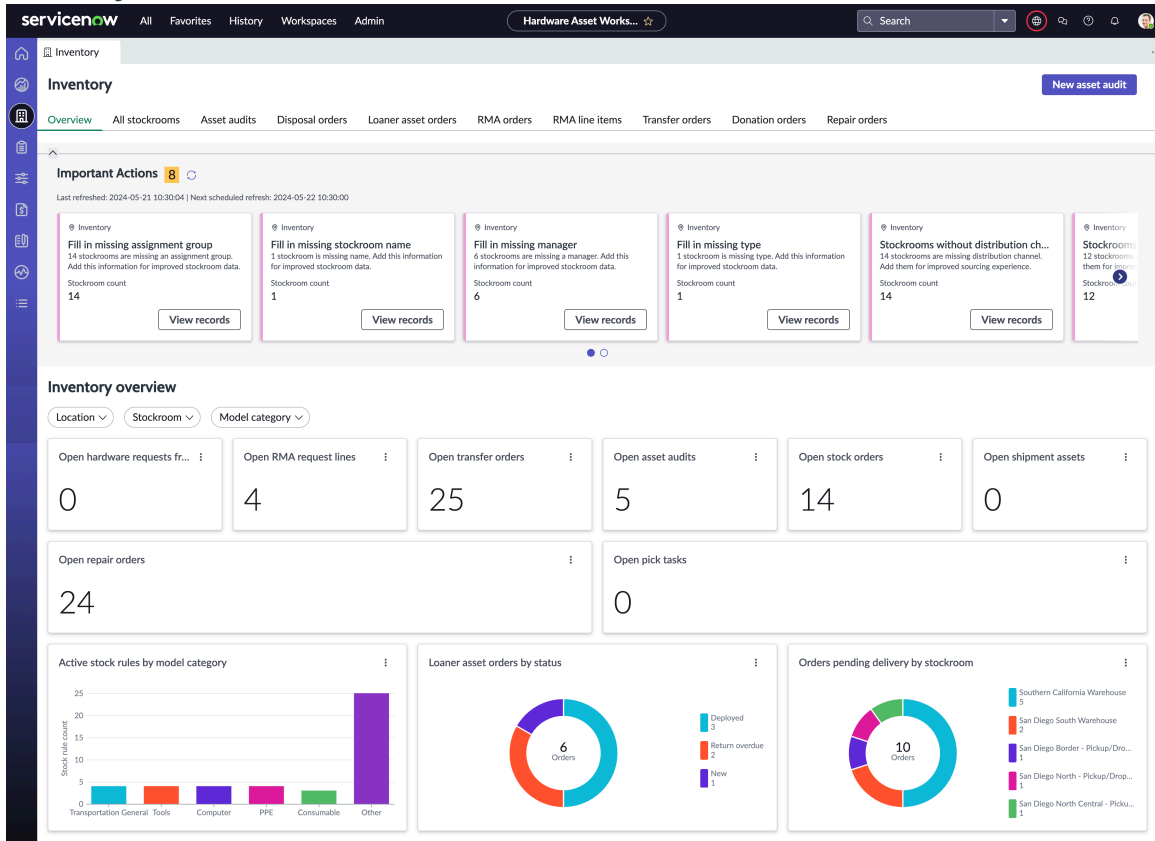
To create an asset audit for your inventory, select **New asset audit**. For more details, see [Audit your inventory](#).

**Note:** You need the asset or inventory\_admin role to access the Inventory view.

### Overview tab

Use the **Overview** tab for a consolidated view of various inventory data as widgets. You can also view notifications about actions with links to act on discrepancies, such as incomplete information on asset audits or disposal orders.

## Inventory view



Select any widget or chart to view in detail and take required actions. You can also use **Domain**, **Location**, **Stockroom**, and **Model category** lists to narrow down your results. The **Domain** filter is available only when domain separation is enabled.

### Inventory overview

Widget or chart	Description
Open hardware requests from stock (YTD)	Number of transfer orders of Procurement type that are already delivered and created this calendar year.
Open RMA request lines	Number of open RMA request lines.
Open transfer orders	Number of canceled or undelivered transfer orders.
Open asset audits	Number of asset audits that are currently new or in progress.
Open stock orders	Number of incomplete or canceled stock orders.
Orders pending delivery by stockroom	Number of purchase orders that aren't received or canceled.
Active stock rules by model category	All active stock rules grouped by their model category.
Loaner asset orders by status	Number of loaner asset orders grouped by their status, such as Return overdue, Deployed, and New.

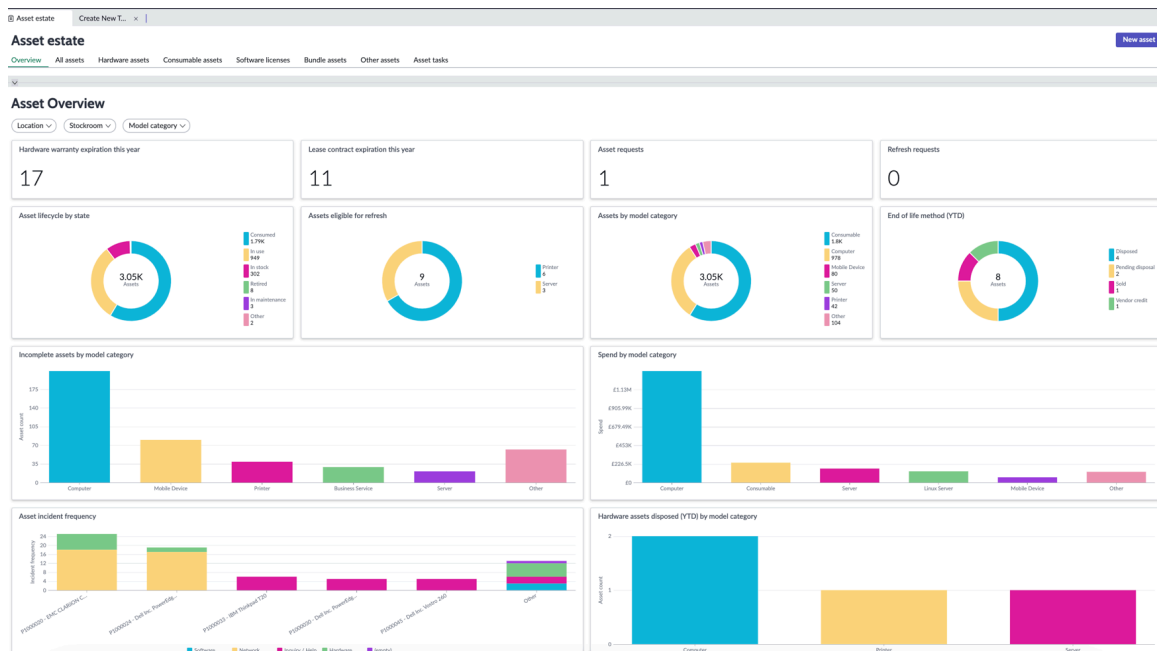
You can use the following important action cards related to service locations, distribution channels, and shipments to view the list of items that needs your action:

- Stockrooms missing service locations: List of stockrooms that aren't associated with any service locations. Stockrooms that are excluded from providing support to service locations aren't shown in the list.
- Stockrooms missing distribution channels: List of stockrooms that aren't associated with any distribution channels. Stockrooms that are excluded from having distribution channels aren't shown in the list.
- Stale shipments: List of shipments that weren't updated with the tracking information from the integrated carrier.
- Shipment data discrepancy: List of shipment records with the Carrier status as delivered and the Stage as In Transit.
- Carrier integration failures: List of integration profiles that failed to connect three consecutive times.
- Unmapped carrier profiles: List of integration profiles that aren't associated with a carrier.

### Asset estate view

Use the Asset estate view in the Hardware Asset Workspace to view the asset functions and notifications such as expiring assets, expiring lease contracts, and take appropriate actions.

#### Asset estate view



**Note:** The Software license tab is hidden when Software Asset Management (com.snc.software\_asset\_management) or Software Asset Management Professional (com.snc.pa.samp) is active. You can view this Software license tab in Software Asset Workspace.

### Asset Overview

Widget or chart	Description
Hardware warranty expiration this year	Count of hardware and consumable assets that are expiring this current year.

**Asset Overview (continued)**

Widget or chart	Description
Lease contract expiration this year	Count of lease contract models expiring this current year.
Asset requests	Count of hardware, consumable, and bundle requests in the catalog.
Refresh requests	Count of assets that are pending refresh.
Asset lifecycle by state	Number of assets grouped by the life cycle state such as Retired, In use, In stock.
Assets eligible for refresh	Assets nearing the end of life and which are eligible for refresh.
Assets by model category	Number of assets grouped by the model category such as Software License, Consumable, Server.
End of life method (YTD)	Assets retired until date in this current year.
Incomplete assets by model category	Asset models without purchase order number, purchase order line, or receiving line.
Spend by model category	Cost of assets grouped by their model category.
Asset incident frequency	Assets that have been reported with frequent incidents.
Hardware assets disposed (YTD) by model category	Assets disposed until the current date in this year and grouped by their model category.

To create hardware, software, consumable, bundle, pallet, mobile, and facility assets, select **New asset**. For more details, see [Create assets](#).

**Load reports on Asset estate view**

You can load charts or widgets that fetch a huge set of asset records on demand instead of loading them along with the page. This approach enables you to reduce the loading time for the Asset estate view.

The system property `sn_itam_workspace.asset_estate_enable_lazy_loading` provides you with an option to either selectively load reports you want to view or load reports concurrently with the page. By default, this system property is set to **False**. When this system property is enabled on your ServiceNow instance, you can view charts or widgets by using the **Load report** option.

## Load reports on Asset estate view

The screenshot displays the ServiceNow interface for the 'Asset estate' view. At the top, there's a navigation bar with 'servicenow', 'All', 'Favorites', 'History', 'Workspaces', and a search bar. Below this, the 'Asset estate' header includes a 'New asset' button and a navigation menu with options like 'Overview', 'Asset indoor map', 'All assets', 'Hardware assets', 'Consumable assets', 'Software licenses', 'Bundle assets', 'Pallets', 'Other assets', and 'Asset tasks'.

The main content area is divided into several sections:

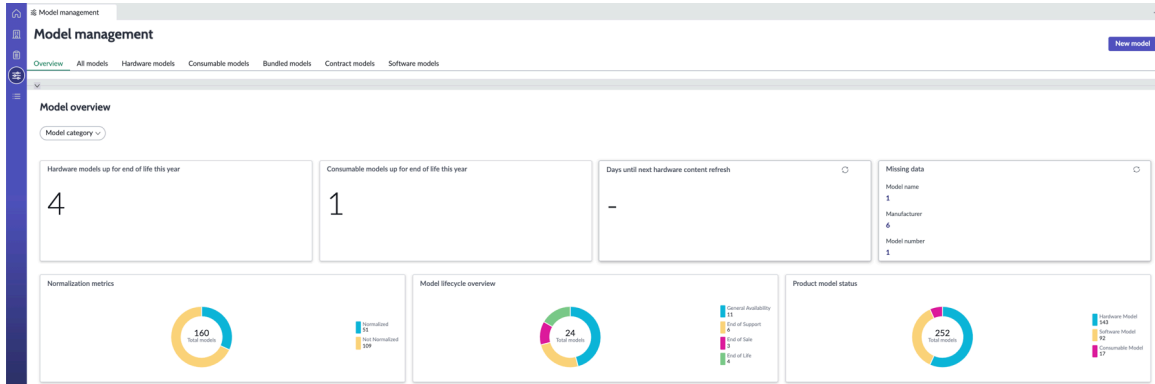
- Important Actions:** A section with 7 items, last refreshed on 2023-12-11 10:30:04. It contains five cards:
  - Fill in missing location:** 65 assets missing location data. Asset count: 65.
  - Fill in acquisition method:** 1277 assets missing acquisition method. Asset count: 1277.
  - Fill in PO number:** 693 assets missing PO number. Asset count: 693.
  - Unmatched RFID tags:** 5 unmatched RFID tags. RFID tag count: 5.
  - Fill in missing asset information:** 59 assets missing information. Asset count: 59.
- Asset Overview:** A dashboard with filters for 'Location', 'Stockroom', and 'Model category'. It contains several report cards:
  - Hardware warranty expiration this year:** 45.
  - Lease contract expiration this year:** Includes a 'Load report' button.
  - Asset requests:** 5.
  - Refresh requests:** 2.
  - Asset lifecycle by state:** Includes a 'Load report' button.
  - Assets eligible for refresh:** A donut chart showing 84 assets, categorized by Mobile Device (75), Printer (6), and Server (3). Includes a 'Load report' button.
  - Asset count by model category:** Includes a 'Load report' button.
  - End of life method (YTD):** Includes a 'Load report' button.
  - Incomplete assets by model category:** Includes a 'Load report' button.
  - Spend by model category:** Includes a 'Load report' button.
  - Asset incident frequency:** Includes a 'Load report' button.
  - Hardware assets disposed (YTD) by model category:** Includes a 'Load report' button.

### Model management view

Use the Model management view in the Hardware Asset Workspace to create or edit models, view the asset model-related functions such as hardware and consumable models nearing the end of life, and take appropriate actions.

## Model management view

All reports except **Days until next hardware content refresh** under the Model Management view get filtered based on the model category you choose.



**Note:** Software model tab is hidden when Software Asset Management (com.snc.software\_asset\_management) or Software Asset Management Professional (com.snc.pa.samp) is active. You can view this Software model tab in Software Asset Workspace.

### Model overview

Widget or chart	Description
Hardware models up for end of life this year	Count of hardware models whose start date of the end of life phase is the current year.
Consumable models up for end of life this year	Count of consumable models whose start date of the end of life phase is the current year.
Days until next hardware content refresh	Number of days after which the next hardware content refresh will be performed by Hardware Asset Management.
Missing data	Count of models that have missing model name, manufacturer, and model number.
Normalization metrics	Count of models that were normalized and those models that didn't get normalized.
Model lifecycle overview	Count of models that are present in each life cycle stage such as General Availability, End of Support, End of Life, and End of Sale.
Product model status	Current count of hardware, consumable, and software models based on the status of the models.

### Content lookup portal for Hardware Asset Management

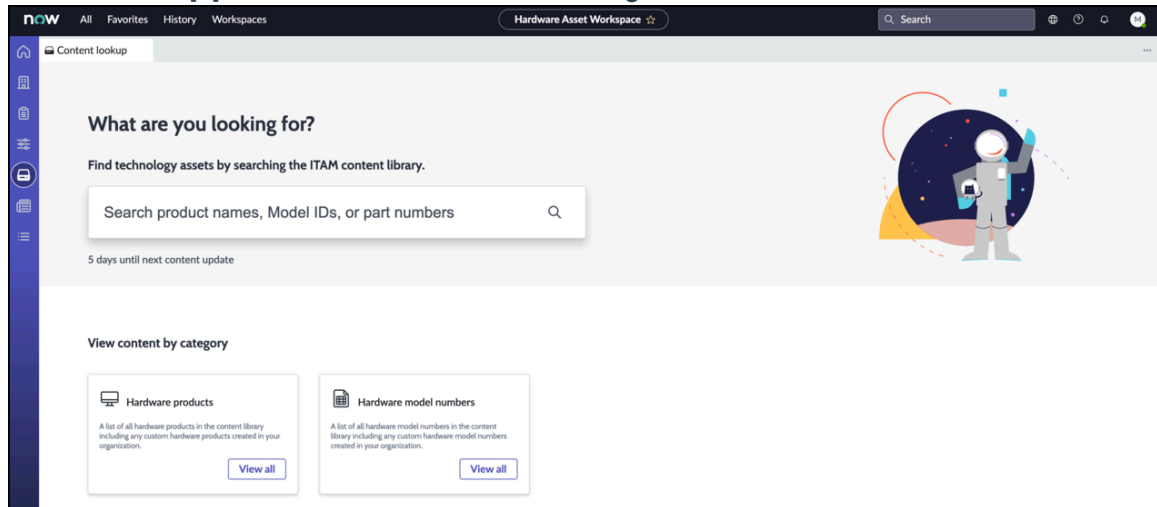
The IT Asset Management Content lookup portal gives you visibility into the data stored in the Hardware Asset Management Content Service via an intuitive user interface.

Once you have installed Hardware Asset Management Professional (sn\_hamp), the Content lookup portal enables you to do the following:

- Search for hardware products or model numbers
- View the entire list of hardware products and model numbers in the Content Service
- View the cumulative days remaining for the next content update

For more information about installing Content lookup, [Install Content lookup to view Hardware Asset Management data](#).

### Content lookup portal for Hardware Asset Management



After you enter your criteria in the search bar, the search results are listed with the most relevant matches at the top. Filters on the left-hand side of the page assist you in further narrowing down your results.

Based on your search criteria the information in the Content Service is pulled from the following tables.

- Hardware product [sn\_hamp\_hw\_product]
- Hardware Model Library [sn\_hamp\_hw\_product\_model]

Select the search result that matches your criteria to display the details of the content record and related lists. The content record page opens in read-only mode.

### Install Content lookup to view Hardware Asset Management data

Install the IT Asset Management Content lookup (sn\_itam\_contlookup) application to view the data stored in the Hardware Asset Management Content Service.

#### Before you begin

- Install Hardware Asset Management Professional (com.sn\_hamp) from [ServiceNow Store](#).
- Activate the AI Search (com.glide.ais) plugin.

Role required: asset

#### About this task

If you have installed the Software Asset Management Professional (com.sn\_samp\_master) plugin, you can view data stored in the Software Asset Management Content service. If you have installed both Software Asset Management Professional (com.sn\_samp\_master) and Hardware Asset Management Professional (com.sn\_hamp) plugins, you can view both their content data on the IT Asset Management Content lookup (sn\_itam\_contlookup) application. You can also filter your search results based on the content type, such as software or hardware. For more

information about installing the Content lookup portal for Software Asset Management, see [Install Content lookup portal for Software Asset Management](#).

## Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.
2. Find the IT Asset Management Content lookup (sn\_itam\_contlookup) application using the filter criteria, search bar, and product tabs.

You can search for the application by its name or ID. If you cannot find the application, request it from the ServiceNow Store.

Visit the [ServiceNow Store](#) website to view all the available apps and for information about submitting requests to the store. For cumulative release notes information for all released apps, see the [ServiceNow Store version history release notes](#).

3. In the Application installation dialog box, review the application dependencies.
4. Select **Install**.

## Procurement view

Use the Procurement view in the Hardware Asset Workspace to view and manage procurement-related details such as procurement requests, purchase orders, sourcing tasks, and receiving slips.

The Procurement view provides access to actions for managing your open requests, pending purchase orders and transfer orders, and requests that need manager approval.

## Procurement view

**Important Actions** 4

Last refreshed 2022-10-24 10:30:02 | Next scheduled refresh at 2022-10-25 10:30:00

- POs in Draft for more than 30 days**  
2 purchase orders have been in Draft state for more than thirty days.  
PO count: 2
- Pending transfer orders**  
2 transfer orders are still pending and items have not been received.  
Transfer order count: 2
- POs on order for more than 30 days**  
5 purchase orders have been open for more than thirty days.  
PO count: 5
- Escalate requests**  
5 requests are waiting for manager approval to be sourced.  
Request count: 5

**Procurement overview**

Location: [v] Stockroom: [v]

**Purchase orders pending delivery**: 12

**Requests pending approval**: 5

**Orders by vendor**

Amaz	5	28%
Apple	5	28%
Logitec	3	17%
Googl	2	11%
Asus	1	6%
<b>Total</b>	<b>18</b>	

**Requests by state for last 30 days**

Open	20	95%
Closed Complete	1	5%
<b>Total</b>	<b>21</b>	

**Expenditure by vendor**

Vendor	Expenditure
Logitech	~\$35,000
Lenovo	~\$28,000
Apple	~\$22,000
Dell Inc.	~\$12,000
Amazon	~\$5,000
Asus	~\$2,000
Google	~\$1,000

**Requests that require sourcing** 6

Number	Requested for	Opened by	Request state
REQ0010003	Eric Admin	(empty)	Pending Approval
REQ0010002	Eric Admin	(empty)	Approved
REQ0010001	Eric Admin	(empty)	Pending Approval
REQ0000027	Sabrina Deppert	Sabrina Deppert	Pending Approval
REQ0000026	Waldo Edberg	Waldo Edberg	Pending Approval
REQ0000025	Pat Hoshaw	Pat Hoshaw	Pending Approval

**Open purchase orders** 12

Number	Vendor	Assigned to	Status
PO0000007	Apple	(empty)	Pending Delivery
PO0000008	Apple	(empty)	Pending Delivery
PO0000010	Apple	(empty)	Ordered
PO0000011	Amazon	(empty)	Ordered
PO0000012	Canon	(empty)	Requested
PO0000013	Apple	(empty)	Requested

Select any widget or chart to view the details. You can also use **Location, Stockroom, and Domain** filters to narrow down your results.

**Note:** The Domain filter is available only when you've enabled the Domain Extensions Installer (com.glide.domain.msp\_extensions.installer) and Domain Separation (plugin com.snc.pa.domain\_support) plugins.

### Procurement overview

Widget or chart	Description
Purchase order pending delivery	Count of purchase orders that aren't received and aren't canceled. Only purchase orders that have a status of Requested, Ordered, or Pending Delivery are displayed.
Requests pending approval	Count of sourceable and active requests with request state of pending approval.

**Procurement overview (continued)**

Widget or chart	Description
Expenditure by vendor	Cost that you've paid to each of your vendors for procuring the inventory. Only purchase orders that have a status of Ordered, Pending Delivery, or Received are listed.
Orders by vendor	Purchase orders that have been ordered, are pending delivery, or have been received by the vendor.
Requests by state for last 30 days	Requests created in last 30 days grouped by state.
Requests that require sourcing	List of requests for which a purchase order, local order, or transfer order hasn't been initiated.
Open purchase orders	List of purchase orders that have been requested, ordered, or not delivered.

**Related topics**

[Procurement](#) 

**Contract management view**

Use the Contract management view in the Hardware Asset Workspace to view and manage details of contracts such as Contract number, Contract start and end dates, terms and conditions statements.

The Contract Management view includes important actions for managing your contract, contract expenditure by type and vendor, and the list of expiring contracts.

## Contract management view

The screenshot displays the ServiceNow Contract Management interface. At the top, there's a navigation bar with 'Contract management' selected. Below it, a 'Contract management' header includes a 'New contract' button. A 'Important Actions' section shows six cards with alerts: '30 days to renew contracts' (4 contracts), '90 days to renew contracts' (8 contracts), 'Duplicate contracts' (4 duplicates), 'Fill in missing contract administrator' (30 contracts), 'Fill in missing end date' (4 contracts), and 'Fill in missing contract administrator' (5 contracts). The main area is 'Contract overview', featuring two donut charts for 'Contract expenditure by type' and 'Contract expenditure by vendor', both totaling £3.19K. To the right is an 'Expiring contract' table with columns for Number, Contract model, Vendor, Name, and End date.

Number	Contract model	Vendor	Name	End date
CNTR0010059	Insurance	Altiris		2022-05-18
CNTR0010058	Maintenance	AT&T		2022-05-19
CNTR0010057	NDA	Cisco		2022-05-20
CNTR0010060	NDA	Altiris		2022-05-21
CNTR0010062	Purchase Order	Asus		2022-06-08
CNTR0010061	Insurance	Amazon		2022-06-16
CNTR0010049	Lease	(empty)		2022-06-25
CNTR0010063	Insurance	APC		2022-07-19

To create a contract, select **New contract**. For more details, see [Create a contract](#).

### Related topics

[Contract Management](#)

[Contract renewal workflow](#)

### Success portal view in Hardware Asset Workspace

Use the Success portal view in Hardware Asset Workspace to track the progress of your Hardware Asset Management (HAM) application with success goals, assign activities to track the success of your goals, and mature your HAM program with predefined maturity items.

Success portal helps you perform the following actions:

- **Track the progress of your HAM application through success goals**

Success goals help you analyze the value that you get out of your hardware assets and calculate your projected savings. Create success goals for the assets that you want to track. For more information about creating a success goal, see [Create a success goal for Hardware Asset Management](#).

- **Track the progress of your success goals**

Track the success of your goals by creating success activities for the goals. For more information, see [Create success activities for HAM success goals](#).

- **Mature your HAM program with predefined maturity items**

The program maturity is categorized into Crawl, Walk, and Run stages to help you improve the value return of your HAM application within your organization. You can link these maturity items to success goals and use the HAM application efficiently. For more information, see [View all maturity items for Hardware Asset Management](#).

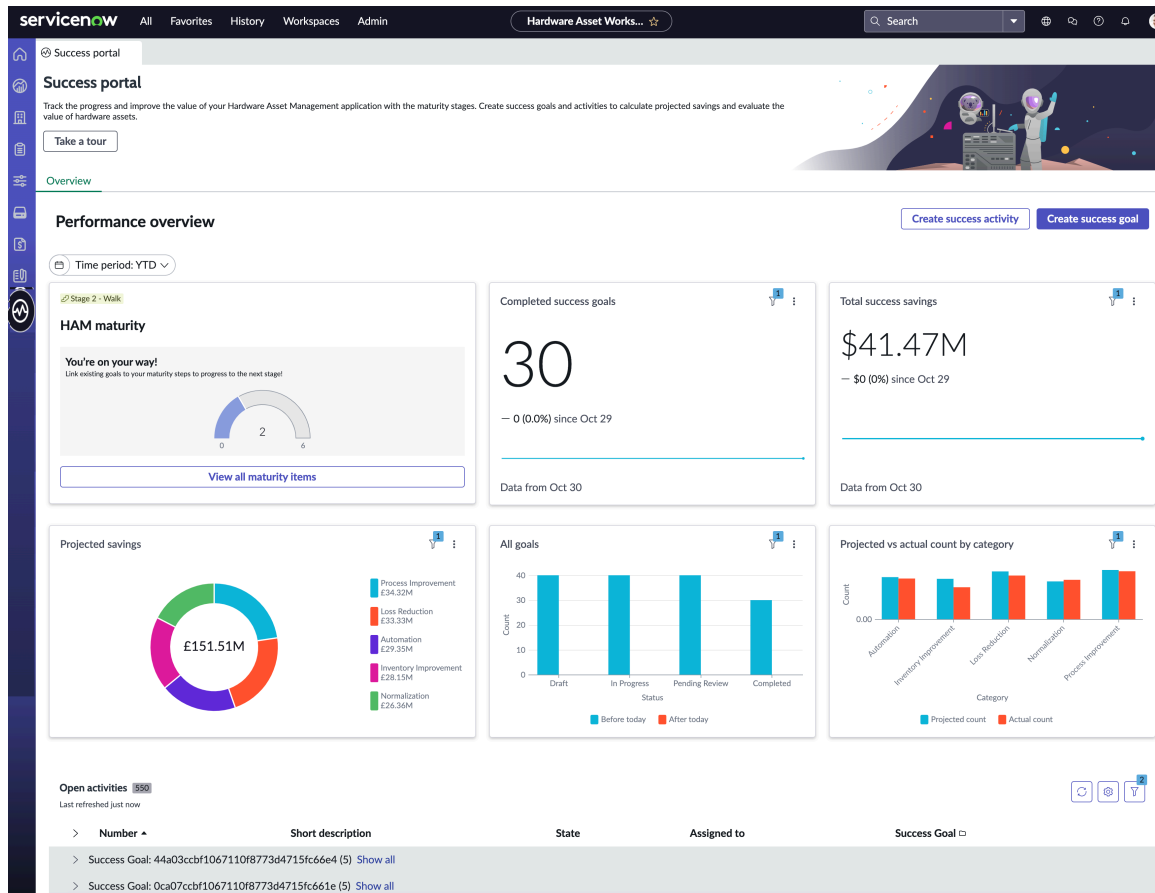
**i Important:** The HAM maturity program is available with the Hardware Asset Management 10.0.0 version or later.

Email notifications are sent when the following conditions are met:

- To a group, when a success goal is assigned to that group.
- To an owner, when a success goal is assigned to that owner.
- To an owner, when a success goal is marked as Pending Review.
- To an assigned user or an assignment group, when a success activity is assigned.

Access the Success portal by navigating to **Hardware Asset Workspace > Success portal**.

The Success portal supports domain separation when the Performance Analytics - Domain Support plugin (com.snc.pa.domain\_support) is activated. To filter the data by domain, select a domain at the top of the dashboard.



To narrow down your results, you can filter by time period.

### Success portal dashboard

Widget	Description
HAM maturity	Current stage of your HAM program maturity such as the Crawl, Walk, or Run stage.  View the maturity items of each stage by selecting <b>View all maturity items</b> . For more information, see <a href="#">View all maturity items for Hardware Asset Management</a> .
Completed success goals	Total number of completed success goals.
Total success savings	Actual savings from the completed success goals.
Projected savings	Anticipated savings from the success goals are grouped by the status and category of the goal.
All goals	Complete list of success goals with one of the following statuses: <ul style="list-style-type: none"> <li>• Draft</li> <li>• In Progress</li> <li>• Pending Review</li> </ul>
Projected vs actual count by category	Comparison between the projected and actual success goals count with status as <b>Draft, In Progress, or Pending Review</b> .
Open activities	Open success goal activities.

**i Important:** The **HAM maturity, Total success savings, Projected savings, and All goals** fields are available with the Hardware Asset Management 10.0.0 version or later.

### Asset operations view

Use the Asset operations view in the Hardware Asset Workspace to view the asset operations-related functions such as stock rules, stock orders, procurement sourcing requests, all contract renewal requests, contract renewal line items, custom products, custom models, and take appropriate actions.

The Asset operations view includes the following list:

- Inventory
  - Stockroom types: View types of stockrooms. For more information, see [Create a new stockroom type](#).
  - Stock rules: View stock rules associated with the stockroom. For more details, see [Create a stock rule](#).
  - Stock orders: View stock orders associated with the inventory.
- Shipment

- Shipments: View and track the shipments from different sources or flows. For more information, see [View hardware asset shipment details](#).
- Shipment assets: View the list of assets included in the shipments. For more information, see [View hardware asset shipment details](#).
- Shipping carriers: Create and view the list of shipping carriers. For more information, see [Create a shipping carrier record](#).
- Carrier integration profiles: View the list of carrier integration profiles associated with the shipping carriers. For more information, see [View the carrier integration profile details](#).
- Procurement-Requests: View and track procurement requests. For more information, see [Sourcing items in a service catalog request](#).
- Hardware asset normalization
  - Custom products: View details of custom products that aren't represented in the Asset Management Content Service. For more information, see [Add a custom product](#).
  - Custom models: View details of custom models. For more information, see [Create a hardware or consumable model](#).
  - Calculated lifecycle templates: View and create life cycle templates and formulas that can be applied on hardware and consumable models. For more information, see [Manage the lifecycle of hardware models with calculated lifecycle templates](#).
- Contract Renewal
  - All contract renewal requests: View details of all contract renewal requests.
  - Contract renewal line items: View details of all line items associated with contract renewal requests.

For more information, see [Contract renewal workflow](#).

- KPI configuration

**i Important:** The KPI configuration options are available in Hardware Asset Management version 13.0.0 and later.

- KPI opt in: Enable the asset performance tracking by opting in to the model categories of the assets. For details, see [Opt in to model categories to track performance KPIs for hardware assets](#).
- Operational schedules: Create and view operational schedules for hardware assets. For details, see [Create an operational schedule for hardware assets](#)
- Asset schedules: Link hardware assets to their respective operational schedules and align KPI records accordingly. For details, see [Map hardware assets to an operational schedule](#)
- TCO configuration
  - Task rate card: Define the type of task and the method of calculating the associated costs, and view the details of the created task rate cards. For more information, see [Create a task rate card in Hardware Asset Workspace](#).
  - Labor rate card: Record the time worked on a task and associate a rate to the task, and view the details of the created labor rate cards. For more information, see [Create a labor rate card in Hardware Asset Workspace](#).
- Zero touch

- Asset requests: View the list of hardware asset requests of your employees submitted through the Zero Touch request flow. For more information, see [Manage hardware asset requests using the Zero Touch request flow](#).
- Provider integration profiles: Create a provider integration profile to transform the Scratchpad updates from your provider into a format required for the Zero Touch request flow. For more information, see [Create a provider integration profile](#).
- Zero touch refresh
  - Requests: View the list of Zero Touch Refresh requests of your employees. For more information, see [Process a Zero Touch Refresh request](#).
  - Refresh models: Create and view the list of refresh models with the configured replacement models. For more information, see [Configure replacement models for a refresh model](#).
- Hardware asset success
  - Success goals: Create success goals and view the list of created success goals for Hardware Asset Management. For more information, see [Create a success goal for Hardware Asset Management](#).
  - Success activities: Create success activities and view the list of created success activities for Hardware Asset Management. For more information, see [Create success activities for HAM success goals](#).
  - Success categories: Create a category for a success goal and view the list of categories. For more information, see [Create a success goal category for hardware assets](#).
  - Hardware maturity: View items that help you drive the success of your hardware assets. For more information, see [View all maturity items for Hardware Asset Management](#).

You can also create and easily access your custom list views from the **My Lists** tab.

### Asset operations

The screenshot shows the ServiceNow interface for 'Asset operations'. The left sidebar contains a navigation menu with options like Inventory, Shipment, Procurement, and Zero touch refresh. The main content area displays a table titled 'Inventory - Stockroom types' with columns for Name, Description, External stockroom, Priority, Shipment required, and Domain. The table lists various stockroom types such as Central Warehouse, Field Agent, FSL, On site, PUDO, and Warehouse.

Name	Description	External stockroom	Priority	Shipment required	Domain
Central Warehouse		false	7	true	global
Field Agent	Virtual Warehouse linked with FSA directly - used for delivery	false	2	false	global
FSL	Forward Shipping Location	false	4	true	global
On site	Warehouse on customer's site	false	1	false	global
PUDO	Pick Up/Drop out location	false	5	true	global
Warehouse		false	6	true	global

## Related topics

[Inventory view](#)

[Request items source](#) 

[Work with hardware normalization](#)

## Mobile app for Hardware Asset Management

Use the ServiceNow Mobile and ServiceNow Agent apps to manage your assets.

### ServiceNow Agent app

Use the ServiceNow Agent app to create assets, look up assets, and receive assets from a purchase order.

### Create an asset

Use the ServiceNow Agent app to create an asset record by scanning the asset.

### Before you begin

Download the ServiceNow Agent app from Apple App Store or Google Play Store.

Role required: asset

The Procurement plugin (com.snc.procurement) must be installed to get the procurement features in ServiceNow Agent app.

## Procedure

1. Navigate to **Asset** and tap **Create Asset**.

11:20

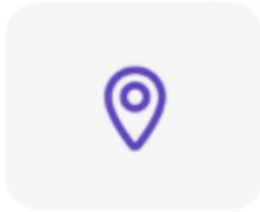
Asset

🔍 AM

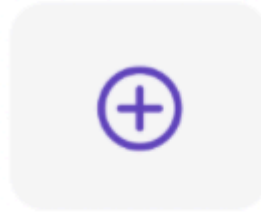
## IT Asset Management



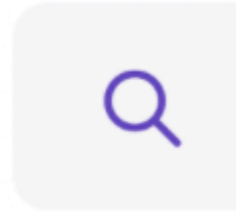
Stockroom audits



Location audits



Create Asset



Asset lookup

### Open stockroom audits

[See all](#)

Open stockroom audits is empty

### Open location audits

[See all](#)

In Progress

ASTAUD0001005

10065 East Harvard Avenue, Denver,...

Created 2023-01-12 18:42:43

New

1007 Gre

Created 20

Assigned to Asset Manager

Assigned

2. Scan the asset serial number or asset tag, then tap **Search**.  
If the asset exists in your ServiceNow instance, an asset record is displayed. This information is to ensure that you don't create duplicate asset records.
3. **Optional:** To update an existing asset, select the asset and then tap **Update Asset**.
4. If no existing asset record is found, tap the action icon in the upper right and select **Create Asset**.
5. Scan or enter values for the **Asset Tag**, **Serial Number**, **Model** (non-software), **Stockroom**, **State**, and **Substate** fields.
6. Tap **Submit** to create the asset.

### Asset lookup

Search for an asset record in your ServiceNow instance by scanning the asset.

### Before you begin

Role required: asset

### Procedure

1. Navigate to **Asset** and tap **Asset lookup**.
2. Scan the asset tag, then tap **Search**.
3. An asset record is displayed if the asset exists in your ServiceNow instance.  
You can select the existing asset to update it or to create an incident related to it.

### Receive assets from a purchase order

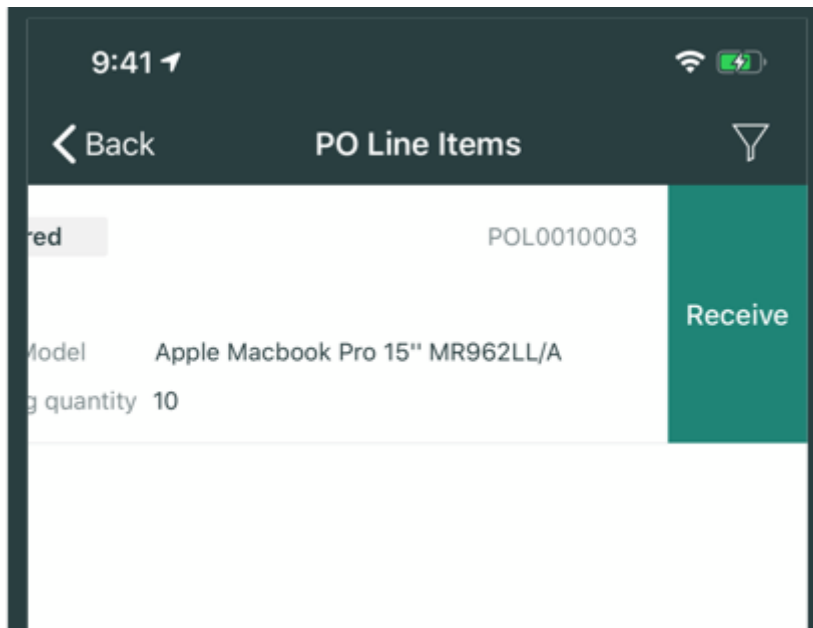
Scan assets from a purchase order (PO) to verify that you received all assets from the order.

### Before you begin

Role required: procurement\_admin or procurement\_user

### Procedure

1. Navigate to **Procurement** and tap **POs Next 30 Days**.
2. Select a purchase order.
3. Tap **Related list**.
4. Tap the **PO Line Items** asset that you ordered and swipe **Receive** to receive the asset.



5. If you only need to receive a single purchase, on the Receive form, scan the QR code for either the asset tag or serial number.
6. If you need to receive multiple purchases, on the Receive form, tap **Scan next item** until you've scanned all of your purchases.
7. Tap **Submit**.

### Result

The purchase order is marked as received.

### Verify and depart your assets for disposal

Use the ServiceNow Agent app to scan, verify, and depart your assets for disposal.

### Before you begin

To verify an asset using the ServiceNow Agent app, make sure that a Disposal order exists in your Hardware Asset Management instance.

Role required: asset

### About this task

After a Disposal order is initiated for your asset, use the ServiceNow Agent app to scan, verify, and depart the asset. You do not have to manually verify and depart your assets.

On the app, you can use the same functionalities when you are offline. For more information, see [Offline mode](#).

### Procedure

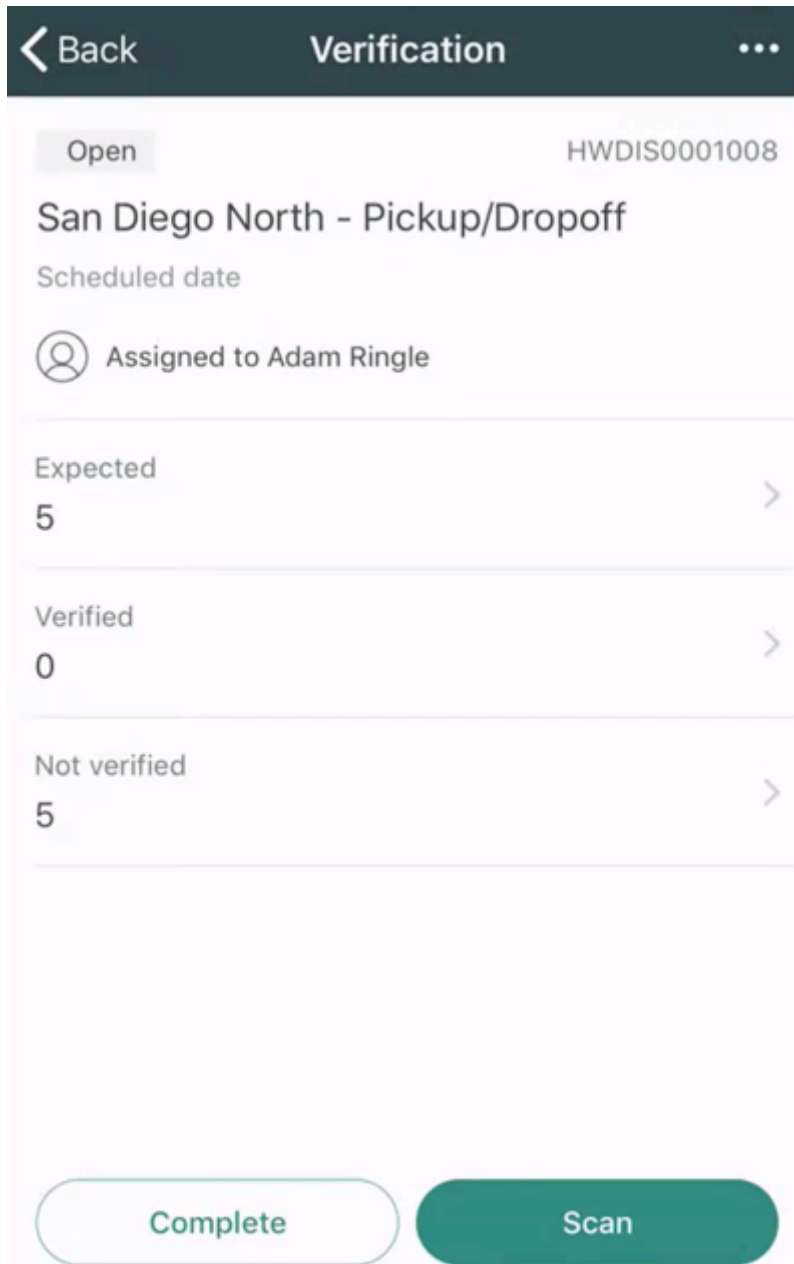
1. Navigate to **All > Asset > Asset disposal**.

The **Verification** tab shows the list of verification tasks, while the **Departure** tab shows the list of departure tasks. These tasks are for the assets that are present in a particular asset location for disposal.

2. Scan and verify your assets in one of the following ways.
  - Swipe a verification task to the left.
  - Tap a verification task to open it and then tap **Scan**.

You can scan multiple assets together. After you open a verification task, the verification task shows the number of assets that are verified, not verified, or expected to be verified. Click **Expected**, **Verified**, or **Not verified** to view the respective types of assets.

Here is an example of a **Verification** tab that shows expected, verified, and not verified assets.



**3. Tap Review > Submit.**

A pop-up message appears and shows the successful verification of the scanned assets. The lists of verified and not verified assets are updated.

**4. Once you scan all the assets, tap Complete to close the verification task.**

If there are still some assets left for scanning and you click **Complete**, then a pop-up window appears to confirm if you still want to close the task. If you tap **Complete**, the task is closed.

**5. Enter the vendor details and the scheduled date by using your Hardware Asset Management instance.**

See [Create a disposal order](#).

After you enter the vendor details and close the Schedule Pickup task from your Hardware Asset Management instance, the **Departure** tab shows the list of departure tasks to process.

**6.** Scan and depart your assets in one of the following ways.

- Swipe a departure task to the left.
- Tap a departure task to open it and then tap **Scan**.  
You can scan multiple assets together. After you open a departure task, the departure task shows the number of assets that are departed, not departed, or expected to be departed. Click **Expected**, **Departed**, or **Not departed** to view the respective types of assets.

**7.** Tap **Review > Submit**.

A pop-up window appears and shows the successful departure of the scanned assets. The lists of departed and not departed assets are updated.

**8.** Once you scan all the assets, tap **Complete** to close the departure task.

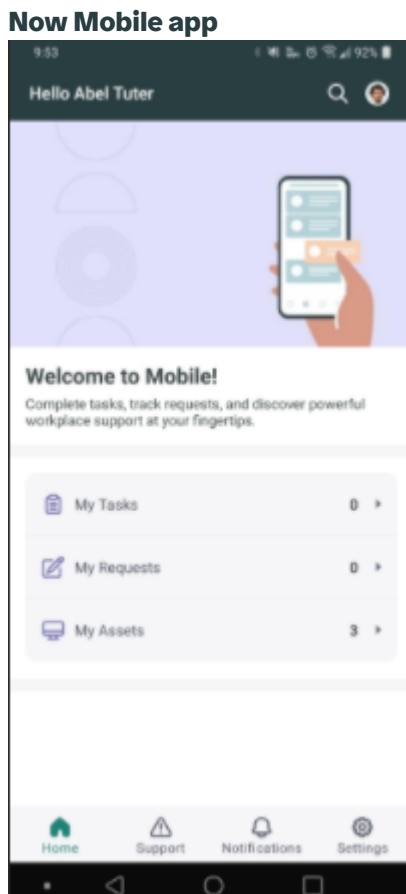
If there are still some assets left for scanning and you click **Complete**, then a pop-up window appears to confirm if you want to close the task. If you tap **Complete**, the task is closed.

**Now Mobile app**

Use the Now Mobile app to view the assets that are assigned to you, to report any issues with your assets, and to remotely receive new assets. Create incidents to report any issues with your assets to your IT department.

Download the Now Mobile app from Apple App Store or Google Play Store.

The Now Mobile app provides different services for tasks and requests.



To view all the assets that are assigned to you, navigate to **My Items > My Assets > Hardware**. The tab shows the assets that have the State field set to In transit or In use, Sub-state set to

Reserved, and the Reserved to field set to your name. You can create an incident for an asset that is in use.

When you are away from your office, you can remotely receive an asset that is in transit. Scan the QR code for the asset tag so that you can automatically notify the IT department that you have received the asset.

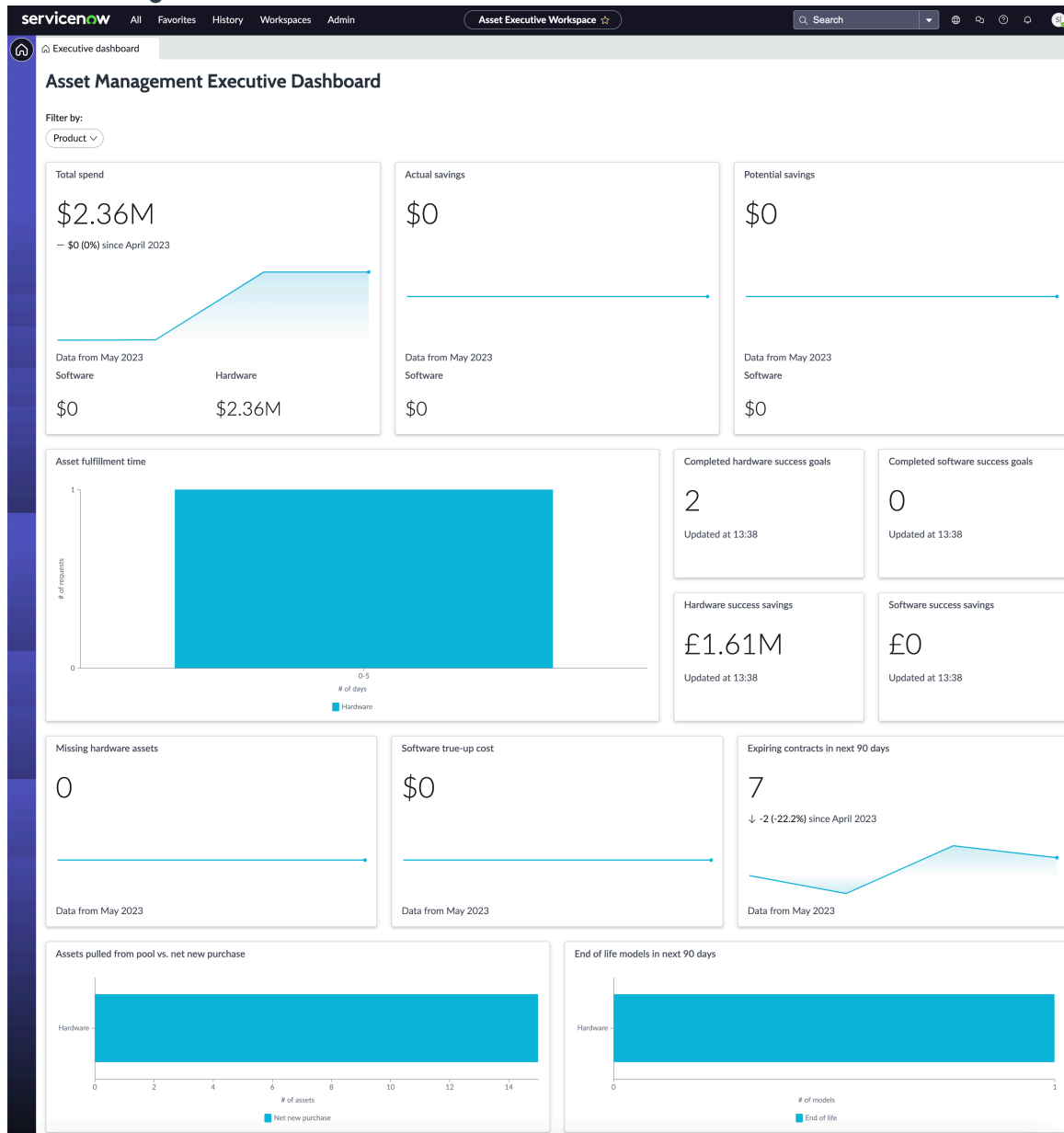
## Asset Management Executive Dashboard

Use the Asset Management Executive Dashboard to gain visibility into critical KPIs for Hardware Asset Management, Software Asset Management, and Cloud Cost Management applications via a single dashboard.

To access the Asset Management Executive dashboard, you must either have Software Asset Management or Hardware Asset Management in your ServiceNow instance.

To view the Asset Management Executive dashboard, navigate to **Asset Executive Workspace > Asset Management Executive Dashboard**. A user with the role of `sn_itam_common.asset_exec` can access the dashboard.

## Asset Management Executive Dashboard



You can filter the results in the dashboard by product, domain, or by both product and domain. If you filter by domain, the filter gets applied to all the widgets. If you filter by product, since some widgets are applicable for certain products, the filter isn't applied to all the widgets.

After you select a filter, a blue box gets displayed on the right side of each widget displaying one of the numbers:

- 0: Indicates that no filter is applied to a widget.
- 1: Indicates that only one filter is applied to a widget.
- 2: Indicates that both the filters are applied to a widget.

**Note:** To use the domain filter, you must activate the plugins: `com.glide.domain.msp_extensions.installer` and `com.snc.pa.domain_support`.

The schedule job, *Asset Management - Populate KPI aggregate table*, runs daily to update the data on the dashboard. To view the latest data for a widget, select the widget to display the list view page.

The dashboard widgets vary depending on the application plugins that you've activated in your instance. The widgets available with each application are listed in the following table:

**Asset Management Executive Dashboard widgets**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
Total spend	<p>Total cost of all entitlements for all products.</p> <p>Source table: License Metric Results [samp_license_metric_result].</p>	<p>Total cost of all hardware assets whose status is either <b>In stock, In use, In maintenance, or In transit</b>.</p> <p>Source table: Hardware [alm_hardware].</p>	<p>Total active cost of all cloud resources.</p> <p>Source table: Spend Report Daily Aggregated Cost [sn_cld_spend_core_daily_aggregated_cost].</p>
Actual savings	<p>Total yearly savings for all products. This value is calculated as the total savings from closed complete reclamation candidates.</p> <p>Source table: Removal Candidate [samp_sw_reclamation_candidate].</p>	Not applicable	<p>This value is calculated as the monthly savings on cloud resources.</p> <p><b>Note:</b> This widget gets displayed only if you have the Software Asset Management application installed on your instance.</p> <p>Source table: Cloud Insights Rightsizing Recommendation Automatics (sn_clin_core_rs_recommendation_automatic) where State = Completed.</p>
Potential savings	<p>Cost saved if removal candidates are reclaimed.</p> <p>Source table: Removal Candidate [samp_sw_reclamation_candidate].</p>	Not applicable	<p>Total of potential savings on a monthly basis on cloud rightsizing, cloud unused machines, cloud reservations, and cloud business hours.</p> <p><b>Note:</b> This widget appears only if you have the Software Asset Management application installed on your instance.</p> <p>Source tables:</p>

Asset Management Executive Dashboard widgets (continued)

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
			<ul style="list-style-type: none"> <li>• Cloud Insights Rightsizing Recommendation Automatics [sn_clin_core_rs_recommendation_automatic].</li> <li>• Cloud Insights Unused Recommendation [sn_clin_core_rs_unused_recommendation].</li> <li>• Reserved Instance Recommendation [sn_clin_core_ri_recommendation].</li> </ul>
<p>Assessment fulfillment time</p>	<p>Fulfillment time bar graph of software requests from the Service Catalog. The graph shows the number of requests and the number of days taken to close those requests in the ranges of 0-5, 6-10, 11-20, 21-30, 31+ days.</p> <p>Source table: Asset fulfillment time [asset_fulfillment_time]</p>	<p>Fulfillment time bar graph of hardware requests from the Service Catalog. The graph shows the number of requests and the number of days taken to close those requests in the ranges of 0-5, 6-10, 11-20, 21-30, 31+ days.</p> <p>Source table: Asset fulfillment time [asset_fulfillment_time].</p>	<p>Not applicable</p>
<p>Completed software success goals</p>	<p>Number of success goals completed for the Software Asset Management application.</p> <p>Source table: SAM Success Goal [samp_success_goal].</p> <p><b>i Note:</b> This widget is available only when the Software Asset Workspace (com.sn_sam_workspace) plugin is installed.</p>	<p>Not applicable</p>	<p>Not applicable</p>

**Asset Management Executive Dashboard widgets (continued)**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
Completed hardware success goals	Not applicable	<p>Number of success goals completed for the Hardware Asset Management application.</p> <p>Source table: HAM Success Goal [sn_hamp_success_goal]</p> <p><b>i Note:</b> This widget is available only when Hardware Asset Management (sn_hamp) is installed.</p>	Not applicable
Software success savings	<p>Actual savings from completed success goals.</p> <p>Source table: SAM Success Goal [samp_success_goal].</p> <p><b>i Note:</b> This widget is available only when the Software Asset Workspace (com.sn_sam_workspace) plugin is installed.</p>	Not applicable	Not applicable
Hardware success savings	Not applicable	<p>Actual savings from completed success goals.</p> <p>Source table: HAM Success Goal [sn_hamp_success_goal]</p>	

**Asset Management Executive Dashboard widgets (continued)**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
		<p><b>i Note:</b> This widget is available only when Hardware Asset Management (sn_hamp) is installed.</p>	
Missing hardware assets	Not applicable	<p>Count of missing, lost, or stolen hardware assets.</p> <p>Source table: Missing Hardware Assets [missing_hardware_assets].</p>	Not applicable
Software true-up cost	<p>Cost of the products actually being used.</p> <p>Source table: Product Results [samp_product_result].</p>	Not applicable	Not applicable
Expiring contracts in 90 days	Count of software contracts that are going to expire in the next 90 days.	Count of hardware contracts that are going to expire in the next 90 days.	Not applicable

**Asset Management Executive Dashboard widgets (continued)**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
	<p><b>i Note:</b> If the Software Asset Management application and the Hardware Asset Management application both exist in your instance, then this widget shows the total number of software and hardware contracts together; not individual contracts for software and hardware.</p>	<p><b>i Note:</b> If Software Asset Management and Hardware Asset Management both exist in your instance, then this widget shows the total number of software and hardware contracts together; not individual contracts for software and hardware.</p>	
<p>Assets pulled from pool vs net new purchase</p>	<p>Bar charts representing the number of requests for software assets being fulfilled from your inventory versus creating purchase orders for new assets.</p> <p><b>i Note:</b> Ensure that the Procurement (com.snc.procurement) plugin is activated in your instance to view software-related data for this widget.</p> <p>Source tables:</p> <ul style="list-style-type: none"> <li>Pool assets: Assigned Allocations [alm_licenses_assigned].</li> </ul>	<p>Bar charts representing the number of requests for hardware assets being fulfilled from your inventory versus creating purchase orders for new assets.</p> <p>Source tables:</p> <ul style="list-style-type: none"> <li>Pool assets: Consume Asset Task [consume_asset_task].</li> <li>Net new assets: Purchase order line items [proc_po_item].</li> </ul>	<p>Bar charts representing the number of assets used from your inventory versus new assets being procured via purchase orders.</p> <p>Source tables:</p> <ul style="list-style-type: none"> <li>Pool assets: Spend Report Monthly Cost [sn_cld_spend_core_monthly_cost].</li> <li>Net new assets: Purchase order line items [proc_po_item].</li> </ul>

### Asset Management Executive Dashboard widgets (continued)

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
	<ul style="list-style-type: none"> <li>Net new assets: Purchase order line items [proc_po_item].</li> </ul>		
End of life models in next 90 days	<p>Number of software models that are reaching their end of life in the next 90 days.</p> <ul style="list-style-type: none"> <li>End of life</li> <li>End of support</li> <li>End of extended support</li> </ul> <p>Source table: Software Lifecycle Report [sam_sw_product_lifecycle_report].</p>	<p>Number of hardware models that are reaching their end of life in the next 90 days.</p> <ul style="list-style-type: none"> <li>End of life</li> <li>End of support</li> <li>End of extended support</li> </ul> <p>Source table: Hardware model [cmdb_hardware_model_lifecycle].</p>	Not applicable

#### Sustainable IT dashboard

The Sustainable IT dashboard helps you track the environmental impact of your IT assets and displays a variety of information to gauge the sustainability impact of the hardware assets of an organization easily.

You must install the Sustainable IT plugin (sn\_esg\_sustain) to view the Sustainable IT dashboard. For more information about the activating the Sustainable IT plugin, see [Activate the Sustainable IT plugin](#).

To know more about the Sustainable IT dashboard data for your hardware assets, see [Sustainable IT dashboard](#).

#### Analytics and Reporting Solutions for Hardware Asset Management


This Platform Analytics Solution contains preconfigured dashboards. These dashboards contain actionable data visualizations that help you improve your business processes and practices.

#### Enabling the Performance Analytics Solution

Use the Performance Analytics widgets on the dashboard to visualize data over time, analyze your business processes, and identify areas of improvement. With solutions, you can get value from Performance Analytics for your application with minimal setup.

**Note:** Solutions include some dashboards that are inactive by default. You can activate these dashboards to make them visible to end users according to your business needs.

For unlimited access to all features of this Platform Analytics Solution, purchase a Performance Analytics subscription. For more information, see [Activating your Performance Analytics subscription](#).

To use this Analytics and Reporting Solution, you must be entitled to use Performance Analytics with Hardware Asset Management . For more information about entitlements to Performance Analytics, see [Activating your Performance Analytics subscription](#) 

This Out-of-the-box Performance Analytics Solution is available from the ServiceNow Store. To enable this solution, an admin navigates to **System Applications > Search ServiceNow Store**. When the landing page for the ServiceNow Store opens, search for Hardware Asset Management . When you have found the Solution, follow the instructions in the Store. The ServiceNow Store has its own documentation.

## Domain separation and 'Run As' user

In some solutions, System Administrator is the **Run As** user for data collection jobs in the Platform Analytics Solutions. In other solutions, the **Run As** user for data collection jobs is left blank. Verify that the **Run As** user exists on the instance, and that this user has the appropriate level of access. An inappropriate **Run As** user can cause errors or limit the data that is collected. This setting only has an effect if domain separation is enabled.

## Performance Analytics dashboards for Hardware Asset Management

**i Important:** You can access the Core UI Performance Analytics dashboards only if you have upgraded from prior releases to Xanadu. Beginning with the Xanadu release, the Core UI Performance Analytics dashboards aren't available to new users of Hardware Asset Management.

The Performance Analytics dashboards available for Hardware Asset Management are the following:

- Hardware Asset Dashboard
- Hardware Normalization Dashboard
- My Assets
- Procurement Overview
- Asset Contract Overview
- Asset Overview

Beginning with the Xanadu release, note the following points about the Core UI Performance Analytics dashboards:

- The Procurement Overview and Asset Contract overview module links are redirected to [Hardware Asset Workspace](#).
- The following Next Experience Platform Analytics dashboard versions of the Asset Overview and My Assets Core UI Performance Analytics dashboards are available:
  - Analytics Overview: You can access this dashboard by navigating to **Asset > Analytics Overview**.
  - My Assets Analytics: You can access this dashboard by navigating to **Self-Service > My Assets Analytics**.

**i Note:** After upgrading to Xanadu, you can view both the Core UI Performance Analytics dashboards and the Next Experience Platform Analytics dashboards for Hardware Asset Management. While migrating the Core UI Performance Analytics dashboards to the Next Experience Platform Analytics dashboards, auto-migration is disabled by default to avoid duplicate dashboards.


**Related topics**

[Platform Analytics Solutions](#) 

[Activate your Performance Analytics subscription](#) 

**Hardware Asset dashboard**

View the key metrics on your hardware and consumable models and assets for the entire asset life cycle in the Hardware Asset dashboard.

 **Important:** You can access the Hardware Asset dashboard only if you have upgraded from prior releases to Xanadu. Beginning with the Xanadu release, the Hardware Asset Dashboard isn't available to new users of Hardware Asset Management.

Access the Hardware Asset dashboard by navigating to **Asset > Hardware Asset Dashboard**.

The results in all the tabs in the Hardware Asset dashboard are updated in real time. Only the reports that display data in the **Lifecycle Overview** sections is updated daily based on scheduled jobs. You can save charts in PNG or JPEG formats for sharing or viewing them locally.

**End user and roles**

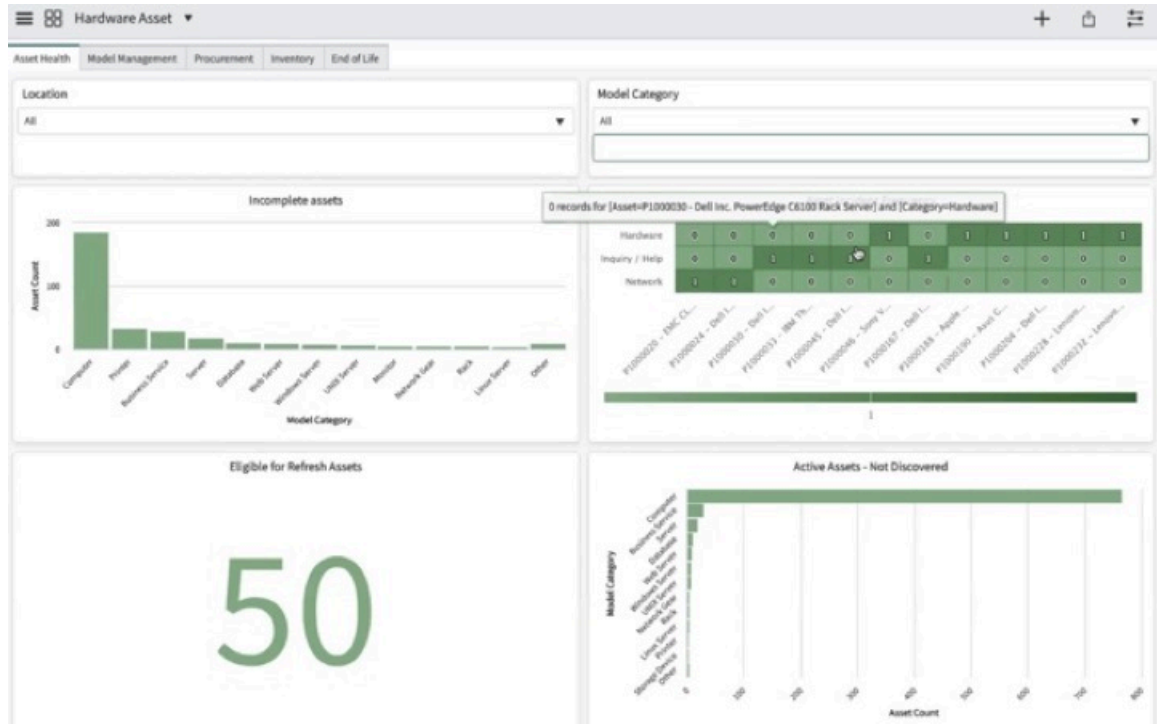
End user and goal	Required role	Benefits
Asset Manager must see patterns in the data all through the asset life cycle.	asset	View reports that provide critical insights on assets such as procurement needs, inventory, and end of life status. You can also view the normalization status and life-cycle overview for hardware and consumable models.

**Asset Health tab**

This tab gives you an overview of hardware and consumable models that are missing purchase information, undiscovered over a period one month of missing, scheduled for retirement, or reported with most incidents. Use Location and Model Category filters to view asset health reports of particular location and model respectively.

Report	Source table	Description
Incomplete Assets	Asset [alm_asset]	Asset models without purchase order number, purchase order line, or receiving line.
Eligible for Refresh Assets	Hardware [alm_hardware]	Asset nearing end of life and which are eligible for refresh.
Asset incident Frequency	Incident [incident]	Assets that have been reported with frequent incidents.
Active Assets - Not Discovered	Asset [alm_asset]	Assets that aren't discovered at all or not discovered within one month.

### Asset Health tab



### Model Management tab

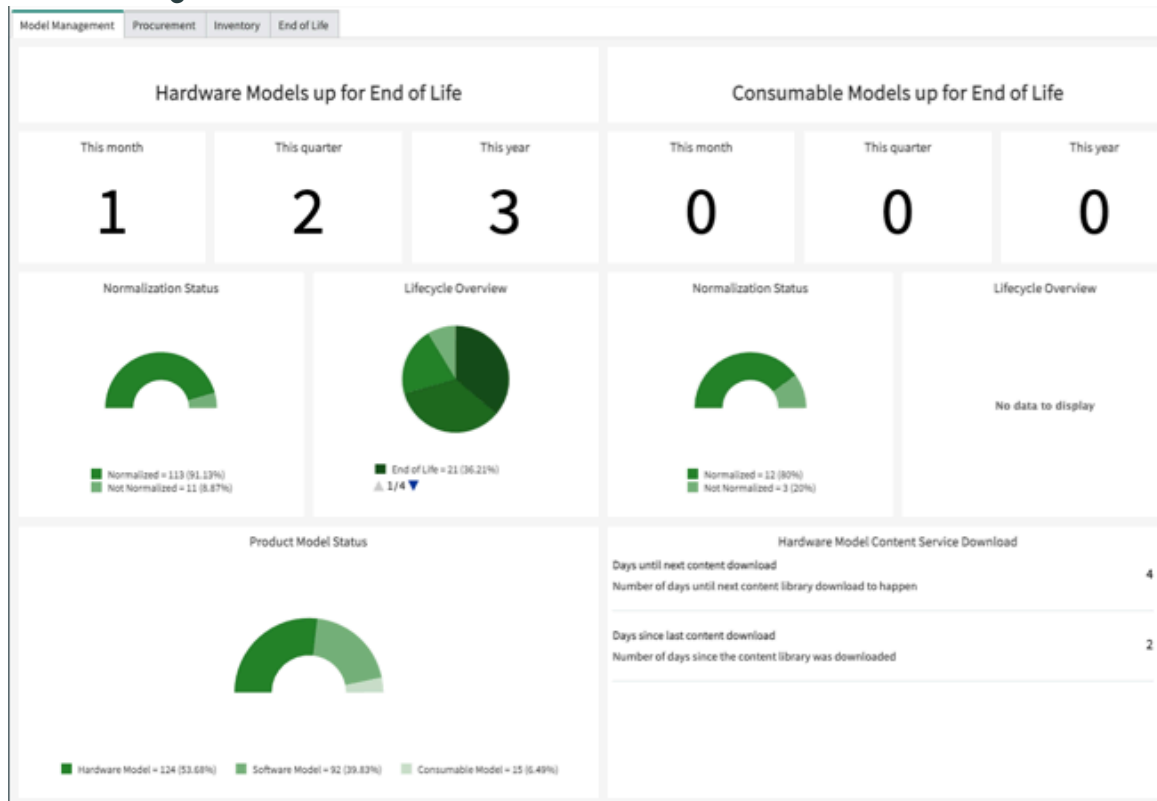
This tab gives you an overview of hardware and consumable models that are reaching their end of life. You can also view the normalization status, life-cycle overview, and information on the content service library. You can effectively manage your models by viewing their end of life status on a monthly, quarterly, or yearly basis.

Report	Source table	Description
Hardware Models up for End of Life	Hardware Model Lifecycle [cmdb_hardware_model_lifecycle]	<p>The beginning phase of the end of life for hardware models. Shows the count of hardware models whose start date of the end of life phase is either the current month, quarter, or year.</p> <p><b>Note:</b> Only hardware model life cycle records that are active, model status is in production, and life cycle type is Publisher appear in <b>This month, This quarter, or This year.</b></p>
Normalization Status	Hardware Product Model [cmdb_hardware_product_model]	<p>Normalization status of all the hardware models. View the count of hardware models that were normalized and those models that didn't get normalized.</p>

Report	Source table	Description
		<p>You can further drill down to view the status of the normalized models: Manually Normalized, Manufacturer Normalized, or Partially Normalized.</p> <p>You can drill down to view the status of non-normalized models too: New and Match Not Found.</p>
Lifecycle Overview	Hardware Model Lifecycle [cmdb_hardware_model_lifecycle]	The count of hardware models that are present in each life cycle stage: General availability, end of support, end of extended support, and end of sale.
Consumable Models up for End of Life	Consumable Model Lifecycle [cmdb_consumable_model_lifecycle]	<p>The beginning phase of the end of life for consumable models. Shows the count of hardware models whose start date of the end of life phase is either the current month, quarter, or year.</p> <p><b>Note:</b> Only consumable model life cycle records that are currently active, model status is in production, and life cycle type is Publisher appear in <b>This month, This quarter, or This year.</b></p>
Normalization Status	Consumable Product model [cmdb_consumable_product_model]	<p>Normalization status of all the consumable models. You can view the count of consumable models that were normalized and those that didn't get normalized.</p> <p>You can further drill down to see the status of the normalized models: Manually Normalized, Manufacturer Normalized, or Partially Normalized.</p> <p>You can drill down to view the status of non-normalized models too: New and Match Not Found.</p>

Report	Source table	Description
Lifecycle Overview	Consumable Model Lifecycle [cmdb_consumable_model_lifecycle]	The consumable models that are present in each life-cycle stage: General availability, end of support, end of extended support, and end of sale.
Product Model Status	Product Model [cmdb_model]	Current count of hardware, consumable, and software models based on the status of the models. Drill down on a model to view the status of that model. For example, click hardware models on the chart to see the status of all the hardware models: In Production, Retired, or sold.
Hardware Model Content Service Download	CDS table [cde_client_schedule]	The days since the content service library was last downloaded on your instance and the days remaining for the next download to take place.

### Model Management tab

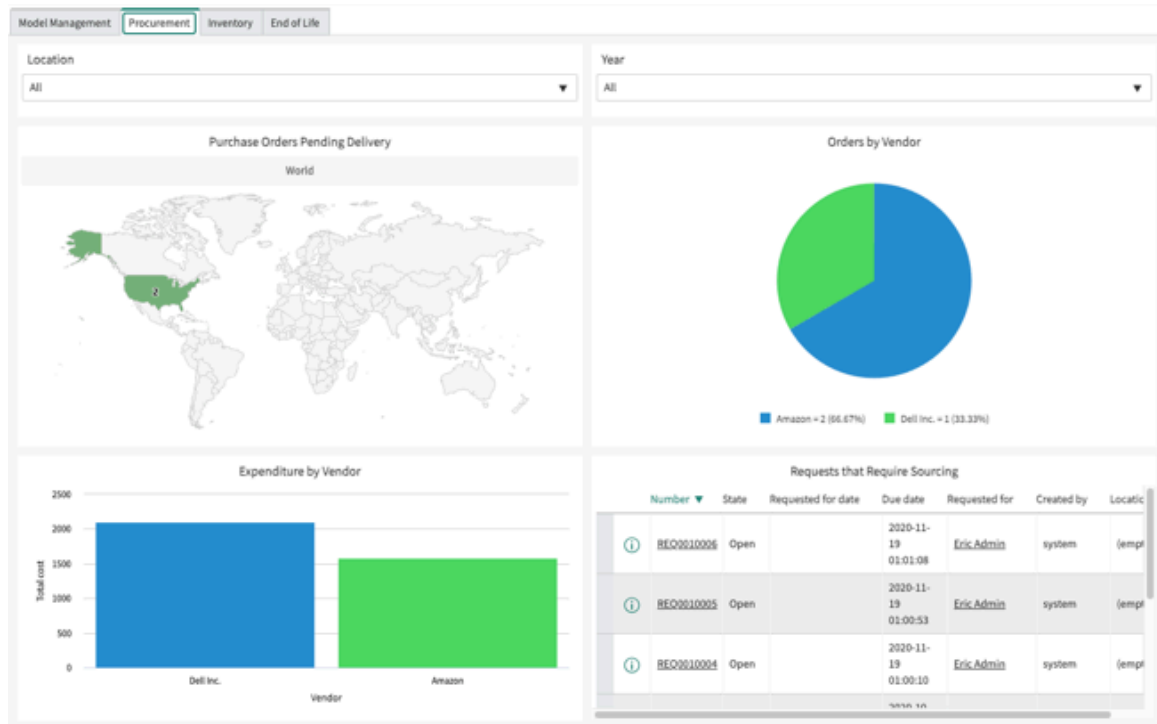


### Procurement tab

This tab gives you a view of the purchase orders for hardware assets that are pending delivery worldwide. You can also view purchase orders that haven't yet been sourced and information relating to cost of purchase orders per vendor. You can filter the results in this tab by location and year.

Report	Source table	Description
Purchase orders pending delivery	Purchase Order [proc_po]	<p>Purchase orders which aren't yet received or canceled. Only purchase orders that have a status of ordered or pending delivery are displayed.</p> <p><b>Note:</b> The asset, procurement_user, inventory_admin, or contract_manager role can only access the Purchase Order [proc_po] reports.</p>
Expenditure by Vendor	Purchase Order [proc_po]	<p>The cost that you've paid to each of your vendors for procuring the inventory. Only purchase orders that have a status of ordered, pending delivery, or received are displayed.</p> <p><b>Note:</b> The asset, procurement_user, inventory_admin, or contract_manager role can only access the Purchase Order [proc_po] reports.</p>
Orders by Vendor	Purchase Order [proc_po]	<p>Purchase orders that are ordered, pending delivery, or received.</p> <p><b>Note:</b> The asset, procurement_user, inventory_admin, or contract_manager role can only access the Purchase Order [proc_po] reports.</p>
Requests that Require Sourcing	Request [sc_request]	<p>Requests that haven't yet been addressed. Requests for which either a purchase order or a transfer order hasn't been initiated.</p>

## Procurement tab



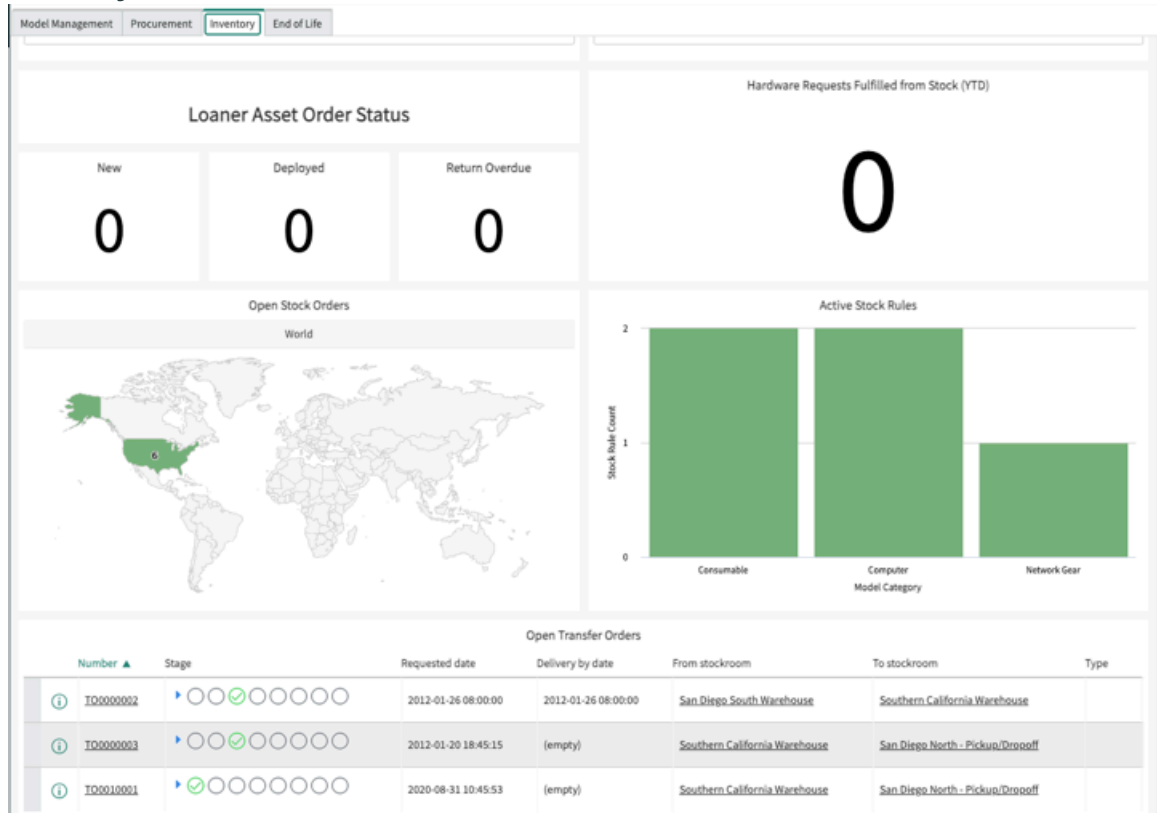
## Inventory tab

This tab shows data regarding your open stock orders. You can also view information about active stock rules, open transfer orders, and requests sourced through stock. You can filter the results in this tab by location and stockroom.

Report	Source table	Description
Hardware Requests fulfilled from Stock (YTD)	Transfer Order [alm_transfer_order]	Requests sourced through stock in the current year.  <b>Note:</b> The inventory_user, asset, or procurement_user role can only access the Transfer Order [alm_transfer_order] reports.
Open Stock Orders	Requested Item [sc_req_item]	All the stock orders which haven't yet been fulfilled. The open stock orders can be viewed as numerical data geographically.
Active Stock Rules	Stock Rule [alm_stock_rule]	Count of active stock rules grouped by model category. If a model of an item that has an active stock rule falls below the threshold value, a new order is placed.

Report	Source table	Description
Open Transfer Orders	Transfer Order [alm_transfer_order]	Transfer orders not yet delivered or canceled.  <b>Note:</b> The inventory_user, asset, or procurement_user role can only access the Transfer Order [alm_transfer_order] reports.
Open Audit Assets	Asset Audits [sn_hamp_asset_audit]	Audits that are currently new or in progress.  <b>Note:</b> The asset or inventory_user role can only access the Asset Audits [sn_hamp_asset_audit] reports.
New Hardware Assets Found by Audits	Asset [alm_asset]	The distribution of categories the assets belong to for audits conducted in the last year.
Loaner Asset Order Status	Loaner Asset Order [sn_hamp_loaner_asset_order]	Number of Loaner Asset Orders that are new, deployed, and the ones that are overdue for return.
Open RMA Request Lines	RMA Request Line [sn_hamp_rma_request_line]	List of all the open RMA request lines.  <b>Note:</b> The asset, itil, or inventory_user role can only access the RMA Request Line [sn_hamp_rma_request_line] reports.

### Inventory tab



### End of Life tab

View this tab to monitor your assets that are approaching their end of life stage and the disposal status of your assets. You can filter the results in this tab by location, stockroom, and model category. The Model category filter doesn't apply to **Hardware Asset Disposal Status**.

Report	Source table	Description
Hardware Nearing End of Warranty	Asset [alm_asset]	Hardware and consumable assets whose warranty expiration date falls in the current month, quarter, or year.  <b>Note:</b> Only assets that are in the following states appear. <ul style="list-style-type: none"> <li>• in stock</li> <li>• in transit</li> <li>• in use</li> <li>• in maintenance</li> <li>• consumed</li> </ul>
Hardware Asset Disposal Status	Hardware Disposal Order [hamp_hardware_disposal]	Status of requests created for hardware assets disposal. The count of new requests appears in <b>New</b> . The count of all hardware disposal requests that are currently

Report	Source table	Description
		in scheduling, transit, and confirmation stages are listed under <b>In progress</b> . <b>Pending Documentation</b> shows all the disposal requests that are in the Documentation stage.
Hardware Assets Disposed (YTD)	Asset [alm_asset]	Hardware and consumable assets, based on model category that have been disposed in the current year.
End of Life Method (YTD)	Asset [alm_asset]	Count of hardware and consumable assets that are retired, based on their substates. A hardware asset in a retired state has many substates (disposed, none, sold, vendor credit, and pending disposal).
Lease Contract Expiration	Contract [ast_contract]	Hardware and consumable assets whose lease expiration date falls in the current month, quarter, or year. It shows only the active contracts.
Hardware Asset Refresh Order	Requested Item [sc_req_item]	A list of Hardware Asset Refresh ordered.

### End of Life tab

Model Management | Procurement | Inventory | **End of Life**

Location: All

Stockroom: All

Model Category: All

Hardware Nearing End of Warranty			Lease Contract Expiration		
This month	This quarter	This year	This month	This quarter	This year
25	63	304	2	2	3

Hardware Asset Disposal Status			End of Life Method (YTD)
New	In progress	Pending Documentation	
0	0	0	No data to display

Hardware Assets Disposed (YTD)		Hardware Asset Refresh Order																
		Number   Stage   Short description   Requested for date																
No data to display		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Number</th> <th>Stage</th> <th>Short description</th> <th>Requested for date</th> </tr> </thead> <tbody> <tr> <td>BITM0010010</td> <td>▶ ● ● ● ● ● ● ● ● ● ●</td> <td>Plan and execute the refresh of aged hardware assets</td> <td></td> </tr> <tr> <td>BITM0010009</td> <td>▶ ● ● ● ● ● ● ● ● ● ●</td> <td>Plan and execute the refresh of aged hardware assets</td> <td></td> </tr> <tr> <td>BITM0010007</td> <td>▶ ● ● ● ● ● ● ● ● ● ●</td> <td>Plan and execute the refresh of aged hardware assets</td> <td></td> </tr> </tbody> </table>	Number	Stage	Short description	Requested for date	BITM0010010	▶ ● ● ● ● ● ● ● ● ● ●	Plan and execute the refresh of aged hardware assets		BITM0010009	▶ ● ● ● ● ● ● ● ● ● ●	Plan and execute the refresh of aged hardware assets		BITM0010007	▶ ● ● ● ● ● ● ● ● ● ●	Plan and execute the refresh of aged hardware assets	
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BITM0010007	▶ ● ● ● ● ● ● ● ● ● ●	Plan and execute the refresh of aged hardware assets																

Asset Count

## Asset and CI management

Asset and configuration item (CI) management refers to creating assets, setting appropriate states and substates, synchronizing assets and CIs, managing consumables, and retiring assets.

### Relationship between asset and CI

It's important to manage the relationship between assets and associated CIs. Assets are tracked with the Asset Management application, which focuses on the financial aspects of owning property. Configuration items are stored in the CMDB, which is used to track items and make them available to users.

When an asset has a corresponding configuration item, the asset record and the configuration item record are kept synchronized with two business rules.

- *Update CI fields on change* (on the Asset [alm\_asset] table)
- *Update Asset fields on change* (on the Configuration Item [cmdb\_ci] table)

**Note:** Assets and CIs can be synchronized only if they're logically mapped.

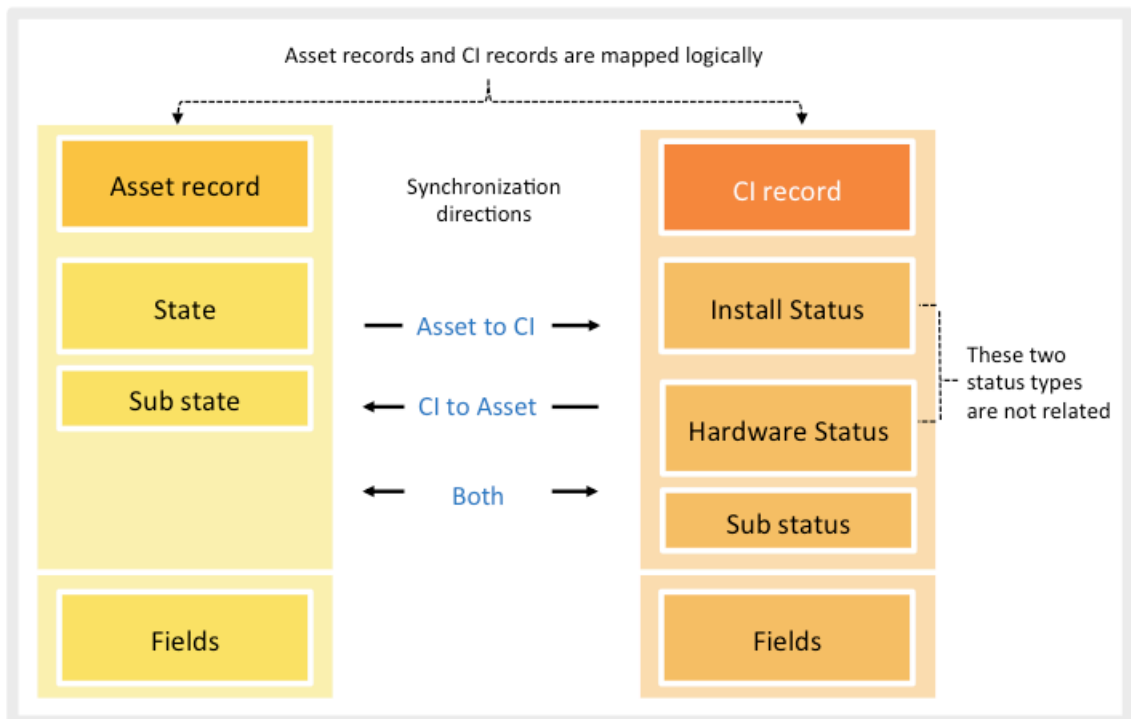
### Asset-CI mapping and synchronization

The State field of asset record and Status field of CI record are synchronized so that changes made on one form trigger the same update on the corresponding form, ensuring consistent reporting.

**Note:** The ServiceNow AI Platform synchronizes updates between assets and configuration items only if the asset and configuration item are pointed toward each other.

The following diagram illustrates the concept of Asset-CI mapping and synchronization.

#### Overview of Asset-CI mapping and synchronization



This synchronization and mapping is based on the following factors:

- Asset state and CI status aren't mapped on one-to-one basis. Rather they're mapped to the most logical counterpart on the other table. For example, for a hardware asset set to state **In Stock - Pending disposal**, the corresponding CI is set to **In Disposition** with no substate.
- This synchronization happens between the asset's State field and the following CI fields:
  - Install Status field: Install Status doesn't have a sub status and must be used for non-hardware CIs.
  - Hardware Status and Sub status field: Hardware Status is visible only for Hardware CI.
- Drive changes by updating the state on the Asset form. The Asset-CI synchronization can be driven in the following ways:
  - Asset to CI synchronization: Change to the asset's status updates the logically mapped CI's Install Status or Hardware Status and sub status.
  - CI to Asset: Change to the CIs Install Status or Hardware Status updates the logically mapped asset's states and sub states.
- For a CMDB hardware CI, if both Hardware Status and Install Status is updated, the Hardware Status change is considered for mapping the corresponding state of the asset.
- CIs Install Status and Hardware Status work independently, so the two fields aren't related. CI's Hardware Status change doesn't change CIs Install Status and vice versa. To avoid confusion, keeping both status for CMDB CI Hardware isn't recommended.

## List of the fields that get synced between Asset and CI

When changing any of the following fields on the asset or CI record, the same field on the corresponding record is automatically updated (except for the **Cost** field, which is informational-only on the CI record).

The following is a list of fields that are synchronized.

- Asset tag
- Assigned
- Assigned to
- Checked in
- Checked out
- Company
- Cost (synchronizes in only one direction: asset to CI)
- Cost center
- Delivery date
- Department
- Due in
- Due
- GL account
- Install date
- Invoice number
- Justification
- Lease id

- Location
- Managed by
- Model (model\_id in CI)
- Order date
- Order received
- Ordered
- Owned by
- PO number
- Purchase date
- Purchased
- Serial number
- Support group
- Supported by
- Vendor
- Warranty expiration

## Asset, CI, and IBI synchronization

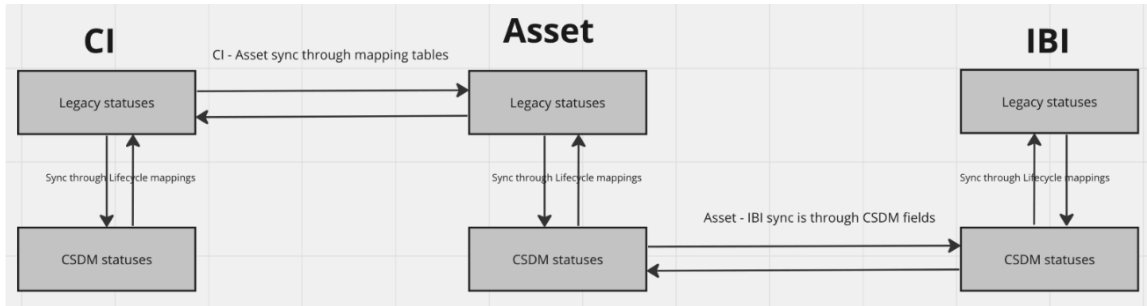
Any item that is provided as a service or sold to your customer is tracked as an Install Base Item (IBI). The Model category table associates Asset, CI, and Install Base Item (IBI). The synchronization between the asset and IBI is through the CSDM Life Cycle Stage and Status fields.

When the CSDM (`csdm.lifecycle.migration.activated`) plugin is activated on your ServiceNow instance, synchronization of the CSDM Lifecycle fields between the asset and CI depends on the `csdm.lifecycle.sync.between.ci.and.asset.activated` system property. If you are upgrading to the Xanadu release, this system property is set to **false** by default. Synchronization between the asset and CI happens in one of the following ways:

- When the system property is set to **false**, synchronization of the CSDM Lifecycle fields is through the legacy State and Substate fields.
- When the system property is set to **true**, the CSDM Life Cycle Stage and Status fields are directly synchronized.

**Note:** If you are activating the CSDM (`csdm.lifecycle.migration.activated`) plugin on your ServiceNow instance for the first time, and you have custom States and Substates for the asset or CI, then make sure to configure mapping between the legacy fields and the CSDM Lifecycle fields. For more information, see [Enabling CSDM life-cycle sync between legacy fields and related assets](#).

**Asset, CI, and IBI synchronization when the `csdm.lifecycle.sync.between.ci.and.asset.activated` system property is set to false**



**Synchronization of updates from asset to IBI and CI**

Updates made to the State or Substate field of an asset are synchronized with the associated IBI and CI. For example, when the State field of the asset is updated to In use, synchronization happens as follows.

- The Life Cycle Stage and Life Cycle Stage Status of the asset are set to Operational and In use, these field values are then synchronized with Stage and Status fields of IBI asset.
- The Status and Substatus fields of the CI change to Installed and In use.

**Synchronization of updates from IBI to asset and CI**

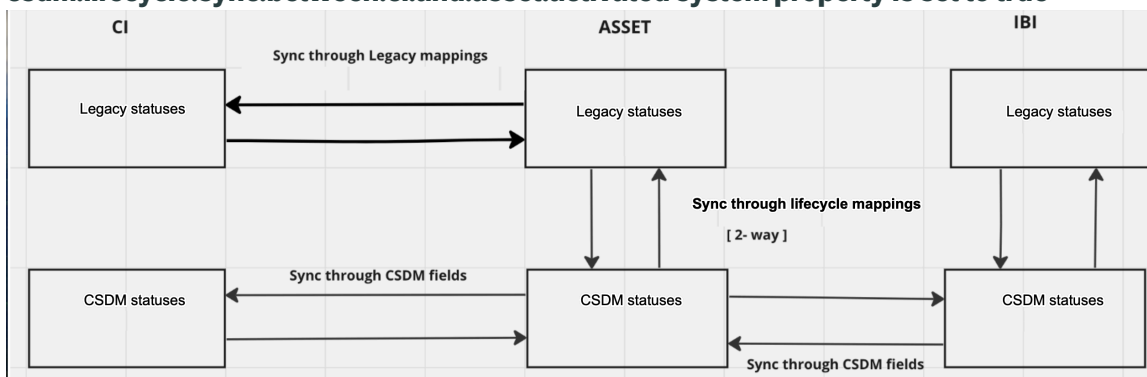
Updates made to the Life Cycle Stage and Life Cycle Stage Status fields of an IBI asset are synchronized with the legacy State and Substate fields of the asset through the CSDM fields. The legacy fields of the asset are then synchronized with the associated CI. For example, when the life Life Cycle Stage and Life Cycle Stage Status fields of an IBI asset are updated to Defective and In Stock, synchronization happens as follows.

1. The Life Cycle Stage and Life Cycle Stage Status of the asset change to In Stock and Defective. These field values are synchronized with the State and Substate fields of the asset.
2. The State and Substate fields of the asset are then synchronized with the corresponding fields of the associated CI.

**Synchronization of updates from CI to asset and IBI**

Updates made to the Status and Substatus fields of a CI are synchronized with the corresponding fields of the asset. The legacy fields of the asset are then synchronized with the Life Cycle Stage and Life Cycle Stage Status fields of the IBI asset through the CSDM fields. For example, when the Status and Substatus fields of a CI are updated to Retired and Donated, the corresponding fields of the asset change. The changes from the asset are synchronized with the IBI asset and the Life Cycle Stage and Life Cycle Stage Status fields change to End of Life and Retired.

**Asset, CI, and IBI synchronization when the `csdm.lifecycle.sync.between.ci.and.asset.activated` system property is set to true**



**Synchronization of updates from asset to CI and IBI**

Updates made to the legacy State and Substate fields of the asset are synchronized between the asset and CI as follows:

- The Life Cycle Stage and Life Cycle Stage Status fields of the asset are updated with values corresponding to the legacy State and Substate fields of the asset.
- The State and Substate fields of the asset are then directly synchronized with the corresponding legacy fields of the associated CI.
- The Life Cycle Stage and Life Cycle Stage Status fields of the asset are then directly synchronized with the corresponding CSDM fields of the associated CI.

However, synchronization of updates from asset to IBI is only through the CSDM Lifecycle fields.

**Synchronization of updates from IBI to asset and CI**

Updates made to the Life Cycle Stage and Life Cycle Stage Status fields of the IBI are synchronized as follows:

- The legacy State and Substate fields of the asset are synchronized through the CSDM fields.
- The legacy fields of the asset are synchronized with the legacy fields of the associated CI.
- The Life Cycle Stage and Status fields of the asset are directly synchronized with the corresponding CSDM fields of the associated CI.

**Synchronization of updates from CI to asset and IBI**

Updates made to the Life Cycle Stage and Status fields of a CI are synchronized as follows:

- The Life Cycle Stage and Status fields of the CI are directly synchronized with the corresponding CSDM fields of the asset.
- The legacy fields of the asset are then updated with the values corresponding to the CSDM fields.
- The legacy fields of the asset are then synchronized with the corresponding fields of the CI.
- The legacy fields of IBI are synchronized with the asset through the CSDM Lifecycle fields.

## Asset and CI creation properties

### `glide.create_alm_asset.async`

The system property `glide.create_alm_asset.async` controls whether assets are created immediately when a configuration item (CI) is created, or are created after a delay. A delay in asset creation enables large numbers of CIs to be created quickly. When this property is set to **true**, assets are created by the *Asset - Create asset delayed sync* scheduled job that runs every 15 minutes. View the status of the scheduled job in the Asset Job Log table [asset\_job\_log]. To view assets waiting to be created and asset creation errors, navigate to **Asset > Administration > Asset Creation Queue**. To reprocess an error, update the state from **Error** to **Ready**. The next time the scheduled job runs, it reattempts to create the asset.

When the `glide.create_alm_asset.async` property is set to **false**, assets are created immediately from CIs.

**Note:** If you upgrade to Xanadu from Orlando or earlier, the default value of this property is **false**. Before updating this property, review your processes that depend on an asset value present on a CI and make any necessary changes to account for delayed asset creation.

### `glide.asset.create_ci_with_ire`

The system property `glide.asset.create_ci_with_ire` enables CIs to be created from assets using the ServiceNow® Configuration Management Database (CMDB) Identification and Reconciliation engine (IRE). This property affects CI classes that have an identification rule on serial number and have no dependent relationships with other CI classes.

**Note:** This property is applicable to CI classes that are extended from the hardware CI class [cmdb\_ci\_hardware].

CIs created with the IRE are named using the format `Serial number - Model name` and the source is `SNAssetManagement`. The **Serial number** field is required on assets with model categories that correspond to these CI classes. Asset creation fails if its serial number is present on an existing CI or asset. The **Serial number** field is also required to receive purchase order line items for model categories that correspond to these CI classes. The **Serial number** field isn't required to create pre-allocated assets, but the serial number must be provided when the asset is allocated.

The default value of this property is false if you upgrade to Xanadu from Orlando or earlier. Before updating this property, review the customizations on the Serial number field and any integrations or flows that use an existing serial number to create an asset.

## Other Asset and CI system properties

### `sn_itam_enable_cache_for_asset_ci_mapping`

The asset and CI fields are synchronized based on the mappings defined in the relevant mapping tables. Fetching these mappings on the update of an asset or CI has an impact on the performance. The `sn_itam_enable_cache_for_asset_ci_mapping` system property enables you to cache the following mappings:

- Asset and CI fields
- Asset state and CI install status
- Asset state and CI hardware status

Unless there isn't any change in the mapping tables, these cached mappings are fetched during the synchronization resulting in the improved system performance.

## Product Instance feature in Hardware Asset Management

You can consistently represent a product along all applications, processes, workflows, and user interactions through the Product Instance feature. Changes made to any of the product representations are synchronized automatically.

The Product Instance feature enables you to have a common representation for any product tracked as an asset in IT Asset Management, an install base item (IBI) in Customer Service Management (CSM), and a configuration item in Configuration Management Database (CMDB). A Product Instance is associated with assets of a particular model category.

**Note:** Product Instance is currently enabled only for the Medical device model category.

## Product Instance Identifier (PID) configurations for a model category

Product Instance Identifier (PID) is a unique identifier for a Product Instance and links asset, CI, and IBI.

A PID is generated based on the following items defined in the Product Instance Identifier Configurations [product\_instance\_identifier\_configuration] table:

- PID configurations
- Order assigned to each configuration

**Note:** PID configurations out-of-the-box can't be edited and are read-only.

Note the following about PID generation:

- If the fields specified in the parameters of PID configurations are empty, a PID isn't generated and the asset isn't created.
- Assets that are in the On order or Pre-allocated state and don't have a serial number won't have a PID generated.
- The PID is recalculated and regenerated whenever changes are made to the fields specified in the PID configuration parameters, for example, updates to the serial number of an asset, CI, or IBI.

**Note:** The PID is stored in the product\_instance\_id field of the Asset [alm\_asset], Configuration Item [cmdb\_CI], and Install Base Item [sn\_install\_base\_item] table.

For the medical device model category, the default parameters of a PID configuration are based on the **Serial number**, **Parent**, and **Model Component ID** fields of the table. The PID configuration based on the item's serial number is given the highest priority when generating a PID. But when the serial number isn't present, the parameters based on the Parent and Model Component ID fields are considered for generating the PID. If you specify an existing serial number, the PID that is generated would be a duplicate of an existing PID, so the asset isn't created. If you have any customizations, such as using a different custom field instead of the Serial Number as a unique identifier, you should deactivate the Serial Number PID configuration and create a new PID configuration for that custom field.

**Note:** To enable PID recalculation for child assets when updates are made to the parent asset, set the system property `sn_itam_enable_pid_recalculation_for_child_asset` to true. The default value is false.

## PID synchronization between an asset, CI, and IBI

Synchronization of PID between an asset, CI, and IBI happens in the following circumstances:

- Any of the fields of the PID is updated on an asset, CI, or IBI
- An asset, CI, or IBI is with values specified in the fields of the PID configuration parameters.

### Create or update assets

When you create an asset by specifying a value for a field included in the PID configuration parameter, based on the PID configuration of the associated model category, the following actions occur:

1. A PID is generated for the asset based on the field value that you specified.
2. The asset is created.
3. The PID of the asset is synchronized with the associated CI.

When you update the field included in the PID configuration parameter of an asset, the PID is recalculated and regenerated based on the new field value. The updated PID of the asset is then synchronized with its associated CI.

### Create or update a CI

When you create a CI, a PID is generated only when the asset is created for that CI. The PID of the asset is then synchronized with the CI.

When you update a field included in the PID configuration parameter on a CI, the following actions occur:

1. The field value is copied from CI to the asset.
2. The PID is recalculated and regenerated for the asset.
3. The PID of the asset is synchronized with the associated CI.

### Create or update an IBI

When you create an IBI by specifying a field included in the PID configuration parameter, an asset and the associated CI are created. The PID is generated on the install base item and is synchronized with the asset and its associated CI.

A PID is regenerated and synchronized when any updates are made to the fields of the IBI that are part of the PID configuration parameters.

## Asset life-cycle automation

Automate the update of your asset records throughout its life cycle and remove the effort of manually maintaining asset accuracy.

Assets must be updated and tracked from the time they're purchased until they're disposed. The automation process starts from the time that you request an asset through determining if the asset is in stock or if it must be purchased. If it's in stock, then the asset is transferred through the transfer order workflow. If the asset must be bought, then the purchase order workflow is triggered. The automated workflows take away the need to update manually each asset record

or the associated configuration item (CI). After the workflow is complete, the asset records or CIs are automatically updated.

**Note:** The automated workflow isn't triggered for excluded assets. You must manually update your asset records or CIs for the excluded assets.

You can [create bulk stock orders](#) for hardware assets for your stockrooms. You can specify the model and the exact quantity you need. After the item is procured or transferred, the workflow is complete.

You can also [create disposal orders](#) for hardware and consumable assets. This workflow guides you through five asset disposal tasks. These tasks involve the planning, scheduling, verification, departure, and the final confirmation of the disposed assets. Closing a task completes the task and creates the next task in the workflow.

For example, Verify is the first task in the asset disposal workflow. After you complete and close the Verify task, the Schedule pickup task is automatically created. This process continues until you close all the tasks required for disposing the asset. For information, see [Hardware disposal order stages](#).

### Asset tasks

Asset tasks are provided for deploy, replace or swap, or retirement operations for your assets. These tasks automatically update the CI/asset record on the completion of these operations.

If an asset is being deployed, replaced, or retired via an incident, change request or a field service work order, the CI/asset record is automatically updated along with the related records for the CI/asset. For example, you have a change ticket to retire a server. After the change is implemented, the Change Management application triggers the retire asset event. The retire task is triggered and updates the following:

- CI
- related asset record
- software allocations
- maintenance contracts

The data accuracy is improved by reducing the need for manual intervention to update records.

When an asset is retired or swapped via an incident, the Stockroom field is populated based on the location of the asset. If there isn't any stockroom in the location of the asset, then the Stockroom field isn't populated. However, if the asset location is supported by multiple stockrooms as part of service locations, then the Stockroom field is automatically populated with details of the supporting stockroom based on the priority. For more details on service locations, see [Associate a stockroom with service locations](#).

This table lists the asset tasks available in each application.

Application	Asset Tasks
Incident Management	<ul style="list-style-type: none"> <li>• Update/Repair</li> <li>• Swap</li> <li>• Retire</li> </ul>

Application	Asset Tasks
	<p><b>Note:</b> By default, asset action is required for closing incidents. However, from Hardware Asset Management version 11.0.2 onward, if you don't want to enforce any asset action for the closure of an incident, you can set the value of the system property <code>sn_hamp.enable_asset_action_validation_i</code> to <b>false</b>. For more details see, the <a href="#">Not able to resolve incident or change request after installing HAMP - mandatory field Asset action [KB1695540]</a> article in the Now Support Knowledge Base.</p>
Change Management	<ul style="list-style-type: none"> <li>• Deploy</li> <li>• Retire</li> </ul> <p><b>Note:</b> By default, asset action is required for closing change requests. However, from Hardware Asset Management version 11.0.2 onward, if you don't want to enforce any asset action for the closure of a change request, you can set the value of the system property <code>sn_hamp.enable_asset_action_validation_c</code> to <b>false</b>. For more details see, the <a href="#">Not able to resolve incident or change request after installing HAMP - mandatory field Asset action [KB1695540]</a> article in the Now Support Knowledge Base.</p>
Field Service Management	Deploy

### Hardware Asset Management license exclusion

Pay only for the assets using licensed Hardware Asset Management features and exclude an asset for which you don't want to use the licensed features.

Hardware asset features are restricted to hardware and consumable asset records. Use the asset level exclusion when you want to use Hardware Asset Management licensed features but want to exclude a few assets. For more information about excluding an asset, see [Exclude assets](#).

Hardware assets belonging to a category that you don't opt in are excluded by default. For example, if you don't opt in for the End User Computer category, all End user computers would be excluded. For more information, see [Opt-in or opt-out of HAM license resource categories](#).

You can't select and use the excluded assets in the following HAM flows and tasks:

- [Loaner](#)
- [Disposal](#)
- [Refresh](#)

- [Lease](#)
- [Bundle](#)
- [Return Merchandise Authorization \(RMA\)](#)
- [Audit](#)
- [RFID](#)
- [Asset lifecycle automation](#)
- [Pallets](#)
- [Donation](#)

**Note:** Any workflow once started on an asset is allowed to complete even if the asset is marked excluded midway through.

## CSDM framework for HAM

Common Service Data Model (CSDM) is a standard and consistent set of terms and definitions to adopt across all ServiceNow products on the ServiceNow AI Platform.

Using CSDM standard and consistent set of terms and definitions helps to effectively track assets through their life cycle transitions. To know more about CSDM, see [Common Service Data Model](#).

To set up CSDM environment for HAM, see [Set up the CSDM environment](#).

**Note:** It is optional to adopt CSDM. You can either adopt CSDM or continue using the existing model.

## Hardware Model Normalization

Asset Management Hardware Model Normalization enables you to normalize the details, such as manufacturer, product, model, and device type, of your hardware and consumable models. Data from the models is compared against the data in the Hardware Model Normalization Content Service.

The Hardware Model Normalization (com.sn\_hwnorm) plugin is activated when you activate the Hardware Asset Management [sn\_hamp] plugin.

For more information about the process of normalizing hardware and consumable models, see [Normalize hardware and consumable models](#).

**Note:** This documentation is for Hardware Model Normalization. For additional information on Asset Management, see the [Asset Management documentation](#).

## Scheduled jobs

To standardize your hardware and consumable models, the asset data must be normalized. You can manually update the model records with the normalization content, or you can compare your data against the Hardware Asset Management Content Service.

The *HAM- Hardware Normalization* scheduled job runs daily. This job doesn't add, remove, or merge models, nor does it modify the original fields like Model Name, Manufacturer, or Model Number. It only updates the normalization-related fields for existing models, such as Normalized Product, Normalized Manufacturer, Normalized Model, and so on.

Content from the Hardware Model Normalization Content Service is pulled into the ServiceNow AI Platform. Use the Asset Job Log (`asset_job_log`) table to review the status of the scheduled job.

The normalization status of models can be reverted by selecting **Revert Normalization** on the model. Any normalization that occurred on the model gets reverted and the rule gets deactivated. When the scheduled job runs, the models are processed with the active rules and the status is updated. For more information about reverting normalization, see [Revert normalization of hardware and consumable models](#).

**Note:** The Domain Asset Process Settings table (`alm_domain_asset_process_setting`) stores configurations for asset processes, including the normalization of hardware models. By default, normalization is performed only for models within the TOP/Default domain. However, if you have the `asset` or `domain_admin` role, you can enable normalization for hardware models in any domain. To enable normalization for a specific domain, follow these steps:

1. Navigate to the Domain Asset Process Settings table (`alm_domain_asset_process_setting`).
2. Locate the specific domain for which you want to enable normalization of models.
3. Set the **Run asset process** field to **true**.

When the scheduled job runs the next time, the hardware models of that domain are normalized.

The scheduled job generates hardware and consumable model reports. These reports identify the overall status of your models and provide a breakdown of the normalization status.

The following reports are included.

- Hardware Product Overall Normalization Status
- Consumable Product Overall Normalization Status
- Hardware Model Normalization Status
- Consumable Model Normalization Status

## Related topics

[Work with hardware normalization](#)

## Hardware Asset Management flow customization

Customize the flows in some of the Hardware Asset Management features by using the available decision tables.

You can also create a flow using Workflow Studio that suits your requirement. You can then customize the existing flows by using the newly created flow in the readily available decision tables. For example, in the Hardware Refresh module, you can remove an existing flow, add a new flow or a condition.

Update the associated Decision table entries to trigger the new flow. For more information, see [Update associated Decision tables for HAM flows](#).

For the list of readily available decision tables and the associated Hardware Asset Management features that you can update, see [Decision tables for Hardware Asset Management flows](#).

## Return Merchandise Authorization

Return Merchandise Authorization (RMA) is an agreement between a buyer and seller that lets the buyer return or replace a faulty product. The Asset RMA Order catalog item has prescriptive flows to streamline the RMA process.

An RMA request has RMA request lines. When an RMA request is submitted, an RMA request line is created for each asset and consumable that was selected. You can view a list of all the open RMA request lines in the Hardware Asset Dashboard. For details, see [Hardware Asset dashboard](#).

## Workflow for Return Merchandise Authorization

The Flow Designer application creates RMA tasks for every RMA request line. The RMA request is completed through the RMA tasks. An Assessment task is created for each RMA request line. The Assessment task is used to assess the faulty asset. When the state of an RMA task is updated, the **Stage** field on the RMA request line form is updated by default.

When you receive a defective product or if a product becomes defective within its warranty period, you can request an Asset RMA Order. Based on your agreement with the vendor, you can decide to repair the faulty asset either on-site or off-site. On the Assessment task form, when you select off-site repair, the flow designer triggers the Asset RMA Off-site flow. The Asset RMA Off-site flow generates the following RMA tasks to complete the RMA process.

- Shipment
- Vendor RMA decision
- Receive

On the Assessment task form, when you select on-site repair, the flow designer triggers the Asset RMA On-site flow. The Asset RMA On-site flow generates the RMA task (On-site repair task) to complete the RMA process.

After attempting an on-site repair, if the faulty asset couldn't be repaired, then you can send the product for an off-site repair. If you want to send the faulty product for an off-site repair, then the Asset RMA Off-site flow is triggered and the RMA process is completed through the Asset RMA Off-site Flow RMA tasks.

You can cancel an RMA request as long none of the assessment tasks are closed for any of the RMA request lines. After an RMA request is canceled, all the associated RMA request lines and RMA tasks are canceled. If you submit RMA for an asset that is part of an existing RMA, the RMA request lines of the existing RMA request are automatically canceled. If an RMA task is canceled, the associated RMA request line is also canceled. If you have the inventory user or itil role, you can cancel an Assessment task, Internal repair task, or a Shipping task.

### Related topics

[Manage RMA requests](#)

## Integrating Zebra technology RFID system

Integrating a Zebra technology Radio Frequency Identification (RFID) system with your ServiceNow instance enables you to identify#, track, and manage your hardware asset locations automatically.

After the asset integration with Zebra technology RFID system is successful, you can view the RFID Tag information such as zone group, zone, and locations mapped with your assets. The RFID information is mapped to the Asset [alm\_asset] table according to the serial number of the asset. For more information about the Asset management tables, see [Installed with Asset Management](#).

**Note:** If the asset is excluded, the RFID information isn't mapped to the Asset [alm\_asset] table according to the serial number of the asset. For more information about asset exclusion, see [Hardware Asset Management license exclusion](#).

The data from the Zebra technology RFID system is imported to ServiceNow regularly. Any data change in the RFID system is updated in your ServiceNow instance.

The RFID asset [rfid\_asset] table stores the RFID information of assets. For more information about viewing the RFID information, see [View RFID information of assets](#).

## Asset bundles

Asset bundles help you bundle a group of assets, already in your inventory, as a single entity.

An asset bundle comprises consumable and hardware assets.

### Example of a developer asset bundle

Component	Model category
Apple MacBook W9576XA	hardware asset
Samsung monitor B2156C	hardware asset
Logitech mouse PB567VT	consumable
Apple keyboard MT65021R	consumable

Asset bundles are based on bundled models. A bundled model is a grouping of models. For more information on bundled models, see [Bundled models](#).

Existing assets from stockrooms are used to create an asset bundle. Only assets that are in the **In stock** status and **Available** substatus are added to an asset bundle. If you want to exclude any assets, you must remove the asset from the bundle. For more information about asset exclusion, see [Hardware Asset Management license exclusion](#). Assets that are part of an asset bundle aren't available as individual assets. No CIs are associated with an asset bundle.

An asset bundle goes through the entire asset life cycle. From building an asset bundle, allocating the bundle to a user, moving it to a state of maintenance if assets need repair, and finally retiring the bundle when its purpose is fulfilled.

Asset bundles can be transferred between stockrooms. However, individual assets within a bundle can't be transferred between stockrooms. Assets within a bundle can't be disposed. After an asset bundle is retired, the assets are disassociated from the bundle and can be individually disposed. Deleting an asset bundle moves all assets belonging to the bundle to a stockroom.

You can swap assets belonging to an asset bundle. Assets can be swapped when the state of the bundle is **In maintenance** or **In stock** and substate **Pending repair**.

You can retire an asset bundle and release all the assets belonging to the bundle. The assets that are released are returned to a stockroom and you can delete the bundle.

Assets belonging to a bundle are excluded from sourcing, transfer orders, and disposal orders flows.

For more information on creating asset bundles, see [Manage asset bundles from your inventory](#).

## Asset reclamation

Reclaim Asset catalog item integrates Asset Management module with HR module to let you efficiently reclaim assets.

When an employee leaves an organization or moves to a different role, reclaiming the assets assigned to the employee is a troublesome task and needs much coordination between the HR professional and the asset manager. The Reclaim Asset catalog item has prescriptive workflows to efficiently reclaim hardware assets and store them in the inventory, reassign, send it for repair, or dispose of as required.

An HR professional, manager, or employee can submit an asset reclamation request using the Reclaim Asset catalog item. A manager can submit an asset reclamation request for the reporting members. An HR professional can submit an asset reclamation request for any employee in the organization. An employee other than an HR professional and a manager can submit an asset reclamation request for self. For more information, see [Submit an asset reclamation request](#).

**Note:** You can't reclaim asset bundles and pallets.

When you create a Reclaim Asset request via Service Catalog, an Asset Reclamation Request is created. For each hardware or consumable assigned to the departing employee, a Hardware Asset Reclamation Line is created for the assets you select in the Reclaim Asset Service Catalog. Each Hardware Asset Reclamation Line is closed through the following Hardware Asset Reclamation Tasks:

- Schedule drop off, Schedule pickup, or Schedule shipment task based on which reclamation method you select in the Reclaim Asset form
- Receive asset
- Evaluate

The Hardware Asset Reclamation Line also has a stage field, which changes when you close a Hardware Asset Reclamation Task as follows:

- Ready
- Pending receive
- Pending evaluation
- Complete

For more information, see [Close an asset reclamation request](#).

The Hardware Asset Reclamation Sub Flow decision table enables you to trigger your custom reclamation sub flow for hardware and consumable assets. Based on the condition related to the asset that you specify in the decision table, the corresponding sub flow is triggered, and the reclamation process completes.

To use Service Catalog Request, you must install SAM Professional or HAM Professional. If you have installed only SAM Professional, you can access the Service Catalog, but only the Software Asset Reclamation flow gets triggered.

## Asset donation

You can easily donate hardware and consumable assets in stock in your organization to charity organizations through an Asset Donation Order.

The Asset Donation flow handles the various stages in the asset donation process. After you submit the Asset Donation Order, the asset manager reviews the asset donation order and, if it

is approved, processes the donation. The asset donation process completes when the charity organization acknowledges the delivery of the assets.

**Note:** You can't donate excluded assets. For information on excluded assets, see [Hardware Asset Management license exclusion](#).

For more details on asset donation, see [Donate assets to charity organizations](#).

## Pre-allocated assets

Pre-allocated assets are often assets that the vendor still owns, but has agreed to store in a customer stockroom for just-in-time procurement.

A pre-allocated asset physically exists, but isn't yet a financial liability. For example, a pre-allocated asset could be a pallet of 100 computers ready to be allocated. Allocating the asset generates a configuration item (if required by the category) and enables you to assign the asset. Pre-allocated assets can be components of another asset that is already in use.

For example, pre-installed, pre-allocated servers can be set up in server racks next to production servers, but the pre-allocated servers only become a financial liability after they're turned on. The pre-allocated option can only be used for assets, not for consumables or licenses. Pre-allocated assets can't be composed of bundles.

**Note:** Warranties aren't active until an item is installed. Therefore, until an asset is allocated and assigned, it isn't under warranty.

You can create a pre-allocated asset, allocate the assets from pre-allocated asset records, and also split a pre-allocated asset to create a group that can be moved to a different stockroom. For more information, see [Manage pre-allocated assets](#).

## Pallet assets

Use the Pallet asset class to track and manage assets in your inventory as a group. You can easily move a group of assets between locations or dispose of them as a group.

A pallet is an asset with the model category Pallet. Pallets are the parent of the assets contained in them. The predefined pallet types are pallet, bin, box, and container.

**Note:** The Pallet asset class with its associated UI options are available only with the Hardware Asset Management Professional plugin (com.sn\_hamp).

You can create a pallet asset and add base, hardware, bundle, consumables, and other pallet assets to the pallet in the Asset Estate view.

Pallet assets aren't associated with any expense lines.

The Pallet [alm\_pallet] table stores information about pallet assets. The location of a pallet in the stockroom is indicated by the **Aisle** and **Space** columns of the Asset [alm\_asset] table.

Note the following when you plan to use pallet assets for inventory management:

- You can't add software, enterprise, and excluded assets to a pallet.

**Note:** For information on excluded assets, see [Hardware Asset Management license exclusion](#).

- You can't add an asset that is already associated to a parent asset.
- Pallet assets can't be a part of asset bundles.

For more details on pallet assets, see [Manage your inventory through pallet assets](#).

## Loaner assets

Request a loaner asset or consumable when you need it for a short period of time.

A loaner order request is completed through the following stages:

- **Prepare task:** Prepare the loaner asset such as by installing the required software before handing over the loaner asset to the requested user. By default, the Prepare task is created two days before the start day. You can change this setting by modifying the *Number of days required for preparing the loaner asset* variable on the Loaner Asset Request catalog item.

**Note:** The *Number of days required for preparing the loaner asset* variable is not shown on the catalog form when you request a loaner asset. To find this variable, go to the Catalog Item module. Only users with the catalog\_admin role can change the value of this variable.

- **Deploy task:** Hand over the loaner asset to the requested user or install the loaner asset at the user's machine. The Deploy task is created after the Prepare task is closed.
- **Reclaim task:** Reclaim the loaner asset after a period of time. The Reclaim task is created one day before the return day.

### **Note:**

Loaner assets are not counted in the stockroom count when stock rules are being processed.

You can't allocate an excluded loaner asset. For more information, see [Hardware Asset Management license exclusion](#).

## Related topics

[Manage loaner assets](#)

## Loaner asset reservation

Waitlisted loaner orders give visibility to future demands for loaner asset.

With the available loaner assets, the user who submits a loaner order first gets the loaner asset. Loaner assets are automatically assigned to the users by a daily scheduled job on the Preparation start day. When there is no loaner asset in a stockroom, all the loaner orders become part of a Waitlist. The Waitlisted Orders module under Loaner shows all the wait listed loaner orders. If new loaner assets are added to a stock room or confirmed loaner order are canceled, the wait listed loaner orders are confirmed in a sequence of when they were submitted. A loaner order that was submitted before gets precedence over the order that was submitted later.

As an inventory admin, if you want to confirm a wait listed loaner order, uncheck the **Waitlisted** box in the Loaner Asset Order form and in the **Asset** field, select the asset. If you want to move a confirmed loaner order to wait list, check out the **Waitlisted** box and remove the Asset from the **Asset** field. You can assign a loaner asset from any locations and with any of the following states and substates:

- In stock
- Available
- Pending install

- Reserved
- In use

**Note:** You can't select an excluded loaner asset. For more information, see [Hardware Asset Management license exclusion](#).

## Stockrooms

Stockrooms are places to which assets are assigned.

When stock is low on a particular asset, stock rules can either notify an asset manager or automatically transfer inventory from one stockroom to another.

Stockrooms are separate, standalone entities in the Asset Management application.

### Stock rules

Stock rules are defined criteria stating that when the inventory of a particular asset in a particular stockroom reaches a specified threshold, a certain number should either be transferred from another stockroom or ordered from a vendor.

For example, a specific model of computer keyboard reaches an inventory of 10 in a particular stockroom and, because a stock rule is in place, a transfer order is automatically created to transfer 50 from a different stockroom. Because there can be multiple assets of a model within a stockroom, stock rules enable you to check all assets fitting the criteria and view a total count.

There are two restocking options:

- Email notifications can be sent to the stockroom manager (specified in the **Manager** field on the stockroom record) through the **Asset Restocking** email action when the inventory of a particular asset in the stockroom reaches a specified threshold. You can customize this email notification by updating the details in the following tabs:
  - **When to send:** Set the conditions under which the email should be triggered.
  - **Who will receive:** Specify the recipients of the email.
  - **What it will contain:** Define the content and information included in the email. A task is automatically created for the stockroom manager or, if Procurement is active, a purchase order and a purchase order line item are created.
- A transfer order can be generated automatically to restock the item from another stockroom.

## Stock Rule Runner job

The Stock Rule Runner job runs everyday to check if the inventory in the stockroom has reached the threshold set by the stock rule. The job then triggers tasks or workflows to restock the inventory. This job creates tasks for stockroom managers and also sends email notifications to them.

**Important:** If restocking is in progress, the system doesn't create duplicate email messages or duplicate transfer orders. It's important to act on it promptly.

By default, the `glide.sc.checkout.twostep` system property that's set to **false**, results in the automatic submission of requests when items are added to the Service Catalog cart. Also, with this setting of the system property, the Stock Rule Runner job triggers the creation of tasks, purchase orders, transfer orders, and Service Catalog requests.

If the value of the `glide.sc.checkout.twostep` system property is set to **true**, then the `CartJSAPI` adds items to the cart but the requests aren't submitted automatically. Instead, the

request submission requires additional actions to be performed, affecting the automatic flow of the Stock Rule Runner job.

The **pending\_delivery** is used to indicate whether a stock rule is awaiting fulfillment or delivery. The pending\_delivery can be set to any of the following values:

- When this flag is set to **true**, the stock rule is in progress, and the system doesn't generate duplicate tasks or orders for the same item.
- When this flag is set to **false**, the system reprocesses the stock rule and triggers the creation of tasks and orders again.

**Note:** Make sure that the pending\_delivery flag is updated to false when a stock rule has been processed, enabling the Stock Rule Runner job to run without redundancy.

Based on the Stock rule type and the plugin activated on your ServiceNow instance, the Stock Rule Runner job creates purchase orders, transfer orders, Service Catalog requests, or tasks.

**Important:**

If the Procurement plugin and the Hardware Asset Management application aren't activated, the Stock Rule Runner job creates a task instead of a purchase order or a Service Catalog request. This task prompts the stockroom manager to take the necessary actions to replenish the inventory.

**Stock Rule Runner job behavior**

Stock rule type	Orders/Requests created
Stockroom	<p>A transfer order is created automatically when the inventory in a stockroom reaches the threshold set by the stock rule.</p> <p>The transfer order is created to transfer stock from another stockroom to replenish the inventory.</p> <p><b>Note:</b> If a transfer order is already in progress, then additional transfer orders aren't created.</p>
Vendor	<p>When the Procurement plugin (com.snc.procurement) is activated, a purchase order and corresponding purchase order line items are created.</p> <p>Purchase orders and purchase order line items are created when the inventory in a stockroom reaches the defined threshold and needs replenishment directly from the vendor.</p> <p><b>Note:</b> You must have a procurement_user role to access the purchase order and purchase order line item.</p>
Vendor or Service Catalog	<p>When the Hardware Asset Management application is installed and the stock rule is set to Vendor or Service Catalog, then note the following points:</p>

## Stock Rule Runner job behavior (continued)

Stock rule type	Orders/Requests created
	<ul style="list-style-type: none"> <li>• The Stock Rule Runner job submits a Service Catalog request instead of creating a purchase order.</li> <li>• The Service Catalog request is automatically submitted for stock replenishment through the Service Catalog. The items are added to the Service Catalog cart for the Stockroom manager to review and approve.</li> <li>• The pending_delivery flag is used to track the status of the Service Catalog requests. This flag guarantees that the Service Catalog requests are processed correctly, avoiding duplicate actions.</li> </ul>

### Related topics

[Create a stock rule](#)

## Integration with Lenovo for asset warranty details

The Lenovo Asset Warranty Flow enables you to get the warranty information of hardware assets by connecting to the Lenovo Warranty API.

Integration with Lenovo has the following requirements:

- The Hardware Asset Management application (sn\_hamp) must be activated.
- The Lenovo Spoke (sn\_lenovo\_spoke) installed on your ServiceNow instance from the ServiceNow Store. For detailed information, see [Lenovo Spoke](#).
- The Client ID from Lenovo to connect to the Lenovo Warranty API.

**Note:** If you don't have a Client ID, contact your organization's Lenovo sales or service representative.

- A Lenovo connection. If you don't have this connection, it must be created using the Lenovo [sn\_lenovo\_spoke.Lenovo] connection and credential alias. For more information, see [Connect to the Lenovo Warranty API](#).

**Note:** For details on the input and response fields of the Lenovo Warranty API, see the "Warranty" topic in the Lenovo WebAPI documentation.

The process involved in fetching the asset warranty details from Lenovo is as follows:

1. The Download Asset Warranty Information - Lenovo scheduled job that runs every week invokes the Lenovo Asset Warranty Flow that fetches all the hardware assets with the manufacturer as Lenovo.

**Note:** The Download Asset Warranty Information - Lenovo scheduled job and the Lenovo Asset Warranty Flow are installed with the Hardware Asset Management (sn\_hamp) application.

2. The Lenovo Asset Warranty Flow then invokes the Download Asset Warranty action that resides in the Lenovo Spoke application and passes 1000 serial numbers in a batch.

3. The Download Asset Warranty action connects your ServiceNow instance to the Lenovo Warranty API by passing the serial numbers and the Client ID. This action also downloads the warranty information for all the serial numbers that are passed.
4. The Process Warranty Information action in the Lenovo Asset Warranty Flow creates or updates asset warranty records in the Asset Warranty [sn\_itam\_common\_asset\_warranty] table using the response from the Lenovo Warranty API.

The Asset Warranty [sn\_itam\_common\_asset\_warranty] table stores the asset warranty details. This table has fields corresponding to the Lenovo API response. Some of the fields of the table are:

- **External warranty ID:** Identifies the warranty records of an asset and update the warranty information.
- **Active:** Boolean field based on the **Warranty** field value of the Lenovo API response.
- **Status:** Indicates whether the warranty is active. This field is populated based on the **Active** field value.
- **Start Date** and **End Date:** Indicate the warranty period.

**Note:** Warranty records for excluded assets aren't fetched.

An asset can have multiple warranties associated with it. You can view the warranty information using the Asset Warranties tab on the asset form. You can also view all the asset warranty records from a central location using the Asset warranties list in the Asset operations view. For more information, see [Track the warranty details of your Lenovo assets](#).

## Related topics

[Receive asset warranty details from Lenovo](#)

## Zero Touch Refresh

Use the Zero Touch Refresh flow to fulfill employee hardware refresh requests through an external vendor without having to maintain new assets in the local stockroom.

The various stages in the asset refresh process are as follows:

1. An employee of your organization submits a request for refresh of the hardware asset.

The Request confirmation task is created when the Zero Touch Refresh request is approved. The state of this task changes to Closed automatically when the provider confirms the request.

2. Provider ships the new asset to the employee.

**Note:** A provider can fulfill a Zero Touch Refresh request by using the Asset Management application.

The following tasks are created:

- a. Request shipment: This task is created when the provider confirms the Zero Touch Refresh request. The state of this task changes to Closed automatically when the provider ships the new asset.

The following happen when the provider ships the asset:

- An asset with the serial number and asset tag specified by the provider is assigned to the employee.
  - Based on the refresh method that the employee selected in the Zero Touch Refresh request, email notifications with details of the new replacement asset that is shipped are sent as follows:
    - When the asset is shipped to the employee, an email notification is sent to all users with the asset role.
    - When the asset is shipped to the stockroom, an email notification is sent to all users with the asset role and also the stockroom manager of the selected stockroom from where the employee will pick up the new asset.
  - Based on the tracking number and shipping carrier details that the provider specified in the request, unique shipment records are created for the shipments of the replacement asset and the old asset. When the same tracking number is provided for both the shipments, a single shipment record is created. You can view the shipment records with the associated assets in the Assets operations view of the Hardware Asset Workspace. For more details, see [View hardware asset shipment details](#).
- b. Ready for pickup: This task is created only for the Pickup refresh method in which the provider ships the new asset to the stockroom from where the employee picks up the asset.
  - c. Receive asset: This task is created as follows:
    - For the Ship refresh method, when the provider ships the asset to the employee.
    - For the Pickup refresh method, when the Ready for pickup task is closed.
  - d. Receive return asset: This task is created when the provider ships the new asset.
3. Employee confirms receipt of the new asset.
  4. Employee returns the old asset to the stockroom in the labeled box shipped by the provider.
  5. Inventory manager confirms that the old asset was received and evaluates it.

**Note:** The Zero Touch Refresh flow requires support from an external provider and is pre-configured to integrate with Insight.

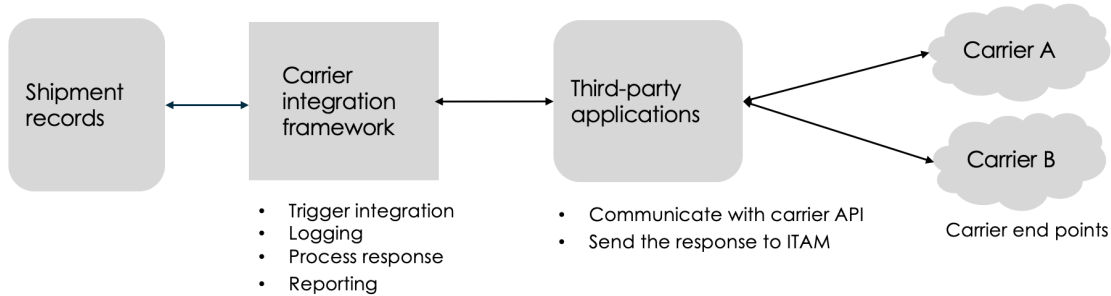
The Zero Touch Refresh flow has the following requirements:

- The employee's organization and the provider must be on the same ServiceNow Cloud.
- The Service Exchange application must be configured on the ServiceNow instance of the provider and the employee's organization.

For more details, see [Manage refresh of assets using Zero Touch Refresh](#).

## Managing shipments by integrating with third-party carrier applications

You can check the status of your shipments in real time by integrating your ServiceNow instance with a third-party carrier application using the integration framework provided by the IT Asset Management application.



## Requirements for integration with third-party carrier applications

**i Important:** The IT Asset Management application provides only the integration framework to integrate with your third-party carrier applications. For the integration to work seamlessly, the implementation team must take care of the following requirements.

1. Create a script include that extends from the base class `ITAMShipmentIntegration` script.

For more details, see [Creating an integration script include for third-party carrier applications](#).

2. If you're using any credentials, then use the Credential table or any table with Password2 fields and provide the KMF access map policy to enable your customers to access your application.

For more details, see [Password2 encryption with the Key Management Framework \(KMF\)](#).

3. Add the application name, API, and connection details to the Carrier integration profile [sn\_itam\_carrier\_int\_profile] table.

For more details, see [View the carrier integration profile details](#).

**i Note:** If you are creating the integration as part of an application, complete the following steps before you create a script include:

1. Create an application.
2. Make the application accessible from any application that belongs to a different scope.  
For more details, see [Creating an integration script include for third-party carrier applications](#).

For more details, see [Track shipments using the integration framework](#).

## Asset Total Cost of Ownership for Hardware Asset Management

Assets incur costs throughout their life cycle, including initial capital costs and operational costs. Asset Total Cost of Ownership helps Asset managers to understand, analyze, and track the Total Cost of Ownership (TCO) of assets, where the total cost includes initial capital cost and operation cost.

**i Important:** You must install Hardware Asset Management 10.0.0 version or later to access the Asset Total Cost of Ownership feature.

## TCO benefits

- Track and analyze incurred expenses across the asset hierarchy.
- Benchmark asset costs against assets and asset model to compare performance.
- Create TCO reports and use predefined reports for better financial planning of your assets.

## TCO calculation

Costs incurred on the assets are created as expense lines. The expense line shows the history of cost incurred for an asset, which includes the total amount on the expense lines, or the initial capital cost and total expense on all the child assets.

TCO is the sum of all the expenses that occurred on the asset during its lifetime.

- When an asset record is created, the initial cost includes the purchase cost from an expense line that gets created. If you update the cost, the expense line record gets updated.
- For serialized assets, the capital cost is added one time only and the rest is considered as the operational cost. Any expense line created is added to the total cost.
- For a child asset,
  - If any cost is incurred on a child asset, the same cost is added to the TCO of the parent asset.
  - If a child asset is removed, the expense lines of the child asset persist and the TCO of the parent isn't affected.
  - If a child asset is swapped, one expense line is created for operational cost.
- Any expense line created by rate cards is added to the TCO of assets.
- Incidents affecting hardware assets already include task rate cards.

## Rate cards, expense lines, and expense categories

Rate cards help you track capital, labor, material, and contract costs and the generated expense lines track these costs. For each task, Hardware Asset Management captures the time worked on that task. After a task is closed, Hardware Asset Management creates expense lines based on the time worked on the task. These expense lines amounts are added to the total cost of the asset. An expense category is then attributed to the expense line. The expense lines appear in the **Expense Lines** tab on the Hardware Asset Details form.

The Hardware Asset Management application supports the following rate cards:

- [Task rate cards](#)
- [Labor rate cards](#)

- **Note:** The labor rate card is a part of the created expense line and is valid if you've included the labor rate card information with the task rate card, which is recording the time worked on the task.

## Capture time for tasks

Each task has a time capturing capability that creates time worked records for that user.

You can start, start a timer, pause, resume, and save your tasks. A new record entry is created in the Time Worked tab in the following scenarios:

- Select **Start** to begin your work and then select **Save**.
- Select **Start Timer** to begin recording the time for a task.
- Select **Pause** to pause the recording.
- Select **Resume** to resume the recording.

The timer stops only when you close a task. To arrive at the total time spent on a task, all the record entries are added up and then multiplied with the labor rate to arrive at the total cost for a task.

You can select **Record Time** to add time to the tasks manually.

## Work with TCO

TCO enables you to perform the following actions:

- Create expense lines to track the initial and operational cost of your hardware assets.
- Track and calculate TCO for the following workflow tasks and the time worked on an individual task in a workflow:
  - Disposal
  - Donation
  - Zero Touch Refresh
  - Contract renewal

**Note:** For Contract cost, allocate and distribute amount asset options are used on the contract rate card to distribute the contract cost evenly. You must add assets to the Asset covered for the contract rate card.

- Return Merchandise Authorization (RMA)
- Lease
- Loaner
- Hardware asset refresh
- Asset reclamation

### **Note:**

Rate cards are included for the Hardware Asset Management workflows. To activate these rate cards, select the **Active** check box on the Task Rate Card form.

- Track the TCO benchmark of a hardware model. After you specify a TCO benchmark cost, the TCO benchmark threshold is calculated by using the following formula:

$$\text{TCO benchmark cost} * \text{TCO benchmark threshold percentage}$$

, where the TCO benchmark threshold percentage is set to 75% of the TCO benchmark cost by default. For more information, see [Hardware model details](#).

- Create a report and compare TCO for a group of assets. For more information on the TCO dashboard and reports, see [Asset analytics view](#).
- For real-time or offline TCO reports, normalize the asset TCO over its useful life and compare the normalized TCO for different models and assets.

- When the useful life of the asset is equal to or greater than asset life, the Normalized TCO (TCO per month) is calculated by using the following formula:

$$\left( \frac{\text{Purchase cost}}{\text{Useful life}} \right) + \left( \frac{\text{Sum of operational cost}}{\text{Asset life}} \right)$$

- When the useful life of the asset is lower than asset life, Normalized TCO (TCO per month) is calculated by using the following formula:

$$\left( \text{Purchase cost} + \text{Sum of operational cost} \right) / \text{Asset life}$$

**Note:** TCO isn't calculated and tracked for the following assets and consumables:

- Bundle assets
- Pallet assets
- Individual consumables

If you have used consumables as child assets, their expense lines are added to the parent asset.

- Excluded assets
- Assets that are a part of the opted out model categories.

## Manage onboarding of hardware products using Application Portfolio Management

Onboard your hardware products and manage the Technology Reference Model (TRM) life-cycle by using Technology Reference Model (TRM) of Application Portfolio Management along with the Hardware Asset Management application.

The Technology Reference Model enables you to maintain a list of hardware products with information on their approval of use within the organization. The TRM library is maintained by enterprise architects and used by application owners. For detailed information on TRM, see [Technology Reference Model](#). TRM enables application owners to request hardware products to be used in the organization, onboard the product, and define the TRM life-cycle phases.

Each hardware product model is associated with a set of life-cycle phases with a start and end date. The Hardware Asset Management application gives visibility into the TRM life-cycle phases for all hardware models associated with a product.

## Synchronizing TRM information with Hardware Asset Management

The HAM - Sync TRM information scheduled job in Hardware Asset Management runs daily to fetch information such as TRM phase and life-cycle for normalized product models from TRM. The job then sends the TRM details to the Hardware Asset Management application. When the scheduled job runs daily, any updates made to the TRM phase are synchronized with Hardware Asset Management.

You can view the following TRM-related information for a hardware product model in the Model Management view of Hardware Asset Workspace:

- The TRM phase using the **TRM product phase** field on the **Details** tab of the hardware product model.
- TRM life-cycle information using the **TRM Product Lifecycles** related tab of the hardware product model.

## Repair flow to fix defective hardware assets within a stockroom

Use the Repair flow to get the defective hardware assets in your stockroom fixed so that the repaired assets can be used in different Hardware Asset Management workflows.

By using the Repair flow, your organization can internally fix the assets that are damaged or out of the warranty period. The repaired assets can be put back to use after validation. There's no external vendor involved in the repair of defective assets.

As an asset manager, you can request repair of assets that are either defective or pending repair in your stockroom by submitting repair orders. For more details, see [Request repair of defective hardware assets in your stockroom](#). The repair flow is triggered when you submit a repair order. A repair order has repair order lines that are associated with repair tasks for the assets. The asset technician completes the repair tasks in the Hardware Asset Workspace or by using the Mobile Agent application. The repair flow completes after the repaired asset is evaluated. For details, see [Manage repair of defective assets in your stockroom in the Hardware Asset Workspace](#) and [Manage hardware asset repair tasks using the Mobile Agent application](#).

### Stages in the Repair flow

**1. Troubleshoot:** Stage to evaluate the defective asset and assess the following:

- Issues with the asset
- Parts required
- Steps to repair the defective asset

At this stage, an asset technician confirms if the asset is repairable, redeployable, or unrepairable. The Repair flow proceeds to the next stage only if the asset is repairable. Otherwise the repair order is marked as Complete.

**2. Repair:** Stage to confirm repair of the defective asset. In this task, the asset is either repaired, redeployed, or marked as unrepairable.

The repair flow proceeds to the next stage only if the asset is repaired. Otherwise the repair order is marked as Complete.

**3. Evaluate:** Stage to perform a quality control check of the repaired asset. Based on the evaluation results, the asset is either redeployed or disposed of. The Repair flow is completed after asset evaluation.

### Inventory picking for Hardware Asset Management

As an inventory user working in large stockrooms, use the Inventory picking feature to pick the assets in the stockroom easily and facilitate the asset pick-up by technicians.

The Inventory picking feature includes adding an Asset pick task in the following Hardware Asset Management workflows:

- [Standard Hardware Asset Request](#)
- [Hardware Refresh Request](#)
- [Sourcing workflow](#)

**i Note:** The Asset pick task is available only if it's enabled explicitly for a stockroom that's used to source asset requests, refresh requests, or sourcing requests. For details, see [Enable the Asset pick task for your stockroom in the Hardware Asset Workspace](#).

The Asset pick task enables you to pick the assets from any aisle and space within your stockroom. You can then drop the asset that you picked to a specified place within the stockroom. After you complete the Asset pick task, asset technicians can pick up the assets to fulfill the requests assigned to them.

For more information on the Asset pick task, see [Manage picking hardware assets within your stockroom for Hardware Asset Management workflows](#) and [Manage hardware asset pick tasks using the Mobile Agent application](#).

## Managing inventory by putting away assets in the stockroom drop-off location

Use the Asset put away feature to track asset movement efficiently in the inventory.

**i Important:** The Asset put away feature is available with Hardware Asset Management version 13.0.0 onwards.

The Asset put away task enables you to track asset movement from the receiving bay of the inventory to the designated space within the stockroom. The Asset put away task confirms that when an asset is received in the inventory, you have filled the aisle-space information for it. An Asset put away task is automatically created in the Hardware Asset Workspace when the following required business rules are met:

- When a hardware asset is created in the Hardware Asset Workspace and the **Aisle-space** field value isn't available, an Asset put away task is created. Open the Asset put away task and updated the **Drop off location** field value, to move the asset to designated aisle-space in the stockroom.

**i Note:** You can create an Asset put away task manually for the in stock assets in the inventory. For more information about manually creating an Asset put away task in the Hardware Asset Workspace, see [Create an Asset put away task](#).

- When the **Stockroom** field is updated for a hardware asset in the [Hardware Asset Details](#) form, an Asset put away task is created. Open the Asset put away task and update the **Drop off location** field value, to move the asset to the designated aisle-space in the stockroom.

**i Note:** You can create the Asset put away task for a stockroom only if the stockroom is enabled to perform warehouse tasks. For more information about enabling the feature, see [Enable the asset put away task for your stockroom](#).

In the Hardware Asset Workspace, the inventory users can perform the following actions:

- Create an Asset put away task manually for the in stock assets. For more information, see [Create an Asset put away task](#).
- View the open put away tasks related to the inventory and stockroom. For more information, see [View open put away tasks for your stockroom](#).
- Update the **Drop off location** field for the open task in the Put away form and close it. For more information, see [Close an Asset put away task](#).

Using the ServiceNow Agent application, you can scan the in stock assets in the inventory and put away them in the scanned drop-off location. After the asset is placed in the drop-off location within the stockroom, you can close the Asset put away task. For more information on the mobile experience for Asset put away task, see [Manage asset put away using the ServiceNow Agent application](#).

## Zero Touch request flow

Fulfill the hardware requests of your employees through an external provider with minimal intervention by using the Zero Touch request flow.

### Zero Touch request flow requirements

The Zero Touch request flow has the following basic requirements:

1. Your organization and the provider must be on the ServiceNow Cloud.
2. The ServiceNow Service Exchange application must be configured on the ServiceNow instance.
3. Your provider must have published the Remote catalog items or Remote record producers.

### Zero Touch request workflow

1. An employee of your organization submits a catalog request for a catalog item associated with the Zero Touch request flow.

A catalog request is created with the **Request state** as **Pending Approval**.

2. The approver reviews the catalog request and performs either of the following tasks:
  - Rejects the catalog request: The **Request state** changes to **Closed Rejected** and the **Stage** of the requested item changes to **Closed incomplete**.
  - Approves the catalog request: The **Request state** changes to **Approved** and the **Stage** of the Requested item changes to **Pending Confirmation**.

**Note:** If a requester who doesn't have access to the remote record producer submits a catalog request, the requested item is marked as **Closed incomplete**.

3. After the catalog request is approved, the request goes through the following changes:
  - a. The request is sent to the provider based on the Remote record producer configured in the catalog item mapping.
  - b. The **Stage** of the requested item changes to **Pending confirmation** on the ServiceNow instance of your organization.
4. The provider sends a Scratchpad update confirming the order to your ServiceNow instance. The **Stage** of the requested item changes to **Pending shipment**.
5. The provider ships the asset to your employee and sends a Scratchpad update with the shipment details to your ServiceNow instance.

The following events happen when the provider ships the asset:

- An asset with the serial number and asset tag specified by the provider is assigned to the employee.

**Note:** An email notification is sent to the asset managers in the following scenarios to take necessary actions:

- An asset record with the serial number provided by the provider exists on your ServiceNow instance.
- The model number provided by the provider isn't available on your ServiceNow instance.
- The asset that is shipped is a consumable.

- Based on the tracking number and shipping carrier details that the provider specified in the Scratchpad update, a unique shipment record is created for the shipment. You can view the shipment records with the associated assets in the Assets operations view of the Hardware Asset Workspace. For more details, see [View hardware asset shipment details](#).

When shipping an asset bundle, the provider can choose to ship the assets fully through a single shipment or partially through multiple shipments. Only when the assets are fully shipped, the **Stage** of the requested item changes to **Pending receive**.

6. The employee acknowledges the receipt of the asset on a mobile device. The Stage of the requested item changes to Complete.

**i Note:** Receipt of the consumable asset can't be confirmed on a mobile device. The asset manager takes the necessary actions based on the email notifications received and confirms on behalf of the employee.

For more details on creating and fulfilling hardware asset requests through the Zero Touch request flow, see [Manage hardware asset requests using the Zero Touch request flow](#).

## Receiving hardware and consumable assets at stockrooms

As an inventory user, you can receive assets at a stockroom from any workflow using the unified and standardized receiving mechanism.

**i Important:** The standardized asset receiving mechanism is available with Hardware Asset Management version 13.0.0 and later.

With the standardized receiving process, you don't need to be familiar with the specific workflow to which the assets belong. Therefore, you can receive hardware and consumable assets from different shipments originating from sources, like transfer orders, purchase orders, or any other workflows seamlessly.

## Benefits of standardized receiving mechanism

- An intuitive user interface standardizes the receiving process, eliminating unique receiving methods for different workflows.
- A standard and common entry point for the receiving process reduces the time spent to receive assets and enhances the efficiency of inventory users.
- The ability to receive assets in bulk using Excel templates.
- Improved asset data quality by requiring assets to have unique identifiers when they're received at the stockroom.
- Comprehensive validations makes sure that there are no discrepancies in the asset data.

## Requirements and limitations

- You can receive enterprise assets in the Hardware Asset Workspace only if the Enterprise Asset Management applications is activated.
- You can receive hardware assets in the Enterprise Asset Workspace only if the Hardware Asset Management application is activated.
- You can only receive complete quantity of consumables.
- You can receive assets from a purchase order line starting from the Zurich release, as well as Yokohama Patch 11 and Xanadu Patch 10 or later.

## Asset receiving mechanisms

You can receive a single asset or multiple assets in bulk using any of the following options on the enhanced stockroom form:

- **Receive assets:** You can either search for an asset using its Asset Tag, Serial Number, or MAC address and receive it, or select one or more assets from the list of inbound shipment assets and receive them. For more details, see [Receive a hardware asset at a stockroom in the Hardware Asset Workspace](#) and [Receive assets from inbound shipments at your stockroom in the Hardware Asset Workspace](#).
- **Import assets:** You can download the Excel template, add the asset details that you want to receive, and import the Excel template. During the import process, the system performs validations, and you can view the imported asset records, validation status, and comments in the Import asset row [sn\_itam\_cmn\_import\_asset\_row] table. Based on the validation status, you can select and receive the assets. If there are any issues with the asset records, you must address those issues before you can receive the assets. For more details, see [Import and receive assets in bulk at your stockroom in the Hardware Asset Workspace](#).

When any asset is received at the stockroom, the following changes happen:

- The State of the asset changes from **In transit** to **In stock**.
- The stockroom field on the asset form is automatically updated.
- The receive tasks in the source workflows associated with the asset that you received are automatically closed.

## Asset performance reports in the Hardware Asset Workspace

Gain insights into the overall operational efficiency of your organization's hardware assets by using the asset performance reports available in the Asset analytics view.

**i Important:** Asset performance reports are available with Hardware Asset Management version 13.0.0 and later.

Asset performance involves assessing how effectively and efficiently assets fulfill their intended functions within an organization. The evaluation includes measuring and analyzing key performance indicators (KPIs), such as:

- Asset availability to determine when the asset is operational
- Mean time between failures (MTBF) to measure reliability
- Mean time to repair (MTTR) to measure repair efficiency
- Total asset task time summary to measure the total time worked on the related tasks for an asset and its child assets.

## Benefits of tracking asset performance

### Reduce unplanned downtime

Monitoring asset health in real-time help prevent and predict issues before they cause downtime.

### Improve maintenance efficiency

Metrics like MTTR and MTBF help you schedule maintenance more effectively, reducing wasted time, and improving technician efficiency.

### Maximize asset life and return on investment (ROI)

By detecting early signs of wear and tear and scheduling timely repairs, organizations can make their equipment last longer and delay the need for replacements.

### Enhance financial planning

Insights into performance help identify models or locations that aren't performing well or have ongoing problems, guiding better investment choices.

### Align operations with service levels

Tracking availability helps assets meet the required uptime targets set by service level agreements (SLAs), compliance standards, or production schedules.

## Considerations, requirements, and limitations

- Asset key performance indicators (KPIs) aren't calculated for pallets, consumable, and bundle assets.
- Asset KPIs aren't calculated by default.
- To track the asset KPIs that include Asset availability, MTBF, and MTTR, you must perform the following configurations:

#### 1. Opt in to the model categories of the assets for which you want to monitor the KPIs.

**Note:** If a model category has child categories, selecting the parent category for performance tracking doesn't automatically include the child categories. You need to opt in to the specific child categories you want to track.

- #### 2. Define an operation schedule, which is a collection of schedule entries that specify the operational status and total operational duration for any entity that references the schedule. The schedule entries define calendar hours of operation within a schedule.

For details, see [Create an operational schedule for hardware assets](#).

**Note:** If an operational schedule isn't defined, the Default operation schedule is applied.

#### 3. Create an Asset schedule to associate the hardware assets with an operational schedule.

**Note:** If an asset isn't associated with an operational schedule, the Default asset schedule will be applied.

- The calculation of asset KPIs for hardware assets begins when the asset transitions to the In use state for the first time.
- KPIs are tracked until the state of the asset changes to Retired or Missing.

## Calculation of asset KPIs

The KPIs are calculated based on the tasks associated with the asset and the operational schedule of the asset. The KPI values are stored in the Asset availability [sn\_ent\_asset\_availability] table, which extends the Service Availability table.

Performance tracking for assets that belong to a model category opted in for performance tracking begins when the asset's state changes to In use for the first time. A record is then created in the Asset Availability table with **Asset availability %** set to **100**. The Asset availability % value decreases when the asset experiences an outage.

### Outage record creation

An outage record is created in the Outages [cmdb\_ci\_outage] table in the following unplanned outage scenarios:

- The state of an asset changes from In use to any of the following:
  - In stock - Pending repair
  - In stock - Pending disposal
  - In stock - Defective
- An incident is created

The outage record is closed when:

- The status of the asset changes back to In use.
- The incident is closed.

The duration of the outage is calculated when the repair task is closed.

### Handling overlapping outages

Outages can overlap due to multiple events being logged within the same time window. To maintain accurate KPI calculations, overlaps between unplanned outages are handled with these rules:

- When multiple unplanned outages, such as an asset moving from In use to In stock - pending repair state and an incident being created on the same asset, occur during overlapping time periods, they are not treated as separate outages. Instead, they are merged into a single outage to avoid overstating downtime.
- The total duration of this combined outage is calculated by merging all overlapping time intervals.
- A sample outage calculation is here:
  1. Outage A: 10:00 AM – 12:00 PM
  2. Outage B: 11:30 AM – 1:00 PM

Result: The resulting outage window is 10:00 AM – 1:00 PM (a single 3-hour outage).

### Passing on outages through the asset hierarchy

In an asset hierarchy, outage on assets or their child assets are handled as follows:

- If a child asset with the **Required** field set to **true** experiences an outage, its parent asset will also have the outage.
- If a parent asset has an outage, all its child assets will also have the outage.

### Asset KPIs

Asset KPI	Formula
Asset availability (in %)	$\frac{(\text{Operating hours} - \text{Total planned downtime} - \text{Total unplanned downtime})}{(\text{Operating hours} - \text{Total planned downtime})}$

### Asset KPIs (continued)

Asset KPI	Formula
Mean time between failures (MTBF) (in hours)	$(\text{Operating hours} - \text{Total planned downtime} - \text{Total unplanned downtime}) / (\text{Total unplanned outages})$
Mean time to repair (MTTR) (in hours)	$(\text{Total unplanned downtime}) / (\text{Total unplanned outages})$

Definition of the variables used in the KPI calculations is as follows:

Variable	Definition
Operating hours	The duration from when the asset first transitioned to the In use state until the current date and time within the asset schedule.
Planned downtime	The duration from when the asset transitioned from the Work in progress state to the Closed complete state.
Unplanned downtime	The duration from when the asset transitions from the In use state to any repair state, such as In stock - Pending repair, In stock - Pending disposal, or In stock - Defective, until it returns to the In use state, within the asset schedule.  If there are overlapping durations between the repair state and an incident on the same asset, the combined duration of both is considered. The asset schedule is also considered when determining the outage duration.
Total unplanned outages	The count of total outage records for an asset. Overlapping and concurrent outages are consolidated as one outage.

### Accessing asset KPI reports

- Contextual sidebar of the asset Form: You can view the following reports by using the options available in the contextual sidebar of the asset form.
  - [Asset availability and related KPIs report for an individual asset.](#)
  - [Asset task time summary report for all hardware assets.](#)
- Asset performance tab on the Asset analytics view: You can view the average values of the KPIs, including Average availability, Average MTTR, and Average MTBF, for all the assets that are being tracked. Additionally, you can see a list of the assets that contributed to the calculation of these KPIs. For details, see [Asset analytics view in the Hardware Asset Workspace](#).

### Scheduled job for calculation of asset KPIs

- The *Calculate asset performance KPIs* scheduled weekly job runs every Saturday to calculate the KPIs for the assets that belong to the model categories opted in for performance tracking. These KPIs are then reflected in the Asset availability and related KPIs report, which displays the most recent KPI values.

**Note:** To track historical KPIs for existing assets in the opted-in model categories, run the *Calculate availability for historical data* job. This job considers the following tasks associated with an asset to calculate the outages and KPIs:

- RMA task
- Repair task
- Troubleshoot task
- Evaluate task
- Recall task

• The *Asset availability data collection* scheduled weekly job runs every Sunday to calculate the average values of the KPIs that includes Average availability, Average MTTR, and Average MTBF. The job then generates the reports in the Asset performance tab of the Asset analytics view.




## Configuring Hardware Asset Management

Configure Hardware Asset Management to have centralized asset data for accurate inventory and insights, automate the IT life cycle with workflows, and reduce the asset costs and risks.

### Configuration overview

Here's an overview of the process for configuring Hardware Asset Management.

#### Configure Hardware Asset Management

Step	Action	Resource
 Install Hardware Asset Management	Get the Hardware Asset Management application from the <a href="#">ServiceNow Store</a>  .	<a href="#">Install Hardware Asset Management</a>
 Use Hardware Asset Management	Use Hardware Asset Management to manage your hardware and consumable assets and reduce the asset costs and risks.	<a href="#">Using Hardware Asset Management</a>

### Install Hardware Asset Management

You can install the Hardware Asset Management application (sn\_hamp) if you have the admin role. The application includes demo data. Install related ServiceNow® Store applications and plugins if they are not already installed.

#### Before you begin

Review the [Hardware Asset Management](#)  application listing in the ServiceNow Store for information on dependencies, licensing or subscription requirements, and release compatibility.

Role required: ham\_admin

### About this task

The following items are installed with Hardware Asset Management:

- Roles
- Scheduled jobs
- Tables

For more information, see [Installed with Hardware Asset Management](#).

### Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.
2. Find the Hardware Asset Management application (sn\_hamp) using the filter criteria and search bar.

You can search for the application by its name or ID. If you cannot find the application, you might have to request it from the ServiceNow Store.

In the list next to the **Install** button, the versions that are available to you are displayed.

3. Select a version from the list and select **Install**.

In the Review Installation Details dialog box, any dependencies installed with your application are listed.

4. If you're prompted, follow the links to the ServiceNow Store to get any additional entitlements for dependencies.
5. **Optional:** If demo data is available and you want to install it, select the **Load demo data** check box.  
Demo data comprises the sample records that describe application features for the common use cases. Load the demo data when you first install the application on a development or test instance.

6. Select **Install**.

## Using Hardware Asset Management

Use the Hardware Asset Management application to manage your hardware and consumable assets.

### Work with hardware normalization

Asset Management Hardware Model Normalization enables users to normalize the details, such as manufacturer, product, model, and device type, of your hardware and consumable models. Data from the models is compared against the data in the Hardware Model Normalization Content Service.

The Normalization Data Services Client (com.glide.data\_services\_canonicalization.client) plugin is also activated when you activate the Hardware Model Normalization plugin.

- Note:** This documentation is for Hardware Model Normalization. For additional information on Asset Management, see the [Asset Management documentation](#).

## Scheduled jobs

To standardize your hardware and consumable models, the asset data must be normalized. You can manually update the model records with the normalization content, or you can compare your data against the Hardware Asset Management Content Service.

The *HAM- Hardware Normalization* scheduled job runs daily. This job does not add, remove, or merge models, nor does it modify original fields like Model Name, Manufacturer, or Model Number. It only updates the normalization-related fields for existing models, such as Normalized Product, Normalized Manufacturer, Normalized Model, and so on.

Content from the Hardware Model Normalization Content Service is pulled into the ServiceNow AI Platform. Use the Asset Job Log (`asset_job_log`) table to review the status of the scheduled job.

The normalization status of models can be reverted by clicking **Revert Normalization** on the model. Any normalization that occurred on the model gets reverted and the rule gets deactivated. When the scheduled job runs, the models are processed with the active rules and the status is updated.

The scheduled job generates hardware and consumable model reports. These reports identify the overall status of your models and provide a breakdown of the normalization status.

The following reports are included.

- Hardware Product Overall Normalization Status
- Consumable Product Overall Normalization Status
- Hardware Model Normalization Status
- Consumable Model Normalization Status

## Related topics

[Hardware Model Normalization](#)

## Opt-in to the Hardware Asset Management Content Service

Opt in to the Hardware Asset Management Content Service to improve the normalization process by sharing hardware and consumable model data from your organization with ServiceNow.

## Before you begin

Role required:

- `ham_admin`: for non domain separated instance
- `ham_admin` plus `domain_admin`: for domain separated instance

## About this task

By opting in to the Hardware Asset Management Content Service, your data is securely shared with ServiceNow to build the content service repository. Adding to the content service allows more models be normalized automatically. These updates occur weekly.

The content updates are based on data from the hardware and consumable models, lifecycles, and custom hardware product models sent back to the Hardware Asset Management Content Service.

Any data that is retrieved by the content service remains anonymous and secure, following ServiceNow privacy policies. After the data has been reviewed, it is properly disposed of.

## Procedure

1. Navigate to **All > Asset > Administration > Hardware Model Normalization > Content Service Setup**.
2. Read the Hardware Asset Management Content Service agreement.
3. Select **Yes, I have read and accept the Opt-In Agreement**.
4. Click **Opt-in**.
5. If there is any hardware model, consumable model, or lifecycle data that you want to exclude, toggle the option on the Content Service Setup form.
6. Click **Save**.

## Example: Opt-in to the Hardware Asset Management Content Service

Your organization has decided to enable the Hardware Asset Management Content Service.

Navigate to the Content Service Setup module and review the Hardware Asset Management Content Service agreement.

### Hardware Asset Management Content Service agreement

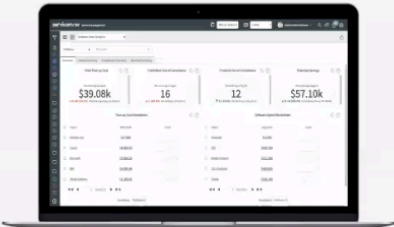
Your company has opted-out of the ServiceNow Hardware Asset Management Content Service program  
Change your mind? Opt-in below ✕

#### What is the Hardware Asset Management Content Service?

ServiceNow Content Service is an IT Asset Management shared service that provides customers continual data quality improvement.

By anonymously and securely providing ServiceNow the unrecognized details of Hardware/Consumable Models, the Hardware Asset Management Content Service will, in return, supply updates to the Normalization Library. This new content will improve your normalization hit ratios and enable you to better manage your hardware assets.

Note that ServiceNow's privacy policies guide how hardware details remain anonymous and secure, and will be properly disposed of after they are reviewed.



\*  Yes, I have read and accept the Opt-In Agreement

Select **Yes, I have read and accept the Opt-In Agreement** to display the Content Service Setup page.

You decide that you don't want to send hardware model data to the Hardware Asset Management Content Service. Toggle the button next to Hardware Models to opt out of sending the hardware model asset data.

## Content Service Setup

Content Service Setup
Save

---

HARDWARE ASSET DATA

**▼ Hardware Models**

Definition: A model created to classify and reduce duplication of hardware models when new models are identified. Only Hardware Models with a status of Match not found, Manufacturer Normalized, Partially Normalized or Manually Normalized will be transferred.

Details transferred: Name, Manufacturer, Model number, Short description, Model category, Status, Normalized name, Normalized manufacturer, Normalized model number, Device type, Normalized status, Normalization rule.

**▼ Consumable Models**

Definition: A model created to classify and reduce duplication of consumable models when new models are identified. Only Consumable Models with a status of Match not found, Manufacturer Normalized, Partially Normalized or Manually Normalized will be transferred.

Details transferred: Name, Manufacturer, Model number, Short description, Model category, Status, Normalized name, Normalized manufacturer, Normalized model number, Device type, Normalized status, Normalization rule.

**▼ Hardware Lifecycles**

Definition: Hardware Model Lifecycle records representing the external or manufacturer defined lifecycle of the hardware product. Only Hardware Model Lifecycles not created by ServiceNow with a lifecycle type other than internal will be transferred.

Details transferred: Lifecycle type, Lifecycle phase, Source, Phase start date, Phase end date, Risk, Normalized name, Normalized manufacturer, Normalized model number, Device type.

**▼ Consumable Lifecycles**

Definition: Consumable Model Lifecycle records representing the external or manufacturer defined lifecycle of the consumable product. Only Consumable Model Lifecycles not created by ServiceNow with a lifecycle type other than internal will be transferred.

Details transferred: Lifecycle type, Lifecycle phase, Source, Phase start date, Phase end date, Risk, Normalized name, Normalized manufacturer, Normalized model number, Device type.

**▼ Custom Product Models**

Definition: A model created to classify new models not provided by content service.

Details transferred: Name, Manufacturer, Model number, Device type, Product.

Click **Save**.

Your organization has decided that they don't want to send any of their data and they want to opt-out of the Hardware Asset Management Content Service. To stop sending your data, toggle all the buttons off.

A message appears verifying that you want to opt-out of using the Hardware Asset Management Content Service.

### Opting-Out of the ServiceNow Content Service

Opting-Out of the ServiceNow Content Service
✕

Opting-out of the ServiceNow Hardware Asset Management Content Service means that your company will no longer receive content updates specific to your unique Hardware model footprint that exists within your environment and CMDB. You will still receive incremental content updates based on what the Content Service team can create from other sources.

Your company can rejoin the ServiceNow Hardware Asset Management Content Service at anytime through the Content Service Setup module in the Hardware Asset Management application.

Opt-Out

Click **Opt-Out**.

You are returned to the Hardware Asset Management Content Service agreement and you can opt back in at anytime.

### Import and export content data

Import and export content data to the ServiceNow Hardware Asset Management content service to improve the normalization process. On-premise users can use the Manage Hardware Library module to import or export data via a zip file.

**Before you begin**

Role required:

- ham\_admin
- domain\_admin (if domain separation is enabled)

**Procedure**

1. Navigate to **Modules** and search for **Manage Hardware Library**.
2. Open the Manage Hardware library form layout and select the **Active** check box to activate the module.
3. Click **Save** and refresh the form layout.
4. Navigate to the Manage Hardware Library module.
5. Import the content data to get the new data into your system.
  - a. Click **Import Hardware Library Content**.
  - b. Click **Attach Content File** and then select the zip file that contains the content.
  - c. Click **Run Import**.  
After the data is imported, the content update schedule job, *HAM - Apply latest content changes*, is triggered to process the content updates.
6. Export content to send the custom data or any hardware models that are not fully normalized to the ServiceNow content service team.
  - a. Click **Content Service Opt-in: Export Hardware Normalization Content**.
  - b. If you already haven't opted in to share the data with ServiceNow content service, click **opt-in** and refresh the Manage Hardware Library page.
  - c. Click **Run Export**.
  - d. After the status changes to Ready for Download, refresh the page.  
A zip file is created and appears at the top of the Manage Hardware Library page. If there is no content to export, an error message appears informing you that no content exists.
  - e. Download and send this zip file to the ServiceNow content service team.

**Create a hardware or consumable model**

To begin tracking your hardware and consumable assets, create a hardware or consumable model. Then, add lifecycle information to keep track of the lifecycle phase of your model.

**Before you begin**

Role required: admin or asset


**Procedure**

1. Navigate to one of the following paths.
  - **Product Catalog > Product Models > Hardware Models**
  - **Product Catalog > Product Models > Consumable Models**

2. Click **New**.

3. Complete the following steps if you are adding a hardware model.

- a. On the Hardware Model form, click the **Consumable Model Fields** section.
- b. Click **Save**.
- c. To add additional information on the asset, click the [Hardware model details](#).
- d. To add unit information, click the [Hardware model details](#).
- e. To link a compatible model, click the [Compatibles](#) and then click **Add Compatible**.
- f. To add a model substitution, click the [Substitutes](#) and then click **Add Substitution**.
- g. To manually normalize your hardware model, click the [Normalization section](#).
- h. To add a configuration item, click the [Configuration Items](#).
- i. To add your model to the Product Catalog, click the [Hardware model details](#).
- j. To publish the model to the Hardware Catalog, click the **Publish to Hardware Catalog** related link.
- k. To add related assets, click the [Hardware model details](#).
- l. To add a model component, click the [Model Components](#).
- m. To add vendor information to your model, click the [Vendor Catalog Items](#) and click **New**.
- n. To add lifecycle information, click the [Hardware Model Lifecycles](#), click **New**.  
If a lifecycle with the same source, lifecycle type, lifecycle phase, and source exists, an error message appears.

 **Note:** While you can delete lifecycles that you've added, you can't delete lifecycles that are created from the Hardware Asset Management Content Service.

4. Complete the following steps if you are adding a consumable model.

- a. On the Consumable Model form, the [fill in the details](#).
- b. Click **Save**.
- c. To add additional information on the consumable asset, click the [Hardware model details](#).
- d. To add your model to the Product Catalog, click the [Hardware model details](#).
- e. To add vendor information to your model, click the [Vendor Items related list](#).

f. To add lifecycle information, click the [Consumable Model Lifecycle related list](#) and click **New**.

If a lifecycle with the same source, lifecycle type, lifecycle phase, and source exists, an error message appears.

**Note:** While you can delete lifecycles that you've added, you can't delete lifecycles that are created from the Hardware Asset Management Content Service

5. Click **Submit**.

**Result**

The model appears in either the Hardware Model or Consumable Model list.

**Note:** If you want to exclude this model from the Hardware Asset Management Content Service, select the **Exclude from content service** option.

**Example: Create a hardware model**

You've purchased the ThinkPad T43 and you need to begin tracking the asset.

To begin tracking your asset, add the following information to the Hardware form.

Field	Description
Manufacturer	Lenovo
Name	ThinkPad T43

Click **Save**.

The **Display name** field is updated with the name of the manufacturer and the name of the hardware.

**Hardware form**

Currently, the Lenovo ThinkPad T43 is generally available. Add the lifecycle status to accurately track the phase of the asset.

Click the Hardware Lifecycle Model related list and click **New**. Add the following information to the Hardware Model Lifecycle form.

Field	Description
Lifecycle type	General Availability
Phase start date	2019-10-08
Phase end date	2019-10-31

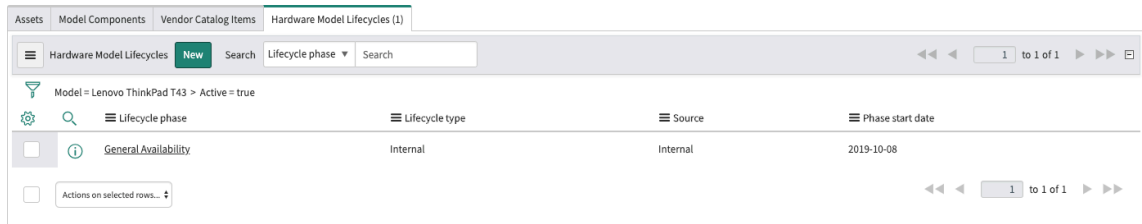
Click **Submit**.

The lifecycle is added to the record.

### Hardware Model Lifecycles

Related Links

[Publish to Hardware Catalog](#)



When the general availability phase is over, the ThinkPad T43 will be discontinued. Add the end of life information to the asset to accurately track the lifecycle.

Click the Hardware Lifecycle Model related list and click **New**. Add the following information to the Hardware Model Lifecycle form.

Field	Description
Lifecycle type	End of Life
Phase start date	2019-11-01
Phase end date	2019-11-30

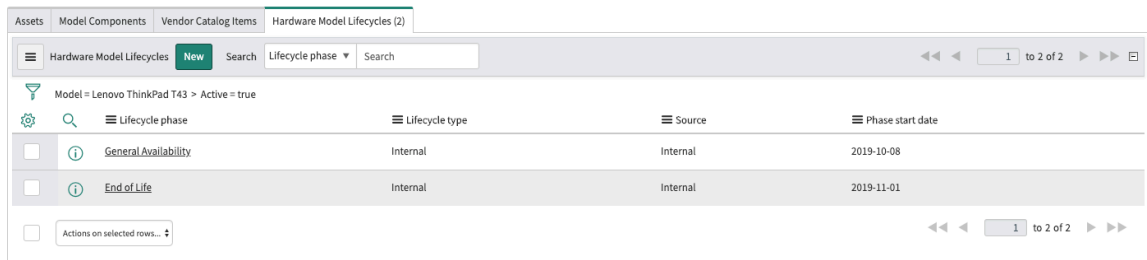
Click **Submit**.

The End of Life lifecycle is added to the record and both lifecycle phases are displayed in the Hardware Model Lifecycle related list.

### Lifecycle phases in the Hardware Model Lifecycles list

Related Links

[Publish to Hardware Catalog](#)



### What to do next

After you've added your hardware or consumable models, you can [normalize the data](#).

## Normalize hardware and consumable models

After you've created your hardware and consumable models, normalize the information of the model.

### Before you begin

Role required: admin or asset

### About this task

#### Note:

- If you've opted in to the Hardware Asset Management Content Service, you can override any life cycle values that were added from the schedule job, or you can manually add your own life cycles.
- For a model to be fully normalized, you must add manufacturer details and a model number, and optionally a model name.
- If you update the **Device Type** field, the normalization status is updated.

### Procedure

1. Navigate to one of the following paths.


- **Product Catalog > Product Models > Hardware Models**
- **Product Catalog > Product Models > Consumable Models**

2. To create a model, select **New**.

3. On the Hardware Model or Consumable Model form, [fill in the details](#).

4. Select **Save**.


If the information is available, the model is compared against the data in the Hardware Normalization Content Service, and the model is normalized.

 **Note:** If the hardware or consumable model is normalized against the Hardware Asset Management Content Service, a life cycle is added if applicable life cycles exist in the content service.

5. Based on the details you added, complete the following steps.

a. If the normalization status of your model is Partially Normalized or Publisher Normalized, select the **Normalized** section and **Consumable Model Fields** section to normalize the model manually.

b. If the normalization status of your model is Fully Normalized, but you don't like the information that was added, select **Revert Normalization**. All normalization fields are cleared and you can manually normalize your model.

 **Note:** This option is only available if the model is Fully Normalized, Partially Normalized, or Manufacturer Normalized. **Revert Normalization** is visible only to users with the ham\_admin role in a non-domain separated instance and is visible to users with the role ham\_admin + domain\_admin in a domain-separated instance. For more information, see [Revert normalization of hardware and consumable models](#).

6. Select **Save**.

The **Normalization Status** field is updated.

## Example: Normalize a hardware model

You've created a hardware model for the Lenovo ThinkPad T43 and you want your asset information to be consistent across the organization.

Review the normalization status of the model by selecting the **Normalization** section.

**Normalization status**

Hardware  
Lenovo ThinkPad T43

Display name: Lenovo ThinkPad T43

Manufacturer: Lenovo

Name: ThinkPad T43

General | Information | Compatibles | Substitutes | **Normalization** | Configuration items | Product Catalog

Normalized manufacturer: Lenovo

Product: ThinkPad T43

Model:

Normalization status: Partially Normalized

Device type: Notebook computers

Exclude from content service:

Update | Delete | Add Compatible | Add Substitution | **Normalize** | Revert Normalization

Related Links

Publish to Hardware Catalog

Assets | Model Components | Vendor Catalog Items | Hardware Model Lifecycles

Assets | New | Search | Asset tag | Search

Model = Lenovo ThinkPad T43

Asset tag | Assigned to | Configuration Item | Company | Cost

No records to display

The normalization status is set to Partially Normalized because the name of the model is missing.

In the **Model** field, enter 2687DTU.

Select **Save**.

The **Normalization Status** field displays **Manually Normalized**.

## Manually Normalized status

### Revert normalization of hardware and consumable models

Revert the normalization of hardware and consumable models in the Hardware Asset Workspace.

#### Before you begin

Role required: ham\_admin, asset

#### About this task

Hardware and consumable models with a status of **Fully Normalized**, **Partially Normalized**, or **Manufacturer Normalized** can be reverted.

#### Procedure

1. Navigate to a normalized hardware or consumable record.

Interface	Action
Core UI	<ul style="list-style-type: none"> <li>○ For hardware models, navigate to <b>All &gt; Product Catalog &gt; Product Models &gt; Hardware models</b>.</li> <li>○ For consumable models, navigate to <b>All &gt; Product Catalog &gt; Product Models &gt; Consumable models</b>.</li> </ul>
Hardware Asset Workspace	<ul style="list-style-type: none"> <li>○ For hardware models, navigate to <b>All &gt; Hardware Asset Workspace &gt; Model management &gt; Hardware models</b>.</li> <li>○ For consumable models, navigate to <b>All &gt; Hardware Asset Workspace &gt; Model management &gt; Consumable models</b>.</li> </ul>

2. Open a hardware or consumable model record that is already normalized.

3. Click **Revert Normalization**.
4. Click **OK** on the confirmation message box.

### Result

After the revert normalization process is complete, the following changes take place:

- All the normalized fields present in the model are reverted and the normalization status changes to **Match not Found**.
- Fields are reset to their original values and any rule associated with the model is deactivated.
- After deactivation of the rule, revert normalization is run on all models that were normalized using that rule before.
- The deactivated rule can no longer normalize any more models. The deactivated rule can't be reactivated. It's a one time procedure.
- The **Revert Normalization** option on the model record is replaced with the **Normalize** option.

### Add a custom product

If you have a product that is not represented in the Asset Management Content Service yet, you can create a custom product.

### Before you begin

Role required: ham\_admin

### Procedure

1. Navigate to **All > Asset > Administration > Custom Products**.
2. Click **New**.

Field	Description
Name	Name of the custom product.
Manufacturer	Name of the manufacturer.
Description	Description of the product.
Device type	Type of device.
Active	Option that indicates the product is active.
Exclude from content service	Option that indicates that the product will be excluded from the content service.

3. Click **Submit**.

### What to do next

After you've created the hardware model, [normalize the model](#).

### Add a custom hardware model

If you have a hardware model that isn't represented in the Asset Management Content Service yet, you can create a custom model.

### Before you begin

Role required: ham\_admin

**Procedure**

1. Navigate to **All > Asset > Administration > Custom Models**.
2. Click **New**.

**Custom Hardware Model Library form**

Field	Description
Model number	Number associated with the hardware model.
Product	Name of the product.
Description	Description of the hardware model.
Name	Name of the model.
Active	Option that indicates the model is active.
Exclude from content service	Option that indicates the model is excluded from being sent to the content service.

3. Click **Submit**.

**What to do next**

After you've created the hardware model, [normalize the model](#).

**Work with Asset and CI**

Asset and configuration item (CI) management refers to creating assets, setting appropriate states and substates, synchronizing assets and CIs, managing consumables, and retiring assets.

**Create assets**

Create hardware, software, consumable, bundle, pallet, mobile, and facility assets using the Core UI or the Hardware Asset Workspace.

**Before you begin**

Role required: asset

**Procedure**

1. Create an asset.

Interface	Action
<b>Core UI</b>	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Asset &gt; Portfolios &gt; All Assets</b>.</li> <li>b. Select the type of asset that you want to create.</li> <li>c. Select <b>New</b>.</li> </ol>
<b>Hardware Asset Workspace</b>	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Hardware Asset Workspace &gt; Asset estate</b>.</li> <li>b. Select <b>New Asset</b>.</li> <li>c. In the dialog box, select the asset type and then select <b>Create</b>.</li> </ol>

2. On the Asset record fields form, fill in the fields.

For a description of the field values, see [Asset record fields](#).

3. Submit or save the asset form.

### Retire assets

You can retire an asset at any time.

### Before you begin

Role required: asset

### About this task

After you change the state of an asset to **Retired**, the **Substate** field is active. When you retire an asset, the status of related CIs also changes to **Retired**. Selecting a substate is not required, but can be helpful for tracking and reporting.

**Note:** When you manually change the state of the asset from **Retired** to any other value such as **In use** the asset becomes active again.

### Procedure

1. Navigate to **All > Asset > Portfolios > All Assets**.
2. In **State**, select **Retired**.
3. **Optional:** In **Substate**, select **Disposed**, **Sold**, **Donated**, or **Vendor Credit**.
4. Click **Update**.

### Delete assets

You can delete an asset at any time.

### Before you begin

**Note:** If an asset is a part of an asset bundle, the asset cannot be deleted.

Role required: asset

### About this task

A confirmation must be accepted before the asset and components are permanently deleted. If a CI and asset are linked, deleting one also deletes the other.

Only delete an asset to clean up errors. For tracking purposes, the correct method for managing an asset that is no longer in use is to change the state of the asset to **Retired**.

### Procedure

1. Navigate to **All > Asset > Portfolios > All Assets**.
2. Select the check box to the left of the asset **Name**.
3. In the **Actions** choice list below the list, select **Delete**.

### Map asset and CI fields

When you map the asset and CI fields, synchronization happens both ways. Changes to either the asset or CI record are updated to the logically mapped record. You can synchronize custom mappings and mappings provided with the base instance.

## Before you begin

Role required: admin or asset

- Note:** If you upgraded from a prior release and customized the *AssetAndCISynchronizer* script include before the upgrade, you must overwrite the customization and then recreate the custom mappings.

## About this task

You can conditionally map the fields for synchronization. For example, you can map the Location field only for a hardware asset and not for a software asset. So when an asset is updated, the **Location** field is synchronized only for the hardware asset.

- Note:** You can't map the asset and CI fields if the asset value is present only in the Hardware [alm\_hardware] table and not in the Asset [alm\_asset] table.

## Procedure

- Navigate to **All > Asset > Administration > Asset-CI Field Mapping** and click **New**.
- From the **Asset field** list, select the field.  
This list refers to the alm\_asset table.
- Select the logically associated field from the **Configuration Item field** list that refers to the cmdb\_ci table.
- To create conditions for the mapping, click the **Advanced view** related link.
  - To specify conditions for synchronizing the asset field with the CI field, use the **Asset mapping condition** builder.
  - To specify conditions for synchronizing the CI field with the asset field, use the **Configuration Item mapping condition** builder.
- Select the **Active** check box to activate the mapping.
- Select **Submit**.

## Map asset state and CI install status

Map the asset **State** and **Substate** fields to the **CI Install Status** field. The **Substatus** field of the **CI Install Status** field should not be used for hardware CIs.

## Before you begin

Role required: admin or asset

- Note:** If you upgraded from a prior release and customized the *AssetAndCISynchronizer* script include before the upgrade, you must overwrite the customization and then recreate the custom mappings.

## About this task

Asset synchronization does not update this field when hardware assets are updated. When you create the mapping, you can set the synchronisation direction from Asset to CI, but not from CI to Asset. For non-Hardware CI classes, you can set the synchronisation in both the directions.

The hardware and consumable assets don't have the Build state and Design substate because they are already prepared. Therefore, the Asset CI install status mappings table doesn't have a mapping for the Build state. For more details on asset states, see [Set asset states and substates](#).

## Procedure

### 1. Navigate to **All > Asset > Administration > Asset-CI Install Status Mapping**.

By default, only custom mappings display. The list of mappings uses the filter condition of **[Out of the box] [is] [False]**.

### 2. Click **New**.

### 3. From the **Asset State** list, select the state you want to map.

### 4. **Optional:** If available, select a substate from the **Asset Substate** list.

Some of the asset states do not have a substate.

### 5. From the **Configuration Item Status** list, select the logically associated CI status you want to map.

### 6. From the **Sync direction** list, select the direction you want to drive the synchronization.

### 7. Select the **Active** check box to activate the mapping.

### 8. Click **Submit**.

## Map asset state and CI hardware status

Map the asset **State** and **Substate** fields to the **CI Hardware Status** field. Don't use the **Substatus** field on hardware CIs because the CI synchronization does not update the field when assets are updated. When you create the mapping, you can set the synchronization direction from the asset, CI, or both.

## Before you begin

Role required: admin or asset

**Note:** If you upgraded from a prior release and you've customized the *AssetAndCISynchronizer* script before the upgrade, overwrite the customization and then recreate the custom mappings.

The hardware and consumable assets don't have the Build state and Design substate because they are already prepared. Therefore, the Asset CI hardware state mappings table doesn't have a mapping for the Build state. For more details on asset states, see [Set asset states and substates](#).

## About this task

The **Install Status** and **Hardware Status** fields of a CI are independent of each other. There is no correlation between them. A change to the **Hardware Status** field does not change the **CI Install Status** field and vice versa.

## Procedure

### 1. Navigate to **All > Asset > Administration > Asset-CI Hardware Status Mapping**.

By default, only custom mappings display. The list of mappings uses the filter condition of **[Out of the box] [is] [False]**.

### 2. Click **New**.

### 3. From the **Asset state** list, select the state you want to map.

### 4. **Optional:** If available, select a substate from the **Asset substate** list.

Some of the asset states do not have a substate.

### 5. From the **Configuration Item status** list, select the logically associated CI state you want to map.

### 6. **Optional:** If available, select a substate from the **Configuration Item substatus** list.

Some of the CI statuses do not have a substatus.

### 7. From the **Sync direction** list, select the direction you want to drive the synchronization.

8. Select the **Active** check box to activate the mapping.

9. Click **Submit**.

## Consumables life cycle

Consumables are assets that are not tracked individually, but as a group of the same model.

The group of consumables has one or more of the following traits.

- Same location
- Same state
- Consumed by the same asset, typically as accessories or parts

Some common consumable assets include mouse devices, computer keyboards, and pencils. The base ServiceNow system includes the **Consumable** model category. The first step in working with models is to create a model within the model category for an individual consumable asset. Items such as monitors, keyboards, and mouse devices are often tracked as consumables. Consumables cannot be pre-allocated.

Consumable assets are stored in the Consumable [alm\_consumable] table. Consumables follow a slightly different life cycle from other assets.

## Stages of consumables

The consumable lifecycle stages are as follows.

- On order
- In stock
- In transit
- Consumed
- In maintenance
- Retired
- Missing

## View consumable assets

Consumables are tracked as a group of the same model, but you can view individual consumables in the consumable model record.

### Before you begin

Role required: model\_manager

## Procedure

1. Navigate to **All > Product Catalog > Product Model > Consumable Models**.
2. Open a consumable model record.
3. View individual consumables in the **Consumables** related list.

## Create consumable assets

Create a consumable to track an asset as a group of the same model.

### Before you begin

Role required: asset

**Procedure**

1. Navigate to **All > Asset > Portfolios > Consumables** and create a new record (see table for field descriptions).

**Consumable record form**

Field	Description
Display name	Name of the asset.
Model category	Model category that controls if an asset is linked to a CI.
Model	Product model of the asset.
Quantity	Amount of items the asset represents.
General	
State	State of the asset.
Parent	Parent asset. When a parent asset is defined, the <b>Assignment</b> and <b>State</b> fields of the child asset are automatically populated based on the <b>Assignment</b> and <b>State</b> fields of the parent asset and are read-only.
Class	Type of asset. The system automatically sets the <b>Class</b> to <b>Consumable</b> .
Expenditure type	The type of expenditure. Choose from the following options: <ul style="list-style-type: none"> <li>○ <b>Capex:</b> Capital expenditure is a one-time expenditure, where the value is realized over the years. For example, a photocopier.</li> <li>○ <b>Opex:</b> Operational expenditure is an on-going expenditure. For example, toners for the photocopier.</li> </ul>
Substate	Substate of the asset.
Location	Location of the asset.
Cost	Price that the asset was purchased for.
Cost Center	Cost center financially responsible for the asset.
Disposal	
Disposal order number	A unique number assigned to the asset disposal order. <p><b>i Note:</b> This field appears only if you have installed Hardware Asset Management from the ServiceNow Store.</p>
Disposal vendor	The vendor assigned to carry out the asset disposal order. <p><b>i Note:</b> This field appears only if you have installed Hardware Asset Management from the ServiceNow Store.</p>
Vendor disposal order ID	Order number assigned by the vendor assigned to carry out the asset disposal order.

Field	Description
	<b>Note:</b> This field appears only if you have installed Hardware Asset Management from the ServiceNow Store.
Disposal date	The date when the asset disposal order process is completed. <b>Note:</b> This field appears only if you have installed Hardware Asset Management from the ServiceNow Store.
Disposal reason	Text explaining why the asset is being retired.
Beneficiary	Organization that receives the asset when it is retired.
Resale price	Value of the asset when it is retired. For example, if the asset is donated, the value used when reporting taxes.
Scheduled retirement	Scheduled date on which the asset is retired.
Retired date	Actual date on which the asset was retired.
Activities	
Work Notes	Work notes related to the asset.

2. Click **Submit**.

### Consume consumable assets

To consume consumable assets, they must have a state of **In Stock** and a substate of **Available**.

### Before you begin

Role required: asset

### Procedure

1. Navigate to **All > Asset > Portfolios > Consumables**.
2. Click the **Display Name** of a consumable asset with a state of **In Stock** and a substate of **Available**.
3. Click **Consume**.
4. Enter the **Quantity** to consume.
5. In **Asset**, click the lookup icon and select the asset associated with the consumable.

### Example

For example, a mouse tracked as a consumable asset can be associated with a non-consumable asset such as a computer.

6. In **User**, click the lookup icon and select a user associated with the consumable.

7. Click **OK**.

On the **Consumable** form, the **Quantity** field shows the reduced number. The Consumables list contains two records for the consumable in the specific stockroom: one with a state and substate of **In Stock** and **Available** (if you did not consume the entire quantity), and one with

a state of **Consumed**. If a consumable is not in the process of being transferred to a different stockroom and information in the data record is the same, similar records merge automatically. After a consumable is consumed, the record remains in the system for reporting purposes.

### Return consumable assets to stockrooms

Move a consumable asset that is in a consumed state and has completed its life cycle back to an in-stock status.

#### Before you begin

Role required: asset, itil, itil\_admin

#### Procedure

1. Navigate to **All > Asset > Consumables**.
2. In the consumable record, click **Retire**.  
**Retire** appears only if the consumable asset is currently in a consumed state.
3. In the Retire Asset dialog box, select a stockroom.  
The quantity gets populated based on the quantity of the consumption of the consumable asset.
4. Update the **Quantity** field based on the quantity of consumable assets that you want to retire.  
You can choose to retire the entire quantity of consumable assets or only a part of the quantity.
5. Select a substate and click **OK**.  
You return to the consumable record. A message appears at the top of the form layout with the number of assets that you have retired.

### Plan disposal of consumable assets

Make the consumable assets that are no longer required in your stockrooms ready for disposal.

#### Before you begin

Role required: asset, itil, itil\_admin

Know that the Planned for disposal column in the Consumable [alm\_consumable] table indicates if the consumable asset is marked for disposal or not.

#### About this task

When you mark assets for disposal, you are only making them available for disposal. To dispose of the consumable assets, you should create a disposal order in the Hardware Asset Management application.

#### Procedure

1. Navigate to **All > Asset > Consumables**.
2. In the consumable record on the top right of the page, click **Mark for disposal**.  
**Mark for disposal** appears only for consumable assets that are in the In stock state and not marked for disposal.  
The state and substate of the consumable asset change to In stock and Pending disposal.
3. In the Planned for disposal dialog box, enter the total quantity or partial quantity of the consumable asset.  
If you enter a partial quantity, a new consumable record is created with the substate as pending disposal. If you enter a total quantity, the consumable's record substatus changes to "pending disposal" and you return to the same consumable record.  
After you mark the consumable asset for disposal, **Mark for disposal** no longer appears.

**Note:** Only a consumable marked for disposal is included in a disposal order. After you mark a consumable for disposal, it does not get merged with another consumable record.

4. Select **Cancel from disposal** to cancel disposing a consumable asset.  
**Cancel from disposal** appears if the Planned for disposal column for the consumable is set to true and the **Disposal number** field is blank.
5. In the Cancel from disposal dialog box, select a stockroom.  
If a stockroom is already selected, then the **Stockroom** field is read-only.
6. Select a substate and select **OK**.  
The Planned for disposal column is set to false. If you added this consumable record to a disposal record, the planned asset record is deleted.

### What to do next

[Create a disposal order.](#)

## Manage asset bundles from your inventory

Create asset bundles from existing assets in your inventory to track, reserve, or deploy a group of assets as a single entity.

### Before you begin

An asset bundle is a grouping of assets and comprises of consumable and hardware assets. Only assets that are in the **In stock** status and **available** substatus are added to an asset bundle. Assets that are part of an asset bundle aren't available as individual assets.

**Note:** For information on asset bundles, see [Asset bundles](#).

Role required: asset

### Procedure

1. Navigate to **All > Asset > Bundled Assets**.
2. Select **New**.  
The model category defaults to **Bundle** and the state defaults to **Build**. The build state is associated to only the **Bundle** model category. The build state is not valid for assets.
3. In the Bundle form layout, select a product model from the **Model** list.
4. In the **Stockroom** field, select a stockroom from where the assets are sourced for the bundle.
5. Automatically add assets to your bundle by selecting **Auto-allocate assets** or add specific assets by selecting **Select assets**:
  - **Auto-select assets:** Automatically adds assets to the asset bundle. The assets are added from the stockroom specified in the asset bundle.

**Note:** Assets are allocated only when all the assets that are part of the bundle are available. Excluded assets aren't considered for auto-selection. For more information about asset exclusion, see [Hardware Asset Management license exclusion](#).

- **Select assets:** Select the assets that you want in your asset bundle and select **Add Assets**.

**Note:**

You can't select an excluded asset. For more information about asset exclusion, see [Hardware Asset Management license exclusion](#). Assets displayed are confined to the stockroom specified in the asset bundle.

Once the assets are allocated to the bundle, the assets appear in the Assets related list and **Auto-allocate assets** and **Select assets** no longer appear in the Bundle form layout.

- i Note:** You must include all the assets to the asset bundle that are associated with the bundled model as a model component. If any asset isn't included, the bundle asset is considered incomplete, and the **State** field value of the bundle asset can't be changed.

**6. Select Save.**

The asset bundle is created. The cost of the bundled model is stamped on the asset bundle and on the expense line of the asset bundle. The cost isn't the cumulative cost of all the model components of the bundled model.

**7. You can swap assets from an asset bundle by selecting Replace assets.**

Assets belonging to an asset bundle can be swapped when the state of the bundle is **In maintenance** or **In stock** (substate **Pending repair**).

**a.** In the Replace assets dialog box, select the assets you want to swap.

**b.** Select the asset that you want to swap the current asset with.

**c. Select Replace.**

The asset that was swapped is returned to the stockroom.

**8. You can delete an asset bundle by selecting Delete.**

You must disassociate assets from an asset bundle to delete the bundle. Once all the assets are released from the bundle, you can delete the bundle.

**a.** In the **State** field, select **Retired**.

**b.** Select **Save**.

**c.** Select the **Release Assets** related link

**d.** In the confirmation dialog box, select **Release assets**.

All the assets are disassociated from the asset bundle and are moved to a stockroom.

**e.** Select **Delete**.

The asset bundle is deleted.

## Manage various assets through asset classes

The default asset classes are Hardware, Software License, Consumable, Bundle, Software Entitlement, and Facility. These general classes can be used to manage various assets.

If the general classes that are provided aren't appropriate for a specific group of assets, consider creating a new asset class. For example, a fleet of cars could be tracked in a custom asset class named Vehicle. Before creating new asset classes, analyze business needs to see if the general classes can be used. Managing a lot of asset classes can be difficult to maintain.

Built-in functionality allows you to use asset classes for financial tracking, in a model bundle, and as a pre-allocated asset.

### Create an asset class

Creating an asset class requires defining a new table and creating a corresponding application and module, then adding the new asset class to new or existing model categories. The default asset classes are Hardware, Software License, and Consumable. These general classes can be used to manage various assets.

**Before you begin**

Role required: asset or category\_manager

**About this task**

If the general classes aren't appropriate for a specific group of assets, consider creating an asset class. For example, a fleet of cars could be tracked in a custom asset class named Vehicle. Before creating asset classes, analyze business needs to see if the general classes can be used. A large number of asset classes can be difficult to maintain.

Built-in functionality allows you to use asset classes for financial tracking, in a model bundle, and as a pre-allocated asset.

Ensure that the model categories contain models. Use the Table form to extend an existing table.

**Procedure**

1. Navigate to **All > System Definition > Tables & Columns > Create Table** and fill out the Table form fields with information on the new table.

Field	Description
Label	Display name of table that can be localized.  For example, a custom asset class to track a fleet of cars can be labeled as Vehicle.
Name	Internal name of table that can't be changed later.  For example, the Vehicle asset class can be named alm_u_vehicle.
Extends table	Table that new table inherits fields from.  The Asset (alm_asset) table can be extended to create a custom asset class.
Application	Application that uses the record.
Create module	Check box for creating a module.
Create mobile module	Check box for creating a mobile module.
Add module to menu	Menu that module displays.
New menu name	New menu name.

2. Click **Submit**.
3. Navigate to the new application (for example, **Asset > Vehicle**) and click **New**.
4. Configure the form to include **Model**, **Model Category**, and **Quantity**.
5. Create a model category and add the asset class you created to the **Asset class** field.
6. Create models and add them to the model category.

**What to do next**

Now that the model category (associated with the new asset class) and the models are created, manage the models as assets. For example, use the model in a bundle.

### Create license assets

You can manage your organization's software license assets.

#### Before you begin

Role required: sam

#### About this task

Examples include a license to use a single copy of a desktop software program and an enterprise license to install a software program on multiple computers.

#### Procedure

1. Navigate to **All > Asset > Portfolios > License Assets** and click **New**.
2. In the **Rights** field, type the number of entitlements to be granted by this license.
3. Complete the form as described in [Create assets](#).

### Set asset states and substates


Use asset states and substates to track assets accurately and at a detailed level.

#### Before you begin

Role required: asset

#### About this task

Good asset information helps you with reporting, controlling assets, and lowering costs. For example, recording missing items using the **State** and **Substates** fields enables you to run reports and analyze the information. You can use this information to lower costs.

 **Tip:** You shouldn't modify state values. If the state values are supported and defined by the process, you can modify substates.

Some of the substate values are available with more than one state. For example, the substate **Pending disposal** is available with the state **In stock**, **In transit**, and **Retired**. The combination of the **State** and the **Substate** fields provide the correct asset tracking information. For example, an asset that is **In stock** and **Pending disposal** indicates that the asset is no longer used and is in the stockroom waiting to be disposed of.

#### Procedure

1. Navigate to **All > Asset > Portfolios > All Assets**.
2. Select an asset.
3. Edit the **State** and **Substate** fields.

#### Asset states and substates definitions

State	Available substates	Notes
On order	None	Asset is ordered but isn't received.
In stock	<ul style="list-style-type: none"> <li>○ Available: Asset is available for use.</li> <li>○ Reserved: Asset is reserved for a user who requested it through a sourcing request.</li> <li>○ Defective: Asset is faulty or inoperative.</li> </ul>	Asset is stored in a stockroom. Substate indicates if the asset can be put to use.

State	Available substates	Notes
	<ul style="list-style-type: none"> <li>○ Pending repair: Defective asset is marked for repair by the vendor.</li> <li>○ Pending install: Asset is yet to be installed.</li> <li>○ Pending donation: Asset is marked for donation because it's no longer required in your stockroom.</li> <li>○ Pending disposal: Asset is marked for disposal because it's no longer required in the stockroom.</li> <li>○ Pending transfer: Asset is being planned to be transferred through a transfer order.</li> <li>○ Pre-allocated: Asset is ready to be allocated but isn't a financial liability until it's allocated to a user.</li> <li>○ On hold: Asset isn't ready to be used because it's awaiting something. For example, necessary documentation is pending.</li> <li>○ Legal hold: Asset is kept on hold because of some legal reasons.</li> <li>○ Quarantine: Asset is kept in isolation in the stockroom.</li> <li>○ Pending certificate: Asset is awaiting certificate for disposal.</li> <li>○ Pending return: Asset that is leased is yet to be returned.</li> <li>○ Test: Asset is in the testing phase and not yet operational.</li> <li>○ Pending resale: Asset is awaiting resale.</li> <li>○ Pending evaluation: Asset is yet to be evaluated or assessed to confirm if it can be used.</li> </ul>	
In transit	<ul style="list-style-type: none"> <li>○ Available: Asset is available for use.</li> <li>○ Reserved: Asset is reserved for a user who requested it through a sourcing request.</li> <li>○ Defective: Asset is faulty or inoperative.</li> <li>○ Pending install: Asset is yet to be installed.</li> <li>○ Pending disposal: Asset is marked for disposal because it's no longer required in your stockroom.</li> </ul>	Asset is being transported.

State	Available substates	Notes
	<ul style="list-style-type: none"> <li>○ Pending donation: Asset is marked for donation because it's no longer required in your stockroom.</li> <li>○ Pre-allocated: Asset is ready to be allocated but isn't a financial liability until it's allocated to a user.</li> <li>○ Pending resale: Asset is awaiting resale.</li> </ul>	
In use	<ul style="list-style-type: none"> <li>○ Pending fulfillment: Asset is functional but awaiting business conditions such as billing and signoff.</li> <li>○ End of support: Asset isn't provided any support services through incidents or contracts.</li> <li>○ Pending retirement: Asset is marked for retirement because it's no longer in service. Asset has reached the end of life and can be sold, disposed, or donated.</li> <li>○ None</li> </ul>	Asset is in use. This option is available for non-consumables only.
In maintenance	None	Asset is being repaired or undergoing maintenance.
Retired	<ul style="list-style-type: none"> <li>○ Disposed: Asset is disposed because it has reached end of life.</li> <li>○ Pending disposal: Asset is marked for disposal because it's nearing the end of life.</li> <li>○ Sold: Asset is sold.</li> <li>○ Donated: Asset is donated to charity organization through asset donation orders.</li> <li>○ Vendor credit: Old faulty asset is returned to the vendor for a replacement asset through Return Merchandise Authorization (RMA).</li> <li>○ Lease return: Leased hardware asset is returned before the expiry of contract.</li> <li>○ Obsolete: Asset is obsolete and should be disposed.</li> <li>○ RMA: Faulty asset is returned to or replaced by the vendor through Return Merchandise Authorization (RMA).</li> </ul>	Set the asset to a Retired state when the asset has reached the end of life. Only delete asset records if they were created erroneously.

State	Available substates	Notes
	<ul style="list-style-type: none"> <li>Buy out: Leased hardware asset is bought before the expiry of contract.</li> <li>Pending resale: Asset is awaiting resale.</li> </ul>	
Missing	<ul style="list-style-type: none"> <li>Lost</li> <li>Stolen</li> </ul>	An asset that is missing or lost.
Build	None	<p>Asset is being prepared. This state is used during the creation of an asset bundle.</p> <p><b>Note:</b> Hardware and consumables don't have a Build state.</p>

### Add depreciation to an asset

Depreciation is the reduction in the value of an asset over time.

#### Before you begin

Role required: asset

#### About this task

A depreciation schedule can be added to hardware assets. Based on the information specified in the asset record, the ServiceNow AI Platform calculates the depreciation amount using the **Calculate Depreciation** scheduled job. The following system properties determine when the **Calculate Depreciation** scheduled job should be triggered to calculate the depreciation amount:

- The *sn\_itam\_depreciation\_job\_last\_run* system property stores the date on which the **Calculate Depreciation** scheduled job was last run.
- The *sn\_itam\_trigger\_depreciation\_job\_after\_days* system property determines the frequency (in days) at which the **Calculate Depreciation** scheduled job should be triggered.

**Note:** By default, this system property is set to **7**. Therefore, the **Calculate Depreciation** scheduled job runs weekly to calculate depreciation amount.

The ServiceNow AI Platform calculates the read-only **Residual date** and **Residual value** fields based on the **Cost**, **Depreciation**, and **Depreciation effective date** fields. For example, if the asset **Cost** is \$1000.00, the **Straight Line** depreciation method is selected, and exactly two years have passed, the **Residual value** would be \$500.00.

When an asset is in the **In Use** state, the asset form populates a Depreciation effective date.

For more information about fixed assets and depreciation, see [Using Depreciation with Fixed Assets](#).

#### Procedure

- Navigate to **All > Asset > Portfolios > Hardware Assets**.
- Select an asset.
- Fill in the **Depreciation**, **Depreciation effective date**, **Salvage Value**, and **Covered by fixed asset** fields as described in [Create assets](#).

Consider these points.

- If the depreciation effective date is in the future, depreciation is 0 and the current residual value is the original purchase price. The system doesn't begin to calculate depreciation until the effective date is reached.
- The salvage value must be less than or equal to the asset cost. If a salvage value greater than the cost is entered, a warning message appears and the record can't be saved.

4. Select and hold (or right-click) the header and select **Save**.

5. Select **Calculate Depreciation**.

The **Residual date**, **Residual value**, and **Depreciated amount** fields are automatically calculated.

**i Important:** The **Calculate Depreciation** scheduled job calculates the depreciation amount weekly. If you perform this step before the next run date of the scheduled job, the recently calculated depreciation amount is displayed.

## Manage your inventory through pallet assets

Manage your inventory effectively using pallet assets.

### Create pallet assets

Create a pallet asset from the Asset estate view in the Hardware Asset Workspace to track and manage assets in the inventory.

### Before you begin

You must create a model for a pallet asset. For more information, see [Models](#) .

Role required: asset

### About this task

While creating a pallet asset, only the Details, Disposal, Activities, and Audit sections of the asset form appear. Although audit-related fields are shown on the asset form, you can't conduct the audit of pallet assets. You can specify the aisle and space details to give the exact location of the pallet in a stockroom.

### Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset estate**.
2. Select **New Asset**.
3. In the dialog box, select **Pallet** as the asset type and then select **Create**.
4. On the form, fill in the fields.

#### Pallet Asset Details section

Fields	Description
Display name	Name of the pallet asset based on the values in the <b>Asset Tag</b> and <b>Model</b> fields set when the pallet asset is created. For example, the display name for a pallet with an Asset tag of PAL0000001 whose Model is 3Com Wooden pallet would be PAL0000001 - 3Com Wooden pallet.
Model category	The model grouping of the pallet asset. This field is read-only and is automatically set to Pallet.
Number	Unique, auto-generated number for the pallet asset.

Fields	Description
Model	Product model of the pallet asset.
Quantity	Number of items the pallet asset represents. This field is automatically set to 1.
Asset tag	Alphanumeric tracking information from the tag attached to the pallet asset.
Pallet type	Type of pallet. The available values are: <ul style="list-style-type: none"> <li>○ Pallet</li> <li>○ Bin</li> <li>○ Box</li> <li>○ Container</li> <li>○ other</li> </ul>
State	Current state of the pallet asset. The available values are: <ul style="list-style-type: none"> <li>○ In stock</li> <li>○ In transit</li> <li>○ Retired</li> <li>○ Missing</li> </ul>
Substate	Current substate of the asset, such as Available or Reserved. The values in the Substate list change based on what you select from the State list.
Stockroom	Name of the stockroom.
Reserved for	Name of the person for whom the pallet is reserved.
Aisle	Aisle details of the pallet within the stockroom. This field appears only when In stock or Build is selected from the <b>State</b> field.
Location	Physical location of the stockroom.
Space	Space details of the pallet within the aisle. This field appears only when In stock or Build is selected from the <b>State</b> field.
Parent	Parent asset of the pallet asset.
Comments	Optional additional information.

**Disposal section**

Fields	Description
Disposal order number	This field is automatically set to the unique number assigned to the asset disposal order. <p><b>Note:</b> This field appears only if you have installed Hardware Asset Management from the ServiceNow Store.</p>
Scheduled retirement	Scheduled date on which the asset retires.
Disposal vendor	The vendor assigned to carry out the asset disposal order.

Fields	Description
	<p><b>Note:</b> This field appears only if you have installed Hardware Asset Management from the ServiceNow Store.</p>
Retire date	Actual date on which the asset retires.
Vendor disposal order ID	<p>Order number from the vendor assigned to carry out the asset disposal order.</p> <p><b>Note:</b> This field appears only if you have installed Hardware Asset Management from the ServiceNow Store.</p>
Refresh request line	Refresh request line number if the asset has been identified as an aged asset by the Hardware Asset Refresh flow.
Disposal date	<p>Date when the asset disposal process is completed.</p> <p><b>Note:</b> This field appears only if you have installed Hardware Asset Management from the ServiceNow Store.</p>
Beneficiary	Organization that will receive the asset when the asset is retired.
Resale price	Value of the asset when it's retired. For example, if the asset is donated, the value used when reporting taxes.

**Activities section**

Field	Description
Work notes	<p>Any additional information about the asset.</p> <p>Work notes are updated automatically in the following situations:</p> <ul style="list-style-type: none"> <li>○ Updates to <b>State</b>, <b>Substate</b>, or <b>Reserved for</b> fields of the asset record. Any updates to these fields are automatically recorded in the <b>Work notes</b> field.</li> <li>○ When the asset is received by a transfer order. These work notes help in tracking the life cycle of an asset.</li> </ul>

**5. Select Save.**

**Result**

The pallet that you created is added to the list shown in the Pallets tab.

**Add assets to a pallet**

Add base, hardware, bundle, consumable, and other pallet assets to an in-stock pallet to track and manage the assets in a stockroom as a group.

**Before you begin**

Role required: asset

**About this task**

You can add assets to a pallet only under the following conditions:

- The asset belongs to the same stockroom as the pallet or has no value set in the **Stockroom** field.
- The pallet **State** field value is In stock.
- The asset **State** field value is one of the following:
  - On order
  - In stock
  - In transit
  - Retired
- The asset isn't associated to another parent asset.

Either remove the existing parent-child association and then add the asset to the pallet or directly add the pallet as parent to the asset.

When an asset that is a parent to other assets is added to a pallet, all its child assets are also added. However, the parent field of the child assets isn't replaced with details of the pallet.

## Procedure


1. Navigate to **All > Hardware Asset Workspace > Asset estate**.
2. Select the **Pallets** tab.
3. Select the pallet to which you want to add assets.
4. Select the **Assets** tab.
5. Add base, hardware, and bundle assets to the pallet.

- a. Select **Add assets**.

- b. In the Add assets dialog box, select the assets that you want to add.  
You can use the filter to narrow the list of available assets.

- c. Select **Add**.

The assets that you added to the pallet are added to the list shown in the Assets tab. The state, substate, location, stockroom, aisle, and space details of the assets are synced with the pallet.

**i Note:** Only the substate of pre-allocated assets isn't synced with the pallet. For more information, see [Create pre-allocated assets](#) .

6. Add consumable assets to the pallet.

- a. Select **Add consumables**.

- b. In the Add consumable to pallet dialog box, select the consumable from the list of available consumables or search for it.

c. In the **Quantity** field, either accept the default field value of the maximum available quantity of the selected consumable or modify the value to the number of consumables you want to add.

d. Select **Add**.

The consumable asset that you added to the pallet is added to the list shown in the Assets tab.

### Remove assets from a pallet

Remove the assets contained in a pallet when you don't need to track and manage them using pallets.

#### Before you begin

Role required: asset

#### About this task

Removing the assets from a pallet breaks the parent-child association between them.

You can remove assets only from a pallet whose **State** field value is In stock.

#### Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset estate**.
2. Select the **Pallets** tab.
3. Select the pallet from which you want to remove assets.
4. In the Pallet Details form, select the **Assets** tab.
5. Select the assets that you want to remove from the pallet and select **Remove**.

#### Result

The assets that you removed from the pallet are no longer shown under the Assets tab.

### Delete pallet assets

Delete a pallet asset when no assets are associated with it.

#### Before you begin

Role required: asset

#### About this task

You can delete a pallet only if it's empty. Remove any assets before trying to delete the pallet.

#### Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset estate**.
2. Select the **Pallets** tab.
3. Select the pallet that you want to delete.
4. Click the more actions icon ( **⋮** ) next to the **Save** button and select **Delete**.

#### Result

The pallet that you deleted is no longer shown under the Pallets tab.

### Using pallet assets for managing inventory

You can add a pallet with the assets contained in it to transfer orders and disposal orders to manage your inventory effectively.

## Moving pallets from one stockroom to another

Move an in-stock pallet along with the assets contained in it from one stockroom to another by using transfer orders. When you move only the assets contained in a pallet, the assets are removed from the pallet after the Ready for fulfillment task is closed. You can also use a transfer order to move an empty pallet.

Updates that you perform on the pallet as part of the transfer order workflow are applicable to the assets contained in it.

If there's a problem with all or some of the assets you receive as part of a transfer order, you can return the pallet along with its assets. You can't return individual assets contained in the pallet.

For more information, see [Transfer orders for Asset Management](#).

## Disposing of pallets

Dispose of a pallet with its assets that are reaching the end of the life cycle or that aren't functional by using a disposal order. When you add a pallet to a disposal order, the assets and child assets in the pallet are also added. However, any asset bundles in the pallet are not included.

The disposal order workflow when disposing of a pallet or its assets is as follows:


- Disposing of the pallet with the assets contained in it: The verified pallet and its assets are disposed.
- Disposing of only the assets and retaining the pallet: The assets are removed from the pallet after they're verified.
- Disposing of the pallet with only some of its assets and retaining the remaining assets: The assets that weren't verified or disposed of are removed from the pallet automatically.

For more information, see [Create a disposal order](#).

## Consuming assets from a pallet

- **Note:** When an asset from the pallet is consumed as part of any workflow, the asset is automatically removed from the pallet.

Assets contained in a pallet can also be consumed as part of the following workflows:

- [Return Merchandise Authorization \(RMA\)](#): When an asset from a pallet is added to RMA, the asset is immediately removed from the pallet.
- **Note:** In an RMA request with an off-site replacement or repair, the assets that are in the pallet aren't shown in the Replacement asset field on the Receive task form.
- [Asset Local Stock](#) : When an asset from the pallet is consumed as part of the local stock, the asset is removed from the pallet after the Confirm assigned asset task is closed.
- [Loaner](#): When an asset from a pallet is consumed as a Loaner asset, the asset is removed from the pallet after the Prepare task of the loaner order is closed.
- [Return leased assets](#): When a leased asset from a pallet is returned, the asset is removed from the pallet after the Shipment task is closed.
- [Swap and deploy tasks from ITSM](#): When deploy asset action is triggered from ITSM, the asset that must be deployed is removed from the pallet. When swap action is triggered from ITSM, the asset in the pallet that is a replacement for a faulty asset is removed from the pallet.

## Create fixed assets

Fixed assets are containers that can hold multiple assets. Fixed assets are commonly tracked at the corporate level by a finance or accounting department, but may contain IT assets such as hardware and software.

The **Fixed Asset** option in the Cost application shows the IT assets related to a fixed asset record. This link can help IT stay coordinated with the corporate asset system. Users with the `financial_mgmt_admin` and `financial_mgmt_user` roles can create fixed assets. After creating a fixed asset and adding assets, the residual value can be automatically calculated.

To create a fixed asset:

1. Navigate to **Cost > Fixed Assets**.
2. Click **New**.
3. Enter a name for the fixed asset.
4. Click **Submit**.

To add assets to a fixed asset:

1. Navigate to **Cost > Fixed Assets**.
2. Click a fixed asset.
3. In the **Covered assets** related list, click **Edit**.
4. In the **Collection** list, double-click an asset to add it to the **Covers Assets List**.
5. Click **Save**.

To sum the residual values of all assets in a fixed asset:

1. Navigate to **Cost > Fixed Assets**.
2. Click a fixed asset.
3. Click **Sum Residual Value**.

The ServiceNow platform calculates the **Residual Value**, **Total cost**, and **Total depreciation** based on information in the **Financial** and **Depreciation** sections on the individual asset records.

## Use depreciation with fixed assets

You can calculate depreciation for a fixed asset using a choice of depreciation schedules. Calculating depreciation for a fixed asset can help IT coordinate with the corporate fixed asset system to report correct valuation and book value.

### Before you begin

Role required: `financial_mgmt_admin` or `financial_mgmt`

### About this task

When creating a new depreciation schedule, select the **Declining Balance** or **Straight Line** depreciation **Category**. The two categories depreciate an asset by the same overall amount during the asset life cycle, but do so on different schedules.

- **Declining Balance**: depreciates an asset by a greater amount in earlier accounting periods than in later periods.
- **Straight Line**: depreciates an asset by an equal amount each accounting period.

The following example shows depreciated value on a \$10,000.00 asset over five years using the two different methods.

### Using depreciation with fixed assets

Year	Declining balance	Straight line
1	\$5000.00	\$8000.00
2	\$2500.00	\$6000.00
3	\$1250.00	\$4000.00
4	\$625.00	\$2000.00
5	\$0	\$0

### Procedure

1. To view a depreciation schedule, navigate to **Financial Management > Depreciation** and click the **Category**.
2. To create a new depreciation schedule, click **New**.
3. Enter a **Name**.
4. Select a **Category**.
5. Add a **Script** to calculate depreciation value.

#### Example depreciation schedule script

The screenshot shows the 'Depreciation' form in ServiceNow. The 'Name' field is 'SL 5 Years' and the 'Category' is 'Straight Line'. The 'Script' field contains the following code:

```

1 var gdt_dd = new
  GlideDateTime(asset.depreciation_date).getDate();
2 answer = (new AssetDepreciation()).calcSLCost(5, asset.cost,
  gdt_dd)
  
```

6. Click **Submit**.  
The depreciation schedule is now available in the **Depreciation** field on the asset record.

### Manage pre-allocated assets

Manage pre-allocated assets, which are the assets that the vendor still owns, but has agreed to store in a customer stockroom for just-in-time procurement.

#### Create pre-allocated assets

Create a pre-allocated asset that physically exists, but isn't yet a financial liability.

#### Before you begin

Role required: asset

## About this task

### Procedure

1. Navigate to **All > Asset > Portfolios > All Assets** and create a record (see table for field descriptions).

**Note:** Category must have the **Allow pre-allocated** option selected.

#### Consumable record form

Field	Description
Display name	Name of the asset.
Model category	Model category that controls whether an asset is linked to a CI.
Model	Product model of the asset.
Quantity	Number of items the asset represents.
General	
State	State of the asset.
Stockroom	Stockroom of the asset. This field is only available if the State field is set to <b>In stock</b> .
Parent	Parent asset. When a parent asset is defined, the <b>Assignment</b> and <b>State</b> fields of the child asset are automatically populated based on the <b>Assignment</b> and <b>State</b> fields of the parent asset and are read-only.
Class	Type of asset. The system automatically sets the <b>Class</b> to <b>Consumable</b> .
Expenditure type	The type of expenditure. Choose from the following: <ul style="list-style-type: none"> <li>○ <b>Capex:</b> Capital expenditure is a one-time expenditure, where the value is realized over the years. For example, a photocopier.</li> <li>○ <b>Opex:</b> Operational expenditure is an on-going expenditure. For example, toners for the photocopier.</li> </ul>
Substate	Substate of the asset.
Location	Location of the asset.
Cost	Price that the asset was purchased for.
Cost Center	Cost center financially responsible for the asset.
Activities	
Work Notes	Work notes related to the asset.

2. Select **Submit**.

#### Allocate a pre-allocated asset

Assets can be allocated from pre-allocated asset records, which creates new asset records and reduces the **Quantity** in the original pre-allocated asset record.

#### Before you begin

Role required: asset

### About this task

Allocating an asset makes it a financial liability. After all pre-allocated assets have been allocated, the pre-allocated asset record is removed from the asset list.

### Procedure

1. Navigate to **All > Asset > Portfolios > All Assets**.
2. Filter the **Substate** column to show only **Pre-allocated** assets.
3. Select the reference icon in the row containing the asset to allocate.
4. Select **Allocate** at the bottom of the form.

**Note:** If the `glide.asset.create_ci_with_ire` property is set to `true`, a form appears when you click **Allocate**. On the form, fill in the **Asset tag**, **Serial number**, and **Reserved for** fields, then click **OK**.

### Result

The system creates and navigates to a new asset record, which has the same model and parent information as the pre-allocated asset. The new asset has a **Quantity** of one, while the pre-allocated asset's **Quantity** is reduced by one.

### Split a pre-allocated asset

You can split a pre-allocated asset to create a group that can be moved to a different stockroom.

### Before you begin

Role required: asset

### About this task

For example, a group of 100 pre-allocated computers is in Stockroom A. Split the group into two groups of 50 and move one group to Stockroom B. Allocate the computers from the two different stockrooms.

### Procedure

1. Navigate to **All > Asset > Portfolios > All Assets**.
2. Filter the **Substate** column to show only **Pre-allocated** assets.
3. Select the reference icon in the row containing the asset to split.
4. Select **Split**.
5. Enter a **Quantity to Split** and select **OK**.  
The pre-allocated asset is split into two groups and the **Quantity** field on each record indicates the number in each group.

### Manage loaner assets

Request a loaner asset or consumable for a short period. You can also prepare the loaner asset or consumable for deployment and reclamation by using loaner asset tasks. Deploy the loaner asset or consumable for a specific period, and reclaim it on the return date.

### Request a loaner asset

Request a temporary or loaner asset or consumable and use it for a short period.

### Before you begin

Role required: None

While requesting a loaner asset, ensure that the start date is within three months from the date of submission, and the end date is within six months from the start date.


**About this task**

Request a loaner asset for a specific period. You can request it for yourself, for another employee of your organization, or for a third-party vendor. Before the asset is installed, you can cancel the loaner asset request at any time.

You can submit a loaner order even if the product isn't available at the moment in the location you want to select. In this case, your order is placed in the queue.

**Procedure**

**1. Navigate to All > Service Catalog > Asset Lifecycle.**

The **Asset Lifecycle** category isn't on the Service Catalog page by default. To add this category, log in with admin credentials, select the add content icon (  ) beside the search catalog bar and then select **Asset Lifecycle**.

**2. Select Loaner Asset Request.**

**3. On the form, fill in the fields.**

**Loaner Asset Request form**

Field	Description
Requested for	Person for whom you are requesting the asset. You can make a request for yourself, for another employee of your organization, or for a third-party vendor.
Requested for user	User for whom you requested the asset. This field appears only when <b>For company user</b> is selected in the <b>Requested for</b> field.
Location	Location where the requested asset should be provided.  When the location that you specified is a service location of multiple stockrooms, the Model field shows the list of loaner asset models that are available in all those stockrooms in addition to the models available in the stockroom of that location. For more details on service locations, see <a href="#">Associate a stockroom with service locations</a> .
Model	Model of the asset that you're requesting.
Start date	Date when you want to start using the asset.
Return date	Date when you want to return the asset.
Justification	Reason why you need the asset.

After entering the **Start date** and **Return date**, if there are no loaner assets available in the selected location and for the selected time period, a warning appears. If you still submit the loaner order, your loaner order will be in a waitlist.

**4. Select Submit.**

A message appears and shows whether your loaner order was placed successfully or the order was placed in a waitlist.

### What to do next

To view your request, navigate to **Self-Service > My Requests**. You can also view your order by using the Now Mobile app.

Before you receive your loaner asset, you can cancel the loaner asset request by selecting **Cancel**. After you receive your loaner asset, the **Cancel** button doesn't appear anymore. You can also return your loaner asset before the specified **Return date**.

### Prepare, deploy, and reclaim loaner assets

Select and prepare the loaner asset or consumable for deployment and reclamation by using loaner asset tasks. Deploy the loaner asset or consumable for a specific period, and reclaim it on the return date.

### Before you begin

To use an asset as a loaner asset or consumable, go to the asset record and set the **Asset function** field to **Loaner**. These assets are reserved for use as loaner assets. You can't use an asset that has the **Asset function** field set to anything other than **Loaner**. Only hardware, bundle, and consumables can be used as Loaner assets.

The Loaner Asset Orders related list in the Asset form shows all the loaner orders that the asset has served in the past and at present. When the consumable isn't in a stockroom, it shows only the current loaner asset order that it's serving at present.

Role required: inventory\_user

### About this task

Use the Loaner Asset Orders module to view and complete the loaner asset orders that were requested by the users.

The Hardware Asset dashboard gives a consolidated view of all the loaner asset orders that are in the New, Deployed, or Return Overdue states. For details, see [Hardware Asset dashboard](#).

### Note:

There are readily available decision tables that you can use to customize the Loaner Asset Request Flow. For more details, see [Hardware Asset Management flow customization](#).

### Procedure

1. Navigate to **All > Inventory > Loaner > Loaner Asset Orders**.
2. Open a loaner asset order record.
3. Under the Loaner Asset Tasks related list, open the Prepare task.
4. On the form, fill in the fields.

#### Prepare task form

Fields	Descriptions
Asset	<p>Asset that is used to fulfill the loaner asset request.</p> <p>When the Location field value of the Loaner Asset Request form is a service location of multiple stockrooms, the Asset field shows the list of loaner assets that are available in all those stockrooms in addition to the loaner assets available in the stockroom of</p>

Fields	Descriptions
	that location. For more details on service locations, see <a href="#">Associate a stockroom with service locations</a> .  <b>Note:</b> The stockroom that is available at the specified location is preferred for fulfilling the loaner asset request. The stockrooms that support the specified location are considered only when there isn't any stockroom in that location.
State	State of the task.
Assigned to	Person who is assigned the task of fulfilling the Deploy task.

5. After you physically prepare the hardware asset for deployment, select **Close Task** to close the Prepare task.

After the Prepare task is completed, a Deploy task is created under the Loaner Asset Tasks related list. On the Asset record [alm\_asset] table, the following changes happen:

- The state of the loaner asset changes to In stock.
- The **Reserved for** field is automatically set to the name of the user who the loaner asset was requested for.
- The substate changes to Pending install.

6. Open the Deploy task.

7. On the form, fill in the fields.

**Deploy task form**

Fields	Descriptions
State	State of the task.
Assigned to	Person who is assigned the task of fulfilling the Deploy task.

8. Deploy the hardware asset.

9. Set the **State** field to **Closed Complete**.

10. To close the Deploy task, select **Close Task**.

On the Asset record [alm\_asset] table, the following changes happen:

- The state of the loaner asset changes to In use.
- The **Stock room** field changes to Null.
- The **Assigned to** field is automatically set to the name of the user who the asset was requested for.
- If you requested the loaner asset for a third-party vendor, then the **Managed by** field is automatically set to the name of the user who the asset was requested for.

For a consumable, the state changes to Consumed.

Two days before the return date, the users who requested the asset will receive an email notification about the reclaim. One day before the return date, a Reclaim task is created under the Loaner Asset Tasks related list.

11. Open the Reclaim task.
12. On the form, fill in the fields.

**Reclaim task form**

Field	Description
Stockroom	Stockroom where the returned asset is stored. If you entered a stockroom different from where you received the loaner asset, then a warning message appears which says that the existing loaner orders from the initial stockroom might be affected.
Returned on	Actual date when the asset was returned.
State	State of the task.
Assigned to	Person who is assigned the task of fulfilling the Reclaim task.
Asset returned	Option to mark the asset as returned. The Reclaim task can't be closed if the asset isn't returned.
Asset functional	Functional status of the loaner asset after it's reclaimed.

If the asset isn't functional, the state of the asset changes to In stock and the substate changes to Pending repair.

13. To close the Reclaim task, select **Close Task**.
14. If a user returns the asset before the return date, do the following:
  - a. Select **Reclaim**.
  - b. On the Reclaim Asset form, update the fields.
  - c. Close the Reclaim task.

On the Asset record [alm\_asset] table, the following changes occur:

- The state of the loaner asset changes to In stock.
- The substate changes to Available.
- The **Stockroom** field is automatically set to the value that was selected on the Reclaim task form.
- If the asset is assigned to a future loaner order, the substate changes to Reserved and reflects the details of the loaner order.

**Donate assets to charity organizations**

Use the Asset Donation flow to donate hardware and consumable assets of your organization to charity organizations.

### Create an Asset Donation Order


Create a service catalog request to donate the in-stock hardware and consumable assets in your organization to charity organizations.

#### Before you begin

Role required: none

#### Procedure

**1. Navigate to All > Service Catalog > Asset Lifecycle.**

The Asset Lifecycle category isn't on the Service Catalog page by default. To add this category, select the Add content icon (  ) beside the Search catalog bar and then select **Asset Lifecycle**.

**Note:** You require admin role to add a category to the Service Catalog.

- 2. On the Asset Lifecycle page, select Asset Donation Order.**
- 3. On the form, fill in the fields.**

#### Request for asset donation form

Field	Description
Charity organization	Name of the charity organization to which you want to donate your assets. You can filter the charity organization list based on Name, City, State/Province, Country, or Phone details.
Description	Name and quantity of the assets that you want to donate. For example, Request to donate two Dell PCs.

**4. Select Submit.**

Your Asset Donation Order is successfully submitted.

**5. Optional:** View the status of your Asset Donation Order by navigating to **All > Self-Service > My Requests**.

#### Approve or reject an Asset Donation Order

As an asset manager, review and then approve or reject an Asset Donation Order.

#### Before you begin

Role required: asset

#### Procedure

- 1. Navigate to All > Contract > My Approvals.**
- 2. Select an Asset Donation Order record that is in the Requested state.**
- 3. Approve or reject the Asset Donation Order.**
  - To approve the order, select **Approve**.

The **State** of the order changes to **Approved**.

- To reject the order, select **Reject** and enter a reason for rejection in the **Comments** field.

The **State** of the order changes to **Rejected**.

### Process an Asset Donation Order

Process an Asset Donation Order to prepare and send assets to a charity organization.

#### Before you begin

Role required: asset

#### About this task

You can cancel an Asset Donation Order until it reaches the transit stage in the workflow. After your Asset Donation Order reaches the Confirmation stage, you can't cancel it.

**i Note:** You can process Asset Donation Orders only in Hardware Asset Workspace and not in Hardware Asset Management Core UI.

### Procedure

1. Navigate to **All > Hardware Asset Workspace > Inventory**.
2. Open the **Donation orders** tab.  
A list of asset donation orders is shown.
3. Select an Asset Donation Order that is in the **Scheduling** stage.
4. Add assets to the Asset Donation Order.
  - a. Open the **Planned Assets** tab.
  - b. Select **Add**.
  - c. In the Add assets pop-up window, select assets that are part of the domain whose state is In stock and substate is Pending donation, and then select **Add**.  
Use the filter to search for the desired assets.  
The assets that you added are shown under the Planned Assets tab.
5. Prepare the assets for donation and provide a date to pick up the assets.
  - a. Open the **Asset Donation Tasks** tab.
  - b. Select the Prepare assets and provide Scheduled date task.
  - c. In the Planned Assets related list, select the assets that you want to prepare and then select **Prepare**.  
**i Note:** You can configure subflows for asset preparation tasks based on your needs and the type of assets to be donated. For example, you can configure Prepare asset tasks for a data storage asset that needs data wiping or a hardware asset that needs packaging before it's donated.  
  
The stage of the planned assets changes to Prepared.
  - d. On the Schedule details form, in the **Scheduled date** field, select a date for pick up.

**e. Select Close task.**

The state of the task changes to Closed complete, and the Select the assets departing for donation task is created as an asset donation task.

**6. Select the assets to be sent.****a. Open the Select the assets departing for donation task.****b. In the Planned Assets related list, select the assets that you want to send from the stockroom and select **Depart**.**

The stage of the planned assets changes from Prepared to In transit. The state of the assets changes to In transit and the Substate changes to Pending donation.

**7. Provide the name of the vendor to pick up the assets and the shipment tracking details.****a. Open the Details tab.****b. On the Schedule details form, specify the following:**

**i. In the Pickup contact name field, enter the name of the vendor to pick up the assets for donation.**

**ii. (Optional) In the Shipping carrier field, select your shipping carrier.**

**iii. (Optional) In the Tracking number field, enter the tracking number for the shipment.**

**Note:** The Shipping carrier and Tracking number fields are used to track shipments from the Shipment list in the Asset operations view of the Hardware Asset Workspace. For details, see [View hardware asset shipment details](#).

**c. Select Close task.**

The State of the task changes to Closed complete. Confirmation from the charity organization task is created under the assets donation tasks.

**8. Confirm donation of the assets.****a. Select the Confirmation from charity organization task.****b. In the Planned assets related list, select the assets and then select **Confirm Donation**.**

The stage of the assets changes to Completed. The state of the assets changes to Retired and the substate changes to Donated.

**9. Attach the donation documentation from the charity organization to the Asset Donation Order record.****a. Select the Confirmation from charity organization task.****b. In the Details related list, select the Attachment icon (  ).****c. Select the document.****d. In the Certificate of donation list, select **Yes**.**

The state of the Asset Donation Order is set to Completed.

- e. Select **Close task**.

**Result**

All the asset donation tasks are in the Closed Complete state and the Asset Donation Order stage changes to Completed.

**Add a charity organization for donating assets**

Add a charity organization to the Charity Organization [sn\_itam\_common\_charity\_org] table to make it available for asset donations.

**Before you begin**

Role required: admin

**Procedure**

1. Navigate to **All > Inventory > Donation Orders > Charity Organization**.
2. Select **New**.
3. Provide the location and contact details of the charity organization.  
The **Name** and **Zip/Postal code** fields are required.
4. On the form, fill in the remaining fields.

**Charity Organization New Record form**

Field	Description
ID	Unique identifier that you assign to the charity organization. The ID field is required.
Active	Option to mark the charity organization record as active.
Domain	Domain of the charity organization record.  The charity organization record is set to the global domain automatically when no default domain is available.

5. Select **Submit**.

**Result**

The charity organization record that you added is added to the Charity Organizations list.

**Exclude assets**

Exclude an asset for which you don't want to use Hardware Asset Management licensed features.

**Before you begin**

Role required: admin

**Procedure**

1. Navigate to **Hardware Asset Workspace > Asset estate > Hardware assets**.
2. Select a hardware asset that you want to exclude.
3. On the asset form, select the **Exclude from HAM features** check box.

**Note:**

The **Exclude from HAM features** check box is automatically selected under these conditions:

- If the hardware asset belongs to a resource category that's opted out of Hardware Asset Management licensed features.
- If the hardware asset belongs to a custom model category whose parent model category is associated with an opted-out resource category.

**4. Select Save.****Result**

The asset is excluded from using the licensed Hardware Asset Management features.

**Use Advanced Shipment Notification**

Use Advanced Shipment Notification (ASN) to automate and create asset records when your assets are in transit.

**Before you begin**

Download your ASN template and get it updated by your asset vendor. Then upload the updated template to your ServiceNow instance. Before you import asset records using the ASN template, check that your ServiceNow instance has the model ID defined and that the same model ID is mentioned in the template.

The shipping address in the ASN template must match the shipping address in the Location [cmn\_location] table.

The shipping carrier in the ASN template must be available in the Shipping carrier [sn\_itam\_shipping\_carrier] table.

Role required: admin

**About this task**

Creating asset records manually is time consuming and can cause errors in your records. Use ASN to automate and create asset records when the assets are in transit. The Tracking number in the ASN template helps to track the assets that are in transit.

**Procedure**

- 1. Navigate to All > Procurement > Orders > Import Shipment Notification.**
- 2. On the Import Template page, select the **Download Template File (.xlsx)** link to download an ASN template.**

The ASN template has fields such as the following:

- Serial number: Unique identifier of the asset.
- Asset tag: Alphanumeric tag assigned by your organization to help track the asset.
- Vendor: Vendor from which the asset was purchased.
- PO number: Number associated with the purchase order.

**Note:** This isn't the vendor PO number.

- Model id: Model number of the product model.

- SVC contract end date: Warranty expiration date of the asset.
  - Carrier: Name of the shipping carrier.
3. Send the ASN template to your asset vendor, such as via email.  
The vendor has to update the template with the details of each asset that will be delivered to you. The vendor can enter values in each column based on the column header. For example, `TrackASN1` in the Tracking number column and `CarrierABC` in the Carrier column. The vendor then shares the updated template with you.
  4. After you receive an updated ASN template from your vendor, select **Browse files** and select the updated ASN template.
  5. Select **Upload**.  
The upload may take some time. The import process is asynchronous so wait for the import process to complete and for all assets to be created.
  6. Check the status of importing the template in one of the following ways.
    - Navigate to **Procurement > Orders > Import Status**.
    - To open directly the import set record, select the link on the message bar that shows `View import progress here`.  
The Import Sets page shows a list of import set records.
  7. Select the import set record that shows the status of importing your template.  
The import set record shows if the asset record was created successfully. If the import wasn't successful, then do the following:
    - a. On the import set record, select the **Import Set Rows** tab.
    - b. To understand the failure, check the **Comment** field.
    - c. Try to import an updated template again.

## Use Organization Management

The Organization Management application provides an easy way to perform such asset management tasks as updating users and adding vendors.

It includes managing your vendors and manufacturers, as well as managing locations.

### Create a new vendor or manufacturer

You can create a new vendor, which is a company that sells assets or services that your organization purchases. You can also create a new manufacturer, which is a company that builds assets that your organization purchases.

### Before you begin

Role required: `user_admin` and `asset`

### Procedure

1. Navigate to one of the following:
  - **Organization > Vendors**
  - **Organization > Manufacturers**
  - **Organization > Companies**
2. Click **New** and create a new record.
3. Complete the form and select either **Manufacturer** or **Vendor**.

**Note:** A company can be considered both a vendor and a manufacturer.

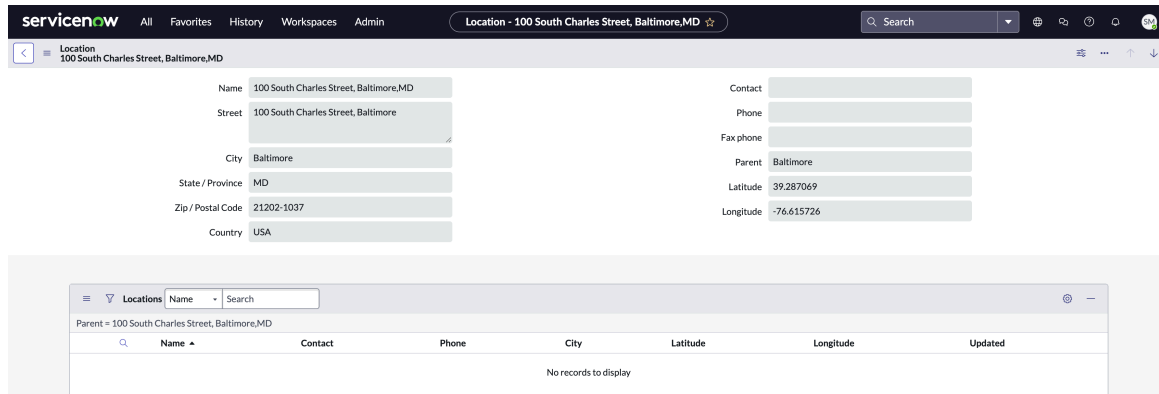
**4. Click Submit.**

**Locations module**

The Locations module is the Asset view of the Location table [cmn\_location].

In addition to the physical specifics for the location, the Asset view includes the **Stock room** designation and a list of configuration items (CI) in stock at that location.

**Asset location**



**Manage RMA requests**

Initiate a Return Merchandise Authorization (RMA) process by submitting an RMA request to initiate an RMA process with your vendor. You can repair or replace a faulty asset.

After you submit an RMA request for a defective asset, you must go through various tasks to finalize repairing or replacing the asset.

To close an RMA request, you have to close each of its request lines separately. To close a line, you have to complete all the line's RMA tasks, and you must provide any necessary information about the line. You close a line by first closing its Assessment task. Then the defective asset is sent for either off-site or on-site repair. The line is closed after all these tasks are finished.

**Submit an RMA request**

Submit a Return Merchandise Authorization (RMA) request to initiate an RMA process with your vendor. You can repair or replace a faulty asset.

**Before you begin**

Role required: asset and inventory user

The asset, inventory\_user, or itil role can only access the reports of the RMA request lines.

**Procedure**

- 1.** Navigate to **All > Service Catalog > Asset Lifecycle > Asset RMA Order.**
- 2.** To initiate an RMA request for a defective asset or consumable, click **Add.**
- 3.** In the **Asset** field on the Add Row form, select the defective asset or consumable for which you want to initiate the RMA request.  
You can select multiple rows of assets and consumables. You can't select an excluded asset.  
For more information about asset exclusion, see [Hardware Asset Management license exclusion.](#)

If you select a consumable, a **Quantity** field appears beside the **Asset** field. In the **Quantity** field, enter the number of defective consumables for which you want to initiate the RMA.

4. To add the selected assets or consumables, click **Add**.
5. To submit the RMA request, click **Submit**.

**Result**

The RMA request is created. A confirmation message appears with the RMA request number.

**Closing an RMA request**

After you submit an RMA request for a defective asset, you must go through various tasks to finalize repairing or replacing the asset.

To close an RMA request, you have to close each of its request lines separately. To close a line, you have to complete all of the line's RMA tasks, and you must provide any necessary information about the line. You close a line by first closing its Assessment task. Then the defective asset is sent for either off-site or on-site repair. The line is closed after all these tasks are finished.

The following procedures explain how to close a single line by closing its tasks. You must repeat these procedures for all the request lines.

**Close the Assessment task for an RMA request**

Close the Assessment task for an RMA request so that the defective assets can get repaired or replaced.

**Before you begin**

Role required: asset, inventory user, or itil

The asset, inventory\_user, or itil role can only access the reports of the RMA request lines.

**Procedure**

1. Navigate to **All > Inventory > Return Merchandise Authorization > All RMA Requests**.  
The RMA Request page appears and shows a list of RMA requests.
2. Open the RMA request that you want to close.
3. Under the RMA Request Lines related list, open an RMA request line.
4. Under the Asset RMA Tasks related list, open the Assessment task.
5. On the form, fill in the fields.

**Assessment task form**

Field	Description
State	State of the task.
Stockroom	Stockroom of the faulty asset or consumable.
Vendor	Vendor from which the asset was purchased.
Vendor RMA number	RMA reference number given by your asset vendor.
Assignment group	Group to which the RMA task is assigned.
Assigned to	User from the assignment group to whom the RMA task is assigned.

Field	Description
RMA action	<p>Action to perform on the RMA. The asset can be repaired either on-site or off-site at the vendor's location. Choices are as follows:</p> <ul style="list-style-type: none"> <li>○ <b>On-site</b></li> <li>○ <b>Off-site</b></li> </ul> <p>Before you close the task, you must update this field.</p>

**6. Click Close Task.**

In the Asset form, the state of the faulty asset changes to In stock and the substate changes to Pending repair.

If the faulty asset is part of an asset bundle, then after closing the Assessment task, the state of the bundle changes to In stock and Pending repair. If there are multiple RMA requests from a bundle, the state of the bundle remains as In stock, and Pending repair until all the RMA requests are closed.

**Result**

Based on whether you selected **On-site** or **Off-site** from the **RMA action** field, either the Asset RMA On-site flow or the Asset RMA Off-site flow is triggered to generate the related RMA tasks to complete the RMA process.

**Close an RMA request with off-site repair or replacement**

Close an RMA request in which a faulty asset is repaired or replaced in the location of the vendor.

**Before you begin**

Role required: asset, inventory user, or itil

**About this task**

After you select **Off-site** from the **RMA action** field on the Assessment task form, a Shipment task is generated under the Asset RMA Tasks related list in the RMA request line. Close the Shipment task and the other RMA tasks one by one to complete the RMA process.

You can cancel an RMA request line that was triggered from an Asset RMA Off-site flow if you have the inventory user or itil role. To cancel an RMA request line, you must do it before the Shipment task is closed.

**Procedure**

1. In the RMA Request Line form, under the Asset RMA Tasks related list, open the Shipment task.
2. On the form, fill in the fields.

**Shipment task form**

Field	Description
State	State of the Shipment task.
Vendor RMA number	RMA reference number given by your asset vendor.
Assignment group	Group to which the RMA task is assigned.

Field	Description
Assigned to	User from the assignment group to whom the RMA task is assigned.
Shipping carrier	Name of the carrier who ships the asset to the location of the vendor for repair or replacement.  This field is a reference to the Shipping carrier [sn_itam_shipping_carrier] table.
Ship date	Date on which the asset is shipped. To close the task, you have to update this field.
Tracking number	Shipment reference number given by the carrier vendor.

**3. Select Close task.**

In the Asset form, the state of the asset changes to In transit. In the RMA request line form, under the Asset RMA Tasks related list, a Vendor RMA decision task is generated.

**4.** In the RMA request line form, under the Asset RMA Tasks related list, open the Vendor RMA decision task.

**5.** On the form, fill in the fields.

**Vendor RMA decision task form**

Field	Description
State	State of the Vendor RMA decision task.
Assignment group	Group to which the RMA task is assigned.
Assigned to	User from the assignment group to whom the RMA task is assigned.
Vendor action	What the vendor wants to do with the faulty asset. Choices are as follows: <ul style="list-style-type: none"> <li>○ <b>Repair</b></li> <li>○ <b>Replace</b></li> </ul> To close the task, you have to update this field.

**6.** Based on what the vendor wants to do with the faulty asset, do one of the following:

- If the vendor wants to repair the faulty asset, select **Repair** from the **Vendor action** field.
- If the vendor wants to replace the faulty asset with a new asset, select **Replace** from the **Vendor action** field.

**7. Select Close task.**

In the RMA request line form, under the Asset RMA Tasks related list, a Receive task is generated.

**8.** In the RMA request line form, under the Asset RMA Tasks related list, open the Receive task.

**9.** On the form, fill in the fields.

**Receive task form**

Field	Description
State	State of the Receive task.

Field	Description
Assignment group	Group to which the RMA task is assigned.
Assigned to	User from the assignment group to whom the RMA task is assigned.
Asset received	Information on whether you received the repaired or new asset. To close the task, you have to update this field.
Replacement asset	The new asset that you received as a replacement for the faulty asset. This option appears only when <b>Replace</b> is selected from the <b>Vendor action</b> field in the Vendor RMA decision task.

10. If you received the repaired asset, do the following:

- a. From the Asset received list, select **Yes**.
- b. Select **Close task**.  
In the Asset form, the state of the asset changes to In stock and the substate changes to Available.

11. If you received a new asset as a replacement for the faulty asset, do the following:

- a. From the Asset received list, select **Yes**.
- b. Add the new asset to the Asset [alm\_asset] table of the Asset form and return back to the Receive task form.
- c. In the **Replacement asset** field, select the new asset.
- d. Select **Close task**.  
In the Asset form, the state of the new asset is In stock and the substate is Available. The **Acquisition method** field under the Financial section in the Asset form shows RMA Replacement.

In the Asset form, the state of the old faulty asset changes to Retired and the substate changes to Vendor credit.

If a vendor replaces an asset that was part of a bundle with a different model, then a warning appears when you select the new asset. The new model can't be added to the bundle. If you close the Receive task, the faulty asset is removed from the bundle. The state of the bundle changes to Build, the state of the new asset changes to In stock, and the substate changes to Available.

**Result**

The RMA process is complete.

**Close an RMA request with on-site repair**

Close an RMA request in which the faulty assets are repaired on-site.

**Before you begin**

Role required: asset, inventory user, or itil

**About this task**

After you selected **On-site** from the **RMA action** field on the Assessment form, an On-site repair task is generated under the Asset RMA Tasks related list in the RMA request line.

If the asset is successfully repaired on-site, then close the On-site repair task. The RMA process will be complete for the asset that was faulty.

If the asset could not be repaired on-site, you may send the asset for an off-site repair. If you send the faulty asset for an off-site repair, the Asset RMA Off-site flow triggers the required RMA tasks to complete the RMA process.

If you have the inventory user or itil role, then you can cancel an RMA request line that was triggered from an Asset RMA On-site flow until the Repair confirmation task is closed.

**Procedure**

1. In the RMA request line form, under the Asset RMA Tasks related list, open the On-site repair task.
2. On the form, fill in the fields.

**On-site repair task form**

Field	Description
Vendor RMA number	RMA reference number given by your asset vendor.
Assignment group	Group to which the RMA task is assigned.
Assigned to	User from the assignment group to whom the RMA task is assigned.
Repair confirmation	Confirmation on whether the asset was successfully repaired on-site or not. To close the task, you have to update this field.
Action change	Option to send the faulty asset for off-site repair because it couldn't be repaired on-site. This option appears only if you selected <b>No</b> from the <b>Repair confirmation</b> field.

3. If the faulty asset was successfully repaired on-site, then do the following:
  - a. From the Repair confirmation list, select **Yes**.
  - b. Click **Close task**.  
In the Asset form, the state of the asset changes to In stock and the substate changes to Available. The RMA process is complete.
4. If the faulty asset could not be repaired on-site and you want to send it for an off-site repair, then do the following:
  - a. From the Repair confirmation list, select **No**.
  - b. From the Action change list, select **Off-site**.
  - c. Click **Close task**.  
The Asset RMA Off-site flow is triggered and Shipment task is generated. See [Close an RMA request with off-site repair or replacement](#) for details.

In the Asset form, the state of the asset changes to In stock and the substate changes to Pending repair.

## Create an inventory stock order request

Create an inventory stock order request so that you can order new hardware in bulk for your stockrooms. After your request is approved, the Hardware Stock Order flow takes you through the process of requesting, sourcing, and receiving your order.

### Before you begin

Role required: Inventory user

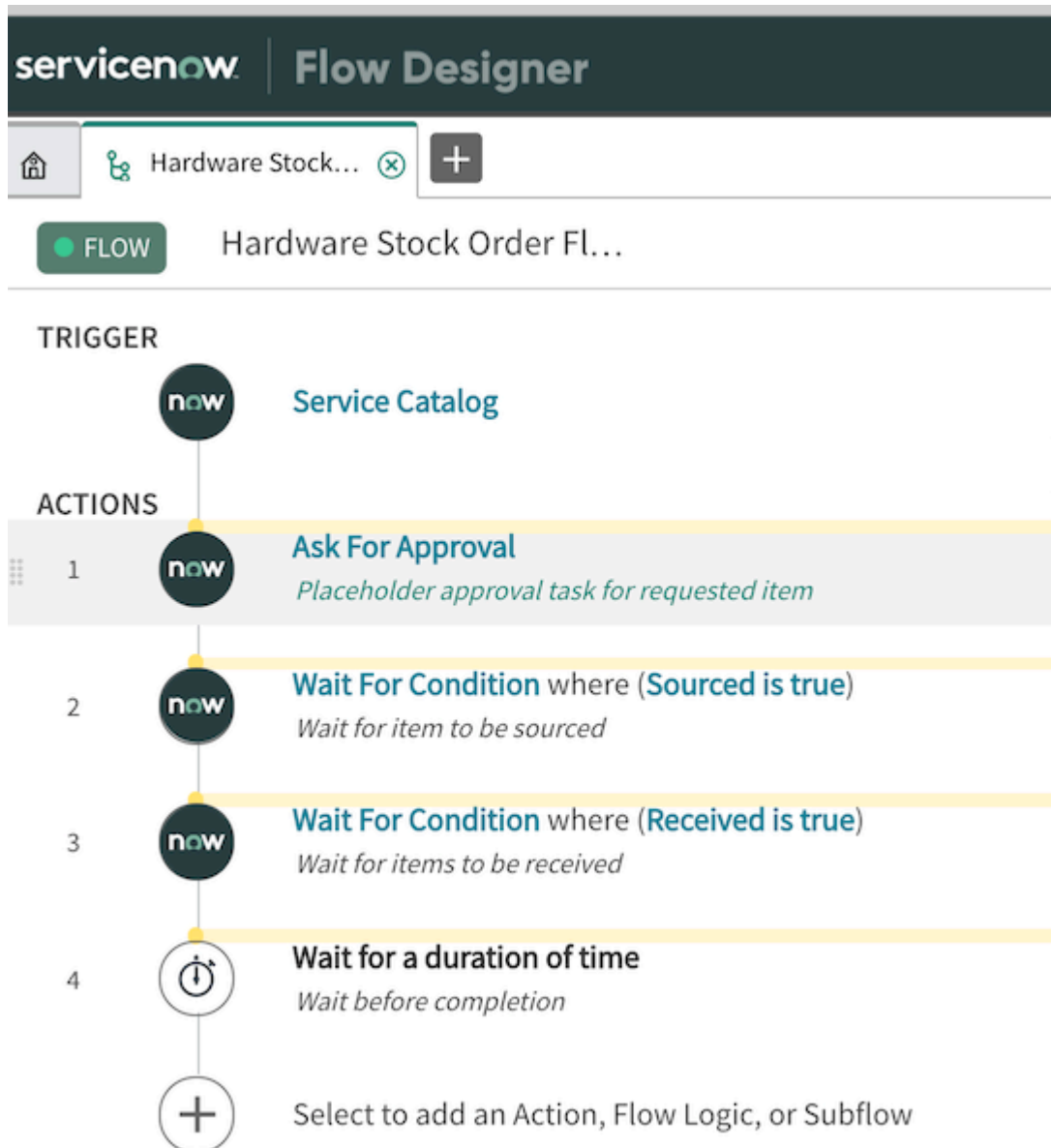
### About this task

A stock order is a catalog request to replenish the stock in a stockroom.

You can manually create a hardware inventory stock order request. However, an inventory stock order request is automatically created from a stock rule trigger when the stock rule threshold breaches.

After your stock order request is approved, the Hardware Stock Order flow is triggered. The Workflow Studio application is used to create the Hardware Stock Order flow to take you through the entire process of requesting, sourcing, and receiving your order.

#### Hardware Stock Order Flow



Role required: inventory\_admin

**Procedure**

1. Navigate to **All > Inventory > Submit Stock Order**.
2. On the form, fill in the fields.

**Hardware Inventory Stock Order form**

Field	Description
Model	New hardware that you want to order.
Quantity	Amount of the new hardware that you want to order.
Stockroom	Stockroom where you want to stock the new hardware.
Comments	Details that are specific to your order request.

**3. Click Order Now.**

The Order Status form displays all the order details. An existing service catalog request workflow takes care of all the required approvals for the request. You can now source your request.

**4. Click the request number to open the request.**

The price of the request item is the price of the model. The price of the request is calculated as quantity of the request item multiplied by the price of the request item. The price of the request item that's shown in the Requested Items related list is the price of the model calculated by the quantity.

Price of the Request Item is the Price of the Model and Price of the Request is calculated as Quantity of Request Item \* Price of the Request Item.

A catalog task is created after the request is approved.

**5. Click Catalog Tasks and open the catalog task.**

**6. Click Source Request.**

The Source Request form layout lists the model name, the quantity of items to be sourced, and the total quantity of the hardware in stock.

**7. Click Add Transfer Order or Add Purchase Order to source the request via a transfer order or a purchase order.**

The quantity mentioned in **Total in Stock** does not include the stock that's available in the destination stockroom.

If the requested item is not available in any stockroom, then **Add Transfer Order** is disabled. If there are no available vendors for the requested item, then **Add Purchase Order** is disabled.

To enable **Add Purchase Order**, do one of the following:

- add a designated vendor by navigating to vendor items.
- add a catalog item for the requested model with vendor details.

**Transfer orders for Asset Management**

Transfer orders move assets between company stockrooms.

The Asset Management application enables asset managers to create transfer orders for moving assets between company stockrooms.

Consumable assets and non-consumable assets can be transferred as follows:

- If an asset is consumable, it can be transferred and the quantity can be greater than one. Consumable parts are tracked by the system qualitatively.
- If an asset is non-consumable, it must be transferred as a single entity with a quantity of one. Non-consumable parts correspond to assets defined in the system.

**i Important:** The Transfer Order Line workflow in the Asset Management application handles the processing of transfer order lines. However, if the Service Management Core plugin is also activated on your ServiceNow instance, the Transfer Order Line SM core workflow will process the transfer order lines instead. For more information, see [Move an asset through the transfer process](#).

## Transfer order lines

Transfer Order Lines is a new module under Inventory with Template Tasks and Template Subtasks as the sub modules. Transfer order lines allow the transfer of multiple assets on one transfer order. Actions such as shipment preparation can take place at the transfer order line level. Pre-allocated assets can be included in a transfer order line, but can only be transferred in their full quantity. A business rule prevents the same asset from being transferred on two different transfer orders at the same time.

**i Note:** The Transfer Order and the Transfer Order Line workflows have moved from the Procurement plugin to the Asset Management plugin. The Transfer Order Line workflow runs only if no other workflows are matched or running on a specific record.

## Transfer order line tasks

When you create a transfer order line, based on the model category specified in the asset, a transfer order line task is automatically created. Transfer order line tasks are created to move transfer order lines from one stage to the other. Transfer order line tasks also help you to track service levels and the time frame needed to complete a transfer order.

Default template tasks are available with the Asset Management application. The template tasks are based on model categories. Default template tasks cannot be deleted or modified. If required, you can also create your own customized template tasks. For more information, see [Create a customized template task](#). When you create a transfer order line and select an asset, that asset corresponds to a model category. If a customized template task exists for that model category then that template task is added to the transfer order line as a transfer order line task. If no customized template task match is found for the asset you selected, then the default template task is added as a transfer order line task.

Closing a transfer order line task completes the task and creates the next task in the process. For example, once you close the Ready for fulfillment task, the state for this task appears as **Closed Complete** and a new task is opened for the next stage, Ready for Shipment. This process continues till you close all the tasks required for completing the transfer order line. As you close a task and as a task moves from one stage to the next, the asset gets automatically updated too. For example, when the transfer order line moves from Ready to Fulfillment to Prepare for Shipment, the asset's status also moves from available to reserved.

**Note:**

If you skip a transfer order line task and select **Closed Skipped**, the asset is not updated automatically. Once the asset is received or delivered, you can make the update manually.

If you are upgrading from any previous release to the New York release, and you have an open transfer order line that is still being processed, all the transfer order line tasks associated with that transfer order line are simultaneously created and displayed in the transfer order line form layout. Based on the stage of the transfer order line, the tasks that still need to be processed will be open; all the other tasks that have already been completed will be closed. Based on the order, if you close a later transfer order line task, all the previous tasks, which are currently open, automatically will be **Closed Skipped**.

**Transfer order line subtasks**

To further add granularity and efficiency to the process, you can also create subtasks for each transfer order line task. Each transfer order line task can have multiple subtasks. For example, before preparing for shipment, for a computer, you may want to create subtasks for imaging the computer or adding additional software. If subtasks have been defined for a particular transfer order line task, then the subtasks are automatically added to the transfer order line task. Once all the subtasks are closed, the transfer order line task is automatically closed. For more information, see [Create a template subtask](#).

**Transfer assets using transfer orders**

Transfer assets from one location to the other by moving the assets through the transfer order process. You create a transfer order and move it from its initial **Draft** status to the final **Received** status.

**Before you begin**

Role required: inventory\_user

The inventory\_user, asset, or procurement\_user role can only access the Transfer Order [alm\_transfer\_order] reports. You must activate the Procurement (com.snc.procurement) plugin for the inventory\_user, asset, and procurement\_user roles.

**Procedure**

1. Navigate to **All > Inventory > Transfer Orders > Create Transfer Order**.
2. In the **From Stockroom** list, select a stockroom from which you want to ship the items.
3. In the **To Stockroom** list, select a stockroom where you want to ship the items.

**Note:** If you select the same stockroom in both the From Stockroom and To Stockroom fields, the transfer order automatically moves from **Draft** to **Received** when a transfer order line is added.

4. Select a date and time for the delivery from the **Delivery by date** date picker.
5. Select **Submit**.
6. Open the transfer order.
7. Next to **Transfer Order Lines**, click **New**.
8. Select a model for the transfer order line.
9. If the model is a consumable, specify a quantity in **Quantity Requested**.
10. Click **Submit**.

After creating transfer order lines, the transfer order and all the transfer order lines are in the draft stage. While a transfer order or a transfer order line is in the draft stage, it can be deleted.

**Note:** When an asset is part of a transfer order set to **Draft**, the asset record updates to show the asset as reserved. You can't request or transfer the asset while it's reserved.

When you create a transfer order line, based on the model category specified in the asset, a transfer order line task is automatically created. The transfer order line task helps you to progress through the various stages of the transfer order line. Each transfer order line task represents a particular stage in the transfer process. As you close a task, a new task is created and the transfer process moves to the next stage.

**11. Open the transfer order line task and click **Close Task**.**

The transfer order line task is completed and a new transfer order line task is opened.

**What to do next**

Keep closing each task until you reach the last stage (Received). After you close the task for the Received stage, the transfer order line is completed and closed. All transfer order lines and the transfer order are marked **Delivered**.

**Summary of transfer order line tasks**

As assets move through the transfer process, the stage of a transfer order is always based on the individual transfer order lines tasks.

**Transfer order line tasks**

Transfer order line stages	Description
Draft	When a transfer order line is created for the asset.  On the asset form, the <b>State</b> field value remains <b>In stock</b> , and the <b>Substate</b> field value is updated to <b>Pending transfer</b> .
Requested	This task is created first for the transfer order line.  On the asset form, the <b>State</b> field value remains <b>In stock</b> , and the <b>Substate</b> field value remains <b>Pending transfer</b> .
Shipment Preparation	After the <b>Requested</b> task is closed, this task is created. This task deals with preparing the transfer order line for shipment. Specify the values for the shipment tracking fields such as <b>Shipping carrier</b> , <b>Vendor</b> , <b>Tracking number</b> , and <b>Ship date</b> .  On the asset form, the <b>State</b> field value remains <b>In stock</b> , and the <b>Substate</b> field value remains <b>Pending transfer</b> .
In Transit	After the <b>Shipment Preparation</b> task is closed, this task is created.  On the asset form, the <b>State</b> field value changes to <b>In transit</b> , and the <b>Substate</b> field value is updated to <b>Reserved</b> .
Received	After the <b>In Transit</b> task is closed, this task is created.  On the asset form, the <b>State</b> field value changes to <b>In stock</b> , and the <b>Substate</b> field value is updated to <b>Available</b> . The <b>Stockroom</b> field value is updated as the asset is received in the destination stockroom.

## Transfer order line tasks (continued)

Transfer order line stages	Description
Delivered	<p>After the <b>Received</b> task is closed, this task is created. After you close the <b>Delivered</b> task, the transfer order line is completed.</p> <p>On the asset form, the <b>State</b> field value remains <b>In stock</b> and the <b>Substate</b> field value is updated to <b>Reserved</b>.</p>

### Related topics

- [Transfer order line asset tracking](#)
- [Transfer order line asset tracking of non-consumables](#)
- [Transfer order line asset tracking consumables](#)

### Delete a transfer order

You can delete a transfer order only if the transfer order is still in the draft stage.

### Before you begin

Role required: inventory\_user

The inventory\_user, asset, or procurement\_user role can only access the Transfer Order [alm\_transfer\_order] reports. You must install the Procurement (com.snc.procurement) plugin for the inventory\_user, asset, and procurement\_user roles.

### Procedure

1. Navigate to **All > Inventory Management > Transfer Orders > Transfer Orders**
2. Select the check box beside a transfer order.
3. From the Actions on the selected rows menu at the bottom of the list, select **Delete**.

### Related topics

- [Delete a transfer order line](#)
- [Return items received in a transfer order](#)

### Delete a transfer order line

You can delete a transfer order line only if it's still in the draft stage.

### Before you begin

Role required: inventory\_user

The inventory\_user, asset, or procurement\_user role can only access the Transfer Order [alm\_transfer\_order] reports. You must install the Procurement (com.snc.procurement) plugin for the inventory\_user, asset, and procurement\_user roles.

### Procedure

1. Open a transfer order.
2. Select the check box beside a transfer order line.

- From the Actions on the selected rows menu at the bottom of the list, select **Delete**.

Alternatively, you can cancel a transfer order or a transfer order line while it is in **Requested** or **Shipment Preparation** stage. Once all the lines are canceled, the transfer order is automatically canceled.

### Related topics

[Delete a transfer order](#)

[Return items received in a transfer order](#)

### Return items received in a transfer order

When you receive a transfer order and if there's a problem with all or some of the items, you can return the transfer order.

### Before you begin

Role required: inventory\_user

The inventory\_user, asset, or procurement\_user role can only access the Transfer Order [alm\_transfer\_order] reports. You must activate the Procurement (com.snc.procurement) plugin for the inventory\_user, asset, and procurement\_user roles.

### About this task

Items in a transfer order must be received before they can be returned.

### Procedure

- Navigate to **All > Inventory Management > Transfer Orders**.
- Select a transfer order that is in the **Received** stage.
- Click the transfer order line **Number** of the item to return.
- Click **Return**.
- Enter a quantity to return.
- Enter a reason for the return.
- Select the **Defective** check box to return items that are broken.

Defective items are returned to the stockroom from which they were delivered, but aren't added to available stock. Instead, they're tracked in the separate category named "Defective" so they can't be requested or transferred again.

- Click **OK**.
- Click **Update**.

A new transfer order line is automatically created.

A new corresponding parent transfer order is also automatically created with the new transfer order line on it.

- If you're returning a consumable, navigate to the transfer order line record, and click the model name to open the model record.

The model record shows which stockrooms contain the model. The one defective model is listed.

**Note:** The defective model is still at the stockroom to which it was delivered. The defective model must be transferred back to the stockroom where it originated.

11. Move the new transfer order through the regular transfer order process. Items are automatically returned to the stockroom from which they were delivered. A transfer order line item that has been returned can't be delivered later.

If you return another defective model from the same, original order, the two defective returns are merged into one line item.

## Create a transfer order for Asset Management

Create a transfer order in order to transfer assets from one location to the other.

### Before you begin

Role required: inventory\_user

### Procedure

1. Navigate to **All > Inventory Management > Transfer Orders > Create Transfer Order**.
2. Click the **From stockroom** list to select a stockroom from which the item(s) is to be shipped.
3. Click the **To stockroom** list to select a stockroom where the item(s) is to be shipped.
4. Click **Submit**.  
Once the transfer order is created, you can create transfer order lines to specify the items that the transfer order comprises of. See [Create a transfer order line](#).

### Create a transfer order line

Transfer order lines specify the exact items that comprise a transfer order.

### Before you begin

Role required: inventory\_user

### About this task

A transfer order can contain one or more transfer order lines. Under a single transfer order, all transfer order lines will have the same From location and To location. Each line contains an asset to transfer and the quantity to transfer. The item to transfer is identified by asset name and model name. A transfer order line can involve one quantity of a non-consumable asset or multiple quantities of a consumable asset. A bundled model can be transferred.

### Procedure

After creating a transfer order, click **New** in the **Transfer Order Lines** related list and fill in the fields as appropriate.

Field	Description
Number	Internal unique number identifying the transfer order line.
Transfer Order	The transfer order to which the transfer order line belongs.
Model	Model of the items requested by the transfer order line. For example, a printer. If the Asset field is filled out first, the Model field is automatically filled in with the model corresponding to the asset.
Quantity requested	Number of items requested by the transfer order line. For example, 3 computers are requested to be transferred.
Quantity received	Number of items already received. For example, 3 keyboards are transferred, 2 are received.

Field	Description
Stage	Current stage of the transfer order. Transfer order lines can only be created when a transfer order is in <b>Draft</b> stage.
Request line	Requested item to associate with the transfer order line.
Asset	Asset requested by the transfer order line. For example, a specific printer. The asset can filter on stockrooms.
Quantity remaining	Number of items yet to be received. For example, 3 keyboards had been requested, 2 are received, 1 is remaining.
Quantity returned	Number of items that already needed to be returned.

**Related topics**

[Summary of transfer order line tasks](#)

**Create a customized template task**

Create customized template tasks to configure your specific task workflow for transfer order lines. Default template tasks are available with the Asset Management application. You can't modify or delete a default template task.

**Before you begin**

Role required: inventory\_user

**About this task**

Template tasks help you progress through the various stages of the transfer order line. Custom template tasks are stored in the Custom Template Task [alm\_custom\_template\_task] table. The template tasks are based on model categories. For example, when you create a customized template task for the Application model category, whenever a transfer order line is created for the Application model category, the template tasks associated with the Application model category are used as transfer order line tasks. When you create customized template tasks, make a copy of the Transfer Order Line workflow and update the workflow accordingly. For example, if you need only four tasks out of five, you can delete the additional task from the workflow.

**Note:** Two template tasks can't be created when they're based on the same model category, the same order number and the same stage. The model category, the order, and the stage have to be unique for each template task. For example, you can't create two template tasks for Prepare for Shipment, based on the Application model category, order number 200, and the stage as Requested. If you try to create an identical template task as mentioned in the example, an error message is displayed.

**Procedure**

1. Navigate to **All > Inventory > Transfer Order Lines > Template Tasks**.  
All the default template tasks that are available with the Asset Management application are listed.
2. Click **New**.  
You can also customize a template task by copying a default template task. Click **Copy Default Template** and select a model category.
3. Fill out the form fields (as shown in the table).

Field	Description
Task name	Name of the template task
Model category	Model category this template task is based on.
Order	Order in which the template task is added to the transfer order line.
Short description	Brief description about this template task.
Next stage	Stage that this template task gets executed.

**4. Click **Submit**.**

**Create a template subtask**

Create template subtasks to add granularity to the transfer order line tasks. For example, before preparing for shipment, for a computer, you may want to create sub tasks for imaging the computer or adding additional software.

**Before you begin**

Role required: inventory\_user

**About this task**

The template subtasks that you create are stored in the Template Subtask [alm\_template\_subtask] table. When a transfer order line task is created and if subtasks are defined for that transfer order line task, then the subtasks are automatically added to the transfer order line task.

**Procedure**

1. Navigate to **All > Inventory > Transfer Order Lines > Template Subtasks**.
2. Click **New** and fill out the form fields (as shown in the table).

Field	Description
Short Description	A brief description of the subtask.
Subtask name	A name for the subtask.
Task	The task that this subtask is associated to.

**3. Click **Submit**.**

**Transfer order line asset tracking**

As transfer order line actions are triggered, the stock information and states of any affected assets are updated. Consumables and non-consumables are tracked differently.

When an asset is included in a transfer order line, the following takes place:

- A substate field on the asset form changes to reflect the transfer order line states
- The Active TO option on the asset form is automatically selected to show that the asset is part of a transfer order and cannot be added to multiple transfer orders
- The asset is removed from the pool of available assets and changed to a state of *In Stock Pending Transfer*

**Related topics**

- [Delete a transfer order](#)
- [Delete a transfer order line](#)
- [Return items received in a transfer order](#)

**Transfer order line asset tracking of non-consumables**

When transfer order line stages change for non-consumables, it affects asset substates.

Transfer order line stage	Affect on asset substate
Draft	Asset moves to <b>In Stock &gt; Pending Transfer</b> (from the current stockroom). If the asset is a consumable, the quantity can be edited.
Requested	Asset stays in <b>In Stock &gt; Pending Transfer</b> .
Shipment Preparation	Asset stays in <b>In Stock &gt; Pending transfer</b> .
In Transit	Asset moves to <b>In Transit &gt; Reserved</b> .
Received	Asset moves to <b>In Stock &gt; Available</b> (in the destination stockroom).
Delivered	Asset moves to <b>In Stock &gt; Reserved</b> .

**Related topics**

- [Delete a transfer order](#)
- [Delete a transfer order line](#)
- [Return items received in a transfer order](#)

**Transfer order line asset tracking consumables**

When a consumable is added to a transfer order line, the stock for the consumable is split into two records and the transfer order links to the newly created stock line.

For example:

1. Stockroom A has ten keyboards in stock.
2. A transfer order line named TOL1 transfers three keyboards from stockroom A to stockroom B.
3. The stock of ten keyboards in A is split into two records: seven shown as **In stock > Available** and three shown as **In Stock > Pending Transfer**.
4. Another transfer order is created with a transfer order line named TOL2 that transfers two keyboards from stockroom A to stockroom B.
5. The seven remaining keyboards are split into another two lines: five **In stock > Available** and two **In stock > Pending Transfer**.

**Note:** The three **In Stock > Pending Transfer** and the two **In Stock > Pending Transfer** are not merged together because they are not part of the same transfer order line and not necessarily from the same person.

6. As TOL2 for two keyboards moves from *Draft* to *Requested* to *Shipment Preparation*, TOL1 for the three keyboards remains **In Stock > Pending Transfer**.
7. When TOL1 for the three keyboards moves to the *In Transit* stage, the three keyboards are changed to the **In Transit > Reserved** stage. The same happens for TOL2 with two keyboards.
8. When TOL1 is *Received*, the three keyboards move to **In stock > Available** in stockroom B.
9. When TOL2 is received in stockroom B, the two keyboards move to **In stock > Available** and are merged with the three keyboards that are also **In Stock > Available** in B.
10. At the end, stockroom B shows five keyboards are **In Stock > Available**.

**Related topics**

- [Delete a transfer order](#)
- [Delete a transfer order line](#)
- [Return items received in a transfer order](#)

**Create a disposal order**

Create a disposal order for hardware or consumable assets. You can create a disposal order for an asset reaching its end of life cycle or an asset that is no longer functional.

**Before you begin**

**Note:** Install the Hardware Asset Management application from the ServiceNow Store.

To add the consumables to a disposal order, select **Mark for disposal**. This will set the Planned for disposal field to **true**. For more details, see [Plan disposal of consumable assets](#).

Use the Workflow Studio application to create the Hardware Asset Disposal flow to take you through the entire hardware disposal order process.

The hardware disposal order goes through various stages before it's completed. Each stage is associated with a hardware disposal task. To move through the various stages, close each task until you reach the last stage. After you complete the last task, the hardware disposal order is complete. For more information about the hardware disposal order stages, see [Hardware disposal order stages](#).

You can cancel a disposal order until it reaches the transit stage in the workflow. After your disposal order is in the confirmation stage, you can't cancel that order. You can cancel a task that is in a draft, scheduling, or transit stage by selecting **Closed Incomplete** from the **State** list and closing the task.

Role required: asset

**Procedure**

1. Navigate to **All > Hardware Asset Workspace > Inventory view**.

Interface	Action
Core UI	Navigate to <b>All &gt; Inventory &gt; Create Disposal Order</b> .

Interface	Action
Hardware Asset Workspace	<p>a. Navigate to <b>All &gt; Hardware Asset Work space &gt; Inventory view.</b></p> <p>b. Select the <b>Disposal orders</b> tab.</p> <p>c. Select <b>New.</b></p>

2. On the form, fill in the fields.

**Create New Hardware Disposal Order form**

Field	Description
Number	Reference number of the disposal order.
Stockroom	Stockroom where the asset is disposed from.
Vendor	Vendor that you want to dispose the asset to.
Location	<p>Location of the stockroom where the asset gets disposed from. The location automatically appears after you select a stockroom.</p> <p>If you change the location and no location is associated with the selected stockroom, the stockroom field becomes empty. In this scenario, you can select a stockroom from the stockroom list for a specified location.</p>
Assigned to	Person responsible for disposing of the asset.

3. Select **Save.**

The disposal order is created and the hardware asset disposal workflow is triggered.

4. In the Pickup details section of the Hardware Disposal Order Pickup Details form, fill in the fields.

**Pickup Details section**

Field	Description
Scheduled date	Date when you want to dispose of the asset.
Pickup contact name	Name of the person from the vendor who will pick up the asset to dispose of.
Pickup details	Details of the pickup.
Additional info	Any message if you want to add.

5. Select the **Planned Assets** tab.

6. Select **Add.**

7. From the list of available assets, select the assets that you want to dispose of.

The assets that you selected are shown in the Planned Assets tab. Also, the Verify Asset task is created as a hardware disposal task.

8. Select the Verify Asset task.
9. Select the asset that you want to verify and select **Verify**.  
You can't select an excluded asset. For more information, see [Hardware Asset Management license exclusion](#).  
The state of the asset changes to retired and the substate changes to pending disposal. The Scheduled Pickup task is created as a hardware disposal task.
10. Update the Schedule Details section with the details of the Vendor, Vendor order ID, Scheduled date, and Pickup contact name and select **Close task**.  
The Asset Departure task is created as a hardware disposal task.
11. In the Schedule Details section of the Asset Departure task, specify the details in the Shipped to, Shipping carrier, and Tracking number fields.
12. Select **Save**.
13. In the Asset Departure task, select the **Planned Assets** tab.
14. Select the assets that you want to depart and select **Depart**.

**Note:** Planned assets that aren't departed are canceled automatically.

The state of the asset changes to in transit and the substate changes to pending disposal. The Vendor confirmation task is created as a hardware disposal task.

15. Select the Vendor confirmation task and then select **Close task**.  
The stage changes to documentation. The Disposal Documentation task is created as a hardware disposal task.
16. Select the Disposal Documentation task and do the following:
  - a. Select the Attach File icon to attach disposal documentation for the planned assets.
  - b. In the **Certificate of disposal** list, select **Yes**.  
  
You must attach disposal documentation to the order and set the field to **Yes** to close the Disposal order to Completed.

#### 17. Select **Close Task**.

- All the hardware disposal tasks are complete and the hardware disposal order stage changes to completed.
- The **Disposal date** field in the **Disposal** section of the asset form is populated.
- For any maintenance contracts that are associated with the disposed asset, the **Date removed** field in the **Contracts** tab is populated and the disposed asset is no longer part of the contract.
- Any entitlements that are associated with the disposed asset are also removed.

## Use a hardware asset request flow

Use a hardware asset request flow for requesting, sourcing, and deploying hardware catalog items from the Service Catalog application.

### Before you begin

Role required:

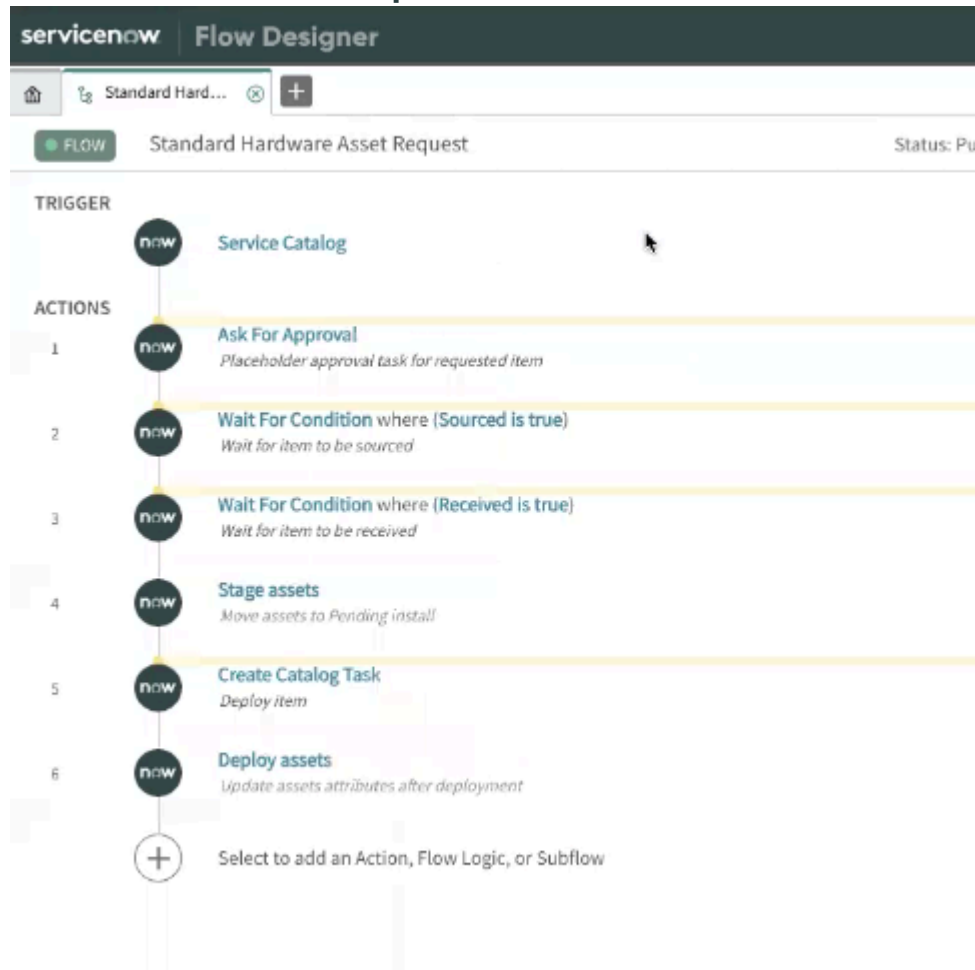
- catalog\_admin
- procurement\_admin

## About this task

Create a request for a hardware catalog item from the Service Catalog application. Associate the catalog item with the Standard Hardware Asset Request flow to trigger the flow.

The Workflow Studio application is used to create the Standard Hardware Asset Request flow to take you through the process of sourcing, procuring, and deploying your hardware catalog items. As the flow takes you through the various stages, the asset details are automatically updated. You can open the Standard Hardware Asset Request flow to view the status of the stages in the flow.

### Standard Hardware Asset Request flow



## Procedure

1. Log in with credentials for the role of catalog\_admin and navigate to **Service Catalog > Maintain Items**.
2. Open the hardware catalog item and in the **Flow** field, select **Standard Hardware Asset Request**.  
If the **Flow** field isn't visible, add it to the form layout by right-clicking the menu icon and navigating to **Configure > Form layout**.
3. Select **Save**.  
The Standard Hardware Asset Request flow is now associated with the hardware catalog item.
4. Navigate to **Service Catalog** and select **Hardware**.
5. Select your catalog item from the list.
6. In the **Location** field, specify the location where the assets should be deployed.

By default, this field is set to the location of the logged-in user. However, you can select a location from the list of available locations.

**Note:** This field is available only for Hardware catalog items that are published from Hardware models after upgrading to Hardware Asset Management 8.0.0.

7. In the **Quantity** field, specify the quantity of the assets and select **Order Now**.
8. Log in with credentials for the role of `procurement_admin` and open the new request.
9. In the Requested Items related list, select the request item.
10. In the Requested Item form layout, select the **Flow Context** related link to view the current stage of the Standard Hardware Asset Request flow.
11. Select the **Catalog Tasks** related list to view the sourcing task for the request.
12. Open the catalog task and select **Source Request**.
13. In the Source Request form layout, select **Add Transfer Order** or **Add Purchase Order** to source the request via a transfer order or a purchase order.  
After you procure the catalog item, the Asset pick task is created for the Requested item only if the asset is sourced from the stockroom which has the Asset Pick task enabled. Otherwise the Deployment task is created for the Requested item without the Asset pick task. For details, see [Enable the Asset pick task for your stockroom in the Hardware Asset Workspace](#).
14. Select the Requested items related list and select the requested item.
15. Select the **Catalog Tasks** related list.
  - If the Pick task is enabled for the source stockroom, complete the Asset pick task first and then complete the Deploy task.
  - If the Pick task isn't enabled, complete the Deploy task.
16. Complete the Asset pick task using the Mobile Agent application.  
For details on completing this step, see [Manage hardware asset pick tasks using the Mobile Agent application](#).  
The Deployment task is created for the requested item.
17. Close the Deployment task.  
In the Standard Hardware Asset Request flow, the action that is associated with deploying the assets is complete. The **State**, **Assigned**, **Installed**, **Location**, and **Assigned to** fields of asset are updated. The CI that is associated with the asset is also updated.

## Audit your inventory

Perform scheduled or blind audits of asset stockrooms and other locations such as offices or datacenters.

### Before you begin

Role required: asset

The asset or `inventory_user` role can only access the Asset Audits [`sn_hamp_asset_audit`] reports.

- Hardware Asset Management
- [ServiceNow Agent app](#)

### About this task

The asset audit process involves verifying and reconciling assets between a physical location or stockroom and the ServiceNow instance. This process includes identifying assets at a physical location by scanning QR codes attached to them and then checking if the corresponding asset

records are present in the ServiceNow instance to generate the audit results. You can view precise inventory information through detailed lists and reports.

You can create an audit on the ServiceNow AI Platform or the ServiceNow Agent app. Use the ServiceNow AI Platform to create scheduled audits and the ServiceNow Agent app for blind audits. For more details on scanning the assets, see [Scan assets by using ServiceNow Agent app](#).

**Procedure**

**1. Create an audit.**

Interface	Action
<b>Core UI</b>	<ol style="list-style-type: none"> <li>a. Navigate to <b>Asset Audits &gt; Asset Audits</b> form.</li> <li>b. Select <b>New</b>.</li> </ol>
<b>Hardware Asset Workspace</b>	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Hardware Asset Work space &gt; Inventory view</b>.</li> <li>b. Select the <b>Asset audit</b> tab. The <b>Asset audit</b> tab displays a list of existing asset audits.</li> <li>c. Select <b>New</b>.</li> </ol>
<b>ServiceNow Agent app</b>	<ol style="list-style-type: none"> <li>a. Tap <b>Assets</b>.</li> <li>b. Select the audit that you want to perform.               <ul style="list-style-type: none"> <li>▪ To perform stockroom audits, tap <b>Stock room audits</b>.                   <ol style="list-style-type: none"> <li>i. Tap the more actions icon ( <b>⋮</b> ).</li> <li>ii. Tap <b>New stockroom audit</b>.</li> </ol> </li> <li>▪ To perform location audits, tap <b>Location audits</b>.                   <ol style="list-style-type: none"> <li>i. Tap the more actions icon ( <b>⋮</b> ).</li> <li>ii. Tap <b>New location audit</b>.</li> </ol> </li> </ul> </li> </ol>

**2. On the Create New Asset Audits form, fill in the fields.**

**Create New Asset Audits form**

Field	Description
Audit number	Audit reference number.
Assigned to	Person responsible for the audit.
Type	Type of the audit. The available values are <ul style="list-style-type: none"> <li>○ Location</li> <li>○ Stockroom</li> </ul>
Status	Present status of the audit.
Stockroom	Location where you want to perform the audit.

Field	Description
Scan date	Date when you want to scan the assets.
Scheduled date	Scheduled date when you want to perform the audit.

**3. Select Save.**

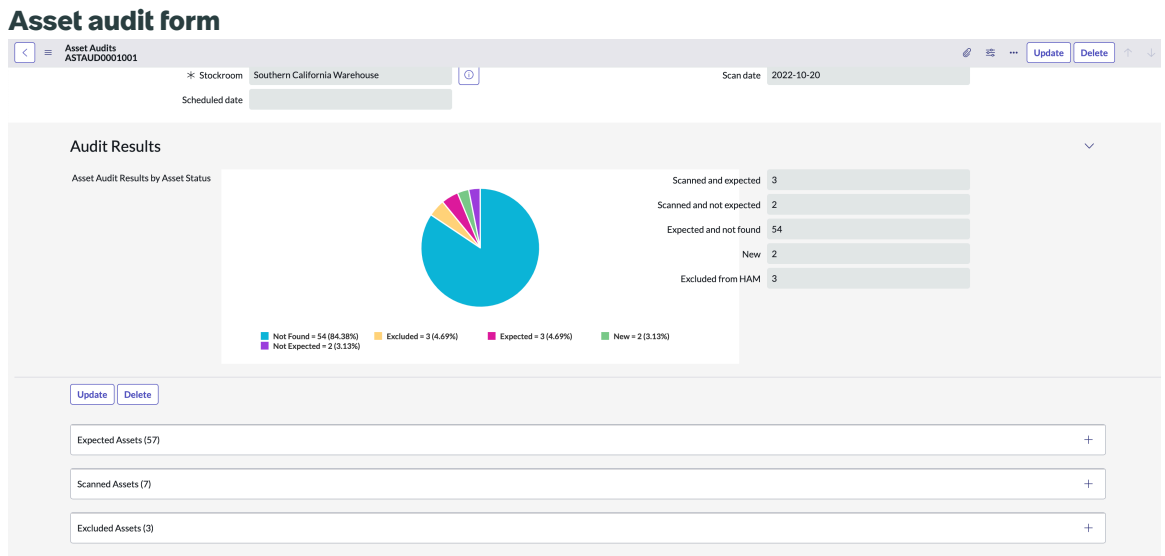
The Audit Results section is activated and shows the details of the audit result.

**4. Optional:** View audit results on the ServiceNow AI Platform.

**a.** Navigate to **Asset Audits > Asset Audits.**

**b.** Select the audit.

(Optional) You can view the Asset audit form and the audit results. For more information, see [Audit results.](#)



**What to do next**

[Scan assets by using ServiceNow Agent app.](#)

**View audit results**

View the audit results after you audit your inventory. The Audit Results section is activated and shows the details of the audit result.

**Before you begin**

Role required: admin

**About this task**

The audit results are generated by comparing the assets scanned at the physical location or stockroom and the asset records present in the ServiceNow instance.

## Procedure

1. Navigate to **Asset Audits > Asset Audits** form.
2. Select the audit number.

You can view the Asset audit form and the audit results. The Audit results show the status of the assets when the scheduled or blind audits of asset stockrooms and other locations are complete. For more information, see [Audit results](#).

## Audit results

The Audit results shows the status of the assets when the scheduled or blind audits of asset stockrooms and other locations is complete.

The audit results are generated by comparing the assets scanned at the physical location or stockroom and the asset records present in the ServiceNow instance.

### Audit Results

Field	Description
Scanned and expected	Number of assets scanned in the audit that are expected to be present at the location or stockroom.
Scanned and not expected	Number of assets scanned in the audit that are not expected to be present at the location or stockroom. These asset records are present in the ServiceNow instance.
Expected and not found	Number of assets that are expected to be present at the location or stockroom but not scanned as part of the audit.
New	Number of asset records that were missing from the ServiceNow instance when the assets were scanned. In such cases, a new asset record is created with the model category set as <b>Unknown model category</b> and the model set as <b>Unknown model</b> .
Excluded from HAM	Number of assets scanned as part of the audit process that are excluded from Hardware Asset Management features. For these assets, audit fields aren't updated.

The following related lists show asset information:

- **Expected Assets:** Shows a list of all assets that are part of the stockroom or location that is being audited. This list gets populated when you scan an asset for the first time in the audit.
- **Scanned Assets:** Shows a list of all assets that are scanned during the audit. The list is updated each time scans are submitted from the ServiceNow Agent app.
- **Excluded Assets:** Shows a list of all assets scanned as part of the audit which are excluded from Hardware Asset Management.

### Scan assets by using ServiceNow Agent app

Scan your assets by using the ServiceNow Agent app.

### Before you begin

Role required: asset

## Procedure

1. Select the audit that you created and select **Scan**.

You can also enter the asset tag manually in the **Asset tag** field. After you enter the asset tag, press the **Enter** key or **return** key.

2. When you're done scanning assets, select **Review**.

On the review page, you can delete assets if needed. However, Hardware Asset Management automatically removes duplicates for assets that you accidentally scan twice.

3. Select **Submit**.

4. Mark the audit as Complete when you're finished scanning assets and mark the audit as in the Agent mobile app.

Otherwise, return to the audit and continue scanning.

### **i** Note:

You can start a new scan as many times as you need while the audit is in progress. After you mark the audit as **Complete**, you can't scan any more assets.

## Request a Hardware Asset Refresh

Use the Hardware Refresh request flow to track the aged hardware assets that are nearing the end of their life cycle. Replace them with new hardware assets.

### Before you begin

Role required: inventory\_user

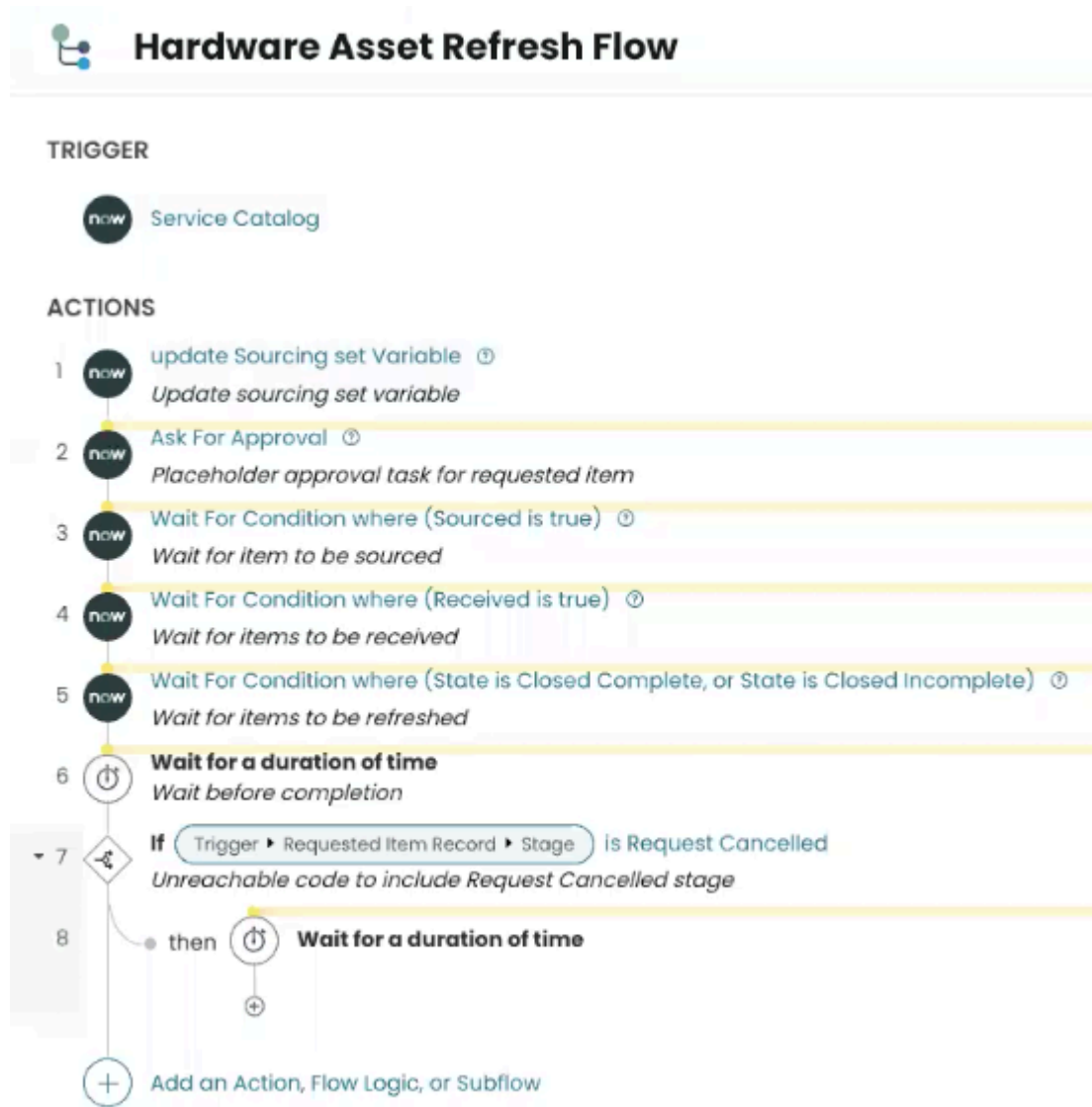
### About this task

When hardware assets get old, their maintenance costs and risks of failure increase, while their performance decreases. You can choose to replace all the old hardware assets with the same or different models of new hardware assets. After your Hardware Asset Refresh request is approved, the Hardware Asset Refresh flow takes you through sourcing and it triggers the Hardware Asset Refresh Line flow. The Hardware Asset Refresh Line flow uses Refresh Line tasks to take you through the steps of preparing the new asset, scheduling it for delivery, deploying it, and reclaiming the aged asset.

The Flow Designer application is used to create the Hardware Asset Refresh flow and the Hardware Asset Refresh Line flow. While customizing the Hardware Asset Refresh module, don't remove or customize the **Update Sourcing set Variable** step in the Hardware Asset Refresh flow.

- i** **Note:** You can check if a hardware model is eligible for refresh by using the Eligible for refresh field of the Hardware [alm\_hardware] table. The SAM - Calculate Asset Refresh Eligibility scheduled job runs weekly and invokes the *Process* method in the *SAMRefreshEligibilityCalculator* Script Include. The Script Include fetches the hardware product model records for the assets for which the useful\_life field (in months) is specified. The date on which the asset record was created is compared with the useful\_life field to determine if the asset is in the useful life period. The Eligible for refresh flag is set to true for assets that aren't in the useful life period.

## Hardware Asset Refresh Flow



While customizing a Hardware Asset Refresh catalog item on the Catalog Item form, don't remove or change the following variables.

### Hardware Asset Refresh Catalog Item form

Tabs in the Catalog Item	Variables
Variables	Type of refresh
	Process
Variable Sets	Hardware Asset Management process set
	Hardware Asset Management sourcing set

**Note:** There are readily available decision tables that you can use to customize the Hardware Asset Refresh Line Flow. For more details, see [Hardware Asset Management flow customization](#).

**Procedure**

**1. Navigate to All > Service Catalog > Asset Lifecycle.**

The **Asset Lifecycle** category isn't on the Service Catalog page by default. To add this category, select the add content icon (+) beside the search catalog bar and then select **Asset Lifecycle**.

**2. Open Hardware Asset Refresh Order.**

**3.** If you want to replace all the aged hardware assets with the same model of new hardware assets, do the following:

**a.** From the **Type of refresh list** field, select **Single model**.

**b.** On the form, fill in the fields.

**Hardware Asset Refresh form**

Field	Description
Replacement model	New hardware asset model that you want to replace the aged hardware assets with.
Location	Location where you want to deploy the new asset.  By default, this field is set to the location of the logged-in user. However, you can select a location from the list of available locations.
Assets	Aged Hardware assets that you want to replace. You can use a filter to search for hardware assets that you want to replace.

**4.** If you want to replace the aged hardware assets with different models of new hardware assets, do the following:

**a.** From the **Type of refresh** field, select **Multi model**.

**b.** Select **Add**.

**c.** For each new hardware asset that you want to use, add a row to enter the hardware model.

**Note:**

You can create 50 rows.

You can't create multiple rows for the same aged hardware asset that you want to replace.

**5. Select Order Now.**

You can't view an excluded asset. For more information, see [Hardware Asset Management license exclusion](#).

**Result**

The aged assets are set to get refreshed. In the Hardware table under the Disposal related list of the aged assets, the **Refresh request line** field is populated.

An Order status page appears and it displays the details of the order. A request is created to source the new hardware assets and to replace the aged hardware assets. The Request form shows the total price of all the new hardware asset models.

**Use Hardware Asset Refresh Lines tasks to replace the aged assets**

Replace aged hardware assets by sourcing new hardware assets.

**Before you begin**

Role required:

- proc\_user for sourcing.
- asset and itil for Refresh Line tasks.

**About this task**

When refreshing hardware assets, you don't have to update the asset records manually. When closing the hardware asset refresh lines, the asset records and the assets are automatically updated. Close each task to go to the next task, complete the refresh, and reclaim the aged assets.

After sourcing the new assets, the asset refresh is completed through the following stages:

- Prepare asset task: Prepare the new asset before you hand it over to the requester. For example, install any software that's required.
- Schedule refresh task: Schedule a date to hand over the asset to the requester.
- Deploy new asset: Hand over the asset to the requester or install the asset at the requester's location if necessary.
- Reclaim aged asset: Collect the aged asset.

**Procedure**

1. Select the hardware asset refresh request.

Interface	Action
Core UI	<p>a. Navigate to <b>All &gt; Service Catalog &gt; Open Record &gt; Requests</b>.</p> <p>b. Select the request number of the hardware asset refresh request that you want to fulfill.</p>
Hardware Asset Workspace	<p>a. Navigate to <b>All &gt; Hardware Asset Work space &gt; Procurement view</b>.</p> <p>b. Select the <b>Requests</b> tab.</p> <p>c. Select the request number of the hardware asset refresh request that you want to fulfill.</p>

After your hardware asset refresh request is approved, the following events happen:

- The Source Request flow is triggered to source new assets.
- In the **Catalog Tasks** tab, a catalog task is created for the procurement of the new hardware asset.

2. Source items in the request.

You can source items in the request by consuming the local stock, through purchase orders, or through transfer orders.

For more details on sourcing items, see [Sourcing items in a service catalog request](#).

After the new asset is received, the following events happens:

- The Hardware Asset Refresh Line flow is triggered for the asset.
- The Hardware Asset Refresh Line tab is displayed next to the Asset Tasks tab on the requested item form.
- The Asset pick task is created under the Refresh Line Tasks only if the requested item is consumed from the local stockroom for which the Asset pick task is enabled. Otherwise the Prepare asset task is created directly without the Pick task. For details, see [Enable the Asset pick task for your stockroom in the Hardware Asset Workspace](#).

**3.** Select the **Hardware Asset Refresh Line** tab.

**4.** Select the hardware asset refresh line.

**5.** Select the **Refresh line tasks** tab.

**6.** Complete the Asset pick task by using the Mobile Agent application.

For details on completing this step, see [Locate and pick the hardware assets in your stockroom using the Mobile Agent application](#).

**7.** Prepare the asset.

**a.** Select the **Prepare asset** task.

**b.** In the **Asset** field, select the hardware asset that you want to replace.

**c.** Select **Save**.

**d.** Select **Close Task**.

- A Schedule refresh task is created under the Refresh Line Tasks.
- The state of the Replacement asset changes to In stock.
- The substate changes to Reserved.
- The **Reserved for** field is populated with the requester details.

**8.** Complete the Schedule refresh task.

**a.** Select the **Schedule refresh** task.

**b.** In the **Scheduled deployment date** field, select the date on which the new asset will be deployed.

**c.** Select **Close Task**.

- The Deploy new asset task is created under the Refresh Line Tasks.
- The state of the Replacement asset changes to In stock and the substate changes to Pending install.

**9.** Complete the Deploy new asset task.

**a.** Select the **Deploy new asset** task.

**b.** Confirm if you have reclaimed the old asset in the **Is reclaimed** list.

- If you've collected the aged asset, select **Yes**.
- If you didn't collect the aged asset, select **No**.

The Location field shows the location where the new asset should be deployed.

c. Select **Close task**.

**Note:** If you select **Yes** from the **Is reclaimed** list, then the Reclaim aged asset task is also closed by default.

- Reclaim aged asset task is created under the Refresh Line Tasks.
- The state of the replacement asset changes to In use.
- The allocations are transferred from the aged asset to the replacement asset.

10. Complete reclaiming the aged assets.

a. Select the **Reclaim aged asset** task.

b. Confirm if you have reclaimed the old asset in the **Is reclaimed** list.

- If you've collected the aged asset, select **Yes**.
- If you didn't collect the aged asset, select **No**.

c. Select **Close task**.

**Note:** You can cancel the hardware asset Refresh Line either by selecting **Cancel** or by changing the **State** field to **Closed Incomplete** in the Refresh Line task.

## Result

After the aged hardware asset is reclaimed, the following changes happen on the Hardware form:

- The state of the aged asset changes to In stock.
- The substate changes to Pending disposal.

## Manage your expiring contracts for leased hardware assets

Use the lease contract expiration flow and decide on what to do before your leased hardware asset contract expires. Get notifications about the lease contracts that are nearing their expiration dates.

### Before you begin

Role required: contract\_manager

### About this task

When a lease contract is nearing its expiration, contract administrators and business owners are notified 90, 60, and 30 days before the expiration date. Getting these notifications early can help give them enough time to act and to avoid paying a penalty. You can customize the email notifications by navigating to **System Notification > i > Notification > Lease contract threshold breached**.

You can view a consolidated list of asset contracts that are expiring on the Hardware Asset Dashboard in the month, quarter, and year formats. For more information, see [Hardware Asset Dashboard](#).

**i Note:**

When the Hardware Asset Management license is activated, the **Renew** UI button doesn't appear for active lease contracts that have assets covered.

If an asset is associated with more than one lease contract, then the **Lease contract** field on the asset record reflects the most recently associated contract.

There are readily available decision tables that you can use to customize the Lease Contract Expiration Flow, Leased Asset Buyout Flow, Leased Asset Extension Flow, and Leased Asset Return Flow. For more details, see [Hardware Asset Management flow customization](#).

With the lease contract expiration flow, the possible lease actions are buying out the leased asset, extending the lease agreement, or returning the asset or another like product.

**i Note:** For an asset covered, if the **Date removed** field is in the past, then the state of the asset is automatically set to Canceled and you can't take any lease actions.

**Procedure****1. Navigate to **Contract > Contracts > Leases**.**

The Lease page opens. It shows a list of lease contracts.

**2. Open the relevant active lease contract and click the **Begin Lease expiration process** related link.****i Note:**

The **Begin Lease expiration process** related link is visible only in active contracts that have at least one asset covered.

You can't choose a lease action such as Buy out, return, and extend for an excluded lease asset. For more information, see [Hardware Asset Management license exclusion](#).

The Leased Assets related list shows all the hardware assets that are covered in the lease contract.

In each asset record that is covered under the lease agreement, a Planning task is generated. The Planning task is automatically assigned to the contract administrators.

**3. Under the Leased Assets related list, perform any of the following to take a lease action:**

- Open a record and then open the Planning task. In the Planning task, select a lease action from the Lease action list.
- Open an asset. From the Asset Covered form, select a wanted lease action from the Lease action list.
- On the list of assets, double-click the **Lease action** field of an asset and select a lease action.

A set of tasks is created. If you select a lease action by a method other than opening the Planning task, then the state of Planning task is automatically moved to Closed.

**i Note:** By default, the Planning tasks are created only for the first 1000 assets under the contract. If you want to create Planning tasks for more than 1000 assets, then you can change the default value (1000) of the `com.sn.hamp.flow.lease_contract_expiration.max_results` key in the Asset Property (asset\_property.list) table. Only users with the asset role can change this property.

**Result**

Based on your selected action, the corresponding workflow is triggered and the associated Contract Asset tasks are created. Close one task to go to the next task.

**What to do next**

Based on what lease action you selected, perform any of the following:

- [Return your leased hardware asset.](#)
- [Buy out your leased hardware asset.](#)
- [Extend your lease contract.](#)

**Return your leased hardware asset**

Return your hardware asset before the contract expires and avoid paying a penalty.

**Before you begin**

Role required: asset, itil, contract\_manager, inventory\_admin, or ham\_admin

**About this task**

After you choose to return your leased asset, various Contract Asset tasks are created to take care of the return process for leased assets. Close each task to go to the next and to complete the process.

**Procedure**

1. Open a lease record.

UI	Action
<b>Core UI</b>	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Contract &gt; Contracts &gt; Leases.</b></li> <li>b. Select a lease record.</li> </ol>
<b>Hardware Asset Workspace</b>	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Hardware Asset Work space &gt; Contract management.</b></li> <li>b. Select the <b>Leases</b> related list and select a lease record.</li> </ol>

2. Select the Leased Assets related list.
3. Select an asset.
4. Under the **Contract Asset Tasks** tab, select the Planning task.
5. On the Contract Asset Task form, select **Return** from the Lease action list.
6. Change the **State** to **Closed Complete**.  
 To take a lease action, you can follow any of the ways mentioned in [Manage your expiring contracts for leased hardware assets.](#)  
 A Collection task is generated under the **Contract Asset Tasks** related list.
7. Select the Collection task.
8. If you successfully collected the asset, then do the following:
  - a. Select the **Asset collection** tab.
  - b. Set the **Asset collected** field to **Yes**.
  - c. In the **Stockroom** field, enter the stockroom where the asset is stored.

On the Hardware form of the leased asset, the asset is moved to the In stock state and to the Pending transfer substate.

9. If you haven't collected the asset from your user, then do the following:

a. Update the **Asset collected** field to **No**.

The **Action change** field appears under the **Asset collection** tab.

b. If you're unable to collect the leased asset from your user and you want to buy out the leased asset, select **Buyout** from the Action change list.

Further buyout-related tasks are created to take care of the buyout process. See [Buy out your leased hardware asset](#).

c. If you're unable to collect the leased asset from your user, and if you want to extend the lease contract, select **Extend** from the Action change list.

Further extension-related tasks are created to take care of the lease extension process. See [Extend your lease contract](#).

d. If you're unable to collect the leased asset from your user and the leaser agrees that you return another similar asset, then do the following:

i. Select **Like-kind return** from the Action change list.

On the original asset, the **Like-kind exchange** field is populated and the asset moves to the Missing state.

ii. From the **Like-kind returned asset** field, select the asset that you want to return to the leaser.

iii. From the **Stockroom** field, select the stockroom that contains the like asset that you want to return.

Further return-related tasks are created for the like asset to take care of the return process.

In the Hardware form, the following changes occur:

- The asset is moved to the Missing state.
- The like asset is moved to the In stock state and to the Pending transfer substate.

10. On the Collection task form, close the task.

During the return confirmation, if there's a need of settlement, you can update the **Settlement** field to **Yes** and update the **Settlement amount** field with the settlement cost. If you do this, a Return Settlement task and a Purchase order are then generated. After the Purchase order is moved to the Received state, the Settlement task is closed automatically.

After the Collection task is closed, a Preparation task is created to remove device allocations of the asset.

11. Under the **Contract Asset Tasks** related list, open the Preparation task.

12. On the form, change the **State** field to **Closed Complete**.

After the Preparation task is closed, a Shipment task is created to update the shipment details.

13. Under the **Contract Asset Tasks** related list, open the Shipment task.

14. Update the **Shipping carrier**, **Ship date**, and **Tracking number** fields.

15. Close the Shipment task.

A Return Confirmation task is created. On the Hardware form, the leased asset is moved to the In transit state and to the None substate.

16. Under the **Contract Asset Tasks** related list, open the Return Confirmation task and do the following:
  - a. Set the **State** field to **Closed Complete**.
  - b. Set the **Return confirmation** field to **Yes**.

### Result

The Return Confirmation task is automatically assigned to the contract administrator. If necessary, you can assign it to any other user.

On the Hardware form of the leased asset, the asset is moved to the Retired state and to the Lease return substate.

### Buy out your leased hardware asset

Buy out your leased hardware asset before the contract expires and avoid paying a penalty.

### Before you begin

Role required: asset, itil, contract\_manager, inventory\_admin, or ham\_admin

### About this task

After you choose to buy out your leased asset, various Contract Asset tasks are created to take care of the purchase process for leased assets. Close each task to go to the next task and to complete the process.

- Note:** To close the Buyout tasks, the Purchase order that is created for the leased asset must be approved by the Procurement manager.

### Procedure

1. Navigate to **All > Contract > Contracts > Leases**.
2. Click the Leased Assets related list.
3. Open an asset.
4. Under the **Contract Asset Tasks** related list, open the Planning task.
5. On the Contract Asset Task form, select **Buyout** from the Lease action list.
6. Change the **State** to **Closed Complete**.  
To take a lease action, you can follow any of the ways mentioned in [Manage your expiring contracts for leased hardware assets](#).

The Purchase order and Purchase order lines are created. In the Purchase order form, the **PO Type** field under the Details section is set to **Lease buyout**. You can order the Purchase orders only after completing all the asset tasks that are associated with the line items of the Purchase order.

After receiving the Purchase orders, Expense lines are created to track the cost of the buyout.

If the lease Buyout Purchase order of your contract is in the Requested state, and if some assets covered under the same contract are updated with the Buyout lease action, then the Purchase order lines of the assets covered are appended to the Purchase order. A new purchase order is created only if an existing Purchase order for a lease buyout is not in the Requested state.

A Buyout task is created to update the buyout information.

7. Under the **Contract Asset Tasks** related list, open the Buyout task.
8. Under the **Buyout details** tab, do the following:

- a. Update the **Buyout date** field with the date on which you want to purchase the asset.
  - b. Update the **Buyout amount** field with the amount to purchase the asset.
9. Fill in the fields as required.
10. Change the **State** field to **Closed Complete**.

After you update the **Cost** field on the Purchase order line, the **Buyout amount** field is automatically populated with the same amount. You can change the **Cost** field on the Purchase order line until the Buyout task is closed.

A Buyout Confirmation task is created to take care of the confirmation process.

11. Under the **Contract Asset Tasks** related list, open the Buyout Confirmation task and do the following:
- a. Fill in the required fields.
  - b. Update the **Buyout confirmation field** to **Yes**.
  - c. Change the **State** field to **Closed and Complete**.

If you want to change the **Buyout amount** field from the Buyout Confirmation task form, you can change the amount from the Purchase order.

To close the Buyout Confirmation task, the Purchase order must be in the Received state.

## Result

After a buyout is confirmed, the following changes occur in the asset record under the **Financial** tab:

- The **Cost** field is updated to the buyout amount.
- The **Acquisition method** field is changed to Purchase.

## Extend your lease contract

Extend your lease contract before the contract expires and avoid paying a penalty.

### Before you begin

Role required: itil, contract\_manager, inventory\_admin, or ham\_admin,

### About this task

After you choose to extend the lease contract of your asset, various Contract Asset tasks are created to take care of the contract extension process. Close each task to go to the next task and to complete the process.

- Note:** To close the Extension tasks, the Purchase order that is created for the leased asset must be approved by the Procurement manager.

## Procedure

1. Navigate to **All > Contract > Contracts > Leases**.
2. Under the Related Links section, click the Leased Assets related list.
3. Open an asset.
4. Under the **Contract Asset Tasks** tab, open the Planning task.
5. Select **Extension** from the Lease action list.
6. Change the **State** field to **Closed Complete**.  
To take a lease action, you can follow any of the ways mentioned in [Manage your expiring contracts for leased hardware assets](#).

The Purchase order and Purchase order lines are created. The **PO Type** field on the Purchase order line is automatically set to **Extension**. You can order the Purchase orders only after completing all the asset tasks that are associated with the items of the Purchase Order line.

After the Purchase orders are created, Expense lines are created to track the costs of the contract extension.

An Extension task is created to take care of the extension process.

7. Under the **Contract Asset Tasks** related list, open the Extension task.
8. Under the **Extension details** tab, update the **Extension start date** and **Extension end date** fields.
9. Update the **Extension cost** field with the amount to extend the lease agreement of the asset covered.  
The Purchase order line is automatically updated with the same amount.
10. Change the **State** field to **Closed Complete**.  
An Extension Confirmation task is created to take care of the confirmation process.
11. Under the **Contract Asset Tasks** related list, open the Extension Confirmation task.  
If you want to change the Extension amount from the Extension Confirmation task, then you can change the amount from the Purchase order.

**Note:** To close the Extension Confirmation task, the Purchase order must be in the Received state.

12. Set the **Extension confirmation** field to **Yes**.
13. Change the **State** field to **Closed Complete**.

### Result

A new contract is created with the start and end dates set as the extension start and end dates.

## Reclaim hardware assets

Reclaim hardware assets efficiently and store them in the inventory, reassign, send it for repair, or dispose of as required.

### Submit an asset reclamation request

Use Reclaim Asset catalog item to efficiently reclaim hardware assets when an employee leaves an organization or moves to a different role.

### Before you begin

Role required: Any employee can submit an asset reclamation request.

### About this task

Asset bundles and pallets can't be reclaimed.

### Procedure

1. Navigate to **All > Service Catalog > Asset Lifecycle > Reclaim Asset**.
2. On the Reclaim Asset form, fill in the fields.

**Reclaim Asset form**

Fields	Description
Requested by	The role of the person, such as an HR professional, Manager, or Employee, who submits the asset reclamation. <ul style="list-style-type: none"> <li>○ If Manager is selected, all the employees reporting to the Manager appear in the <b>Requested for</b> field.</li> <li>○ If Employee is selected, the <b>Requested for</b> becomes read-only.</li> </ul>
Requested for	Person for who you are submitting the asset reclamation.
Employee separation	Whether the person for who you are submitting the asset reclamation is leaving the organization or moving to a different role.
Asset	Hardware assets assigned to the person for who you are submitting the asset reclamation.
Reclaim method	The method how you want to collect the hardware assets from the departing employee. You can pick up the assets or the employee can either drop off or ship them to the organization.
Legal hold method	If the hardware assets need to be kept on hold because of any legal reasons.
Notes/Special instructions	Any instructions if you want to mention.

**3. Select **Submit**.**

An Asset Reclamation Request is created.

**Close an asset reclamation request**

Efficiently reclaim hardware assets when an employee leaves an organization or moves to a different role.

**Before you begin**

Role required: inventory\_user or inventory\_admin

**About this task**

For each reclaimed asset, a Hardware Asset Reclamation Line is created. For each Hardware Asset Reclamation Line, at most three Hardware Asset Reclamation Tasks are created.

You must close all the tasks of a Hardware Asset Reclamation Line to close the Hardware Asset Reclamation Line. After all Hardware Asset Reclamation Lines are closed, the Asset Reclamation Request is closed.

**Procedure**

1. Navigate to **All > Inventory > Asset Reclamation > Asset Reclamation Request**.
2. Open the Asset Reclamation Request that you want to close and then open a Hardware Asset Reclamation Line.  
Based the Reclaim method selected while submitting the Asset Reclamation request, a Schedule drop off, Schedule pickup, or Schedule shipment task is created in the Hardware Asset Reclamation Line.  
The **Stage** field of the Hardware Asset Reclamation Line form shows **Ready**.
3. Open the Schedule drop off, Schedule pickup, or Schedule shipment task that is present in the Hardware Asset Reclamation Line.
4. On the form, fill in the fields.

**Schedule shipment task form**

Field names	Description
Assignment group	Group to which the Schedule shipment task is assigned.
Assigned to	User from the assignment group to whom the Schedule shipment task is assigned.
Stockroom	Location where the reclaimed assets are stored. This field is required.
Shipping carrier	Name of the carrier vendor who ships the asset to the stockroom.  This field is required and it is a reference to the Shipment carrier [sn_itam_shipping_carrier] table.
Tracking number	Shipment reference number given by the carrier vendor. This field is required.
Ship date	Date on which the asset is shipped. This field is required.
Work notes	Any additional information that you want to mention.

5. Select **Close Task**.  
The **Stage** field of the Hardware Asset Reclamation Line form changes from **Ready** to **Pending received**.  
A Receive asset task is created in the Hardware Asset Reclamation Line.
6. Open the Receive asset task.
7. On the form, fill in the fields.

**Receive asset task form**

Field names	Description
Assignment group	Group to which the Receive asset task is assigned.

Field names	Description
Assigned to	User from the assignment group to whom the Receive asset task is assigned.
Is asset reclaimed?	Select this check box if you've received the assets. This check box is required.
Quantity received	Number of consumables received. This field is required and appears only if the Hardware Asset Reclamation Line is created for a consumable.
Work notes	Any additional information that you want to mention.

**8. Select Close Task.**

The **Stage** field of the Hardware Asset Reclamation Line form changes from **Pending received** to **Pending evaluation**.

After an asset is received, in the asset form, the following changes occur:

- The **Assigned to** field on the asset record becomes empty.
- State of the asset changes to In stock and Substate changes to Pending repair.

**9. On the form, fill in the fields.**

**Evaluate asset task form**

Field names	Description
Assignment group	Group to which the Evaluate asset task is assigned.
Assigned to	User from the assignment group to whom the Evaluate asset task is assigned.
Evaluation status	Status of the reclaimed asset. This drop-down list is required and the available values are: <ul style="list-style-type: none"> <li>○ Re-deployable</li> <li>○ Needs repair</li> <li>○ To be disposed</li> </ul>
Work notes	Any additional information that you want to mention.

**10. Select Close Task.**

Based on what you selected from the **Evaluation status** drop-down list, the State, and Substate of the asset change as follows:

Evaluation status values	Asset state and substate	
	State	Substate
Re-deployable	In stock	Available
Needs repair	In stock	Pending repair

Evaluation status values	Asset state and substate	
To be disposed	In stock	Pending dispose

The **Stage** field of the Hardware Asset Reclamation Line form changes from **Pending evaluation** to **Complete**.

**Note:** When the stage of all Hardware Asset Reclamation Lines has changed to Closed Complete, the state of the Asset Reclamation Request also changes to Complete.

### View RFID information of assets

View the Radio Frequency Identification (RFID) information of assets to manage and locate important assets easily.

#### Before you begin

Role required: asset

#### Procedure

Navigate to a hardware asset for which you want to view the RFID information.

Interface	Action
<b>Core UI</b>	<ol style="list-style-type: none"> <li>Navigate to <b>All &gt; Hardware Assets</b>.</li> <li>Select an Asset tag for which you want to view the RFID information.</li> <li>Select the Preview icon (i) beside the <b>RFID tag</b> field in the <b>General</b> tab.</li> <li>Select <b>Open Record</b> to view the RFID information of the asset.</li> </ol>
<b>Hardware Asset Workspace</b>	<ol style="list-style-type: none"> <li>Navigate to <b>Hardware Asset Workspace &gt; Asset estate</b>.</li> <li>Select the <b>Hardware assets</b> tab.</li> <li>Select the display name of a hardware asset for which you want to view the RFID information.</li> <li>Select the Open Record icon (i) in the <b>RFID tag</b> field under the <b>Details</b> tab.</li> </ol>

**Note:** The RFID tag field doesn't exist for an excluded asset.

Field	Description
RFID tag	Unique identifier of the RFID tag in the RFID system.
Site name	Name of the site as defined in the RFID system.

Field	Description
Type	Resource type as defined in the RFID system.
Zone group	Zone group as defined in the RFID system.
Serial number	Unique identifier as defined in the RFID system.
Zone group dwell	Length of time the asset has been in the current zone group relative to the timestamp of the data import.
Tag source	The application source of RFID data.
Zone	Zone as defined in the RFID system.
Last blink time	Last time the RFID tag was scanned.
Zone dwell	Duration for which the asset has been in the current zone as compared to the timestamp of the data import.
Last blink elapsed time	Duration for which the asset has been scanned in the RFID system as compared to the timestamp of the data import.
Grid-x, Grid-y, Grid-z	Physical location as defined in the RFID system.
Status	Status of the matching of RFID information to the resource.
Active	Option to map RFID information to the Asset [alm_asset] table. This option is selected by default.

**Note:**

The activity history is captured only for RFID tag and Zone.

**Related topics**

[Integrating Zebra technology RFID system](#)

**Manage the lifecycle of hardware models with calculated lifecycle templates**

Manage the complete lifecycle of hardware models by creating calculated lifecycle templates and associating these templates with the models.

**Create Calculated lifecycle templates in the Hardware Asset Workspace**

Create Calculated lifecycle templates to manage the complete lifecycle of hardware models efficiently.

**Before you begin**

Role required: asset

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset Operations**.
2. From the **Hardware asset normalization** list, select **Calculated lifecycle templates**.

The list of existing Calculated lifecycle templates is displayed.

3. Select **New**.
4. On the form, fill in the fields.

**Create New Calculated Lifecycle Template form**

Field	Description
Name	Name of the Calculated lifecycle template.
Description	Brief information about the template.
Active	Option to indicate that the Calculated lifecycle template is available for use.

5. Select **Save**.  
The **Calculated Lifecycle formulas** tab is displayed with the list of calculated lifecycle formulas for the following lifecycle phases:
  - **End of Extended Support**
  - **End of life**
  - **End of Sale**
  - **End of Support**
  - **End of General Availability**
6. Define the calculated lifecycle formula for a lifecycle phase.
  - a. Select the calculated lifecycle formula.
  - b. In the **Phase start** and **Phase end** fields, enter the number of months for calculating the start date and end date of the lifecycle phase.
  - c. Select **Save**.  
The calculated lifecycle formula is updated with the values that you entered in the Phase start and Phase end fields.

**What to do next**

[Associate a hardware model with a Calculated lifecycle template.](#)

**Associate a hardware model with a Calculated lifecycle template**

Associate a hardware model with a Calculated lifecycle template to populate the lifecycle details of the model automatically.

**Before you begin**

Role required: asset

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace > Model management**.
2. Select the **All models** tab.
3. Select the model that you want to associate with a Calculated lifecycle template.
4. In the Model Details section of the Model form, enter the template details.

- a. In the **Calculated lifecycle template** field, select the calculated lifecycle template that you want to apply to the model.
- b. In the **Calculated lifecycle start date**, select the date from which the Phase start date and Phase end date are calculated for each lifecycle phase defined in the Calculated lifecycle template that you selected.

5. Select **Save**.

### Result

The list of lifecycle phases with details such as Phase start date, Phase end date, and Source is displayed in the Model Lifecycles tab.

## Receive asset warranty details from Lenovo

Connect to the Lenovo Warranty API and get the warranty details of your hardware assets.

### Related topics

[Integration with Lenovo for asset warranty details](#)

### Connect to the Lenovo Warranty API

Create a connection and credential to connect to the Lenovo Warranty API and download the warranty information for hardware assets.

### Before you begin

You should have the Client ID provided by Lenovo. If you don't have one, contact your organization's Lenovo sales or service representative.

Role required: admin

### Procedure

1. Navigate to **All > Connections & Credentials > Connection & Credential Aliases**.
2. Select *Lenovo*.
3. From the **Related Links**, select **Create New Connection and Credential**.
4. **Optional:** Change the default connection name for the connection to the Lenovo Warranty API in the **Connection Name** field.  
By default, this field is set to **Lenovo Connection**.

**Important:** Don't change the default URL specified in the Connection URL field.

5. In the **Client ID** field, enter the Client ID provided by Lenovo.
6. Select **Create**.

### Result

The Lenovo connection is successfully created and listed in the Connections tab.

### Track the warranty details of your Lenovo assets

View and track the warranty details of your Lenovo hardware assets from a central location in the Asset operations view of the Hardware Asset Workspace.

### Before you begin

Role required: asset

### Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset operations.**
2. From the **Asset warranty** list, select **Asset warranties.**
  - To see whether an asset is still in warranty, check the **Status** column.
  - To track warranties that are nearing expiration, check the **End Date** column of the asset record and the asset's status.
3. **Optional:** Select a warranty record to view more details.

### Manage stockrooms

Manage the assets in the stockroom by using appropriate stock rules, service locations, and distribution channels.

For details, see [Stockrooms](#) and [Stock rules](#).

#### Create a stockroom

Create stockrooms to assign places to assets.

#### Before you begin

Role required: inventory\_admin

#### About this task

Stockrooms are separate, standalone entities in the Asset Management application. When stock is low on a particular asset, stock rules can notify an asset manager, or automatically transfer inventory from one stockroom to another.

### Procedure

1. Create a stockroom.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Inventory &gt; Stock &gt; Stock rooms.</b></li> <li>b. Select <b>New.</b></li> </ol>
Hardware Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Hardware Asset Workspace &gt; Inventory.</b></li> <li>b. Select <b>All stockrooms.</b></li> <li>c. Select <b>New.</b></li> </ol>

2. On the form, fill in the fields.

#### Create New Stockroom form

Field	Description
Name	Display name of the stockroom type.
Assignment group	Group that primarily uses the stockroom.
Location	Physical location of the stockroom.

Field	Description
Type	Type of stockroom, such as Field Agent or On site.
Manager	Person in charge of the stockroom. Receives restocking notifications and requests for the stockroom's stock rules.

3. Select **Save**.

### Result

The stockroom is added to the list shown in the All stockrooms tab.

### Delete a stockroom with assets

You can delete a stockroom. If the stock room has assets, you must remove the assets from the stockroom first.

### Before you begin

Role required: inventory\_admin

### Procedure

1. Navigate to **All > Asset > All Assets**.
2. Personalize the list to add the **Stockroom** column.
3. Filter the list to show only the assets in the stockroom that you want to delete.
4. Change or remove the stockroom for all of the asset records.
5. After removing assets from the stockroom you want to delete, continue with the instructions for [deleting a stockroom with no assets](#).

### Delete a stockroom with no assets

You can delete a stockroom that has no assets.

### Before you begin

Incomplete transfer orders must be deleted before you delete the stockroom.

Role required: inventory\_admin

### Procedure

1. Navigate to **All > Inventory > Stock > Stockrooms**.
2. Select the check box beside the stockroom name.
3. In the **Actions** list, select **Delete**.

**Note:** Transfer order history is deleted when you delete the stockroom.

### Create a new stockroom type

If you need stockroom types that are not included in the base system, you can create a custom stockroom type.

### Before you begin

Role required: inventory\_admin

### About this task

Check the [priority level](#) of the stockroom types provided in the base instance to ensure that you assign the correct priority level to any new stockroom types you create. You can also modify the stockroom types included in the base system.

### Procedure

1. Navigate to **All > Inventory > Stock > Stockroom Types** and create a new record (see table for field descriptions).

Field	Description
Name	Display name of the stockroom type.
Description	General information about the stockroom type.
External stockroom	Whether stockrooms of this type are managed internally (check box cleared) or managed externally by a third party (check box selected).
Priority	Level of precedence for this type of stockroom.
Shipment required	Option that determines if stockrooms of this type require shipment by default.
Value	Internal identifier of the stockroom type.

2. Click **Submit**.

### View stockroom details

View detailed information about the stockrooms where your hardware, consumables, bundles, pallets, loaner, enterprise, and other assets are located.

### Before you begin

Role required: admin or asset

### Procedure

1. Navigate to **All > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. From the list of available stockrooms, select the stockroom.
4. View details about the stockroom on the Details tab.  
View the following details about the stockroom:
  - All open tasks associated with the stockroom through the Open stockroom task cards. Selecting a card displays a list of the task records.
  - The active stock rules of your stockroom. The stock rule cards from the contextual sidebar help you know if the stock is less than the threshold and if the model has reached the end of sale.
  - The hours that the stockroom is available are shown in the **Hours of operation** field.
  - The location of the stockroom based on the specified address is shown in the interactive map. To view all service locations and distribution channels associated with the stockroom, select **Toggle full screen view**.
  - Options to enable AI agents in the Help manage hardware asset requests agentic workflow to source hardware assets requests autonomously are available in the Sourcing by AI agents section. The auto-sourcing options include the following:

- **Auto-consume**
- **Auto-transfer**
- **Auto-purchase**

For more details, see [Configure a stockroom for automated sourcing by AI agents and Now Assist for Hardware Asset Management \(HAM\) AI agent collection Help manage hardware asset requests agentic workflow.](#)

5. On the Task timeline tab, view the timeline of all scheduled stockroom tasks and the inbound shipments, outbound shipments, and work activities associated with those tasks.
6. **Optional:** On the **Task timeline** tab, adjust the timeline view and timeline duration.
  - Set the view to the calendar view with a specified time duration by selecting one of the following values from the **Calendar** drop-down list in the top right:
    - **Day**
    - **Work week**
    - **Week**
    - **Month**
  - Set the view to the timeline view with a specified time duration by selecting one of the following values from the **Timeline** drop-down list in the top right:
    - **Day**
    - **Week**
    - **4 Weeks**
7. View the service locations and distribution channels of the stockroom and details of different types of assets in the stockroom by selecting the tabs corresponding to the asset type.

**Note:** The tabs related to the enterprise assets appear only if the Enterprise Asset Management application is installed on your ServiceNow® instance. If you select an enterprise asset, you're automatically redirected to the corresponding record in the Enterprise Asset Workspace. If you have access to an enterprise asset, you also have access to the Enterprise Asset Workspace. For more details, see [Enterprise Asset Workspace](#).

### Associate a stockroom with service locations

Manage sourcing requests that consume from local stockrooms effectively by associating your stockroom with multiple service locations. Optimize your loaner asset workflow and automated asset tasks by serving multiple locations using a single stockroom.

#### Before you begin

Role required: inventory\_admin

#### About this task

##### **Note:**

You can't add service locations to a stockroom that is excluded from providing location coverage. For more details, see [Exclude a stockroom from service locations](#).

#### Procedure

1. Navigate to **All > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom that you want to associate with service locations.

4. Select the **Service locations** tab.
5. Select **Add**.
6. In the Add service locations dialog box, select the active locations that you want the stockroom to support and select **Add**.

When you add a parent location, all its child locations are also supported by the stockroom. For example, when you add the city San Francisco, the stockroom supports all the locations within San Francisco.

**Note:** If the Active check box isn't selected, the stockroom doesn't support that location, or its child locations so that location can't be added to the stockroom.

## Result

The selected locations are added to the list shown in the **Service locations** tab.

## Related topics

[Source requests from local stockrooms](#)

[Request a loaner asset](#)

[Create a transfer order from a request](#)

[Asset life-cycle automation](#)

## Remove service locations

Remove service locations when the associated stockroom doesn't support those locations.

## Before you begin

Role required: inventory\_admin

## Procedure

1. Navigate to **All > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom for which you want to remove the supported locations.
4. In the **Service locations** tab, select the locations that you want to remove and select **Remove**.

## Result

The removed locations are no longer shown in the Service locations list.

## Exclude a stockroom from service locations

Exclude a stockroom from service locations so that the stockroom isn't shown in the Stockrooms missing service locations important actions card in the Inventory view.

## Before you begin

Role required: inventory\_admin

## About this task

**Note:** You can't exclude a stockroom that already has associated service locations. You must first remove the associated service locations and then exclude the stockroom from service locations. For more details, see [Remove service locations](#).

### Procedure

1. Navigate to **All > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. From the list of available stockrooms, select the stockroom that you want to exclude from service locations.
4. Select the **Exclude from service locations** check box.
5. Select **Save**.

### Result

- The stockroom isn't shown in the Stockrooms missing service locations important actions card even if the stockroom doesn't support service locations.
- The **Service location** tab doesn't show the **Add** option for adding service locations to the stockroom.

### Link stockrooms into a distribution channel

Link two geographically related stockrooms to create a distribution channel and make the distribution of assets more efficient. You can assign a preference order for each channel to source assets to the stockroom.

### Before you begin

Role required: inventory\_admin

### About this task

A stockroom can have distribution channels with the following functions:

- Inbound: The distribution channel is used to source assets from the linked stockroom.
- Outbound: The distribution channel is used to transfer assets to the linked stockroom.

### Note:

You can't create distribution channels for a stockroom that doesn't support sourcing assets through distribution channels. For more details, see [Exclude a stockroom from distribution channels](#).

### Procedure

1. Navigate to **All > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom for which you want to create a distribution channel.
4. Select the **Distribution Channel** tab.
5. Select **New**.
6. On the form, fill in the fields.

#### Create New Stockroom Distribution Channel form

Field	Description
Base stockroom	Name of the stockroom for which you want to create a distribution channel. This field is automatically populated.

Field	Description
Channel stockroom	Name of the stockroom that you want to link to the base stockroom to create a distribution channel for sourcing assets.
Rank	Numeric order of preference given to the distribution channel for sourcing assets.
Function	Function of the distribution channel. This field is read-only and is automatically set to Inbound.
Active	Option that indicates whether the distribution channel is active for sourcing assets to the base stockroom.  <b>Note:</b> When you clear the <b>Active</b> check box, the outbound function of the base stockroom for that channel stockroom also becomes inactive automatically.

7. Select **Save**.

8. Repeat steps 4–7 to create another distribution channel for this base stockroom.

### Result

- The distribution channel is added to the list shown in the **Distribution Channel** tab.
- The base stockroom is added as an outbound distribution channel for the channel stockroom. The **Function** field of the base stockroom is set to **Outbound**.

### Related topics

[Create a transfer order from a request](#)

[Source requests from local stockrooms](#)

### Exclude a stockroom from distribution channels

Exclude a stockroom from distribution channels so that the stockroom isn't shown in the Stockrooms missing distribution channels important actions card in the Inventory view.

### Before you begin

Role required: inventory\_admin

### About this task

- **Note:** You can't exclude a stockroom that is already linked into any distribution channel.

### Procedure

1. Navigate to **All > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. From the list of available stockrooms, select the stockroom that you want to exclude from distribution channels.
4. Select the **Exclude from distribution channels** check box.
5. Select **Save**.

## Result

- The stockroom isn't shown in the Stockrooms missing distribution channels important actions card even if the stockroom isn't linked into distribution channels.
- The **Distribution Channel** tab doesn't show the **New** option for creating a distribution channel for the stockroom.

## Create a stock rule

Create a stock rule to control what happens when the inventory of a particular asset in a particular stockroom reaches a specified threshold.

## Before you begin

Role required: inventory\_admin

## Procedure

1. Create a stock rule.

Interface	Action
Core UI	<ol style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Inventory &gt; Stock &gt; Stock Rules</b>.</li> <li>b. Select <b>New</b>.</li> </ol>
Hardware Asset Workspace	<ol style="list-style-type: none"> <li>a. Navigate to <b>Asset operations &gt; &gt; Inventory</b>.</li> <li>b. From the Inventory list, select <b>Stock rules</b>.</li> <li>c. Select <b>New</b>.</li> </ol>

2. On the form, fill in the fields.

### Create New Stock Rule form

Field	Description
Model	Product model to which the rule applies.
Threshold	<p>Quantity that the stock must reach to trigger restocking. For example, enter a threshold of 10 for a laptop computer that should be restocked when inventory drops below 10 in the specified stockroom.</p> <p><b>Note:</b> If a stock rule is created for a hardware or software model reaches the threshold limit, a notification is sent to the stockroom manager and a stock order request is automatically created.</p>
Restocking option	<p>Location where additional supplies should come from.</p> <p>If Procurement isn't active, then restocking option is <b>Stockroom</b> only. Otherwise, select one of the following:</p> <ul style="list-style-type: none"> <li>○ <b>Stockroom:</b> Creates a transfer order to obtain the asset from another stockroom.</li> <li>○ <b>Vendor:</b> Sends an email to the stockroom manager to order from a vendor. In addition to the email notification, a purchase order and purchase order line item are created.</li> </ul>

Field	Description
	<p><b>i Important:</b> Once a transfer order, purchase order, or purchase order line item is created, it's important to act on it promptly. Any email notifications or reminders won't be sent for these actions.</p>
Active	Option for enabling the stock rule for restocking automatically.
Stockroom	Current physical location of the asset.
Order size	<p>Minimum order quantity for stockroom transfers or vendor purchases. ServiceNow calculates the smallest multiple of the order size needed to restock the item above the threshold.</p> <p>For example, there are 3 laptops in stock with a threshold of 10 and the <b>Stockroom</b> option selected. If the order size is set to 4, the system creates a transfer order for 8 laptops to exceed the threshold and satisfy the rule (3 in stock + 8 ordered = 11). When restocking from a vendor, ServiceNow sends an email to the stockroom manager showing the total number of items to order, as multiples of the order size.</p>

**3. Select **Submit** or **Save**.**

**Result**

- The stock rule that you created appears in the **Stock rules** tab.
- If the restocking option was set to **Vendor**, the **Stock orders** tab will be displayed. All the stock orders that are created using this stock rule are listed under the Stock orders tab.

**i Important:** The Stock orders tab is available with Hardware Asset Management version 13.0.0 and later.

- If the restocking option was set to **Stockroom**, the **Transfer orders** tab will be displayed. All the transfers orders created using this stock rule are listed under the **Transfer orders** tab.

**i Important:** The Transfer orders tab is available with Hardware Asset Management version 13.0.0 and later.

For stock orders created through the restocking by a vendor, the stock order tab shows all stock orders generated by that stock rule. But for transfer orders, the tab only displays transfer orders after the upgrade.

**Related topics**

[Stock rules](#)

**Configure a stockroom for automated sourcing by AI agents**

Configure a stockroom to enable AI agents in the Manage hardware asset requests agentic workflow to source hardware assets automatically.

**Before you begin**

Role required: ham\_admin

## About this task

**i Important:** Configuring the stockroom is necessary for AI agents to source the hardware asset requests from it. However, to automate your hardware asset requests using the Manage hardware asset requests agentic workflow, you must install the Now Assist for Hardware Asset Management (HAM) application. For more details, see [Now Assist for Hardware Asset Management \(HAM\)](#).

## Procedure

1. Navigate to **All > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom that you want to set up for automatic sourcing.
4. Select the automatic sourcing options in the **Sourcing by AI agents** section.
  - To enable the AI agent to consume the local stock automatically, select the **Auto-consume** check box.
  - To enable the AI agent to create a transfer order for the stockroom automatically, select the **Auto-transfer** check box.
  - To enable the AI agent to create a purchase order for the stockroom automatically, select the **Auto-purchase** check box.
5. Select **Save**.

## Result

The stockroom is configured for the automatic sourcing options that you selected.

## Manage the receiving of assets at stockrooms in the Hardware Asset Workspace

Receive hardware and consumable assets at stockrooms from any workflow at a centralized location on the stockroom form in the Hardware Asset Workspace.

**i Important:** The options to receive assets at your stockroom through the standardized asset receiving mechanism is available with Hardware Asset Management version 13.0.0 and later.

Depending on the number and type of assets that you want to receive, you can select from the following options to receive assets at your stockroom:

- [Receive a single hardware asset at your stockroom.](#)
- [Receive one or more hardware and consumable assets from the list of shipment assets.](#)
- [Import and receive hardware and consumable assets in bulk through an Excel template.](#)

**i Note:** You should have the ham\_admin role to import asset records using the Excel template.

For more details, see [Receiving hardware and consumable assets at stockrooms](#).

## Receive a hardware asset at a stockroom in the Hardware Asset Workspace

Receive a single hardware asset that has arrived at your stockroom, whether it's part of a workflow or not, in the Hardware Asset Workspace.

## Before you begin

**i Important:** The option to receive a hardware asset at your stockroom through the standardized asset receiving mechanism is available in Hardware Asset Management version 13.0.0 and later.

Role required: inventory\_user or asset

## About this task

This task enables you to receive assets in the following scenarios:

### Receiving a hardware asset with an existing record

When you're receiving a hardware asset from workflows such as a transfer order or Return Merchandise Authorization (RMA), where a repaired asset has arrived at your stockroom, the asset record exists in your ServiceNow instance. You can search for the existing asset record using the Asset tag or Serial number and then receive the asset, which automatically closes the receive task of the source workflow.

### Receiving a new hardware asset at your stockroom

When you're physically receiving a new hardware asset at your stockroom, it's likely that the asset record isn't present in your ServiceNow instance. You can receive new assets through workflows like a purchase order, asset refresh, or RMA with a replacement asset. Through this task, you can create an asset record and associate it with the source workflow, which automatically closes the receive task linked to the source workflow.

### Receiving an independent hardware asset

You can receive a hardware asset that isn't part of any workflow and has arrived at your stockroom.

**i Important:** You can also receive an enterprise asset only if the Enterprise Asset Management application is activated.

## Procedure

1. Navigate to **Workspaces** > *Hardware Asset Workspace* > **Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom for which you want to receive the hardware asset.
4. Select **Receive assets**.
5. Find the hardware asset that you want to receive.
  - a. In the Receive assets dialog box, enter the Asset tag or Serial number of the asset that you want to receive in the search field.
  - b. Select **Search**.

- If the asset record is found, it appears in the Assets list.

**Note:**

The following asset details are displayed:

- **Display name**
- **Model category**
- **Asset tag**
- **Quantity**
- **State**
- **Stockroom**
- **Location**

- If the asset record isn't found, a message appears indicating that the asset isn't found, along with an option to create the asset record.

**6. Receive the hardware asset in your stockroom.**

- If the asset record is found in the Assets list, select the asset record and then select **Receive**.

**Result**

- The State of the asset changes from **In transit** to **In stock**.
- The **Stockroom field** on the asset form is automatically updated with the stockroom at which you received the asset.
- The receive task in the source workflow associated with the asset that you received is automatically closed.
- If the asset record isn't found, create one to receive.
  - Select Create asset.**
  - In the Create asset dialog box, enter the details.**

**Create asset dialog box**

Field	Description
Model	Specific product model of the asset.  This field is required.
Model Category	Model grouping of the asset.  This field is required.
Serial Number	Serial number of the asset.  <b>Note:</b> Depending on the Model Category that you selected, this field is either required or optional. For instance, Serial number is required for Computer model category.
Asset Tag	Tag to help track the asset.

Field	Description
Mac Address	MAC address of the asset.
Stockroom name	Name of the stockroom that you selected to receive the asset. This field is automatically populated and is read only.
Source type	Source workflow to which the asset that you're receiving belongs. <ul style="list-style-type: none"> <li>To receive the asset from a purchase order, select <b>PO</b>.</li> <li>To receive the asset from the RMA flow, select <b>Asset RMA</b>.</li> <li>To receive the asset through asset refresh workflow, select <b>Refresh</b>.</li> </ul>
Source ticket	Request number of the source workflow that's associated with the asset that you want to receive. <ul style="list-style-type: none"> <li>To receive an asset from a purchase order or asset refresh order, select the associated PO line number.</li> <li>To receive an asset from an RMA order, select the associated RMA line number.</li> </ul> <p><b>Note:</b> Source tickets are displayed based on the model and source type that you selected.</p>

**Important:**

Providing the Source type and Source ticket details is optional when creating an asset record. However, including these details links the hardware asset to the source workflow. This link results in the automatic closure of the Receive task in the source workflow when the asset is created. If you don't include these details, the asset record is still created, but you should close the Receive task manually in the source workflow.

Note the following points before you consider creating an asset record:

- If you're receiving an asset from an RMA workflow, you can create an asset record first. Later, you can manually add the details of this asset in the Asset RMA receive task, and then close the task.
- If you're receiving an asset from a purchase order, you can create an asset record for the asset you physically received. However, you can't receive the same asset later through the Receive task on the purchase order.

**c. Select Create.**

**Result**

- An asset record is created with State as **In stock** and Substate as **Available**.
- The **Stockroom** field on the asset form is automatically updated with the stockroom at which you received the asset.
- The receive task in the source workflow is automatically closed only if you provided the Source type and Source ticket details.

## Receive assets from inbound shipments at your stockroom in the Hardware Asset Workspace

Receive hardware and consumable assets from one or more shipments that are in transit to your stockroom in the Hardware Asset Workspace. You can receive assets from shipments originating from any workflow.

### Before you begin

**i Important:** The option to receive assets from inbound shipments at your stockroom through the standardized asset receiving mechanism is available in Hardware Asset Management version 13.0.0 and later.

Role required: inventory\_user or asset

### About this task

If you don't have the details of the assets you want to receive at your stockroom, you can view the list of assets that are on their way and then receive them. You can receive the complete quantity of consumables in the shipments, not a partial quantity.

Assets from an inbound shipment can be received under the following conditions:

- The assets must have a serial number and an asset tag.
- The assets must be in the In-transit state and linked to a shipment record.
- Enterprise assets can be received only if the Enterprise Asset Management application is activated.

### Procedure

1. Navigate to **Workspaces** > *Hardware Asset Workspace* > **Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom for which you want to receive hardware or consumable assets.
4. Select **Receive assets**.
5. In the Receive assets dialog box, select **View all inbound assets**.  
A list of all shipment assets currently on their way to the stockroom is displayed.

The following details of a shipment are displayed:

- **Asset:** Display name of the asset.
- **Stage:** Stage of the shipment.

**i Note:** Only shipments that are In transit are displayed.

- **Model categories:** Model grouping of the asset.
- **Quantity:** Number of assets to be received.
- **Asset tag:** Tag to track the asset.
- **Serial number:** Serial number of the asset.
- **Tracking number:** Identifier to track the shipment.
- **Source:** Details of the source workflow including the request number through which you're receiving the asset. The source could be a transfer order line, a purchase order line, an RMA order line, or any other workflow through which the asset is received.

6. Select the shipment asset that you want to receive and then select **Receive**.

### Result

If the asset details are valid, the following changes occur:

- The assets are received successfully.
- The State of the assets changes from **In transit** to **In stock**, and the Substate of the assets changes from **Reserved** to **Available**.
- The **Stockroom** field on the asset form is automatically updated with the stockroom at which you received the assets.
- The Status of the shipment tasks associated with the assets changes to **Delivered**.
- The receive tasks in the source workflows are automatically closed.

**Note:** If any of the asset details are invalid, an error message is shown in the **Alert** column for the corresponding asset record. You should resolve the error before receiving the assets.

### Import and receive assets in bulk at your stockroom in the Hardware Asset Workspace

Receive multiple hardware and consumable assets at your stockroom by importing the asset records using an Excel template in the Hardware Asset Workspace.

#### Before you begin

**Important:** The option to import and receive assets in bulk through the standardized asset receiving mechanism is available in Hardware Asset Management version 13.0.0 and later.

Role required: ham\_admin

#### About this task

This task enables you to receive assets with existing records, and also new assets, only if you have provided valid asset details in the template.

When you import a template with asset details, extensive validation is performed on each row. The records from the template and the validation results are stored in the Import asset row [sn\_itam\_cmn\_import\_asset\_row] table.

**Note:** The *sn\_itam\_common.receive\_assets\_batch\_size* system property determines how many asset records are processed at once when logging imports and receiving jobs. By default, the system handles 1,000 asset records per batch. With the admin role, you can adjust this number to optimize the system performance and handle large volume of assets. This system property supports domain separation by using the application property.

The asset data validation takes care of the following points:

- Child assets can't be received.
- Enterprise assets can only be received if the Enterprise Asset Management application is activated.
- Operational Technology (OT) assets can only be received if the OT Asset Management application is activated.
- Assets can be received only if the following conditions are fulfilled:
  - The required fields are provided.
  - The asset quantity is valid.
  - The Source type and Source ticket details are valid.
- Asset from purchase order lines can be received only in Zurich and later releases.
- Asset bundles can't be received.

## Procedure

1. Navigate to **Workspaces** > *Hardware Asset Workspace* > **Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom for which you want to receive hardware or consumable assets.
4. Select **Import assets**.
5. Prepare the asset data for import, and then proceed with the import.
  - a. Download, update, and save the asset import template.
    - i. Select **Download Template**.
    - ii. Fill in the template with the details of the assets that you want to import and receive.

The template has the following columns:

- **Asset tag** and **Serial number**: These fields are used to determine whether the asset record exists in your ServiceNow instance or not.
- **Model category**, **Model name**, and **Model number**: The fields required to validate an asset record depend on the model category. For example, a serial number is required for the Computer model category, and you can receive assets of that model category only if the serial number is provided. Additionally, if an asset record isn't found, fields related to the model are required to create one using the Asset tag and Serial number values provided in the template.
- **Quantity**: This field should have a value of 1 for hardware assets, and for consumables, it should reflect the number of assets you're receiving. You can't receive a partial quantity of consumables.
- **Manufacturer**: Asset manufacturer.
- **Source type**: The source type is the workflow through which you're receiving the asset. You should enter values that correspond to the workflows, such as the following:
  - TOL for transfer order line
  - POL for purchase order line
  - RMAL for Return Merchandise Authorization (RMA)

**Note:** This field is required for a consumable asset so that the correct asset is identified and received.
- **Source ticket**: The request number of the source workflow that's associated with the asset that you want to receive, such as TO line number, PO line number, or RMA line number.
 

**Note:** This field is required for a consumable asset so that the correct asset is identified and received.
- **Reserved for**
- **Parent asset**
- **MAC address** and **OT entity**: These fields are required to identify and receive OT assets.

- iii. Save the template.

- b. On the Create New Import asset form, fill in the details.

- i. In the **Name** field, provide a name for the asset import record.
  - ii. Select **Attach file** and then select the asset import template that you created in step a.
- c. Select **Import**.

- The **Import asset data rows** tab is displayed, showing all the asset record rows that were imported through the Excel template.

**Note:** Depending on the number of records being processed, it might take some time for the asset records to appear in the Import Asset Data Rows tab.

- The **Status** column indicates whether the asset is ready to be received. Here are the possible values:
  - **Ready to receive:** This status indicates that the asset data is valid and ready to be received at your stockroom.
  - **Receive error (Asset not found):** This error indicates that no asset records match the details you provided in the template. However, since the details are valid, asset records will be created when you proceed with the Receive action.
  - **Import error:** This error is because of the invalid asset data provided in the asset import template, such as duplicate serial numbers or invalid quantity for hardware assets.
- The **Alert** column provides details about any errors and the steps that you should take to resolve them and successfully receive the asset.

**Note:** You can proceed to receive assets with a status of Ready to receive or Receive error.

For assets with a status of Import error, correct the data issues in your template and create a new import record to import the corrected template. You can then receive the assets.

## 6. Receive assets at your stockroom.

- a. Select the import data rows corresponding to the assets that you want to receive.
- b. Select **Receive**.

If you received the assets with Status Ready to receive, the following changes happen:

- The State of the assets changes from **In transit** to **In stock**, and the Substate of the assets changes from **Reserved** to **Available**.
- The **Stockroom** field on the asset form is automatically updated with the stockroom at which you received the assets.
- The receive tasks in the source workflows associated with the assets that you received are automatically closed.

If you received the assets with Status Receive error, the following changes happen:

- Asset records are created with State as **In stock** and Substate as **Available**.
- The **Stockroom** field on the asset form is automatically updated with the stockroom at which you received the assets.
- The receive task in the source workflow is automatically closed only if you provided the Source type and Source ticket details.

## Manage stockrooms with inventory reports in the Hardware Asset Workspace

Track and manage stockrooms efficiently by evaluating the inventory reports in the Hardware Asset Workspace.

**i Important:** The inventory reports are available with Hardware Asset Management version 13.0.0 and later.

The inventory reports help you:

- Find replacement options for assets.
- Quickly identify shortages and align current demand in your stockroom with both current and incoming supply.
- Analyze the supply to meet open demand across all stockrooms or locations.

## Identify suitable replacement options for assets in the Hardware Asset Workspace

Use the Inventory availability report to determine suitable replacement options for your assets and their child components that are in use, in maintenance, pending repair, or defective. The report also helps you to determine the quantity of available substitute models that can be used locally, moved through the distribution channels, and estimate the lead time for new purchases.

### Before you begin

**i Important:** The Inventory availability report is available with Hardware Asset Management version 13.0.0 and later.

The Inventory Availability Report is available only for hardware, consumable, and bundle assets that are in use, in maintenance, pending repair, or defective.

Service locations and distribution channels should be configured for the stockroom. If the asset's location is a service location of a stockroom, it automatically becomes the local stockroom. A location can have multiple local stockrooms if it is serviced by more than one stockroom. For more details, see [Associate a stockroom with service locations](#) and [Link stockrooms into a distribution channel](#).

Role required: asset

### About this task

The Inventory availability report helps you to identify the best sourcing option when sourcing assets or its components that are in use and nearing the end of their life, defective, or pending repair. Additionally, you can check how much stock is currently available at a stockroom.

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset estate**.
2. Select the asset for which you want to view the replacement assets available in the local and remote stockrooms.
3. Select the **Inventory availability** tab.

The list displays the asset and any of its child assets, along with their linked models and any substitute models. The list includes the following details:

#### Inventory availability report

Field	Description
Asset	Display name of the asset.
Model	Model of the asset.

Field	Description
	<p><b>Note:</b> If there are any substitute models for the asset model, they're also displayed.</p>
Asset type	<p>Indicates whether the asset is the original asset or a substitute model asset.</p> <p>This field can have any of the following values:</p> <ul style="list-style-type: none"> <li>○ <b>Original parent</b> for the actual parent asset.</li> <li>○ <b>Original child</b> for the child of the original parent asset.</li> <li>○ <b>Substitute parent</b> for the asset of the substitute model.</li> <li>○ <b>Substitute child</b> for the child asset of the substitute model.</li> </ul>
Local stockroom quantity	<p>Quantity of assets that are in stock and available in the stockrooms that service the asset location.</p> <p><b>Note:</b></p> <p>If you select the quantity shown, you can view the full list of assets in your local stockroom that can be used as replacements. There can be multiple local stockrooms if more than one stockroom serves the same location.</p>
Remote stockroom quantity	<p>Quantity of assets that are in stock and available in the distribution channel stockrooms that are marked as inbound stockrooms to the current local stockroom.</p> <p><b>Note:</b></p> <p>If you select the quantity shown, you can view the full list of assets in your distribution channel stockrooms that can be used as replacements.</p>
Purchase lead time	<p>Average time in days it has taken from ordering to receiving replacement assets through new purchase orders.</p>

### Identify the supply and demand for models within a stockroom in the Hardware Asset Workspace

Use the Supply vs Demand report to evaluate the available and incoming quantity of models in your stockroom and the requests for these models from different service locations. This report helps you determine if you have enough assets to meet the demand.

#### Before you begin

**Important:** The Supply vs Demand report is available with Hardware Asset Management version 13.0.0 and later.

Supply refers to the assets that are currently in stock and those that are incoming at your stockroom. Demand refers to the requests for assets from different service locations that your stockroom services.

Note the following points about the Supply vs Demand report:

- Supply of an asset model to your stockroom includes:
  - In stock assets that are in the Available, Reserved, Pending transfer, and Pending install stage
  - Incoming transfer orders that are partially shipped, fully shipped, in transit, received, and delivered
  - Incoming purchase orders that are ordered
- Demand for an asset model includes:
  - Outgoing transfer orders that are in the Draft, Requested, and Shipment preparation stage
  - Asset requests
  - Refresh requests
  - Work order parts requests

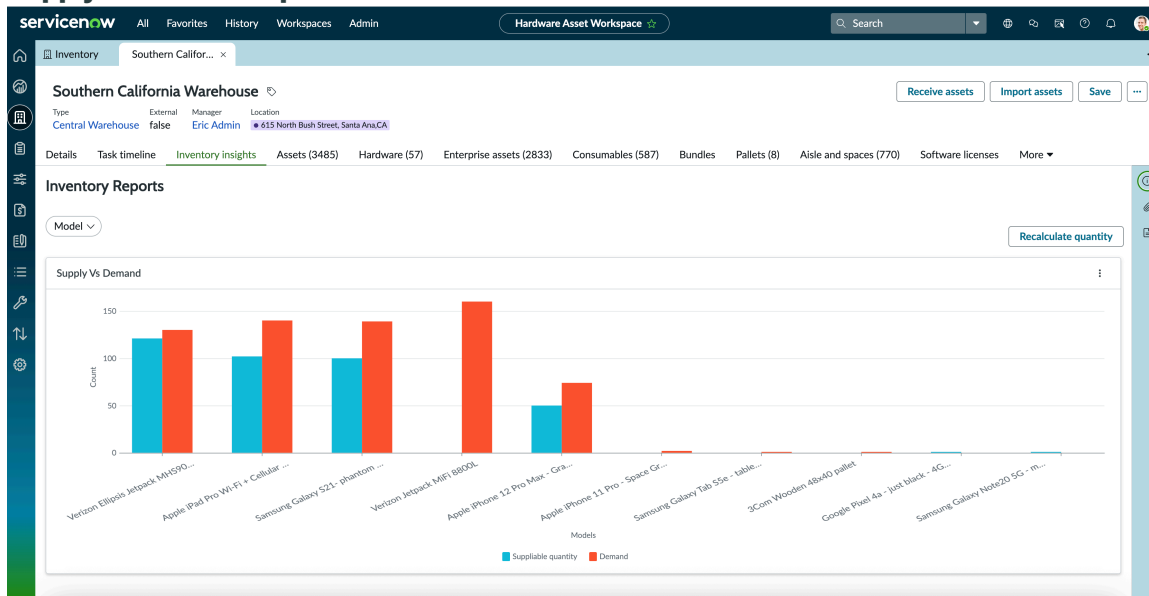
The supply and demand details are stored in the Model and stockrooms [sn\_asset\_model\_and\_stockroom] table. The *Populate model and stockroom data* scheduled job runs daily to populate this table.

Role required: asset

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. From the list of stockrooms, select the one for which you want to view the supply and demand details.
4. Select the **Inventory insights** tab.

### Supply vs Demand report



The Supply vs Demand report shows the count on the y-axis and the model on the x-axis, with separate bars for supply and demand for each model. This visual representation helps you to compare the available quantity of each model in the stockroom with the number of requests from different service locations. By looking at the graph, you can determine which models have enough supply to meet demand and which ones need more stock.

**i Note:** By default, the graph shows details for only 10 models.

5. View the details of the model that isn't shown on the report.
  - a. Select the **Model** filter.
  - b. Enter the model in the search field or select the model from the **Available** list.
  - c. Move the selected model to the **Applied** list.
  - d. Select **Apply**.
6. To further drill down into the supply or demand for a model and view its component-level details, select the corresponding bar.
  - The supply graph shows the count of the following:
    - **In stock assets**
    - **Incoming transfer order**
    - **Incoming purchase order**
  - The demand graph shows the count of the following:
    - **Outgoing transfer order**
    - **Asset requests**
    - **Refresh requests**
    - **Work order parts requests**

By selecting the relevant bars, you can view the list of assets that make up the count.

7. **Optional:** To initiate the calculation of supply and demand for asset models manually, select **Recalculate quantity**.

(Optional) The Supply vs Demand graph updates to show the recently calculated values.

### Identify the supply for open demands in the Hardware Asset Workspace

Use the Open demands report to determine available stock within local stockrooms and distribution channels to fulfill sourcing requests that are open.

#### Before you begin

**i Important:** The Open demands report is available with Hardware Asset Management version 13.0.0 and later.

Role required: asset

#### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Procurement**.
2. In the Procurement overview, select **Open demands**.

The report displays the list of open demands with the following details:

- Requests and requested items.
- The quantity of the requested model available in local stockrooms that serve the asset location.

- The quantity of the requested model available in distribution channel stockrooms that serve the asset location.
  - The purchase lead time, which is the average time in days it has taken from ordering to receiving assets through new purchase orders.
- 3.** To view the current stock availability in the local stockrooms for all open requests for a model and determine if there is sufficient quantity, select the number shown in the **Local stockroom quantity** column.
- The available asset quantity is determined by the current state. If two requests from a service location, which is serviced by two or more stockrooms, are for the same model and the available quantity is 100, the report will show 100 available in the local stockroom for both requests. Once one request is fulfilled, the quantity will update to reflect the remaining amount for the other request.
- 4.** To view the current stock availability in the distribution channel stockrooms for all open requests for a model and determine if there is sufficient quantity, select the number shown in the **Remote stockroom quantity** column.

## Track shipments using the integration framework

Track your shipments in real time by integrating your ServiceNow instance with your third-party carrier's application through the integration framework provided by the IT Asset Management application.

### Creating an integration script include for third-party carrier applications

In order to integrate with a ServiceNow instance, a third-party carrier application must have a script include that extends the base class `ITAMShipmentIntegration` script on its ServiceNow instance to receive the shipment tracking number from the customer's ServiceNow instance and respond with the carrier-related details.

Consider the following when you create the script include:

- Make sure that the script include is accessible from the Asset Management Common application scope by adjusting the following settings on the application resource record:
  - Set the **Accessible from** field to **All application scopes**.
  - Set the **Caller Access** field to **None** to make sure the caller access isn't restricted.
- The code for communicating with the customer's ServiceNow instance based on the tracking number must be included within the `fetchShipmentInfo` function.
- When the API is invoked in the test mode for validating the connection with the customer's ServiceNow instance, the return response from the `fetchShipmentInfo` method should be a JSON object with the HTTP response code and response message, as follows:

```
{
  httpResponseCode: 200, httpResponseMessage: 'SUCCESS'
}
```

- When not in the test mode, query the shipments and invoke the `processResponse` method with the following response format:

```
[
  {
    trackingNumber: '',
    deliveryDate: '',
    pickupDate: '',
    packageStatus: '',
    statusDetail: ''
  }
]
```

```

trackingURL: '',
parcelWeight: '',
deliveryServicesCost: '',
currency: ''
}
]

```

## ITAMShipmentIntegration script include sample codes

### Sample ITAMShipmentIntegration script include with the default processResponse function provided by the IT Asset Management application

```

Script
1  var DemoFedexAPI = Class.create();
2  DemoFedexAPI.prototype = Object.extendObject(sn_itam_common.ITAMShipmentIntegration, {
3      initialize: function() {
4          },
5      },
6      // trackingNumbers: Array of shipment tracking numbers
7      fetchShipmentInfo: function (trackingNumbers, mode) {
8          var returnObj = {
9              httpResponseCode: 0,
10             httpResponseMessage: ''
11         };
12         // Mode = test indicates just check connectivity to API
13         // If mode is test, just check the connection
14         // Else get the status for the input tracking numbers
15         if (mode != 'test') {
16             // Make a call to the carrier API - pass the "trackingNumbers"
17             // If there are no errors, returnObj.httpResponseCode should be 200, else, set it to the returned error code
18             // In case of any error message being returned from API, copy it to returnObj.httpResponseMessage
19             // If call is successful, make sure response is in the format as below:
20             // array of JSON, where each JSON would have below keys with corresponding values
21             // trackingNumber, deliveryDate, pickupDate, packageStatus, statusDetail, trackingURL
22             // Then invoke the default function to update shipments
23             this.processResponse(responseArray);
24         } else {
25             // Check the connection to carrier API and return response
26             // If connection is successful, returnObj.httpResponseCode should be 200, else set it to the returned error code
27         }
28         return returnObj;
29     },
30     type: 'DemoFedexAPI'
31 });
32

```

## Sample ITAMShipmentIntegration script include with custom processResponse function

```

Script
1  var DemoUPSAPI = Class.create();
2  DemoUPSAPI.prototype = Object.extend(sn_itam_common.ITAMShipmentIntegration, {
3      initialize: function() {
4          },
5
6          // trackingNumbers: Array of shipment tracking numbers
7          fetchShipmentInfo: function (trackingNumbers, mode) {
8              var returnObj = {
9                  httpResponseCode: 0,
10                 httpResponseMessage: ''
11             };
12             // Mode = test indicates just check connectivity to API
13             // If mode is test, just check the connection
14             // Else get the status for the input tracking numbers
15             if (mode != 'test') {
16                 // Make a call to the carrier API - pass the "trackingNumbers"
17                 // If there are no errors, returnObj.httpResponseCode should be 200, else, set it to the returned error code
18                 // In case of any error message being returned from API, copy it to returnObj.httpResponseMessage
19                 // If call is successful, make sure response is in the format as below:
20                 // array of JSON, where each JSON would have below keys with corresponding values
21                 // trackingNumber, deliveryDate, pickupDate, packageStatus, statusDetail, trackingURL
22                 // Then invoke the default function to update shipments
23                 // In case there is a need for handling shipment updates, implement processResponse function like below
24                 this.processResponse(responseArray);
25             } else {
26                 // Check the connection to carrier API and return response
27                 // If connection is successful, returnObj.httpResponseCode should be 200, else set it to the returned error code
28             }
29             return returnObj;
30         },
31
32         processResponse: function () {
33             // Custom logic for updating shipment records
34             // Query shipment table for each tracking number and then update the values from response onto the corresponding columns
35         },
36
37         type: 'DemoUPSAPI'
38     });

```

### fetchShipmentInfo function

The *fetchShipmentInfo* function receives the tracking numbers from the ServiceNow instance of the customer and invokes the carrier API to fetch the shipment details for all the tracking numbers. Within this function, you must define the business logic that enables your customers to communicate with your carrier APIs based on the tracking numbers. This function processes the response that is received from the carrier API and invokes the post-processing function.

### processResponse function

The *processResponse* function receives the response from the carrier API and updates the shipment records with the following carrier-related details:

- Carrier link
- Carrier status
- Carrier status detail
- Carrier pick-up date
- Carrier delivered date
- Currency
- Delivery services cost
- Parcel weight

You can either use the default *processResponse* function or define a custom logic to update the shipment records.

## Connect your ServiceNow instance with a shipping carrier application

Associate a shipping carrier with an integration profile to connect your ServiceNow instance to the carrier application.

### Before you begin

Make sure that the shipping carrier that you want to associate with an integration profile has a shipping carrier record. For more details, see [Create a shipping carrier record](#).

Role required: admin or domain\_admin

### About this task

A shipping carrier can be associated with only one active integration profile.

### Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset operations**.
2. From the **Shipment** list, select **Carrier integration profiles**.
3. Select the carrier integration profile that you want to associate with a shipping carrier.

**Note:** The third-party carrier application automatically inserts records into the Carrier integration profiles list. If the integration profile associated with your carrier isn't listed, make sure that the prerequisites for the integration with the carrier are fulfilled. For more information, see [Managing shipments by integrating with third-party carrier applications](#).

4. Select the **Shipping Carriers** tab.
5. Associate the shipping carrier with the carrier integration profile.
  - a. Select **Add**.
  - b. In the **Add carriers** dialog box, select the carrier and select **Add**.

**Note:** If the carrier you intended to associate is not listed, it likely is already associated with an integration profile.

### Result

The shipping carrier is associated with the profile and the carrier details are shown in the **Shipping Carriers** tab.

## Remove a shipping carrier from an integration profile

Remove a shipping carrier that you no longer want to associate with an integration profile.

### Before you begin

Role required: admin or domain\_admin

### Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset operations**.
2. From the **Shipment** list, select **Carrier integration profiles**.
3. Select the integration profile for which you want to remove the associated shipping carrier.
4. Select the **Shipping Carriers** tab and select the shipping carrier that you want to remove.
5. Select **Remove**.

**Result**

The shipping carrier is no longer associated with the integration profile.

**Create a carrier integration profile**

Create a carrier integration profile for your carrier by specifying the API and connection details that are used to connect your ServiceNow instance to the third-party shipping carrier application.

**Before you begin**

Role required: admin

**Procedure**

1. Navigate to **All > Hardware Asset Workspace > Asset operations.**
2. From the **Shipment** list, select **Carrier integration profiles.**
3. Select **New.**
4. On the form, fill in the fields.

**Carrier Integration Profile Details form**

Field	Description
Name	Name of the integration profile.
Connection details	Reference to the Connection and Credentials Aliases table that stores the credentials of the customer.  <b>Note:</b> Your credentials must be updated in the Connection and Credentials Aliases table so that you're authenticated to connect to the carrier API.
API	Name of the script that has the integration business logic.
Job	Name of the scheduled job that invokes the carrier API to fetch the shipment details.  This job is automatically created by a job that runs daily, The ITAM: Process integration profiles and stale shipment job.
Active	Option that indicates the status of the integration profile.  <b>Note:</b> You can only deactivate the integration profile but can't delete the integration profile. When an integration profile is deactivated, the associated job that invokes the carrier API is deactivated automatically.

5. Select **Save.**

**Result**

The carrier integration profile is created and added to the Carrier integration profiles list.

**View the carrier integration profile details**

View the details of the carrier API used to connect your ServiceNow instance to the third-party shipping carrier application.

**Before you begin**

Role required: admin, domain\_admin, asset, or inventory\_admin

## Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset operations.**
2. From the **Shipment** list, select **Carrier integration profiles.**  
The third-party carrier application automatically inserts records into the Carrier integration profiles list. You can also create a carrier integration profile.
3. Select the carrier integration profile of your carrier.

### Carrier Integration Profile Details form

Field	Description
Name	Name of the integration profile.
Connection details	Reference to the Connection and Credentials Aliases table that stores the credentials of the customer.  <b>i Note:</b> Your credentials must be updated in the Connection and Credentials Aliases table so that you're authenticated to connect to the carrier API.
API	Name of the script that has the integration business logic.
Job	Name of the scheduled job that invokes the carrier API to fetch the shipments details.  This job is created by a job that runs daily, The ITAM: Process integration profiles and stale shipment job.
Active	Option that indicates the status of the integration profile.  <b>i Note:</b> Only users with the admin or domain_admin role can deactivate the integration profile but they can't delete the integration profile. When an integration profile is deactivated, the associated job that invokes the carrier API is deactivated automatically.

### Test the integration with the carrier API

Check the connection with the carrier API to handle any connection issues such as invalid credentials, incorrect tracking details, and issues with the integration script include.

### Before you begin

Role required: admin or domain\_admin

## Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset operations.**
2. From the **Shipment** list, select **Carrier integration profiles.**
3. Select the carrier integration profile that you want to test.
4. Select **Test connection.**

## Result

A message that indicates the success or failure of the connection is displayed.

### Create a shipping carrier record

Create a shipping carrier record used to associate the carrier with an integration profile.

#### Before you begin

Role required: inventory\_admin

#### Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset operations.**
2. From the **Shipment** list, select **Shipping carriers.**
3. Select **New.**
4. Provide the contact details of the carrier.
5. On the form, fill in the remaining fields.

#### Create New Shipping Carrier form

Field	Description
Name	Name of the shipping carrier. This field is required.
Company	Core company of the shipping carrier.
Integration profile	Profile for integrating with the third-party carrier's application. For more details, see <a href="#">View the carrier integration profile details.</a>
Status	Status of the carrier.  This field is set to <b>Active</b> by default.
Max wait days	Maximum days that the carrier takes to deliver a shipment.  By default, this field is set to 90. You can change this value.  <b>i Note:</b> This field isn't shown on the form by default. You can choose to display this field on the form.  A shipment record that is not updated by the carrier after the integration profile job has run for the specified maximum wait days is marked as stale shipment by The ITAM: Process integration profiles and stale shipment job.
Notes	Additional information about the carrier.

6. Select **Save.**

#### Result

The shipping carrier record is created and added to the Shipping carriers list.

#### View hardware asset shipment details

View all hardware asset shipment details in a single place in the Hardware Asset Workspace.

#### Before you begin

Role required: inventory\_user (read) or inventory\_admin

**About this task**

The Shipment list shows all the shipment records initiated by the shipment tasks of various flows. For details, see [Task closures that create shipment records](#).

A shipment record is created automatically whenever a shipment task of a flow or process is closed.

**Note:**

The Shipment [sn\_itam\_common\_shipment] table also has the Currency, Delivery services cost, and Parcel weight fields. However, these fields aren't shown on the Shipment form.

**Procedure**

1. Navigate to **All > Hardware Asset Workspace > Asset operations**.
2. From the **Shipment** list, select **Shipments**.
3. Select a shipment record to view the shipment details.

**Shipment Details form**

Field	Description
Shipment number	Auto-generated and unique identifier for the shipment record.
Tracking number	Unique carrier tracking number for the shipment.  Multiple orders or line items can have the same tracking number when they belong to the same shipment. Also, multiple line items that belong to the same order can have different tracking numbers when they're part of different shipments.
Stage	Stage of the shipment record.  A shipment can be in one of the following stages: <ul style="list-style-type: none"> <li>○ Draft</li> <li>○ On Order</li> <li>○ Prepare</li> <li>○ In Transit</li> <li>○ Delivered</li> <li>○ Canceled</li> </ul> When a shipment has multiple orders, the Stage of the shipment record changes to <b>Delivered</b> when the shipment assets of an order are delivered.
Shipped from	Location from where the assets are shipped.  This field is populated with the corresponding field of the order that created this record.
Shipped to	Location to which the assets are shipped.  This field is populated with the corresponding field of the order that created this record.

Field	Description
Shipped by	<p>Name of the person who shipped the assets.</p> <p>This field is populated with the corresponding field of the order that created this record.</p>
Ship date	<p>Date on which the assets are shipped.</p> <p>This field is populated with the corresponding field of the order that created this record.</p> <p>The date corresponds to the date on which the ship task of the source is closed.</p>
Shipment quantity	<p>Quantity of assets shipped for the shipment record.</p> <p>This field value is automatically populated when the assets are shipped to the destination.</p> <p>The shipment quantity is the sum of the asset quantities shipped for each shipment line.</p> <div style="background-color: #e1f5fe; padding: 5px;"> <p><b>i Important:</b> The <b>Shipment quantity</b> field is available with Hardware Asset Management version 14.0.0 onwards.</p> </div>
Receive date	<p>Date on which the assets are received.</p> <p>This field is populated with the corresponding field of the order that is received first as part of the shipment.</p> <p>The date corresponds to the date on which the receive task of the source is closed.</p>
Received by	<p>Name of the person to whom the assets are sent.</p> <p>This field is populated with the corresponding field of the order that is received first as part of the shipment.</p>
Carrier	Reference to the shipping carrier record.
Carrier status	<p>Status of the shipment.</p> <p><b>i Note:</b> This field is populated only when you integrate with your third-party carrier applications.</p>
Carrier pick-up date	<p>Date on which the carrier picked up the assets.</p> <p><b>i Note:</b> This field is populated only when you integrate with your third-party carrier applications.</p>
Carrier delivered	<p>Date on which the carrier delivered the assets.</p> <p><b>i Note:</b> This field is populated only when you integrate with your third-party carrier applications.</p>

Field	Description
Carrier link	Link provided by the carrier to track the shipment.
Stale shipment	Option that indicates whether the shipment record is stale. This option is read-only.

### Stale shipments

Shipments that are delayed due to various reasons such as an incorrect tracking number, the loss of a shipment package during transit, and invalid connection details are considered stale shipments.

The ITAM: Process integration profiles and stale shipment job runs daily to check for any stale shipments. A shipment record that is not updated by the carrier even after the integration profile job has run for the maximum wait days for a carrier is marked as stale shipment.

The tracking number of the shipment record that is marked stale isn't sent to the carrier for further tracking. If you know the reason that a shipment is late, you can decide to continue tracking it. For more information, see [Continue to track delayed shipments](#).

**Note:** You can view the list of shipments that weren't updated with the tracking information from the integrated carrier through the Stale shipments important actions card in the Inventory view. For more information, see [Inventory view](#).

### Continue to track delayed shipments

Continue to track a stale hardware asset shipment that is delayed if the reason for the delay is known.

### Before you begin

Role required: inventory\_user (read) or inventory\_admin

### Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset operations**.
2. From the **Shipment** list, select **Shipments**.
3. Select a shipment record that you want to track.
4. On the Shipment details form, select the **Ignore stale check** check box.
5. Select **Save**.

### Result

- The **Stale shipment** check box on the Shipment details form is automatically cleared.
- The tracking number of this shipment is sent to the carrier for tracking and this shipment record won't be marked as stale again.

### Track a hardware asset shipment

Track the progress of your hardware asset shipment that isn't delivered and that has a carrier associated with an active integration profile.

### Before you begin

Role required: inventory\_user (read) or inventory\_admin.

## Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset operations**.
2. From the **Shipment** list, select **Shipments**.
3. Select a shipment record that you want to track.
4. Select **Track now**.

## Result

The following fields on the Shipment details form show the tracking details received from the carrier:

- Carrier status
- Carrier pick-up date
- Carrier delivered date

## Track asset location using indoor maps

Locate and track the consumables and hardware, bundle, and pallet assets in your organization by using indoor maps. Indoor maps provide an interactive interface that enables you to visualize the location of your assets within your campuses, buildings, floors, and places.

### Before you begin

To be able to use indoor maps in Hardware Asset Workspace, make sure you fulfill the following requirements:

- You should explicitly install Indoor Mapping for Assets (`com.sn_ima`) application from the ServiceNow® Store. When you install this application, Indoor Mapping (`sn_map_core`) and Indoor Mapping component (`sn_map_component`) are also installed.

**Note:** To be able to view demo data for indoor maps, you must reinstall demo data after you install the Indoor Mapping for Assets application. For more information, see [Add or repair demo data for applications and plugins](#).

- Set the `com.sn_ham.indoormap.enabled` asset parameter to **true** in the Asset Properties [`asset_property`] table on your ServiceNow instance.
- Set up your indoor maps: You can design indoor maps using Map Studio. For more information, see [Configure Indoor Mapping](#).

**Note:** When you install indoor maps using the entitlement to the Hardware Asset Management license, you can use only the PNG floor map files in the Map Studio. You can't import the files that are in AutoCAD or Raster file format. To use AutoCAD or Raster files, you should have entitlement to Workplace Service Delivery.

- Synchronize location data: The Hardware Asset Management application supports the following indoor mapping location types:
  - Campus: Represents a set of buildings within the same geographic location.
  - Building: Represents a multi-floor building within a specific campus.
  - Floor: Represents a floor within a specific building.
  - Place: Represents either a polygon or point of interest within a specific floor. Places can represent areas, rooms, desks, printers, assets, and more.

- Note:** For indoor map to show assets in Hardware Asset Workspace, assets should be assigned to a location of the type **place** or **room** in the Location [cmn\_location] table.

To view the newly created locations within the Hardware Asset Management application, make sure to synchronize the newly created locations from Map Studio to the Location [cmn\_location] table.

You can associate the locations created in Map Studio with pre-existing records or new records in the Location [cmn\_location] table. For more information, see [Synchronize Indoor Mapping map data with CMN location](#).

Role required: admin or asset

## Procedure

1. Navigate to **All > Hardware Asset Workspace > Asset estate**.
2. Select the **Asset indoor map** tab.
3. View the assets on a selected floor by using the **Campuses, Buildings, and Floors** filters.
4. **Optional:** Select a display option at the bottom-right corner of the Indoor map page to view the assets and their location on the selected floor in a particular format.
  - To show the location of the assets on an interactive map, select **Show map only**.
  - To display both the interactive map and a list view of the assets, select **Show map and list**.
  - To display only a list view of the assets, select **Show list only**.
5. **Optional:** If you're viewing the interactive map, view the list of assets in a selected location on the floor by selecting a location on the map.
6. **Optional:** View the location of assets based on a department, user, or model category or a combination of these values.
  - a. Select the Filters Tab icon on the contextual sidebar of the map.
  - b. Select the values for the **Department, User, or Model category** filters in the Filter by dialog box.

## Assess performance of Hardware Asset Management

Track the success of the Hardware Asset Management application in your instance by creating success goals. You can also create a success goal category for a success goal and track the success of your goals by creating success activities.

### Create a success goal for Hardware Asset Management

Create a success goal to track the success of the Hardware Asset Management application in your instance.

### Before you begin

Role required: ham\_admin

## Procedure

1. Navigate to one of the following paths.
  - **Hardware Asset Workspace > Success portal**
  - **Hardware Asset Workspace > Asset operations > Success goals**
2. Select **Create success goal** or **New**.

3. On the form, fill in the fields.  
For a description of the field values, see [HAM Success Goal Details](#).
4. Select **Save**.  
If you want to cancel a success goal, select the success goal number and select **Cancel Goal**.

### Result

The success goal that you created gets displayed on the Success goals page in the Asset operations view.

### Create success activities for HAM success goals

Create success activities to track the success of your created goals.

### Before you begin

Role required: ham\_admin, asset (owner of the goal)

### Procedure

1. Navigate to one of the following paths.
  - **Hardware Asset Workspace > Success portal**
  - **Hardware Asset Workspace > Asset operations > Success activities**
2. Select **Create success activity** or **New**.
3. On the form, fill in the fields.  
For a description of the field values, see [HAM Success Activity](#).
4. Select **Save**.

### Result

The success activity that you created gets displayed on the Success activities page in the Asset operations view.

### Create a success goal category for hardware assets

Create a success goal category to associate it with the Hardware Asset Management success goal.

### Before you begin

Role required: ham\_admin

### Procedure

1. Navigate to **Hardware Asset Workspace > Asset operations > Success goals > Categories**.
2. Select **New**.
3. On the Success Goal Category form, fill in the category that you want to add and select the **Hardware asset category** check box.
4. Select **Save**.

### Result

The category that you add gets listed as an option in the **Category** field while creating a success goal for Hardware Asset Management. For more information, see [Create a success goal for Hardware Asset Management](#).

### View all maturity items for Hardware Asset Management

View the maturity of your Hardware Asset Management (HAM) program to analyze the status of each maturity stage, where each stage shows the number of maturity items completed.

## Before you begin

Role required: asset

**Note:** The asset role can also change the state and success goal of the maturity item.

## About this task

The maturity of your HAM program is divided into three stages:

- Crawl
- Walk
- Run

For more information, see [Maturity stages of your Hardware Asset Management program](#).

**Note:** The maturity level can't be modified for a required maturity item.

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Success portal**.
2. On the Overview page, select **View all maturity items**.  
The All maturity items page opens, which lists all the maturity items included in the stage your HAM program is in.
3. Select a maturity item to view its details.  
For a description of the field values, see [Maturity item details](#).
4. Select **Save**.

## Manage refresh of assets using Zero Touch Refresh

Enable your employees to request hardware refreshes through an external vendor by using the Zero Touch Refresh flow on your ServiceNow instance. This process enables you to eliminate having to maintain a local inventory of new assets.

### Service Exchange configuration for Zero Touch Refresh

The Zero Touch Refresh flow uses the Service Exchange application to connect providers with your ServiceNow instance to manage asset refresh requests. Your employees and the provider can work on requests in their own environments.

## Service Exchange setup for providers

Providers should perform the following setup tasks to communicate the details of Zero Touch Refresh requests:

1. [Install Service Exchange for Providers](#).
2. [Onboard a new Service Exchange customer](#).
3. [Trigger the assignment of a remote task](#).

## Service Exchange setup for employee requests


Perform the following setup to communicate the details of Zero Touch Refresh requests with the provider:

1. [Install Service Exchange for Consumers](#).
2. [Activate the remote task definitions published by the provider](#).

## Trigger the assignment of a remote task

As an asset provider, create remote task definitions that trigger the assignment of a remote task for your customer to communicate the details of Zero Touch Refresh requests.

### Before you begin

As a provider, you must have created a provider record. For more details, see [Set up a Service Exchange provider record](#) .

Role required: admin

### About this task

You receive the details of a Zero Touch Refresh Fulfillment Request from your customer's ServiceNow instance through the inbound fields of the remote task definition. Any updates made to the Zero Touch Refresh Fulfillment Request are sent to your customer's ServiceNow instance through the outbound fields of the remote task definition.

### Procedure

1. Navigate to **All > Service Bridge > Provider > Remote Task Definitions**.

2. Select **New**.

3. On the form, fill in the fields.

For the description of field values, see [Remote task definition form](#) .

4. Set the **Provider table** and **Customer table** field values to the Zero Touch Refresh Fulfillment Request [sn\_itam\_ztr\_fulfillment\_req] table.

5. Select **Submit**.

6. Select this new remote task definition record.

7. Create the inbound fields, which enable you to receive data from the customer's instance when a remote task is created or updated.

a. On the **Inbound fields** tab, select **New**.

b. For each field you create, fill in the fields and then select **Submit**.

For the required details of the inbound fields that you must create, see [Remote task definition inbound and outbound fields](#).

8. Create the outbound fields, which enable you to send data to the customer's instance when a remote task is created or updated.


a. On the **Outbound fields** tab, select **New**.

b. For each field you create, fill in the fields and then select **Submit**.

For the required details of the outbound fields that you must create, see [Remote task definition inbound and outbound fields](#).

9. Set customer criteria, which specify the customers who can use this remote task definition.

10. Select **Publish**.

 **Note:** If you later need to edit this remote task definition, access it and select **Edit**.

**Result**

A remote task definition record is created on your instance and the **State** field of the record is set to Published. This record is also synchronized with your customer's instance and is pending activation on your customer's instance.

**Activate the remote task definitions**

Activate the remote task definitions published by the provider on your instance so that your provider can fulfill your Zero Touch Refresh requests.

**Before you begin**

The Service Exchange application must be installed on your instance. For more information, see [Install Service Bridge for customers](#) .

Before you can activate a remote task definition on your ServiceNow instance, your provider must create and publish it. For more information, see [Trigger the assignment of a remote task](#).

Role required: admin

**Procedure**

1. Navigate to **All > Service Bridge > Customer > Remote Task Definitions**.
2. Select the remote task definition record.
3. On the Remote Task Definition form, in the Simple Trigger section, set the trigger condition as **Model is not empty**.  
Remote tasks are automatically created when records with values in the **Model** field are added to the Zero Touch Refresh Fulfillment Request [sn\_itam\_ztr\_fulfillment\_req] table.
4. Select **Save**.
5. Verify the data on the **Inbound fields** tab, the **Outbound fields** tab, and the **Remote task variables** tab.  
The provider defines these values. When you create a remote task, the provider receives the remote task data through the inbound fields and responds with the remote task data through the outbound fields.
6. Select **Activate**.
7. In the pop-up window, verify the mappings of the inbound and outbound variables and select **OK**.

**Configure replacement models for a refresh model**

Configure replacement models for a hardware asset model that is refreshed. When configured, employees can select replacement models for their hardware assets on the Zero Touch Refresh form.

**Before you begin**

Role required: admin

**Procedure**

1. Navigate to **All > Hardware Asset Workspace > Asset operations**.
2. In the **Zero touch refresh** list, select **Refresh models**.
3. Create the refresh model.
  - a. On the Refresh models page, select **New**.
  - b. On the form, fill in the fields.

### Create New Zero Touch Refresh Model form

Field	Description
Model	Model that is being refreshed.
Location	Location for which the replacement models are valid.  <b>Note:</b> Configuring replacement models for a country is the most efficient setup. However, you can configure replacement models for more specific locations such as state or city.
Active	Option that indicates whether the replacement rule is active.

c. Select **Save**.

4. Add replacement models for the refresh model.

a. In the **Replacement models** tab, select **Add**.

b. In the **Replacement Model** dialog box, select the models that you want to add as replacement for the refresh asset model and select **Add**.

c. Select **Save**.

### Result

The refresh model with the assigned replacement models is included in the **Refresh models** list.

### Request a hardware asset refresh through Zero Touch Refresh

Request to replace a hardware asset that you own with a new asset directly with the provider through Zero Touch Refresh.

### Before you begin

Role required: none

### Procedure

1. Navigate to **All > Service Catalog > Asset Lifecycle**.

If the Asset Lifecycle category isn't available in the service catalog, contact your administrator.

2. On the Asset Lifecycle page, select **Zero Touch Refresh**.

3. On the form, fill in the fields.

### Zero Touch Refresh form

Field	Description
Asset	Hardware asset that you own that you want to refresh.  If you select an asset that is not eligible for refresh, a message stating that approvals will be requested is displayed. An approval request is then automatically sent to the asset manager.
Replacement model	Asset model with which you want to replace the hardware asset.

Field	Description
	The list shows the refresh models based on the model of the hardware asset that you selected and the location of the asset. If the location of the asset isn't specified in the asset record, the location of the requester is considered.

4. Determine where the replacement asset should be sent.

Shipping location	Action
<b>Your location</b>	<p>In the <b>Refresh method</b> field, select <b>Ship</b>.</p> <p><b>Note:</b> The form shows your contact details such as your address and phone number. You can change your contact details if necessary.</p>
<b>Stockroom</b>	<p><b>a.</b> In the <b>Refresh method</b> field, select <b>Pickup</b>.</p> <p><b>b.</b> In the <b>Pickup location</b> field, select the location of the stockroom from which to collect your new asset.</p> <p><b>Note:</b> The Locations list shows all the stockroom locations in your country.</p>

5. Confirm the shipping address choice by selecting the acknowledge check box at the bottom of the Zero Touch Refresh form.

6. Select **Submit**.

7. **Optional:** View the status of your Zero Touch Refresh request by navigating to **All > Self-Service > My Requests**.

**Result**

Your Zero Touch Refresh request is successfully submitted.

**Fulfill a Zero Touch Refresh Fulfillment Request**

As a provider, ship a replacement asset requested through a Zero Touch Refresh Fulfillment Request to the requester.

**Before you begin**

The Service Exchange configuration necessary for the Zero Touch Refresh flow must have been set up. For more details, see [Service Exchange configuration for Zero Touch Refresh](#).

Role required: admin, asset, procurement\_user, or inventory\_user

**About this task**

When an employee submits a Zero Touch Refresh request on the ServiceNow® instance of your customer, a corresponding Zero Touch Refresh Fulfillment Request is created on your ServiceNow® instance.

## Procedure

1. Log in to your ServiceNow<sup>®</sup> instance.
2. Navigate to **All > Zero Touch Refresh Fulfillment Requests**.
3. Select a request that is in the Requested state.
4. Review the details on the Zero Touch Refresh Fulfillment Request form.

The Customer request number field shows the corresponding Zero Touch Refresh request number. The fields in the Shipment details tab and the Return shipment details tab are populated with the details specified in the Zero Touch Refresh request.

5. Confirm the Zero Touch Refresh Fulfillment Request.
  - a. In the **State** field, select **Order confirmed**.
  - b. Select **Save**.
6. Ship the replacement asset to the requester or to the stockroom.
  - a. Enter the asset information in the **Asset tag** and **Serial number** fields.
  - b. In the **Shipment details** tab, enter values in the **Tracking number** and **Carrier** fields.
  - c. In the **Return shipment details** tab, enter values in the **Tracking number** and **Carrier** fields.
  - d. In the **State** field, select **Shipped**.
  - e. Select **Save**.
  - f. In the shipment, include a box that the employee can use to return the old asset with an address label made out for the stockroom.
  - g. Ship the new asset to the requester or to the stockroom location where the requester can pick up the asset.

## Result

An asset with the serial number and asset tag specified in the Zero Touch Refresh Fulfillment Request is assigned to the employee.

## Process a Zero Touch Refresh request

Process a Zero Touch Refresh request to receive the assets from your provider and complete the Zero Touch Refresh flow.

## Before you begin

The Service Exchange configuration necessary for the Zero Touch Refresh flow must have been set up. For more details, see [Service Exchange configuration for Zero Touch Refresh](#).

Role required: admin, asset, procurement\_user, or inventory\_user.

## About this task

After the provider ships the assets, the Zero Touch Refresh flow completes when the following actions have occurred:

1. The employee confirms that the replacement asset is received.
2. The inventory manager or the asset manager confirms and evaluates the old asset that was received.

## Procedure

1. Log in to your ServiceNow<sup>®</sup> instance.
2. Navigate to **All > Hardware Asset Workspace > Asset operations**.

3. From the **Zero touch refresh list**, select **Requests**.
4. Select the request that you want to process.
5. Select the **Zero Touch Refresh Tasks** tab.
6. As a stockroom manager, notify the employee that the new asset is ready for pickup.
  - a. Select the **Ready for pickup** task.
  - b. Select **Close Task**.
    - An email message is sent to notify the employee that the asset has arrived in the stockroom and is ready for pickup.
    - The Receive asset task is created.
7. Ensure that the Receive asset task is closed.

- If the employee has acknowledged receipt of the replacement asset online, the task is closed automatically.

For more details, see [Acknowledge receipt of an asset on a mobile device](#) or [Acknowledge receipt of an asset through the Core UI](#).

- If the asset has been picked up at the stockroom but the employee has not acknowledged receipt online, users with the admin or asset role can close this task on behalf of the employee by accessing the task and selecting **Close task**.
8. Confirm that the old asset was returned to the stockroom.
    - a. Select the Receive return asset task.
    - b. Select **Close task**.
      - The Receive asset task is closed.
      - The Asset evaluation task is created.
  9. Evaluate the old asset and select the appropriate status.
    - a. Select the Asset evaluation task.
    - b. In the **Evaluation status**, mark the asset for reuse, repair, or ready for disposal.
      - To mark the asset for reuse, select **Re-deployable**.

The state and substate of the asset are set to In stock and Available.
      - To mark the asset for repair, select **Needs repair**.

This option initiates the [Return Merchandise Authorization \(RMA\)](#) flow.

The state and substate of the asset are set to In stock and Pending repair.
      - To mark the asset as ready for disposal, select **To be disposed**.

The state and substate of the asset are set to In stock and Pending disposal.
    - c. Select **Close task**.

## Result

The Zero Touch Refresh flow completes. The stage and state of the Zero Touch Refresh request change to Closed complete and Completed.

## Acknowledge receipt of an asset on a mobile device

As an employee, acknowledge receipt of the new asset that you received through a Zero Touch Refresh request on a mobile device.

### Before you begin

To use your mobile device for this acknowledgment, you must have the ServiceNow mobile app installed on your iOS or Android mobile device.

Role required: none

### Procedure

1. Navigate to **My Items > My assets**.
2. Tap the asset.
3. Tap **Scan delivered asset**.
4. Provide the asset tag information.
  - To provide the information through a scan, scan the asset tag of the asset.
  - To provide the information manually, enter a value in the **Asset tag** field.
5. Select **Submit**.

### Result

- The state of the asset changes to **In use**.
- The state of the Receive asset task of the Zero Touch Refresh request changes to **Closed**.

## Acknowledge receipt of an asset through the Core UI

As an employee, acknowledge receipt of the new asset that you received through a Zero Touch Refresh request through the Core UI on your ServiceNow instance.

### Before you begin

Role required: none

### Procedure

1. Navigate to **All > Self-Service > My Requests**.
2. Select the Zero Touch Refresh request.
3. In the **Zero Touch Refresh Tasks** tab, select the **Receive asset** task.
4. Select **Close task**.

### Result

The state of the Receive asset task of the Zero Touch Refresh request changes to **Closed**.

## Configure the Total Cost of Ownership of assets

Configure the Total Cost of Ownership (TCO) of assets by creating rate cards for each task in a Hardware Asset Management workflow.

Rate cards capture costs for a task or on the time consumed on the task.

### Related topics

[Asset Total Cost of Ownership for Hardware Asset Management](#)

[Asset analytics view](#)

### Create a task rate card in Hardware Asset Workspace

Create a task rate card to define the type of task and the method of calculating the associated costs.

#### Before you begin

Role required: asset\_admin

Activate the ServiceNow® Cost Management (com.snc.cost\_management) plugin. For more information, see [Activate Cost Management](#).

#### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset operations > TCO configuration > Task rate card.**
2. Select **New.**
3. On the form, fill in the fields.

#### Create New Task Rate Card

Field	Description
Name	Purpose of the rate card.
Use time worked	Option for forcing the rule to calculate the task cost based on the related task time worked entries.  By default, a flat rate for each task is defined in the <b>Task rate</b> field.
Table	The type of tasks the rate card applies to.
Active	Option to determine if the rate card is actively used.
Task rate	Rate of the task, with a currency list.  To add a new currency, use the Edit link.
Default labor rate	The default hourly rate to apply to the time worked entries if the worker doesn't have a labor rate card.  This field appears only when <b>Use time worked</b> is selected.
Order	Order in which the task rate card applies to the same task.  When more than one task rate card applies to the same task, the one with the lowest order is used.
Set conditions	Filter to run on the table selected to determine whether this rate card applies to a given task. This field uses the Condition

Field	Description
	Count Widget to preview what records would be returned by the conditions.

**4. Select Save.**

**Result**

After a task rate card is defined for a task, expense lines are created by the **Use time worked** value. When you select the Use time worked field for a task rate card, the time worked records created against users and labor rate are used to calculate expense lines. For more information, see [Process task rate cards](#).

**Related topics**

[Asset Total Cost of Ownership for Hardware Asset Management](#)

[Asset analytics view](#)

[Asset operations view](#)

**Create a labor rate card in Hardware Asset Workspace**

Create a labor rate card to record the time worked on a task and associate a rate to the task.

**Before you begin**

Role required: asset\_admin

Activate the ServiceNow® Cost Management (com.snc.cost\_management) plugin. For more information, see [Activate Cost Management](#).

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset operations > TCO configuration > Labor rate card.**
2. Select **New.**
3. On the form, fill in the fields.

**Create New Labor Rate Card**

Field	Description
Name	Purpose of the rate card.
Active	Option to determine if the rate card is actively used.
Hourly rate	Identifies the hourly rate to be applied to task time worked entries when the worker meets the condition defined.
Order	Order in which the labor rate card applies to the same task.  When more than one labor rate card applies to the same task, the one with the lowest order is used.
Set conditions	Filter to determine whether the <b>Use time worked</b> option applies to this rate card. For

Field	Description
	<p>more information, see <a href="#">Create a task rate card in Hardware Asset Workspace</a>.</p> <p>This field uses the Condition Count widget to preview what records would be returned by the conditions.</p>

**4. Select Save.**

**Result**

If you're working on multiple HAM workflows including a labor rate card, the same value is used for all the time recorded tasks. But a labor rate card isn't included, the Default labor rate mentioned in the task rate card is used. For more information, see [Create a task rate card in Hardware Asset Workspace](#).

**Related topics**

[Asset Total Cost of Ownership for Hardware Asset Management](#)

[Asset analytics view](#)

[Asset operations view](#)

**Create a TCO report in Hardware Asset Workspace**

Create your own Total Cost of Ownership (TCO) report to compare the actual or projected TCO of multiple assets or compare the actual or projected asset TCO with the benchmark cost of the hardware model.

**Before you begin**

Role required: asset

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset analytics**.
2. In the Comparative reports section, select **New**.
3. On the form, fill in the fields.

**TCO report**

Field	Description
Name	Name of the TCO report.
Type	<p>Type of the TCO report.</p> <ul style="list-style-type: none"> <li>○ TCO comparison: Costs of multiple assets are compared.</li> <li>○ TCO vs benchmark: Costs of assets are compared with the benchmark cost.</li> </ul>
Report table	Table for Hardware Asset Management, Hardware (alm_hardware).

Field	Description
Total cost type	<ul style="list-style-type: none"> <li>○ Actual TCO: The TCO value of the selected asset.                             <ul style="list-style-type: none"> <li>▪ If both Actual TCO and Real time report check boxes are selected, the generated TCO report is real-time and offline based on the Real time report selection.</li> <li>▪ If only Actual TCO is selected, the generated TCO report is offline.</li> </ul> </li> <li>○ Projected TCO: This value is referenced from the following formulas and the generated report is only offline.                             <ul style="list-style-type: none"> <li>▪ When useful life of the asset is equal to or greater than asset life, the Projected TCO (at end of life) is calculated by using the following formula:                                     <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <math display="block">\text{Normalized TCO} * \text{Useful life}</math> </div> <p>, where Normalized TCO (TCO per month) is</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <math display="block">\left( \frac{\text{Purchase cost}}{\text{Useful life}} \right) + \left( \frac{\text{Sum of operational cost}}{\text{Asset life}} \right)</math> </div> </li> <li>▪ When useful life of the asset is lower than asset life, the Projected TCO (at end of life) is calculated by using the following formula:                                     <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <math display="block">\text{Normalized TCO} * \text{Asset life}</math> </div> <p>, where Normalized TCO (TCO per month) is</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <math display="block">\left( \frac{\text{Purchase cost} + \text{Sum of operational cost}}{\text{Asset life}} \right)</math> </div> </li> </ul> </li> </ul>
Description	A brief and meaningful description of the report.
Show benchmark	<p>Option for indicating the benchmark cost in the report.</p> <p>This field appears only when <b>Type</b> is selected as <b>TCO comparison</b>.</p>
Benchmark model	Asset model to indicate the benchmark cost.

Field	Description
	When TCO comparison is selected in the Type field, this field appears only when the <b>Show benchmark</b> check box is selected.
Real time report	Option for generating real-time data on the report.
Workspace	The workspace you're working on. Default: HAM

**4. Select Save.**

**Result**

The TCO report is generated and displayed in the Comparative reports section of the Total Cost of Ownership dashboard.

**Create a TCO report source**

Create a Total Cost of Ownership (TCO) report source for TCO reports.

**Before you begin**

Role required: asset

**Procedure**

1. Navigate to **Hardware Asset Workspace > Asset analytics.**
2. Open the report for which you want to create report sources from the Comparative reports section.  
You can also create a comparative report. For more information, see [Create a TCO report in Hardware Asset Workspace.](#)
3. Select the **Report sources** tab.
4. Select **New.**
5. On the form, fill in the fields.

**Create New TCO report source**

Field	Description
Name	Name of the report source.
Active	Option to indicate if the report source is active or not. By default, this check box is selected.  <b>Note:</b> You can have a maximum of four active report sources for a report at any given time. If you want to add another active report source, you must inactivate another report source.
Report table	Table for Hardware Asset Management, Hardware (alm_hardware).

Field	Description
Set conditions	Filter to select assets with certain conditions.
Description	A brief and meaningful description of the report source.

## 6. Select **Save**.

### Result

The new report source is added to the list of TCO report sources in the **TCO report sources** tab.

### Related topics

[Asset Total Cost of Ownership for Hardware Asset Management](#)

[Asset analytics view](#)

## Manage and monitor hardware asset performance

Configure settings for asset KPI tracking and monitor asset KPIs using performance reports in the Hardware Asset Workspace.

**i Important:** The settings to enable the tracking of asset performance are available with Hardware Asset Management version 13.0.0 and later.

### Configure settings to monitor asset key performance indicators (KPIs) in the Hardware Asset Workspace

Set up the necessary configurations in the Asset operations view to enable the tracking of KPIs for your hardware assets. These settings enable you to monitor and manage the performance your assets.

**i Important:** The settings to enable the tracking of asset performance are available with Hardware Asset Management version 13.0.0 and later.

As an administrator, configure the following settings to monitor asset KPIs:

1. [Opt in to model categories to track performance KPIs for hardware assets.](#)
2. [Create an operational schedule for hardware assets.](#)
3. [Map hardware assets to an operational schedule.](#)

For details on asset performance and the related reports, see [Asset performance reports in the Hardware Asset Workspace](#) and [Asset analytics view](#).

### Opt in to model categories to track performance KPIs for hardware assets

Monitor the performance KPIs of hardware assets in your organization by enabling the KPI tracking for the models to which the assets belong.

### Before you begin

**i Important:** The settings to enable the tracking of asset performance are available with Hardware Asset Management version 13.0.0 and later.

Role required: admin

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset operations > KPI configuration.**
2. From the KPI configuration list, select **KPI opt in.**
3. From the list of model categories, select the one for which you want to enable the KPI tracking.
4. On the Asset performance tracking form, select the **Track performance KPI** check box.
5. Select **Save.**

## Result

[Create an operational schedule for hardware assets.](#)

### Create an operational schedule for hardware assets

Define the scheduled operational time, which is the duration during which the asset will be in use, by creating an operational schedule.

### Before you begin

**i Important:** The settings to enable the tracking of asset performance are available with Hardware Asset Management version 13.0.0 and later.

Role required: asset

### About this task


An operational schedule record is stored in the Asset schedule [sn\_itam\_common\_asset\_schedule] table. If an operational schedule isn't defined, the Default operation schedule (24/7) hours is applied.

**i Note:** The calculation of asset key performance indicators (KPIs) begins when the asset first moves to the In Use state. Therefore, the linked operational schedule must cover the entire period for accurate results.

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset operations > KPI configuration.**
2. From the KPI configuration list, select **Operational schedules.**
3. Select **New.**
4. On the form, fill in the fields.

### Create New Operation schedule form

Field	Description
Name	Unique name for the operational schedule.
Parent	Parent schedule that constraints the new schedule.  For more details, see <a href="#">Parent and child schedules</a>  .
Time zone	Time zone for the schedule. If you select <b>Floating</b> , the time zone is relative to whatever process is accessing the item at the time.

Field	Description
	<ul style="list-style-type: none"> <li>○ For example, if an enterprise administrator in Amsterdam sets a floating schedule for 8:00A.M. to 5:00P.M., a user in San Jose sees the schedule as 8:00 A.M. to 5:00 P.M.</li> <li>○ When a schedule is defined in a specific time zone, users in different time zones see the schedule with their own time zone applied.</li> </ul>
Description	Description of the operational schedule.

5. Select **Save**.

6. Add one or more schedule entries to the operational schedule.

a. Select the **Schedule Entries** tab.

b. Select **New**.

c. On the Schedule Entry New record, fill in the fields.

For details on Schedule Entry New record fields, see [Schedule entry fields](#).

d. Select **Submit**.

A schedule entry is created and listed under the Schedule Entries tab.

**Note:**

You can't edit a schedule or its entries. If you want to stop using an asset schedule, you can deactivate it by deselecting the **Active** check box. You can then create a new schedule as needed.

7. **Optional:** To view the calendar view of the schedule with the schedule entries, select **Show schedule**.

**What to do next**

[Map hardware assets to an operational schedule.](#)

**Map hardware assets to an operational schedule**

Create an asset schedule to map the hardware assets to an operation schedule.

**Before you begin**

**Important:** The settings to enable the tracking of asset performance are available with Hardware Asset Management version 13.0.0 and later.

Role required: admin

**About this task**

An asset schedule record is stored in the Asset schedule policy [sn\_asset\_cmn\_schedule\_policy] table.

**Note:** If an asset isn't associated with an operational schedule, the Default asset schedule (24 hours, 7 days a week or 24/7) will be applied.

The *Asset performance - Map schedule policies* job runs weekly to sync the mapping between assets and the operational schedule.

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset operations > KPI configuration.**
2. From the KPI configuration list, select **Asset schedules.**
3. Select **New.**
4. On the form, fill in the fields.

**Create New Asset schedule form**

Field	Description
Name	Unique name for the asset schedule.
Source table	Source table for the assets. You can select any of the following tables: <ul style="list-style-type: none"> <li>○ Hardware [alm_hardware]</li> <li>○ Enterprise asset [sn_ent_asset]</li> <li>○ Construction asset [sn_ent_construction_asset]</li> <li>○ Facility asset [sn_ent_facility_asset]</li> <li>○ Industrial asset [sn_ent_industrial_asset]</li> <li>○ Linear asset [sn_eam_linear_asset]</li> <li>○ Medical asset [sn_ent_medical_asset]</li> <li>○ Retail asset [sn_ent_retail_asset]</li> <li>○ Tactical equipment asset [sn_ent_tactical_asset]</li> <li>○ Transportation asset [sn_ent_transportation_asset]</li> <li>○ Wearable asset [sn_ent_wearable_asset]</li> </ul>
Condition	Set a condition to select the assets that you want to associate with the operational schedule. For example, if you set the <b>Department</b> field to <b>IT</b> , the operational schedule is inked to all assets within the IT department.  <b>Note:</b> Select the source table before setting the condition.
Schedule	Operational schedule that you want to associate with the assets.
Priority	Order in which schedules should be applied to an asset when there are overlapping schedules.
Active	Indicates whether the asset schedule is active.

5. Select **Save.**
6. **Optional:** To sync the mapping between the assets and the operational schedules on demand, select **Sync KPI records.**

**Monitor hardware asset performance with Asset KPIs report**

Track the asset availability and related KPI values in the report to see how well a hardware asset is performing.

**Before you begin**

**Important:** The Asset KPIs report is available with Hardware Asset Management version 13.0.0 and later.

Role required: asset


### About this task

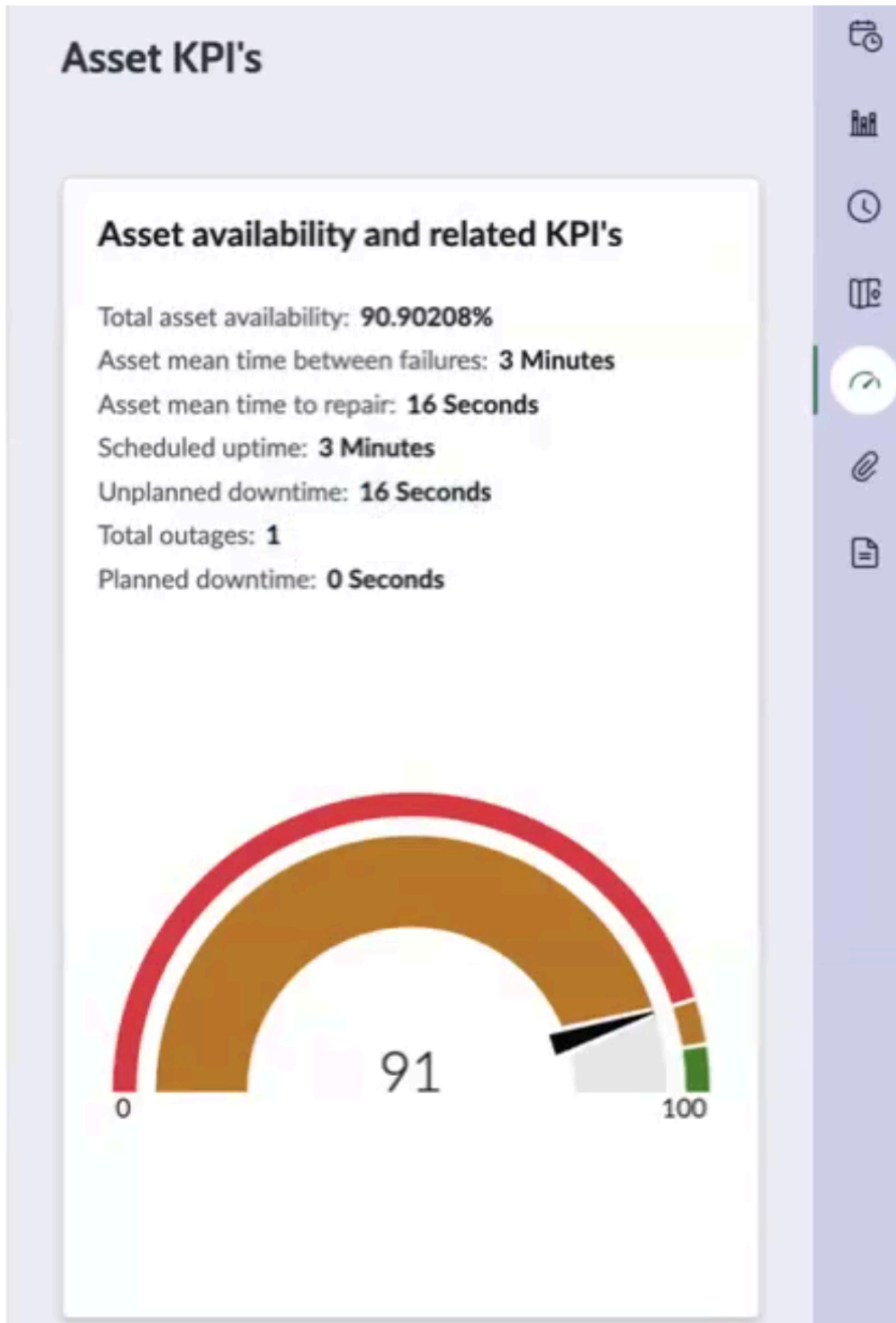
The Asset KPIs report is available for a hardware asset under the following conditions:

- The asset belongs to a model category of an opted in resource category, and for which the performance tracking is enabled. For details, see [Opt in to model categories to track performance KPIs for hardware assets](#).
- The asset has moved to the In use state, and its KPIs have been calculated and are available in the Asset Availability table [sn\_ent\_asset\_availability].

**Note:** The *Calculate asset performance KPIs* scheduled weekly job runs every Saturday to calculate the KPIs for the assets. These KPIs are then reflected in the Asset availability and related KPIs report, which displays the most recent KPI values.

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset estate**.
2. Select the **All assets** tab.
3. Select the asset record for which you want to view the details of the asset key performance indicators (KPIs).
4. On the contextual sidebar, select the Asset availability and related KPIs icon [  ].  
The Asset KPIs report is displayed.



5. To view the details of the report, select any section on the report.

A form view of the availability record for the asset is shown with additional details such as the following:

- **Current asset schedule:** The asset schedule linked to the asset currently and used for KPI calculations. If no schedule is linked, the Default asset schedule is used.
- **Start:** The date and time when the asset KPI values were first calculated.
- **End:** The date and time when the asset KPI values were last calculated.
- **Outages During Interval tab:** A list of outages with details like start and end time of the outage and the duration of the outage. For more details on outage record creation and handling, see [Asset performance reports in the Hardware Asset Workspace](#).

### View the total time worked on all tasks related to a hardware asset

Use the Asset task time summary report to see the details of the time spent on all tasks for an asset and its child assets, grouped by task category.

### Before you begin

**i Important:** The Asset task summary report is available with Hardware Asset Management version 13.0.0 and later.

Role required: asset

### About this task

Asset task time refers to the total time spent on all tasks related to an asset. The total time spent includes the sum of time worked on all related tasks for the asset and its child assets.

#### **i Note:**

Time spent on tasks related to child assets is rolled up to the parent asset only if the tasks were created and closed after the **last\_used** date on the child assets. The total time from these tasks is then aggregated and added to the parent asset's time spent.

When a child asset is removed from a parent asset, the total time spent on the parent asset remains the same. Therefore, the time spent lines associated with the parent asset will be available even after the child asset is removed.

The time worked on a task is tracked after you start working on it and select **Start Timer** until you close the task. The timer automatically stops when you close the task, and the total duration is updated. You can also pause the timer when you aren't working on the task by selecting **Pause**, and then select **Resume** when you continue to work on the task. You can also add time worked details to the task manually by selecting **Record Time**. The time worked on a task is stored in the Time worked [task\_time\_worked] table.

After a task is closed on a parent or child asset, a time spent line is generated and stored in the Time spent line table [sn\_itam\_common\_time\_spent\_line]. Each time spent line includes the time worked on the asset task. The sum of the time spent values in these time spent lines gives the total asset task time. If a task involves multiple assets, the total time spent is equally divided among them. This equally distributed time is then aggregated to the parent asset if there are any child assets involved.

**i Note:** When you upgrade to Hardware Asset Management version 13.0.0, the *Calculate asset time spent* fix script creates time spent lines for asset tasks that have already been completed and closed.

The total time spent is grouped by the following task categories:

- **Purchase - Asset:** Includes the following tasks
  - All tasks in the Refresh flow except the Reclaim aged asset task.
  - All tasks in the Zero touch refresh flow

- Replacement task in the Return Merchandise Authorization (RMA) flow
- Replacement task in the Recall flow
- Labor - Maintenance
- **Labor - Repair:** Includes tasks in the following workflows:
  - Repair order
  - RMA order
  - Incident
- **Labor - General:** Includes tasks in the following workflows:
  - Asset reclamation
  - Asset donation
  - Resale
  - Disposal
  - Lease return
  - Transfer order
  - Loaner
  - Asset onboarding
  - Asset refresh flow (only the Reclaim aged asset task)
  - Asset request (Pick task)
  - Drop off and Receive task
  - Change

**Note:** Total time spent on an asset task isn't calculated for pallets, consumables, and bundle assets. Therefore, the Asset task time summary report isn't available for these assets.

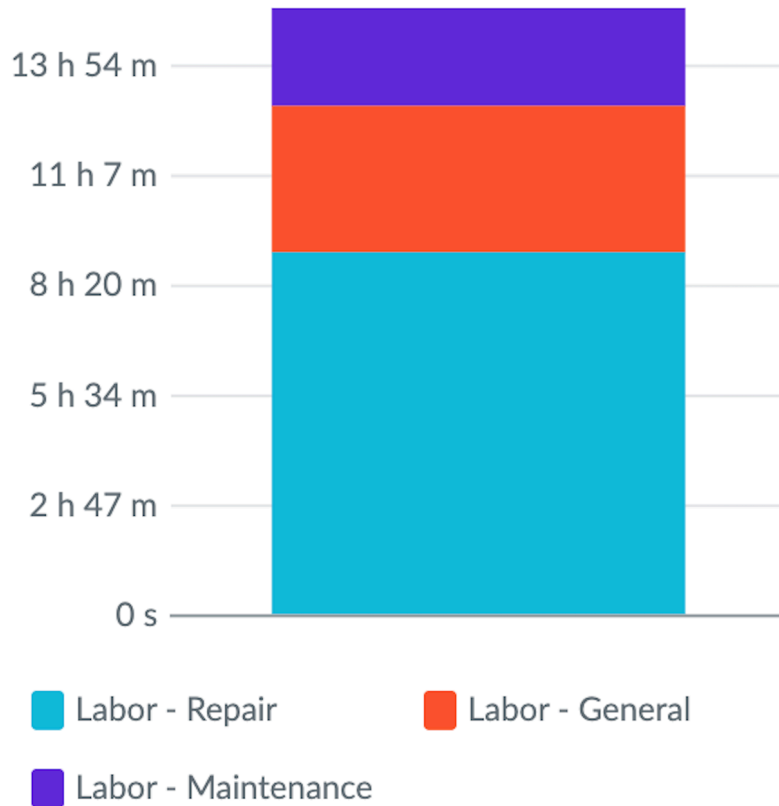
## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset estate**.
2. Select the **All assets** tab.
3. Select the asset record for which you want to view the details of the total time spent on the tasks.
4. On the contextual sidebar, select the Asset task time summary icon [🕒].  
**Total time spent by task category** report is displayed.

## Asset task time summary

### Total time spent by task category

Total time spent: **15 Hours 19 Minutes**



The Asset task time summary report includes the following details:

- **Total time spent:** Total time worked on all related tasks for the asset, including tasks on child assets.
- **Breakdown of total time spent:** Total time worked on all related tasks, divided and shown separately for each task category. This visualization helps you to see how much time was spent on tasks within each task category.
- **Legends for the task categories:** Legends shown are based on the actual asset tasks and their task categories. The legends include the following:
  - **Purchase - Asset**
  - **Labor - Maintenance**

- **Labor - Repair**
- **Labor - General**

5. To view the details of the time spent on all tasks within a specific task category, select the corresponding task category section in the report.

The list of time spent lines is displayed, with each line showing the following details:

- **Source asset:** Display name of the asset, including both parent and child assets, for which time was spent on the task.
- **Task:** Task number
- **Task type:** Type of the task, such as the Hardware RMA Order Line task.
- **Task name:** Name of the task, such as Prepare or On-site repair.
- **Time spent:** Time worked on the asset task.
- **Short description:** A brief description of the task.
- **Closed:** The date and time when the asset task was closed.
- **Task category:** Category to which the task belongs.

## Manage Hardware Asset Management subscriptions

Save on Hardware Asset Management licensing cost by choosing only the Hardware Asset Management Resource Categories that you use.

For details on Hardware Asset Management licensing, see [Hardware Asset Management subscription](#).

### Opt-in or opt-out of HAM license resource categories

Opt in the Hardware Asset Management (HAM) license resource categories that are part of the HAM subscription. You can purchase and opt in the resource categories that you use, and you can opt out and not pay for the categories that you don't use.

### Before you begin

Role required: admin or HAM admin

### About this task

This procedure is a one-time activity. If you're upgrading from HAM 1.0 or 2.0 version, then all resource categories are by default opted in. The exception is the Mobile Device resource category.

If you're a new user, manually opt in all the resource categories that are part of the HAM subscription.

**i Important:** The Mobile Device resource category is only accessible with HAM Mobile Device License entitlement. Resource categories are available irrespective of entitlements in non-production instances. However, in production instances, you would find the resource categories available only with their associated entitlements.

Hardware assets belonging to a category that you don't opt in are excluded by default. For example, if you don't opt in for the End User Computer category, all End user computers would be excluded. For more information, see [Hardware Asset Management license exclusion](#).

**i Note:** All the HAM license resource categories are opted in by default when you load demo data in an instance. You must deselect the resource categories that you don't want to opt in for.

## Procedure

1. Navigate to **All > Asset > Hardware Model Normalization > HAM Resource categories**.
2. Open a resource category.  
Each resource category lists the model categories associated with it.
3. To opt in or opt out of the resource category, do one of the following:
  - If you want to opt in the resource category, select **Opt in**.
  - If you want to opt out of the resource category, select **Opt out**.  
A pop-up message appears and asks if you want to opt in or opt out.
4. Select **Ok**.

## Result

The resource category is opted in or opted out. A one time run job execution executes the following updates:

- Sets the License opt in column on the models that have the model categories belonging to the opted in or opted out resource categories.
- Sets the exclusion flag on the assets of these models. For more information, see [Hardware Asset Management license exclusion](#).
- A normalization job is triggered for the models that are associated with the resource category.

## View the license report for the Hardware Asset Management application

View details of the subscriptions purchased and consumed by your organization for the managed IT resource types such as Server, End User Computing Device, Networking Device, Mobile Device, and Telecom Network Inventory using the ITAM License Report.

## Before you begin

Role required: admin, usage\_admin

## About this task

- 📘 **Note:** Every Sunday, the license count for the managed IT resource types is calculated. Any changes to the license consumption reflect on the ITAM license report only after the monthly license count calculation.

## Procedure

1. Navigate to **All > ITAM Licensing > ITAM License Report**.
2. Search for the Hardware Asset Management application.

Application	Resource Category	Resource Subcategory	Resource Total Count	Subscription Unit Ratio	Total Subscription Units Consumed
Application: Hardware Asset Management (4)					
Hardware Asset Management	Printer		39	10:1	4
Hardware Asset Management	Monitors		5	15:1	1
Hardware Asset Management	End User Computers		1,019	4:1	255
Hardware Asset Management	Storage		3	3:1	1
Sum					261
Application: Hardware Asset Management for TNI (3)					
Hardware Asset Management for TNI	Network Gear		5	5:1	1
Hardware Asset Management for TNI	Servers		69	1:1	69
Hardware Asset Management for TNI	Telecom Network Inventory		0	1:1	0
Sum					70
Application: Hardware Asset Management for Zero Touch Mobility (2)					
Hardware Asset Management for Zero Touch...	Mobile Device	Bring Your Own Asset	0	10:1	0
Hardware Asset Management for Zero Touch...	Mobile Device	Corporate Asset	0	10:1	0
Sum					0
Sum					331

Subscription details of all the Hardware Asset Management applications activated on your ServiceNow instance are shown.

You can view the following information on subscriptions purchased for the resource categories that you opted-in for all the Hardware Asset Management applications:

- **Application:** Name of the application that is activated on your ServiceNow instance. The ITAM License Report is grouped by the application.
- **Resource Category:** Managed IT resource types available for the Hardware Asset Management application. The resource types include the following:
  - Server
  - End User Computers
  - Network gear
  - Mobile Device
  - Telecom Network Inventory
  - Printers
  - Monitors
  - Storage
  - Unclassified hardware

Note the following:

- Printers, Monitors, Storage, and Unclassified hardware are available with Hardware Asset Management version 10.1.0 and later.
- When more than one Hardware Asset Management solution is activated on your ServiceNow instance, an opted-in resource category that is available with the activated solutions is licensed only under solution. For more details, see [Licensing framework for Hardware Asset Management solutions](#).
- **Resource Subcategory:** Subcategories of a Resource category.

**Note:**

- Resource Subcategory is available with Hardware Asset Management version 10.1.0 and later.
- Based on the acquisition method, the following resource subcategories are available for the Mobile Device only when the Hardware Asset Management integration with Zero Touch Mobility is activated on your ServiceNow instance:
  - Bring Your Own Asset
  - Corporate Asset
- **Resource Total Count:** Asset count of the managed IT resources that is grouped by Resource categories and Model categories.
- **Subscription Unit Ratio:** Predefined ratios that determine how many assets of a Resource category require a subscription. For example, the defined ratio of 4:1 for End User Computers means that every four assets of that resource category require one Subscription Unit.
- **Total Subscription Units Consumed:** The number of subscriptions per Resource category that your organization consumed. The licensing module calculates this number by applying the Subscription Unit Ratio to the Resource Total Count for each Resource Category.

**Manage hardware asset requests using the Zero Touch request flow**

Fulfill hardware asset requests of your employees through an external provider by using the Zero Touch request flow.

**Setup required for providers**

The provider must complete the following tasks to fulfill the requests received through the Zero Touch request flow:

1. [Complete the Service Exchange setup for providers.](#)
2. [Configure Scratchpad to send updates to your consumer.](#)

**Note:** After completing the prerequisites of the Zero Touch request flow, the provider can fulfill provider tasks. For details, see [Fulfill a provider task](#).

**Setup required for your Service Catalog requests**

Make sure that you have the completed the following tasks so that your catalog requests can be fulfilled through an external provider:

1. [Complete the Service Exchange setup for your service catalog requests.](#)
2. [Manage Service Catalog items for the Zero Touch request flow.](#)
3. [Create a provider integration profile.](#)

**Note:** You must perform this task only if the Scratchpad update received from your provider isn't in the format required for the Zero Touch request flow. You must also [create a Script Include to transform Scratchpad updates from your provider](#).

**Zero Touch request flow tasks for your employees**




1. [Request a hardware asset through the Zero Touch request flow.](#)
2. [Acknowledge receipt of an asset received through the Zero Touch request flow.](#)

## Configure Service Exchange for the Zero Touch request flow

The Zero Touch request flow uses the Service Exchange application to connect providers with your ServiceNow instance to manage hardware asset requests submitted through the Service Catalog.



### Service Exchange setup for providers

Providers must perform the following tasks to communicate about the request details with your organization:

1. [Install Service Exchange for Providers](#) .
2. [Register a Service Exchange consumer](#) .
3. [Create and publish remote record producers in a Remote Catalog](#) .

### Service Exchange setup for your service catalog requests


Perform the following steps to receive updates on the catalog requests from your provider:

1. [Install Service Exchange for Consumers](#) .
2. [Activate the remote record producers published by the provider](#) .

### Use the Scratchpad to complete your request fulfillment tasks

As a provider, use the Scratchpad feature of the Service Exchange application to send updates to the ServiceNow instance of your consumer while performing the request fulfillment tasks.

The Zero Touch request flow requires you to send Scratchpad updates to your consumer's ServiceNow instance when you complete the confirmation and shipment tasks successfully. Based on the updates that you send, the Zero Touch flow progresses on your consumer's ServiceNow instance.

You must include the code specific to your tasks in the *PSBScratchpadUtil* API. For more information, see [Using the Scratchpad for Service Exchange tasks](#) . Confirm that the Scratchpad codes associated with the tasks of your request fulfillment flow are in the following format.

### Sample code for request confirmation

```
var scratchPadJSON = {
  "orderStatus": "confirmed"
};
var value = JSON.stringify(scratchPadJSON);
var rtGR = new GlideRecord("sn_sb_pro_provider_task");
rtGR.get(<ProviderTaskID>);
if (rtGR.isValidRecord()) {
  var util = new sn_sb_pro.PSBScratchpadUtil();
  util.update(rtGR, "confirmation", value);
}
```

When you confirm a provider task, a Scratchpad update with the order status as **Confirmed** is sent to your consumer's ServiceNow instance.

### Sample code for shipment

```
var scratchPadJSON = {
  "orderStatus": "partially_shipped / fully_shipped"
  "orderLineItems" :
```

```
[ {
  "status": "shipped",
  "trackingNumber": "123",
  "carrier": "C1",
  "modelName": 'MD322LL/A',
  "assetTag": 'P1000177',
  "serialNumber": 'P1000177'
}, {
  "status": "shipped",
  "trackingNumber": "123",
  "carrier": "C1",
  "modelName": 'MD322LL/A',
  "assetTag": 'P1000178',
  "serialNumber": 'P1000178'
}
];
```

When you ship the requested items and confirm the shipment, a Scratchpad update with the following details are sent to your consumer's ServiceNow instance:

- **Order status:** Depending on how the provider has shipped the assets in a request, the Order status can have the following values:
    - **partially\_shipped:** Assets in the request are shipped through multiple shipments.
    - **fully\_shipped:** All the assets in the request are shipped.

For example, consider that a requester has requested for five assets. If you ship only three assets through a shipment, you should pass the **Order status** as **partially\_shipped**. When you ship the remaining two assets, you should pass the **Order status** as **fully\_shipped**.
  - **Tracking number:** Every shipment has a unique tracking number.
  - **Carrier:** The name of the carrier through which the provider shipped the assets.
  - **Model number:** Unique model number of the asset that is shipped.
  - **Asset tag:** Unique asset tag of the asset that is shipped.
  - **Serial number:** Serial number of the asset.
- Note:** The shipment update for consumable assets doesn't include Asset tag and Serial number details. If there are multiple shipments, the information of the asset in a shipment must be sent to your consumer's ServiceNow instance only once.

### Manage Service Catalog items for the Zero Touch request flow

As a catalog administrator, configure your Service Catalog items so that the hardware asset requests can be fulfilled by an external provider.

Complete the following tasks for your catalog requests to be available for fulfillment through the Zero Touch request flow:

1. [Associate your catalog items with the Zero Touch request flow.](#)
2. [Create variables for the catalog item associated with the Zero Touch request flow.](#)
3. [Associate a catalog item with a remote record producer.](#)

### Associate your catalog items with the Zero Touch request flow

Set the flow of your catalog item to Zero Touch request flow for fulfilling all the requests for that catalog item through an external provider.

## Before you begin

Role required: catalog\_admin

### Procedure

1. Navigate to **All > Service Catalog > Catalog Definitions > Maintain Items**.
2. Select the catalog item.
3. On the Catalog form, select **Zero touch request** in the **Flow** field.
4. Select **Update**.

## What to do next

[Create variables for the catalog item associated with the Zero Touch request flow.](#)

### Create variables for the catalog item associated with the Zero Touch request flow

Create variables for your catalog item so that your provider can fulfill the requests for that item based on the variable details.

## Before you begin

Role required: catalog\_admin

### About this task

To enable your provider to fulfill the catalog requests accurately, you must create variables similar to the variables associated with your provider's remote record producer. For example, if the remote record producer has size and color variables, then you must create the same set of variables for the catalog item. For details, see [View the variables of a remote record producer](#).

### Procedure

1. Navigate to **All > Service Catalog > Catalog Definitions > Maintain Items**.
2. Select the catalog item.
3. On the catalog form, select the **Variables** tab.
4. Select **New**.
5. On the form, fill in the fields.  
For details on the form fields, see [Service Catalog variable form fields](#).

**i Important:** If your provider supports multiple quantities of an asset in a single request, hide the equivalent quantity variable for the catalog item by selecting the **Hidden** check box. This approach avoids multiple quantity fields on the catalog request.

6. Select **Submit**.

## Result

The variables are displayed on the Service Catalog request for that catalog item.

## What to do next

[Associate a catalog item with a remote record producer.](#)

### Associate a catalog item with a remote record producer

Associate a service catalog item with your provider's remote record producer to send the order details to your provider for fulfillment.

## Before you begin

Role required: catalog\_admin

## Procedure

1. Navigate to **All > Asset > HAM Zero Touch > Catalog Item mappings**.
2. On the form, fill in the fields.

### Catalog item mapping form

Field	Description
Catalog item	Service Catalog item that you want to associate with the remote record producer.
Remote record producer	Remote record producer of the external provider.
Multiple quantity supported	Option to indicate that your provider's remote record producer supports multiple quantities for the catalog item.
Quantity variable	Variable to capture quantity from the list of variables defined for the catalog item.  This field is editable only when the <b>Multiple quantity supported</b> check box is selected.
Active	Option to indicate that the catalog item mapping is available for use.

3. Select **Submit**.

### View the variables of a remote record producer

View the variables associated with your provider's remote record producer. Variables help you identify the necessary details to include in catalog requests for fulfillment by your provider.

### Before you begin

Role required: catalog\_admin

## Procedure

1. Navigate to **All > Service Bridge Consumer > Provider connections**.
2. Select your provider connection.
3. Select the **Remote record producers** tab.
4. Select the remote record producer.
5. Select the **Variables** tab.

## Result

The variables of the selected remote record producer are listed in the Variables tab.

### Request a hardware asset through the Zero Touch request flow

Request a hardware asset directly with the external provider through the Zero Touch request flow by ordering the asset from the Service Catalog.

### Before you begin

Role required: none

## Procedure

1. Navigate to **All > Service Catalog > Hardware**.
2. On the catalog request, provide the required details.  
The fields displayed on the catalog request form vary with the catalog item and the provider.  
The provider requires these field values to fulfill the request.
3. In the **Quantity** field of the Order this item section, select the quantity of items that you want to order.

**Note:** If your provider supports multiple assets in a single request, an additional field to enter the quantity details is displayed on the catalog request only when your Catalog Administrator hasn't hidden the equivalent quantity variable for the catalog item. However, the quantity that you selected in the **Order this item** section is considered for your request.

4. Select **Submit**.

## Result

Your hardware catalog request is successfully submitted.

## Fulfill a provider task

As a provider, ship the asset requested through the Zero touch request flow to the requester.

## Before you begin

1. The Service Exchange configuration necessary for the Zero Touch Refresh flow must have been set up. For more details, see [Configure Service Exchange for the Zero Touch request flow](#).
2. The Scratchpad must have been configured for the confirmation and shipment tasks involved in your request fulfillment flow. For more information, see [Use the Scratchpad to complete your request fulfillment tasks](#).

Role required: Roles are provider-specific

## About this task

When an employee places an order for the catalog item associated with the Zero Touch request flow on your consumer's ServiceNow<sup>®</sup> instance, a corresponding Provider task is created on your ServiceNow<sup>®</sup> instance. The provider task triggers a request fulfillment flow on your ServiceNow<sup>®</sup> instance. As the provider task moves through various stages in the fulfillment flow, the information is sent to your consumer's instance through the Scratchpad updates.

## Procedure

1. Log in to your ServiceNow<sup>®</sup> instance.
2. Navigate to **All > Service Bridge Provider > Open Records > Provider Tasks**.
3. Select a provider task that is in the Received state.
4. Review the details on the Provider task form.  
The Variables section provides details that the requester provided on the Service Catalog request.
5. Confirm the provider task by sending a Scratchpad update to your consumer's ServiceNow<sup>®</sup> instance.
6. Ship the assets requested in the provider task and send a Scratchpad update with the shipment details to your consumer's ServiceNow<sup>®</sup> instance.  
The following shipment details are included in the Scratchpad:

- Order status: Order status could be either **fully\_shipped** or **partially\_shipped**.
- Tracking number: Unique tracking number for the shipment.
- Model number: Unique model number of the asset that is shipped.
- Asset tag: Unique asset tag of the asset that is shipped.
- Serial number: Serial number of the asset.

## Result

An asset with the serial number and asset tag specified in the Scratchpad is assigned to the requester.

## Acknowledge receipt of an asset received through the Zero Touch request flow

As an employee, acknowledge receipt of the new asset that you received through the Zero Touch request flow on a mobile device.

## Before you begin

To use your mobile device for this acknowledgment, you must have the ServiceNow mobile app installed on your iOS or Android mobile device.

Role required: User of the asset.

## About this task

You can only confirm the receipt of hardware assets on a mobile device. To acknowledge the receipt of consumable assets, contact your Asset Manager.

## Procedure

1. Navigate to **My Items > My assets**.
2. Tap the asset.
3. Tap **Scan delivered asset**.
4. Provide the asset tag information.
  - To provide the information through a scan, scan the asset tag of the asset.
  - To provide the information manually, enter a value in the **Asset tag** field.
5. Select **Submit**.

## Result

- The state of the asset changes to **In use**.
- The stage of the requested item in the catalog request changes to **Complete**.

## Create a provider integration profile

Create a provider integration profile to convert any format of Scratchpad update sent by your provider to a format required for the Zero Touch request flow.

## Before you begin

You must have the Script Include with the method *transformScratchPadToHAMZTRFormat*. For details, see [Create a Script Include to transform Scratchpad updates from the provider](#).

Role required: admin

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset operations**.
2. From the **Zero touch** list, select **Provider integration profiles**.
3. Select **New**.
4. On the form, fill in the fields.

### Create New Provider Integration Profile form

Field	Description
Provider	Name of the external provider.
API	Name of the Script Include that includes the business logic for transforming the Scratchpad update sent by the provider to the required format.
Active	Option for indicating the status of the provider integration profile.

5. Select **Save**.

## Result

The provider integration profile is created and added to the Provider integration profiles list.

### Create a Script Include to transform Scratchpad updates from the provider

To transform Scratchpad updates sent by your provider into a format required for the Zero Touch request flow, you must have a Script Include with the method *transformScratchPadToHAMZTRFormat*.

In the confirmation and shipment stages of the Zero Touch request flow, your provider should ideally send Scratchpad updates to your ServiceNow instance in a particular format. For details, see [Use the Scratchpad to complete your request fulfillment tasks](#). However, if your provider's Scratchpad update isn't in the required format, you can transform it by using a Script Include with the method *transformScratchPadToHAMZTRFormat*.

Consider the following points when you create the Script Include:

- The Script Include is accessible from the Asset Management Common application scope by adjusting the following settings on the application resource record:
  - Set the **Accessible from** field to **All application scopes**.
  - Set the **Caller Access** field to **None** to make sure the caller access isn't restricted.
- Define the method *transformScratchPadToHAMZTRFormat* in the following format:

```
/** Input to the following method is scratchpad value of type
JSON */
transformScratchPadToHAMZTRFormat: function (input) {
// Logic to transform the input to the expected format
// This method should return a value of type JSON with expected
format
}
```

### View hardware asset requests submitted through the Zero Touch request flow

View the list of hardware asset requests of your employees submitted through the Zero Touch request flow in the Asset operations view.

## Before you begin

Role required: admin or asset

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset operations**.
2. From the **Zero touch** list, select **Asset requests**.  
The list of asset requests is displayed. You can get the request details such as requested item, quantity, and stage.
3. Select an asset request to view the details.

## Manage repair of defective assets in your stockroom in the Hardware Asset Workspace

Optimize your inventory by getting the defective hardware assets in your stockroom repaired using the Repair flow.

In the Repair flow, an asset manager requests the repair of defective assets in the stockroom. An asset technician troubleshoots, repairs, and evaluates the asset. The evaluated asset is either put to use or disposed of. For details on stages in the Repair flow, see [Repair flow to fix defective hardware assets within a stockroom](#).

### Request repair of defective hardware assets in your stockroom

As an asset manager, you can get the defective hardware assets in your stockroom repaired by creating repair orders.

You can request repair of defective hardware assets through any of the following options:

- [Request repair of hardware assets using Service Catalog](#)
- [Create repair orders for hardware assets in the Inventory view](#)
- [Request repair of a hardware asset using the Repair option](#)

### Note:

Consider the following points when you create a repair order:

- You can't request repair of the following assets:
  - Consumables
  - Assets that are part of any other workflow
- You can request repair of a child asset only if you have added its parent asset to the repair order. However, assets in the pallets can be repaired.

### Request repair of hardware assets using Service Catalog

Submit a Service Catalog request to repair hardware assets that are defective or pending repair in your stockroom.

## Before you begin

Role required: asset

## About this task



You can request repair of multiple defective hardware assets in your stockroom using a single catalog request.

**Procedure**

1. Navigate to **All > Service catalog > Asset Lifecycle > Asset Repair**.
2. On the form, fill in the fields.

**Request for stockroom repair of an asset form**

Field	Description
Due Date	Date by which you want the defective assets to be repaired.
Stockroom	Stockroom that has assets to be repaired.

3. Select assets to be repaired.
  - a. Select the Edit Asset(s) icon (  ).
  - b. Select the assets from the list.  
You can add one or more assets to the request.
  - c. Select the Lock icon (  ).

4. Select **Submit**.

**Result**

- Your repair request is submitted successfully.
- A repair order is created in the **Draft** stage.
- Each asset in the repair order is associated with a repair order line that is in the **Troubleshoot** stage.

**Create repair orders for hardware assets in the Inventory view**

Request repair of hardware assets that are defective or pending repair by creating a repair order in the Inventory view of the Hardware Asset Workspace.

**Before you begin**

Role required: asset

**About this task**

When you create a repair order from the Inventory view, you must explicitly create a repair order line for the asset that you want to get repaired.

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Create a Repair order.
  - a. Select **New**.
  - b. On the form, fill in the fields.

**Note:** The following fields are optional:

- **Assignment group**
- **Assigned to**
- **Due date**
- **Work note**

**Create New Repair order form**

Field	Description
Stockroom	Stockroom that has assets to be repaired.  This field is required.
Assignment group	Assignment group to which you want to assign the repair order.
Assigned to	Person from the assignment group who is primarily responsible for the Repair order.
Due date	Date by which the defective hardware assets should be repaired.
Work notes	Notes about the repair order.

c. Select **Save**.

- A repair order that's in the **Draft** stage is created.
- The **Repair order lines** tab is displayed next to the **Details** tab of the repair order.

**4.** Add repair order lines to the repair order.

a. Select the **Repair order lines** tab.

b. Select **Add**.

c. In the **Add assets** dialog box, select the assets and then select **Add**.

**Note:** You can add child assets of a pallet asset to the repair order. The asset that you added to the repair order is removed from the pallet automatically.

For each asset that you added, a repair order line that's in the **Troubleshoot** stage is created.

**5.** Select **Save**.

**Request repair of a hardware asset using the Repair option**

Request repair of a defective hardware asset in your stockroom directly through an option on the asset form.

**Before you begin**

Role required: asset

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Asset Estate**.
2. Select the **All assets** tab.
3. Select an asset with State as **In stock** and Substate as **Defective** or **Pending repair**.
4. Select the More Options icon ( **⋮** ) on the asset form.
5. Select **Repair**.

## Result

A repair order with a repair order line in the **Troubleshoot** stage is created.

## Fulfill repair orders in the Hardware Asset Workspace

Fulfill a repair order by completing all the open repair asset tasks associated with its repair order lines.

A repair order can have one or more repair order lines depending on the number of assets to be repaired through that repair order. A repair order is fulfilled only when all its repair order lines are completed.

As a technician, you must complete the following tasks associated with each repair order line to fulfill a repair order:

1. [Troubleshoot asset](#)
2. [Repair asset](#)
3. [Evaluate asset](#)

You can also work on the asset repair tasks assigned to you by using the Mobile Agent application. For details, see [Manage hardware asset repair tasks using the Mobile Agent application](#).

## View open repair orders for your stockroom in the Hardware Asset Workspace

View open repair orders for your stockroom to get the details of the repair order lines and repair tasks that need action.

## Before you begin

Role required: asset

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom.  
In the Open stockroom tasks section, the **Open repair orders** card displays the number of open repair orders.
4. Select the **Open repair orders** card.

## Result

The list of open repair orders for the stockroom is displayed.

## Troubleshoot assets requested for repair in the Hardware Asset Workspace

Complete the troubleshooting task to assess the issues with the defective asset. Based on your observations, you can confirm whether the asset can be repaired, redeployed, or should be disposed of.

### Before you begin

Role required: asset

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select a repair order that's in the Draft or In Progress stage.
4. Select the **Repair order lines** tab.
5. Select a repair order line that's in the Troubleshoot stage and Open state.
6. Select the **Repair asset tasks** tab.
7. Select the **Troubleshoot asset** task that's in the Open state.
8. Indicate that you have started working on the Troubleshoot task by selecting **Start Work**.  
The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
9. **Optional:** Record the time worked on the task.  
You can either use the timer or record the time manually. For more details, see [Record time worked on asset repair tasks in the Hardware Asset Workspace](#).  
An entry for the time you worked is created in the **Time Worked** tab of the Troubleshoot asset task.
10. Select the **Details** tab.
11. Select the troubleshooting result in the **Troubleshoot result** field.
  - If the asset is repairable, select **Repairable**.
  - If the asset is unrepairable, select **Unrepairable**.
  - If the asset can be redeployed, select **Redeployable**.
12. **Optional:** Enter the issue identified with the asset during the repair process in the **Issue identified** field.  
Once the task is closed, this field can't be modified.  
The value in the **Issue identified** field is carried forward to the repair asset task after the troubleshooting task is closed.
13. Enter notes related to the task in the **Work notes** field.
14. Select **Close task**.

### Result

- If you had set the Troubleshooting result to **Unrepairable**, the following changes happen on closure of the task:
  1. The repair order and the repair order line are in the Completed stage.
  2. The state of the asset changes to In stock and substate changes to Pending disposal.
- If you had set the Troubleshooting result to **Redeployable**, the following changes happen on closure of the task:
  1. The repair order and the repair order line are in the Completed stage.
  2. The state of the asset changes to In stock and the substate changes to Available.

- If you had set the Troubleshooting result to **Repairable**, the following changes happen on closure of the task:
  1. The stage of the repair order line changes to Repair.
  2. The state of the asset changes to In stock and the substate changes to Pending repair.
  3. Repair asset task is created.

### What to do next

[Complete the repair asset task in the Hardware Asset Workspace.](#)

### Complete the repair asset task in the Hardware Asset Workspace

Complete the repair of the defective asset and confirm if the asset is repaired, unrepairable, or redeployable.

### Before you begin

Role required: asset

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select the repair order for which you want to complete the Repair asset task.
4. Select the **Repair order lines** tab.
5. Select the repair order line that's in the Repair stage.
6. Select the **Repair asset tasks** tab.
7. Select the **Repair asset** task that's in the Open state.
8. Indicate that you have started working on the Repair asset task by selecting **Start Work**. The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
9. **Optional:** Record the time worked on the task.  
You can either use the timer or record the time manually. For more details, see [Record time worked on asset repair tasks in the Hardware Asset Workspace](#).  
An entry for the time you worked is created in the **Time Worked** tab of the Repair asset task.
10. Select the **Details** tab.
11. Select the repair result in the **Repair result** field.
  - If the asset is repaired, select **Repaired**.
  - If the asset couldn't be repaired, select **Unrepairable**.
  - If the asset can be redeployed, select **Redeployable**.
12. **Optional:** Enter the issue identified with the asset during the repair process in the **Issue identified** field.  
  
(Optional) This field is automatically populated with the value carried forward from the troubleshoot asset task if the issue is identified and a value is provided in the **Issue identified** field. Once the task is closed, this field can't be modified.  
  
The value in the **Issue identified** field is carried forward to evaluate repaired asset task after the repair task is closed.
13. Enter notes related to the task in the **Work notes** field.
14. Select **Close task**.

## Result

- If you had set the Repair result to **Unrepairable**, the following changes happen on closure of the task:
  1. The repair order and the repair order line are in the Completed stage.
  2. The state of the asset changes to In stock and the substate changes to Pending disposal.
- If you had set the Repair result to **Redeployable**, the following changes happen on closure of the task:
  1. The repair order and the repair order line are in the Completed stage.
  2. The state of the asset changes to In stock and the substate changes to Available.
- If you had set the Repair result to **Repairable**, the following changes happen on closure of the task:
  1. The stage of the repair order line changes to Evaluate.
  2. The state of the asset changes to In stock and the substate changes to Pending evaluation.
  3. Evaluate asset task is created.

## What to do next

Evaluate the repaired asset in the [Hardware Asset Workspace](#).

### Evaluate the repaired asset in the Hardware Asset Workspace

Evaluate the repaired asset and confirm if the asset is redeployable or should be disposed of. The Repair flow completes after the repaired asset is evaluated.

## Before you begin

Role required: asset

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select the repair order for which you want to evaluate the repaired asset.
4. Select the **Repair order lines** tab.
5. Select a repair order line that's in the Evaluate stage and Open state.
6. Select the **Repair asset tasks** tab.
7. Select the **Evaluate asset** task that's in the Open state.
8. Indicate that you have started working on the Evaluate asset task by selecting **Start Work**. The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
9. **Optional:** Record the time worked on the task.  
You can either use the timer or record the time manually. For more details, see [Record time worked on asset repair tasks in the Hardware Asset Workspace](#).  
An entry for the time you worked is created in the **Time Worked** tab of the Evaluate asset task.
10. Select the **Details** tab.
11. Select the evaluation result in the **Evaluation result** field.
  - If the asset is repaired and redeployable, select **Redeployable**.
  - If the asset can't be used and should be disposed of, select **To be disposed**.
12. **Optional:** Enter the issue identified with the asset during the repair process in the **Issue identified** field.

This field is automatically populated with the value carried forward from the repair asset task if the issue is identified and a value is provided in the **Issue identified** field. Once the task is closed, this field can't be modified.

**13.** Enter notes related to the task in the **Work notes** field.

**14.** Select **Close task**.

## Result

- If you had set the Evaluation result to **To be disposed**, the following changes happen on closure of the task:
  1. The repair order and the repair order line are in the Completed stage.
  2. The state of the asset changes to In stock and the substate changes to Pending disposal.
- If you had set the Evaluation result to **Redeployable**, the following changes happen on closure of the task:
  1. The repair order and the repair order line are in the Completed stage.
  2. The state of the asset changes to In stock and the substate changes to Available.

## Bulk close asset repair tasks in the Hardware Asset Workspace

Complete and close multiple repair tasks at one go to process a repair order with multiple repair order lines.

### Before you begin

Role required: asset

### About this task

You can bulk close only similar asset repair tasks that are in the Open state. However, you can't bulk close similar repair tasks for which the task result isn't the same. For example, you can't bulk close two Troubleshoot assets tasks, when one task has a repairable asset and the other has an unrepairable asset.

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select a repair order with multiple open repair order lines for which you want to complete the asset repair tasks.
4. Select the **Repair order lines** tab.
5. Select the repair order line that you want to complete.
6. Select the repair task that you want to close.
7. On the Details form, select the task result.
  - If you're completing a Troubleshoot asset task, then select any of the following results in the **Troubleshoot result** field:
    - **Repairable**
    - **Unrepairable**
    - **Redeployable**
  - If you're completing a Repair asset task, then select any of the following results in the **Repair result** field:

- **Repaired**
  - **Unrepairable**
  - **Redeployable**
  - If you're completing an Evaluate asset task, then select any of the following results in the **Evaluation result** field:
    - **Redeployable**
    - **To be disposed**
8. Enter notes related to the task in the **Work notes** field.
  9. Select **Save**.
  10. Select **Bulk Close**.  
The **Select Assets** dialog box with similar repair tasks is displayed.
  11. Select the tasks that you want to close and select **Close Task**.

### Result

All the selected repair tasks are closed with the same task result and Work notes.

### Cancel a repair order in the Hardware Asset Workspace

Cancel a repair order that no longer needs to be fulfilled.

### Before you begin

Role required: asset

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select a repair order that's in the Draft or In Progress stage.
4. Select **Cancel**.

### Result

- The stage of the repair order changes to Cancelled and the state changes to Closed Incomplete.
- The stage and state of the repair order lines that weren't completed change to Cancelled and Closed Incomplete.

### Cancel a repair order line in the Hardware Asset Workspace

Cancel a repair order line that no longer needs to be fulfilled.

### Before you begin

Role required: asset

### About this task

You can only cancel a repair order line that is not in the Completed stage.

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select a repair order that's in the Draft or In Progress stage.

4. Select the **Repair order lines** tab.
5. Select the repair order line that you want to cancel.
6. Select **Cancel**.

### Result

- The stage of the repair order line changes to Cancelled and the state changes to Closed Incomplete.
- The state of the associated repair asset tasks that were open changes to Closed Incomplete.
- The stage of the repair order changes to Cancelled only if there aren't any other repair order lines that are in the Troubleshoot, Repair, Evaluate, or Completed stage.

### Record time worked on asset repair tasks in the Hardware Asset Workspace

Manage and record time worked on Troubleshoot asset, Repair asset, and Evaluate asset tasks in the Hardware Asset Workspace. After you start work on a repair asset task, you can pause and resume work. You can also record the time worked manually.

### Record time worked on a repair task automatically in the Hardware Asset Workspace

Record the time that you took to complete a repair task without taking any break until you completed the task.

### Before you begin

Role required: asset

### About this task

You can record the time worked for Troubleshoot asset, Repair asset, and Evaluate asset tasks that are in the Open state.

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select the repair order that you're working on.
4. Select the **Repair order lines** tab.
5. Select the repair order line that you're working on.
6. Select the **Repair asset tasks** tab.
7. Select the asset repair task for which you want to record the time worked.
8. Indicate that you started work on the task by selecting **Start Work**.  
The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
9. Select **Start Timer**.
10. After you have completed working on the task, on the Details form, select the task result.
  - If you have completed a Troubleshoot asset task, then select any of the following results in the **Troubleshoot result** field:
    - **Repairable**
    - **Unrepairable**
    - **Redeployable**
  - If you have completed a Repair asset task, then select any of the following results in the **Repair result** field:

- **Repaired**
- **Unrepairable**
- **Redeployable**
- If you have completed an Evaluate asset task, then select any of the following results in the **Evaluation result** field:
  - **Redeployable**
  - **To be disposed**

**11.** Enter notes related to the task in the **Work notes** field.

**12.** Select **Close Task**.

### Result

The actual time you worked on the task completion is automatically calculated. An entry for the time worked is created in the Time Worked tab of the asset repair task.

### Record time worked on a repair task manually in the Hardware Asset Workspace

Create an entry for the time worked on an asset repair task manually in the Hardware Asset Workspace.

### Before you begin

Role required: asset

### Procedure

- 1.** Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
- 2.** Select the **Repair orders** tab.
- 3.** Select the repair order that you're working on.
- 4.** Select the **Repair order lines** tab.
- 5.** Select the repair order line that you're working on.
- 6.** Select the **Repair asset tasks** tab.
- 7.** Select the task for which you want to record time manually.
- 8.** Indicate that you started work on the task by selecting **Start Work**.  
The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
- 9.** Select **Record Time**.
- 10.** In the **Record Time** dialog box, enter the details of the time worked.
  - a.** Enter the time duration that you worked on the task in the **Days**, **Hours**, and **Minutes** fields.
  - b. Optional:** Provide any additional information in the **Comments** field.
- 11.** Select **Save**.

### Result

The Time Worked form is saved and the time card is added to the Time Worked tab of the asset repair task.

### Pause a repair task in the Hardware Asset Workspace

Record a break from a repair task in the Hardware Asset Workspace if you're not continuing to work on it. Resume the task when you start working on it again. The system automatically tracks and calculates the actual time taken to complete the task even though the work was interrupted.

### Before you begin

You can pause an asset repair task that is in the Work in Progress state. The option to pause the task is available only after you perform the following actions for the asset repair task:

1. Indicate that you have started working on the task by selecting **Start Work**.
2. Start recording the time by selecting **Start Timer**.

Role required: asset

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select the repair order that you're working on.
4. Select the **Repair order lines** tab.
5. Select the repair order line that you're working on.
6. Select the **Repair asset tasks** tab.
7. Select the task that you want to pause.
8. Select **Pause Work**.  
The **Pause Work** changes to **Resume Work**
9. Select **Resume Work** when you're ready to work on the activity again.

### Result

Each time you pause or resume work on the task, the actual time you worked on the task is automatically calculated. An entry for the time worked is created in the Time Worked tab.

## Manage picking hardware assets within your stockroom for Hardware Asset Management workflows

Enable the Asset pick task explicitly for your stockroom and provide granular location details of the asset to facilitate asset picking within your stockroom.

### Enable the Asset pick task for your stockroom in the Hardware Asset Workspace

Enable the Asset pick task for your stockroom so that the task is automatically added to Standard Hardware Asset requests, Hardware Asset Refresh requests, and Sourcing workflow.

### Before you begin

Role required: inventory\_user

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. From the list of available stockrooms, select the stockroom for which you want to enable the Asset pick task.
4. On the **Stockroom Details** form, select the **Warehouse tasks required** check box.
5. Select **Save**.

## Add aisles and spaces to a stockroom in the Hardware Asset Workspace

Add details of aisles and spaces in a stockroom to provide granular location details of an asset in that stockroom. The aisle and space details enable you to locate and pick an asset in the stockroom.

### Before you begin

Role required: inventory\_user

### About this task

A space is associated with an aisle in the stockroom. You can add a space only after you have added a minimum of one aisle to the stockroom.

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.

2. Select the **All stockrooms** tab.

3. Select a stockroom.

4. Select the **Aisle and spaces** tab.

The list of existing aisles and spaces in that stockroom is displayed.

5. Add aisles to the selected stockroom.

a. Select **Add aisle**.

The **Add aisle** dialog box is displayed.

b. In the **Aisle** field, enter a unique identifier for the aisle.

You can enter any string value in this field. For example, aisle\_0001.

c. **Optional:** To add more aisles, select the Add icon ( + ) and enter a unique identifier for the aisle in the **Aisle** field.

d. Select **OK**.

The aisle is added to the list in the Aisle and spaces tab.

6. Add a space to an aisle in the stockroom.

a. Select **Add space**.

The **Add space** dialog box is displayed.

b. In the **Aisle** field, select the aisle for which you want to add a space.

c. In the **Space** field, enter a unique identifier for the space.

You can enter any string value in this field. For example, space\_0001.

d. **Optional:** To add more spaces, select the Add icon ( + ) and enter a unique identifier for the space in the **Space** field.

e. Select **OK**.

- The space is added to the list in the Aisle and spaces tab.
- The Display name of the space is automatically set based on the **Aisle** and **Space** fields. For example, the display name of the space whose aisle is aisle\_001 and space is space\_001 is **aisle\_001 - space\_001**.

### View the open hardware asset pick tasks for your stockroom

View the open hardware asset pick tasks for your stockroom to get the details of the tasks that need action.

#### Before you begin

Role required: inventory\_user

#### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom.  
In the Open stockroom tasks section, the **Open pick tasks** card displays the number of open pick tasks.
4. Select the **Open pick tasks** card.

#### Result

The list of open asset pick tasks for the stockroom is displayed.

#### What to do next

Manage all the hardware asset pick tasks assigned to you by using the Mobile Agent application. For details, see [Manage hardware asset pick tasks using the Mobile Agent application](#).

### Manage asset put away using the Hardware Asset Workspace

Enable the Asset put away task explicitly for your stockroom to put away the assets from the receiving bay in the designated aisle-space. View the open Asset put away task and close it after specifying the aisle-space value to move the asset in the stockroom.

**i Important:** The Asset put away feature is available with Hardware Asset Management version 13.0.0 onwards.

#### Enable the asset put away task for your stockroom

Enable the Asset put away feature for your stockroom so that the Asset put away task is automatically created to track asset movement.

#### Before you begin

Role required: inventory\_user

#### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. From the list of available stockrooms, select the stockroom for which you want to enable the Asset put away task.
4. On the Stockroom Details form, select the **Warehouse tasks required** check box.
5. Select **Save**.

## Result

You can perform asset put away for in stock assets in the stockroom.

## View open put away tasks for your stockroom

View the open put away tasks for your stockroom in the Hardware Asset Workspace to get the details of the tasks that need action.

## Before you begin

Role required: inventory\_user

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. View the open put away task either from the Inventory overview section or the All Stockrooms tab.
  - In the Inventory overview section, select the **Open put away tasks** number.
  - In the **Stockrooms** tab, select a stockroom. In the Open stockroom tasks section, select the **Open put away tasks** number.

## Result

The list of open Asset put away tasks are displayed.

## What to do next

Put away the asset in the desired drop-off location in the stock room. Close the Asset put away task after adding the **Drop off location** field value in the Asset put away task form. For more information about closing Asset put away task, see [Close an Asset put away task](#).

## Create an Asset put away task

Create an Asset put away task manually for the In stock assets in the Hardware Asset Workspace to track the movement of assets within the stockroom.

## Before you begin

Role required: inventory\_user

## About this task

You can create an asset put away task in the Hardware Asset Workspace for the In stock assets for which the **Aisle and Space** field value isn't already specified. When you create a put away task, you can either directly close the task or save it. To close the task, the **Drop off location** field value is required.

## Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Open the Create New Asset put away task form either from the Inventory overview section or the All Stockrooms tab.
  - In the Inventory overview section, select the **Open put away tasks** card and select **New**.
  - In the Stockrooms tab, select a Stockroom. Then in the Open stockroom tasks section, select the **Open put away tasks** card. Select **New**.
3. On the Asset put away task form, fill in the fields.  
For a description of the field values, see [Asset put away task fields](#).
4. Save your modifications.

- To save your changes and create the Asset put away task, select **Save**.
- To save your changes and close the Asset put away task, select **Close task**.

**Note:** **Drop off location** field value is required to close the Asset put away task.

### Close an Asset put away task

Add the asset drop-off location for an open Asset put away task and close it in the Hardware Asset Workspace.

#### Before you begin

Role required: inventory\_user

#### About this task

You can bulk close selected Asset put away tasks that are open and assigned to you by specifying a drop-off location, which moves all associated assets to that location. You can also close individual tasks by specifying a drop-off location.

**Note:** When you make the following changes to a hardware asset, the associated Asset put away task is closed:

- When the asset’s **Aisle and Space** value is filled, the associated Asset put away task for the asset is closed, and the **State** field is updated to **Closed Complete**.
- When the asset’s State field is updated from In stock to some other value without adding the **Aisle and Space** field value, the associated Asset put away task is closed and its state is updated to Closed Incomplete.

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Open the put away task either from the Inventory overview section or the **All Stockrooms** tab.

Option	Description
<b>From the Inventory overview section</b>	<ol style="list-style-type: none"> <li>a. In the Inventory overview section, select the <b>Open put away tasks</b> card.</li> <li>b. Select the <b>Number</b> link to open the Asset put away task.</li> </ol>
<b>From the All Stockrooms tab.</b>	<ul style="list-style-type: none"> <li>○ In the <b>All Stockrooms</b> tab, select a stock room.</li> <li>○ In the Open stockroom tasks section, select the <b>Open put away tasks</b> card.</li> <li>○ Select the <b>Number</b> link to open the Asset put away task.</li> </ul>

3. In the Put away task form, select the **Drop off location** value.
4. Save your modifications or close the put away task.
  - To close the put away task, select **Close task**.
  - To save your changes and stay on the same page, select **Save**.

- To close multiple put away tasks, select **Bulk close**.

The **Select Assets** dialog box is displayed listing the Asset put away tasks assigned to you. Select the tasks that you want to close and select **Close Task**.

## Result

- Closed tasks aren't displayed in the Open put away tasks list.
- The task closure is captured in the **Activity** tab. The name of the user who closed the task is shown in the work notes.

## Manage hardware asset tasks using the Mobile Agent application

Manage hardware asset tasks such as repair tasks and asset pick tasks using the intuitive Mobile Agent application.

**i Important:** The Asset put away feature is available with Hardware Asset Management version 13.0.0 onwards.

### Manage hardware asset repair tasks using the Mobile Agent application

Manage all the repair tasks associated with the defective hardware assets in your stockroom using the intuitive Mobile Agent application.



### View your hardware asset repair tasks using the Mobile Agent application

View the Troubleshoot asset, Repair asset, and Evaluate asset tasks assigned to you by using the Mobile Agent application.

### Before you begin

Role required: admin or asset

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. View all the tasks assigned to you by selecting **See all**.
4. **Optional:** Filter your tasks by field values.
  - a. Tap the Filter icon ()
  - b. Enter values in the fields by which you want to filter your task: **Due Date, Asset, Location, or Priority**.
5. **Optional:** Sort your tasks.
  - a. Tap the Filter icon ()
  - b. Tap **Sort by**.
  - c. Select the fields by which to sort your tasks.

### Start working on a hardware asset repair task using the Mobile Agent application

Indicate in the Mobile Agent application when you start work on a repair task assigned to you.

### Before you begin



Role required: asset

## About this task

You can work on the repair tasks that belong to the following task types:

- Asset troubleshoot task
- Asset repair task
- Asset evaluate task

## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to start isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the repair task that you want to start.
6. On the **Details** tab, tap **Start work**.

## Result

On the **Details** tab, the **Start work** link changes to **Start timer, Record time, and Close** automatically.

## What to do next

[Record time worked on a hardware asset repair task using the Mobile Agent application.](#)

### Record time worked on a hardware asset repair task using the Mobile Agent application

Manage and record time worked on Troubleshoot asset, Repair asset, and Evaluate asset tasks using the Mobile Agent application. After you start working on a task, you can pause and resume work. You can also record the time worked manually.

### Pause a hardware asset repair task using the Mobile Agent application

Record a break from a repair task for the hardware assets using the Mobile Agent application if you're not continuing to work on it.

## Before you begin

After you start work on the repair task, start recording the time by tapping the **Start Timer** in the **Details** tab.

Role required: asset

## About this task

You can resume the task when you start working on it again. The system automatically tracks and calculates the actual time taken to complete the task even though the work was interrupted.



## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.

The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.

**3.** If the task you want to pause isn't displayed, tap **See all**.

**4. Optional:** Filter or sort the task view.

- To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
- To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.

**5.** Tap the task record that you want to pause.

**6.** On the **Details** tab, tap **Pause**.

On the **Details** tab, the **Pause** option changes to **Resume**.

**7.** Tap **Resume** when you're ready to work on the activity again.

## Result

Each time you pause or resume work on the repair task, the actual time you worked on the task is automatically calculated. An entry for the time worked is created in the Time worked section of the Related tab.

## Record time worked on a hardware asset repair task manually using the Mobile Agent application

Record time worked on a hardware asset repair task manually and provide any additional comments on the task using the Mobile Agent application.

## Before you begin

Make sure you have indicated that you started working on the repair task by tapping **Start work** in the **Details** tab.

Role required: asset

## Procedure



**1.** From your mobile device, launch the Mobile Agent application.

**2.** On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.

The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.

**3.** If the task for which you want to record time isn't displayed, tap **See all**.

**4. Optional:** Filter or sort the task view.

- To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
- To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.

**5.** Tap the repair task record for which you want to record time.

**6.** On the **Details** tab, tap **Record time**.

**7.** On the Record time screen, specify the details of the task.

- a. Enter the time duration that you worked on the task in the **Time worked (Hours)** and **Time worked (Minutes)** fields.
- b. **Optional:** Provide any additional information in the **Time worked comments** field.

8. Tap **Done** and then tap **Submit**.

**Result**

The Record time form is saved and the time card is added to the Time worked section of the Related tab.

**Close a hardware asset repair task using the Mobile Agent application**

Complete an assigned hardware asset repair task and mark the task as closed using the Mobile Agent application.

**Before you begin**



Role required: asset

**About this task**

You can close any task that belongs to the following task types:

- Troubleshoot asset task
- Repair asset task
- Evaluate asset task

**Procedure**

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to close isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon (  ) and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (  ), tap **Sort by**, and select the fields to sort your tasks.
5. Tap the repair task that you want to close.
6. On the **Details** tab of the repair task, tap **Close** .
7. On the Repair task input form screen, enter the result of your task.

Task	Action
<b>Troubleshoot asset</b>	In the <b>Troubleshoot result</b> field, select any of the following: <ul style="list-style-type: none"> <li>○ <b>Repairable</b></li> <li>○ <b>Unrepairable</b></li> <li>○ <b>Redeployable</b></li> </ul>
<b>Repair asset</b>	In the <b>Repair result</b> field, select any of the following:

Task	Action
	<ul style="list-style-type: none"> <li>○ <b>Repaired</b></li> <li>○ <b>Unrepairable</b></li> <li>○ <b>Redeployable</b></li> </ul>
<b>Evaluate asset</b>	<p>In the <b>Evaluation result</b> field, select any of the following:</p> <ul style="list-style-type: none"> <li>○ <b>Redeployable</b></li> <li>○ <b>To be disposed</b></li> </ul>

8. In the **Work notes** field, enter your closure comments.

9. Tap **Done** and then tap **Submit**.

### Result

The state of the repair task changes to Closed Complete.

### Manage hardware asset pick tasks using the Mobile Agent application

Work on the hardware asset pick tasks assigned to you by using the Mobile Agent application.



### Start working on a hardware asset pick task using the Mobile Agent application

Indicate in the Mobile Agent application when you start work on an asset pick task assigned to you.

### Before you begin

Role required: inventory\_user

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to start isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon (  ) and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (  ), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the Asset pick task that you want to start.  
Use the details provided in the following fields on the **Details** tab to start work on the assigned asset pick task:
  - **Asset:** Asset that you should pick.
  - **Stockroom:** Stockroom from which you should pick the asset.
  - **Pick location:** Aisle and space within the stockroom from where you should pick the asset.
6. On the **Details** tab, tap **Start work**.

**Result**

On the **Details** tab, the **Start work** link changes to **Start timer**, **Locate**, and **Scan asset** automatically.

**What to do next**

Complete the Asset pick task assigned to you. For details, see [Locate and pick the hardware assets in your stockroom using the Mobile Agent application](#).

**Record time worked on a hardware asset pick task using the Mobile Agent application**

Manage and record time worked on hardware asset pick tasks using the Mobile Agent application. After you start working on a task, you can pause and resume work.

**Pause a hardware asset pick task using the Mobile Agent application**

Record a break from a hardware asset pick task by using the Mobile Agent application if you're not continuing to work on it.

**Before you begin**



After you start work on the hardware asset pick task, make sure to start recording the time by tapping **Start timer** in the **Details** tab.

Role required: inventory\_user

**About this task**

After you pause a task, you can resume when you start working on it again. The system automatically tracks and calculates the actual time taken to complete the task even though the work was interrupted.

**Procedure**

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to pause isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date**, **Asset**, **Location**, or **Priority** fields.
  - To sort your tasks, tap the Filter icon () , tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the asset pick task record that you want to pause.
6. On the **Details** tab, tap **Pause**.

**Note:** The **Pause** option is displayed only after you tap **Start timer**.

On the **Details** tab, the **Pause** option changes to **Resume**.

7. Tap **Resume** when you're ready to work on the activity again.

**Result**

Each time you pause or resume work on the asset pick task, the actual time you worked on the task is automatically calculated. An entry for the time worked is created in the Time worked section of the Related tab.

## Locate and pick the hardware assets in your stockroom using the Mobile Agent application



Locate a hardware asset placed in a specific aisle and space in the stockroom by using indoor maps. After locating the asset, pick and drop off the asset to another location within the stockroom using the Mobile Agent application.

### Before you begin

You should explicitly install Indoor Mapping for Assets (com.sn\_ima) application from the ServiceNow Store. When you install this application, Indoor Mapping (sn\_map\_core) and Indoor Mapping component (sn\_map\_component) are also installed.

Role required: inventory\_user

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to start isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date**, **Asset**, **Location**, or **Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the Asset pick task for which you have started work.
6. To locate the hardware asset in the stockroom, on the **Details** tab, tap **Locate**.
  - The exact location of the hardware asset in the stockroom is displayed on the map.
  - The **Get directions** option is displayed.
7. Get directions to the asset location in the stockroom.
  - a. Tap **Get directions**.
  - b. Choose the start location on the map.
  - c. Tap **Save**.
    - The following details are displayed on the map:
      - Path from the start location to the asset location
      - Approximate time required for you to reach the asset location
    - **View steps** and **Scan asset** options are displayed.
8. **Optional:** To view the route to the asset location, tap **View steps**.
9. After reaching the asset location, pick the asset.
10. Complete the Asset pick task.
  - a. Tap **Scan asset**.
  - b. Provide the asset tag information.
    - To provide the information through a scan, scan the asset tag of the asset.
    - To provide the information manually, enter a value in the **Asset tag** field.

**c. Optional:** In the **Drop off location** field, select the space within the stockroom where you want to drop off the asset that you picked.

**d. Select Close complete.**

- The state of the Asset pick task changes to Closed complete.
- The **Location** field of the asset is updated with the drop off location only if you have specified the drop off location.
- The Hardware Asset request flow and Hardware Refresh request flow proceed to the next stage.

### **Manage asset put away using the ServiceNow Agent application**

Scan and put away the assets from the receiving bay in the designated aisle-space using the ServiceNow Agent application.

### **Put away assets using the ServiceNow Agent application**

Scan available assets in the inventory and perform an asset put away task in the designated scanned drop-off location.

### **Before you begin**

Role required: inventory\_user

### **About this task**





The inventory user can scan the available assets in the inventory and put them away in the scanned aisle-space in the stockroom. The Hardware Asset Management application checks the existence of an active put away task for the asset and makes the required update in the Hardware Asset Workspace.

- If an active Asset put away task exists, the task is closed when the asset is placed in the designated stockroom location.
- If an active Asset put away task doesn't exist for the asset, then a task is created and closed when the asset is placed in the designated stockroom location.





### **Procedure**

- 1.** From your mobile device, launch the Mobile Agent application.
- 2.** On the navigation bar, tap the Asset put away menu.

### IT Asset Management

-  Location audits
-  Create Asset
-  Asset disposal
-  Asset put away

### Customized Old IT Asset Management

-  Location audits
-  Create Asset
-  Asset lookup
-  Asset disposal


### Open stockroom audits

[See all](#)

**In Progress** ASTAUD0001022

**San Diego North - Pickup/Dropoff**

Created 2020-04-22 01:14:50

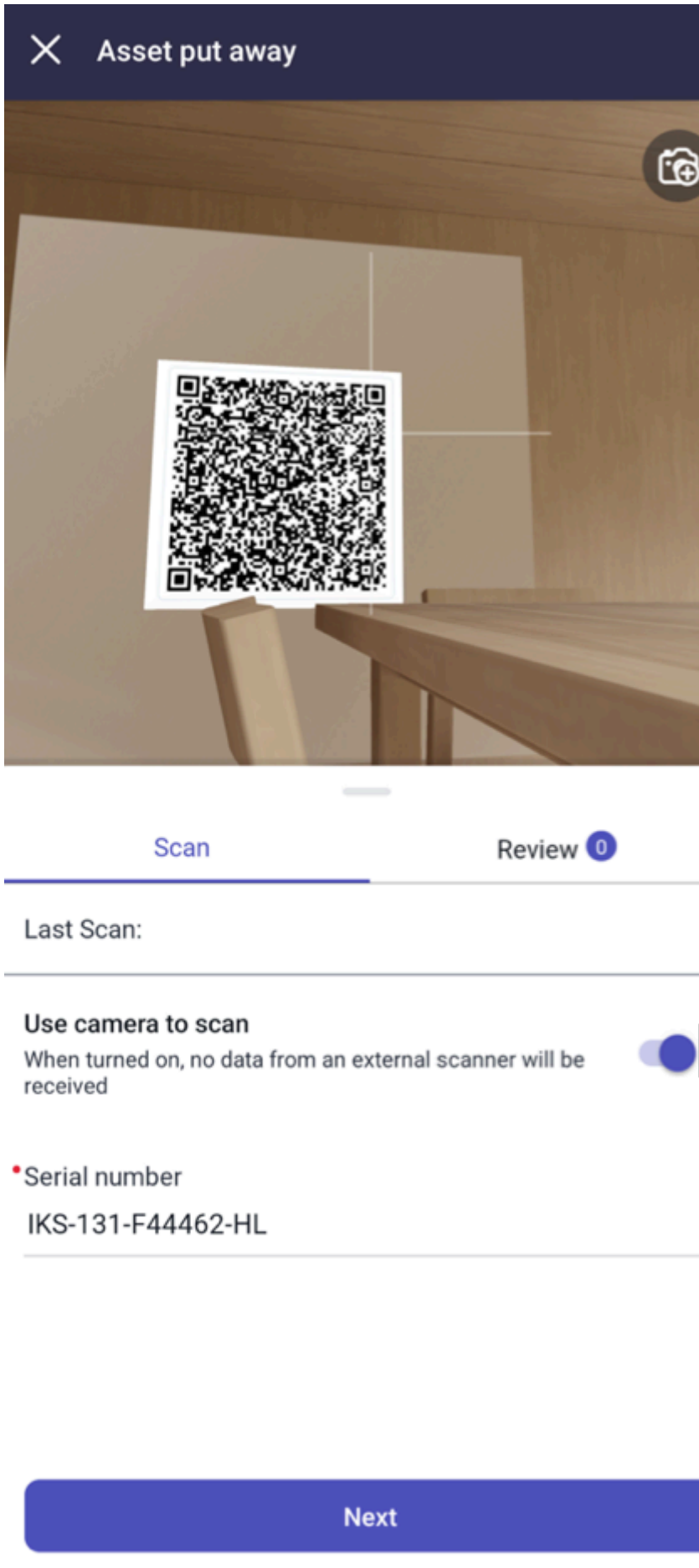
 Assigned to **Beth Anglin**

### Open location audits

[See all](#)

The Asset put away page is displayed.

**3.** Enter or scan the asset serial number and tap **Next**.




You can scan multiple assets at a time. All the scanned asset serial numbers are listed in the **Review** tab.


✕ Scan Assets

Scan      Review <sup>2</sup>

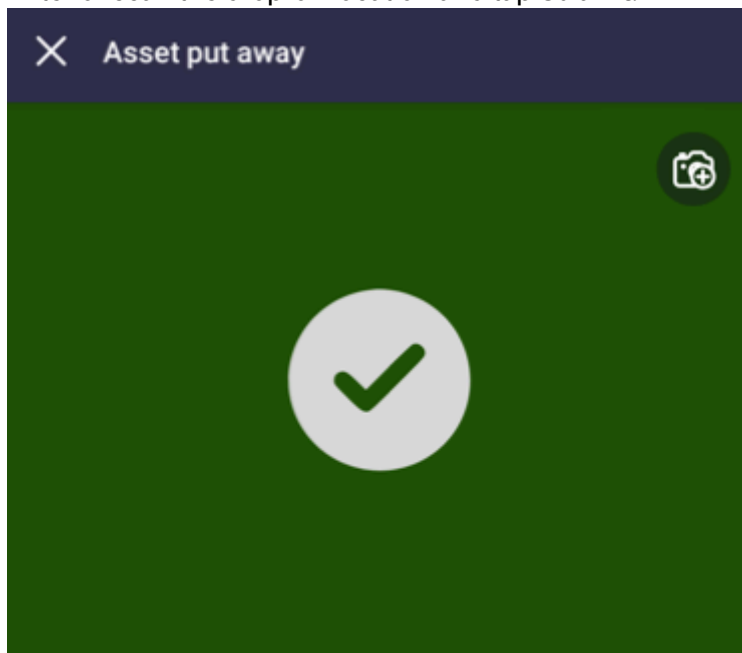
---

• Asset identifier  
IKS-131-F44462-HL 

---

• Asset identifier  
LBT-135-M11956-PU 

Next

**4. Enter or scan the drop-off location and tap **Submit**.**

• Drop-off location

4492 Camino De La Plaza, San Ysidro, CA | San Di 

Previous

Submit

**Result**

A confirmation message appears on the mobile screen showing the number of put away tasks closed.

**Acknowledge receipt of assets on the Employee Center portal**

After receiving hardware or consumable assets that were in transit and reserved for you, confirm their receipt on the Employee Center portal.

**Before you begin**

**i Important:** The option to receive assets on the Employee Center portal is supported in Hardware Asset Management version 13.0.0 and later.

Role required: Log in as an employee.

To view the **My Assets** option on the global header navigation bar of the Employee Center portal, the value of the **enable\_assets** option must be set to **true** on the Additional options, JSON format field of the Employee Center menu record. For more details, see [Enable or disable global header options](#).

**Note:** The **My Assets** option requires the Hardware Asset Management application to be activated.

**About this task**

When an asset reserved for you is in transit, you will receive an email notification with a link to the Employee Center Portal, where you can acknowledge its receipt. You can receive an asset even if the asset is excluded from Hardware Asset Management workflows or if the associated resource category isn't opted in.

**Procedure**

1. View the assets that are reserved for you on the Employee Center portal.

- Select the **Receive assets** link in the email notification that you received.

The link opens the **My Assets** page on the Employee Center portal.

- View assets using any of the options available in the global header navigation bar of the Employee Center portal.

**UI options on the global header navigation bar**

UI option	Action
<b>My Assets</b>	Select <b>My Assets</b> in the global header navigation bar of the Employee Center portal.  <b>Note:</b> The number displayed on the <b>My Assets</b> option represents the total count of assets that must be attested and received.
<b>Profile</b>	a. Select <b>Profile</b> on the global header navigation bar of the Employee Center portal.  b. Select the <b>Assets</b> tab.

The page displays all the hardware and consumable assets that are assigned to you, in transit, and reserved for you. You can acknowledge the receipt of hardware and consumable assets that are in transit.

2. Acknowledge after you receive the asset.

Asset	Action
<b>Hardware</b>	a. For the hardware asset that you want to receive, select <b>Receive asset</b> .  b. In the Receive asset dialog box, follow any of these steps:

Asset	Action
	<ul style="list-style-type: none"> <li>▪ If the <b>Asset tag</b> and <b>Serial number</b> fields have values, verify them and then select <b>Submit</b>.</li> <li>▪ If either the <b>Asset tag</b> or <b>Serial number</b> field is empty, enter the value and then select <b>Submit</b>.</li> </ul> <p><b>i Note:</b> You can only enter values in the empty <b>Asset tag</b> or <b>Serial number</b> fields if the value of the <code>sn_hamp.enable_asset_tag_serial_number</code> system property is set to <b>true</b>. This system property can be updated with the admin role.</p> <p><b>Result:</b></p> <ul style="list-style-type: none"> <li>○ Asset is received successfully.</li> <li>○ Status of the asset changes from <b>In transit</b> to <b>In use</b>, and the asset is assigned to you.</li> <li>○ The <b>Receive asset</b> option is no longer available for that asset.</li> <li>○ Any receive task associated with that asset is automatically closed.</li> </ul> <p><b>i Note:</b> If the details of the asset that you received don't match the information shown in the Receive Asset dialog box, you can raise an issue by selecting the <b>Raise issue</b> option.</p>
<p><b>Consumables</b></p>	<ul style="list-style-type: none"> <li>a. For the consumable asset that you want to receive, select <b>Receive asset</b>.</li> <li>b. In the Receive asset dialog box, enter the quantity of consumables that you received in the <b>Quantity</b> field.</li> </ul> <p><b>i Note:</b> By default, this field displays the consumable quantity that you requested. You can enter a value that is lesser than or equal to the requested quantity, but it must be a positive number and not zero.</p> <ul style="list-style-type: none"> <li>c. Select <b>Submit</b>.</li> </ul> <p><b>Result:</b></p>

Asset	Action
	<ul style="list-style-type: none"> <li>○ If you received the full requested quantity of consumables, then the Status of the asset changes from <b>In transit</b> to <b>Consumed</b>, and the asset is assigned to you.</li> <li>○ If you received only a partial quantity of the requested consumables, the following changes occur: <ul style="list-style-type: none"> <li>▪ The status of the assets that you received changes from <b>In transit</b> to <b>Consumed</b>, and the assets are assigned to you.</li> <li>▪ The status of the assets that you didn't receive remains <b>In transit</b>.</li> </ul> </li> </ul> <p><b>Note:</b> Consumed and in transit consumables are displayed separately.</p>


## Update associated Decision tables for HAM flows

Update associated Decision tables for Hardware Asset Management (HAM) flows to trigger a new or customized HAM flow.

### Before you begin

Role required: admin, decision\_table\_admin

### Procedure

1. Navigate to **All > System Definition > Decision Tables**.
2. Open a decision table that you want to update.
3. On the flow page, select the Add icon (  ) in the Decision table section.
4. Select **Add condition column**.
5. In the NEW CONDITION COLUMN dialog box, fill in the conditions according to the conditions that you want to trigger the flow.
6. Select **Done**.  
A new row is created and the condition shows up in the Decision table section.
7. In the Flow column, select the flow that you have created.
8. Select **Save**.
9. Navigate to the Decisions (sys\_decision\_question) table and search the updated Decision table that you updated.
10. Update the **Order** field with a value less than 100.

## Hardware Asset Management reference

Reference topics provide additional information about the lists and forms that you use to configure and administer Hardware Asset Management.

### Domain separation and Hardware Asset Management

Domain separation is supported in Hardware Asset Management. Domain separation enables you to separate data, processes, and administrative tasks into logical groupings called domains. You can control several aspects of this separation, including which users can see and access data.

#### Support level: Enhanced

- Includes all aspects of **Basic** and **Standard** levels of support.
- Data-driven process enables service provider customers to modify business logic that is based on defined use cases. These configurations are UI-based and fail-safe so that configurations by one customer cannot affect another.
- Tenants of the instance must be able to configure minimum viable product (MVP) business logic and data parameters for themselves. This logic and parameters would be expected for the application's normal function.

Sample use case: Tenant-customers of a shared environment must be able to modify the impact, urgency, or priority matrix to set priority within their domain.

For more information on support levels, see [Application support for domain separation](#) .

### Domain separation overview

Domain separation support in the product enables service providers to offer managed services for software and hardware asset management to their customers. This feature also caters to large organizations who manage their subsidiaries as independent domains.

### How domain separation works in Hardware Asset Management

In HAM, domain separation occurs in two stages: data separation and process separation. There are no system properties specific to Hardware Asset Management that can be used to enable or disable the separation. However, the Domain Asset Process Settings table (`alm_domain_asset_process_setting`) stores configurations for asset processes, including the normalization of hardware models. By default, normalization is performed only for models within the TOP/Default domain. However, if you have the `asset` or `domain_admin` role, you can enable normalization for hardware models in any domain. To enable normalization for a specific domain, follow these steps:

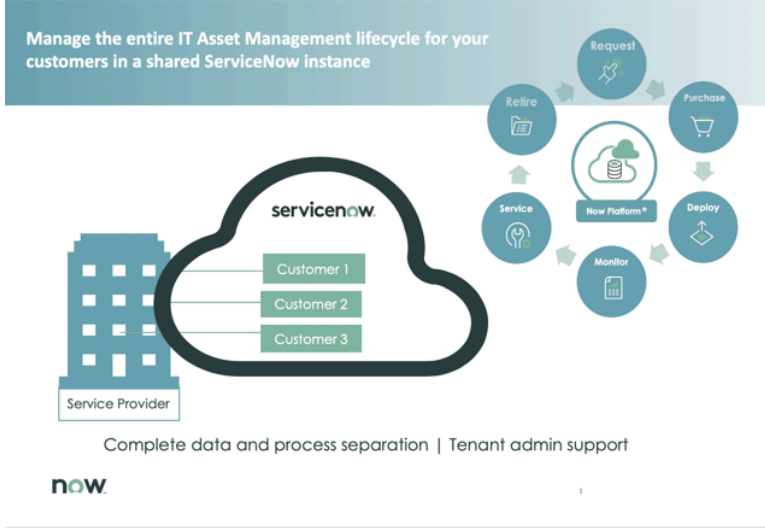
1. Navigate to the Domain Asset Process Settings table (`alm_domain_asset_process_setting`).
2. Locate the specific domain for which you want to enable normalization of models.
3. Set the **Run asset process** field to **true**.

#### **Note:**

The [Recommended practice](#)  is to avoid customizing the base system domain configuration record.

## Multi-Tenant support for IT Asset Management

# Multi-Tenant Support for IT Asset Management



### Service Provider Benefits

- Accelerate into new markets
  - Software Asset Management
  - Hardware Asset Management
- Provide ITAM as a service:
  - ❖ Contract and entitlement management
  - ❖ Discovery and normalization reporting
  - ❖ Software reconciliation, optimization and licensing expertise
  - ❖ Audit response
  - ❖ Software lifecycle and vulnerability reporting

### Customer Benefits

- Experts provide best practice services and processes
- No platform or process ownership required

## Required plugins

- Service Catalog – Domain Separation (com.glideapp.servicecatalog.domain\_separation)
- Domain separation extension (com.glide.domain.msp\_extensions.installer)
- Performance Analytics – Domain Support (com.snc.pa.domain\_support)
- HAMP (store app)

To learn more, see [Domain separation explained](#), [Contains queries and domain access](#), and [Importance of Default domain](#).

## Related topics

[Domain separation for service providers](#)

## Example Asset Management process

The best method for managing assets depends on business needs and how your business is organized.

### Before you begin

Role required: asset

### About this task

These steps are one possible process for getting started with Asset Management.

## Procedure

1. Identify assets in your system.

A key component of asset management is the initial and ongoing inventory or discovery of what you own. The ServiceNow platform provides the following options for asset discovery.

- The separate, robust Discovery tool.
  - For organizations that want to use the discovery technologies they have deployed already, such as SMS, Tally NetCensus, LanDesk, or others, ServiceNow can support integration to those technologies via web services. Scanned data can be mapped directly into the Configuration Management Database (CMDB).
2. Clean up information in the CMDB.  
Remove information that is obsolete or invalid. Ensure that all remaining information is accurate and complete. Add any necessary information.
  3. Create categories of asset models such as computers, servers, printers, and software.
  4. Create asset models.  
Models are specific versions or various configurations of an asset, such as a MacBook Pro 17".
  5. Create individual assets, such as hardware, consumables, and software licenses.  
If you used a discovery tool, you may already have many assets identified accurately.
  6. Manage assets by counting software licenses, viewing assets that are in stock, setting asset states and substates, and analyzing unallocated software.

### Quick start tests for Hardware Asset Management

Validate that Hardware Asset Management (HAM) still works after you make any configuration change such as apply an upgrade or develop an application. Copy and customize these quick start tests to pass when using your instance-specific data.

Hardware Asset Management quick start tests are available when you install the Hardware Asset Management (HAM) application from the ServiceNow Store.

#### Hardware Asset Management test suite

Test	Description	Release version
HAM - Hardware Normalization	Validates the various normalization status values based on the normalized Manufacturer, Product, and Model.	Orlando
HAM - Hardware Asset Disposal work flow	Validates asset disposal work flow.	Paris
HAM - Automating Asset deploy workflow	Validates asset deployment work flow.	Paris
HAM - Automating Asset Swap workflow	Validates Asset Exchange/ Swap work flow.  <b>Note:</b> Requires demo data.	Paris
HAM - Standard Hardware Asset Request Flow	Validates the Standard Hardware Asset Request flow, which is a part of the Hardware Asset Management application.	Paris
HAM - Hardware Asset Refresh flow	Validates asset refresh workflow.	Quebec

### Hardware Asset Management test suite (continued)

Test	Description	Release version
HAM - Loaner Asset Allocation Flow	Validates loaner asset workflow.	Quebec
HAM - Lease Contract Asset Expiration	Validates leased contract asset expiration end to end workflow, performing return or extend of the assets covered in the lease contract.	Quebec
HAM - Asset RMA Flow	Validates the asset Return Merchandise Authorisation (RMA) workflow with Inventory User.	Rome
HAM - Asset RMA Flow (SP)	Validates the asset Return Merchandise Authorisation (RMA) workflow from Service Portal.	Rome
HAM - Loaner Asset Request Flow	Validates the Loaner asset allocation workflow with Inventory Admin user.	Rome
HAM - Contract Renewal Flow	Validates the Contract Renewal flow with Contract Manager user.	Tokyo

#### Related topics

[Quick start tests](#) 

### Hardware Asset Workspace roles

Details of the out-of-the-box roles that can access Hardware Asset Workspace.

#### Roles to access Hardware Asset Workspace

Role	Access details
inventory_admin	Access to create, edit, manage, and delete stockrooms.
procurement_user	Access to procurement tasks such as creating purchase orders and viewing transfer orders.
inventory_user	Access to stock information.
model_manger	Access to create, modify, and delete records of the base Model [cmdb_model] table.
contract_manager	Access to create, edit, and delete contracts through the Contract Management application.
itil	Access to open, update, and close the following items: <ul style="list-style-type: none"> <li>• Incidents</li> <li>• Problems</li> </ul>

### Roles to access Hardware Asset Workspace (continued)

Role	Access details
	<ul style="list-style-type: none"> <li>• Changes</li> <li>• Configuration management items</li> </ul>
sam_admin	Access to work on any functionality that the Software Asset Management application offers.
asset	Access to create, edit, manage, and delete the hardware and consumable asset records.
catalog_manager	Access to view and assign catalog editors to their categories. Also create, modify, and publish items within those categories.
ham_admin	This role is available only when the Hardware Asset Management (HAM) is installed and provides access to all HAM features.
sam_user	This role is available only when the Hardware Asset Management application is installed
catalog_admin	Access to create, edit, and manage the Service Catalog.
sam	Access to Software Asset Management features included with Asset Management. Different roles such as sam_admin, sam_user, and sam_developer are required to use the Software Asset Management application.

### Stockroom types

Stockroom types are categories of stockrooms.

The stockroom type has two significant characteristics.

- **Priority:** Order of stockrooms the parts should be sourced from. For example, if a personal stockroom (priority 2) contains the required part, the personal stockroom receives priority over the Central Stockroom (priority 7) because the part in the personal stockroom doesn't require delivery.
- **Shipment Required:** Informs the system if a transfer order must be created when the part is sourced from a stockroom of the given type. For example, a part in a personal stockroom doesn't require shipment, so no transfer order is needed.

### Stockroom types defined in the base system

Value	Name	Priority	Shipment Required	Description	Comment
on_site	On Site	1	False	Stockroom at the customer site.	Close to the users and doesn't require shipping.
field_agent	Field Agent	2	False	Virtual, personal stockroom linked with a field service agent (FSA)	Used to indicate to the system that the part has been delivered and is with the FSA.

**Stockroom types defined in the base system (continued)**

Value	Name	Priority	Shipment Required	Description	Comment
				directly, used for delivery.	
fsl	FSL	4	True	Forward Shipping Location.	Small stockrooms where the parts can typically be shipped via overnight delivery.
pudo	PUDO	5	True	Pick Up/Drop out location.	This type is sometimes called a by-box. Can be a postal box that can receive new and returned parts that are often near major customer sites.
stockroom	Warehouse	6	True		A regional stockroom.
central_stockroom	Central Warehouse	7	True		A central stockroom, usually a large facility from which most parts are shipped.

**Installed with Model Management**

Several types of components are installed with Model Management.

Demo data is available with Model Management.

**Business rules installed with Model Management**

Model Management uses a number of business rules.

Name	Table	Description
Abort action if no license type	[cmdb_software_product_model]	Ensures that a license type (not a license type group that cannot be handled by counters) has been selected.
Calculate display_name	Product Model [cmdb_model]	Sets the <b>Display name</b> field when any of the following field values change: <b>Manufacturer, Name, Version, Edition</b> . The display name differs depending on whether the <i>glide.cmdb_model.display_name.shorten</i> property is set to <b>true</b> or <b>false</b> .
Date validation	[cmdb_m2m_downgrade_model]	Ensures that the Start date is before the End date.
Enforce CI Rules	[cmdb_model_category]	Ensures that categories that track assets as consumables or software licenses do not have a CI class.
Flag parent as bundle on creation	[cmdb_m2m_model_component]	Flags a model that has components as a bundle.

Name	Table	Description
License Type - Fullname	[cmdb_sw_license_calculation]	Computes the full name of the license type.
License validation	Software Upgrade and Downgrades [cmdb_m2m_downgrade_model]	Prevents software upgrades and downgrades from being duplicated and prevents having duplicate upgrades and downgrades for the same license where duplication also involves having the same dates. Also ensures that both the <b>Upgrade parent</b> and <b>Downgrade child</b> fields are mandatory and that if the <b>License</b> field is not empty, either <b>Upgrade parent</b> or <b>Downgrade child</b> must be equal to the license.model.
Protect cmdb_ci_class	[cmdb_model_category]	Prevents CI class from being changed after creation.
Protect cmdb_ci_class on insert	[cmdb_model_category]	Prevents creation of a category if another category already exists for the chosen CI class.
Protect Contract	[cmdb_model_category]	Prevents changes to the Contract model category record.
Set parent's main component link	[cmdb_m2m_model_component]	Populates a read-only reference from the bundle to the component when a bundle component is selected as the main component.
Unflag parent on last delete	[cmdb_m2m_model_component]	Removes the bundle flag from a model when the last component is deleted from the bundle.
Update model category	[cmdb_ci]	Updates the model categories for the associated model if the model is not already associated with the CI's model category.
Validate record before creation	[cmdb_m2m_model_component]	Ensures that a component is not already in a bundle when an attempt is made to add the component to a bundle.

### Client scripts installed with Model Management

Model Management includes a number of client scripts.

Name	Table	Description
Clear models not matching license	[cmdb_m2m_downgrade_model]	Clears the <b>Upgrade parent</b> and <b>Downgrade child</b> fields when the <b>License</b> field is changed to a license and neither the upgrade or downgrade fields match the license model.
Constraints based on asset class	[cmdb_model_category]	Enables or disables bundling options based on the asset class of the category.
Hide sections when needed	[cmdb_model]	Shows and hides sections according to what is relevant for a given model.

Name	Table	Description
model_category change	[cmdb_model]	Ensures compatibility of classes between the several categories referenced by the same model (client part).
Populate downgrade from license	[cmdb_m2m_downgrade_model]	Sets the downgrade child to the software model on the referenced license when an upgrade is selected. Only sets the downgrade to the license if the license is not empty.
Populate upgrade from license	[cmdb_m2m_downgrade_model]	Sets the upgrade parent to the software model on the referenced license when a downgrade is selected. Only sets the upgrade to the license if the license is not empty.

### Properties installed with Model Management

Model Management includes the property *glide.cmdb\_model.display\_name.shorten*.

Name	Description
<i>glide.cmdb_model.display_name.shorten</i>	<p>When set to <b>true</b>, generates shorter display names for models by eliminating duplication of the manufacturer name. Consider the following model, for which <b>Manufacturer</b> is set to <b>Spotify</b> and <b>Name</b> is set to <b>Spotify Premium</b>.</p> <p>The <b>Display name</b> field is set as follows, based on the property setting.</p> <ul style="list-style-type: none"> <li>• false: Display name is Spotify Spotify Premium</li> <li>• true: Display name is Spotify Premium</li> </ul> <p>For software models, the edition and version are also included in the name, if they are specified.</p> <ul style="list-style-type: none"> <li>• Type: true   false</li> <li>• Default value: false</li> <li>• Location: System Properties [sys_properties] table</li> </ul>

### Script includes installed with Model Management

Model Management includes script includes.

Name	Description
ModelAndCategoryFilters	Refines reference qualifiers for models and model categories based on class.
ModelCategoryCheck	Ensures compatibility of classes between the several categories referenced by the same model.

### Tables installed with Model Management

Model Management includes numerous tables.

Table	Description
Application Model [cmdb_application_product_model]	Stores models used to describe software application products.
Consumable Model [cmdb_consumable_product_model]	Describes consumable product models.
Contract Model [cmdb_contract_product_model]	Stores all contract models.
Depreciation [cmdb_depreciation]	Stores asset depreciation patterns.
Hardware Model [cmdb_hardware_product_model]	Describes hardware product models.
Model Category [cmdb_model_category]	Defines groups of assets, consumables, product bundles, and configuration items.
Model Compatibility [cmdb_m2m_model_compatibility]	Stores many-to-many relationship between two models signifying their compatibility with one another.
Model Component [cmdb_m2m_model_component]	Stores many-to-many relationship between two models signifying that they form a bundle.
Product model [cmdb_model]	Describes all kinds of product models.
Software License Calculation [cmdb_sw_license_calculation]	Defines commonly used software licensing patterns.
Software Model [cmdb_software_product_model]	Describes software product models.
Software Suite [cmdb_m2m_suite_model]	Stores many-to-many relationship between two models that defines elements of a software suite.
Software Upgrade and Downgrades [cmdb_m2m_downgrade_model]	Stores many-to-many relationship between two models signifying that being licensed for one model grants rights to the other as well.

### UI policies installed with Model Management

Model Management includes UI policies.

Name	Table	Description
Hide unverified	Model Category [cmdb_model_category]	Shows the <b>Enforce CI verification</b> field if the <b>Asset class</b> and <b>CI class</b> fields are not empty.

Name	Table	Description
Lock fields for Contract and Work	Model Category [cmdb_model_category]	Sets all fields on the Model Category form to read-only if the <b>Name</b> is <b>Contract</b> or, <b>Work Order</b> or <b>Work Task</b> .
Lock fields for Contract		
Protect model category	Product Model [cmdb_model]	Makes the <b>Model categories</b> field mandatory and read-only if it contains any of the following values: <b>Software License</b> , <b>Contract</b> , <b>Work Order</b> , <b>Work Task</b> .
Show is an option if Oracle	Software Model [cmdb_software_product_model]	Shows the <b>Is an option</b> field if the selected <b>Manufacturer</b> name starts with <b>Oracle</b> .

### User roles installed with Model Management

Model Management includes user roles.

Role	Contains Roles	Description
category_manager	model manager	Can create, edit, and delete model categories.
model_manager	none	Can create new CMDB models. The model manager role can control the base models and any model extensions that are not hardware, software, or consumables. Hardware and consumable models are controlled by the asset manager (asset) role. Software models are controlled by the software asset manager (sam) role.

### Installed with Asset Management

Several tables, user roles, UI policies, script includes, client scripts, and business rules are installed with Asset Management.

Demo data is available with asset management. The demo data provides information such as users, assets, and individual stockrooms.

### Tables

Asset Management includes the following tables.

#### Asset Management tables

Table	Description
Asset [alm_asset]	Stores general, financial, and contractual information about assets.
Asset Entitlement [alm_entitlement_asset]	Enables ServiceNow to categorize the Asset Entitlement table and enforce how entitlements behave.

**Asset Management tables (continued)**

Table	Description
Consumable [alm_consumable]	Stores data about consumable assets (previously known as parts).
Default Stockroom [alm_user_stockroom]	Stores the relationship between a user and their default stockroom.
Fixed Assets [alm_fixed_assets]	Stores fixed assets, which are containers that can hold multiple assets.
Fixed asset to asset [m2m_fixed_asset_to_asset]	Stores associations between fixed assets and assets.
Hardware [alm_hardware]	Stores general, financial, and contractual information about hardware assets.
License Entitlement [alm_entitlement]	Stores entitlements that permit users or machines to use a software license.
Software License [alm_license]	Stores general, financial, and contractual information about software license assets.
Stock Rule [alm_stock_rule]	Transfers stock or sends an email message to the asset manager when a specified asset drops below a set threshold.
Stockroom [alm_stockroom]	Stores information about stockrooms.
Stockroom Model [alm_m2m_stockroom_model]	Tracks all models that have ever been stocked in a stockroom. This table is automatically populated.
Stockroom Type [alm_stockroom_type]	Stores general information about stockroom types.
Transfer Order [alm_transfer_order]	<p>Contains data about transfer orders, including the state and stockrooms.</p> <p><b>i Note:</b> The <code>inventory_user</code>, <code>asset</code>, or <code>procurement_user</code> role can only access the reports. You must activate the Procurement (<code>com.snc.procurement</code>) plugin for the <code>inventory_user</code>, <code>asset</code>, and <code>procurement_user</code> roles.</p>
Transfer Order Line [alm_transfer_order_line]	Contains data about individual assets being shipped with a transfer order.
User Entitlement [alm_entitlement_user]	Enables ServiceNow to categorize the User Entitlement table and enforce how entitlements behave.

**User roles**

Asset Management includes the following user roles.

### Asset Management user roles

Role	Contains roles	Tasks
asset (Asset Manager)	<ul style="list-style-type: none"> <li>category manager</li> <li>contract manager</li> <li>financial mgmt user</li> <li>inventory user</li> <li>procurement user</li> </ul>	<ul style="list-style-type: none"> <li>Manage hardware and consumable assets ([alm_hardware] and [alm_consumable]).</li> <li>Asset manager can't edit asset records that are created and updated automatically, but can read and delete the asset records when needed.</li> <li>Create requests.</li> <li>Create and delete stock information.</li> <li>Access to requests, purchase orders, and base system catalog tasks.</li> </ul>
inventory_admin	inventory user	<ul style="list-style-type: none"> <li>Create and delete stock information.</li> <li>Edit stock rules, stockrooms, and stockroom types.</li> </ul>
inventory_user	none	<ul style="list-style-type: none"> <li>Access stock information.</li> <li>Create and manage transfer orders.</li> </ul>
sam	<ul style="list-style-type: none"> <li>contract manager</li> <li>model manager</li> <li>financial mgmt user</li> </ul>	<ul style="list-style-type: none"> <li>Create, edit, change, and manage software licenses.</li> <li>Edit the Software model field on a <a href="#">Discovery models and software installations</a>.</li> <li>Approve a model. Has full control of the Software Asset Management application.</li> <li>Controls the Software Asset Management IBM PVU Process Pack, if activated.</li> </ul>

### UI policies

Asset Management includes the following UI policies.

#### Asset Management UI policies

Name	Table	Description
Hide asset tag and serial num	[alm_asset]	Hides the asset tag when the asset is pre-allocated and the quantity is greater than 1.
Hide/show parent stockroom on Stockroom Replenish	[alm_stock_rule]	Shows the Parent stockroom field only when the Restocking option field is set to Stockroom.
Make allocated to and assigned to required.	License Entitlement [alm_entitlement]	Makes the Allocated to and Assigned to fields required.

### Asset Management UI policies (continued)

Name	Table	Description
Make substatus read-only when not required	[alm_asset]	Sets the Substatus to read-only if the State is On order, In use, Consumed, or In maintenance.
Model bundle field hidden but present for UI Policy conditions purposes	[alm_asset]	Hides the Model Bundle field. Exists on page only for use by UI policies and client scripts.
Pre-allocated constraints	[alm_asset]	Hides unneeded fields and related lists when the asset is pre-allocated.
Quantity readonly until model and category qualify the asset and are not bundle	[alm_asset]	Sets the Quantity field to read-only for assets that aren't consumable, software, or pre-allocated. Quantity is also read-only if the model or model category fields are empty.
Show 'Assigned to'	[alm_asset]	Shows the Assigned to field if the State field is not On order, In stock, or In transit.
Show 'Reserved for'	[alm_asset]	Shows the Reserved for field if the State field is On order, In stock, or In transit.
Show 'Stockroom'	[alm_asset]	Shows the Stockroom field if either of the following conditions is true: <ul style="list-style-type: none"> <li>The State field is In stock and Substate isn't Pre-allocated.</li> <li>The Substate is Pre-allocated and Parent is empty.</li> </ul>

### Script includes

Asset Management includes the following script includes.

#### Asset Management script includes

Name	Description
AssetandCI	Code for creating and managing the relationship between asset and CI records.
AssetAndCISynchronizer	Synchronization code between asset and CI records.
AssetUtils	Utility functions for asset management. Also checks if a license can be merged and then merges licenses if requirements are met.
AssetUtilsAJAX	AJAX-based utility functions for asset management. Call the AssetUtils script include from a client-side UI action.
Consumables	Code to change (for example, consume, split, and merge) consumables.
FixedAssetUtils	Methods for rolling up fixed asset costs.
PortalFilters	Filters used in the My Assets portal.
PreAllocatedAssets	Code to change pre-allocated assets.

**Asset Management script includes (continued)**

Name	Description
StockRuleFilters	Reference qualifier code for filtering options on reference fields on stock rules.
StockRuleTransfer	Transfer order creation code for when stock rules are triggered.
TransferOrderDateTimeAjax	Date comparison utility for transfer orders.
TransferOrderFilters	Reference qualifier code for reference field filtering options on transfer orders.
TransferOrderFinder	Finds an appropriate transfer order to put a transfer order line into.
TransferOrderHelper	Function that checks if a transfer order has multiple transfer order lines.
TransferOrderLineFilters	Reference qualifier code for reference field filtering options on transfer order lines.
TransferOrderReceiver	Code for receiving a transfer order line.
TransferOrderReturn	Code for returning a transfer order line.
TransferOrderStageHandler	Code for changing transfer order stages and transfer order line stages.
TransferOrderStageHelper	Helper method to get numeric stages for transfer orders and transfer order lines.

**Client scripts**

Asset Management includes the following client scripts.

**Asset Management client scripts**

Name	Table	Description
Correct substatus	[alm_asset]	Updates the Substatus field when the Status field is modified.
Ensure no negative quantity	[alm_asset]	Clears the Quantity field when set to less than 1.
Error on pre-allocated substatus	[alm_consumable]	Prevents Substatus field from being set to be Pre-allocated for consumable assets. Also displays an error message.
Error on pre-allocated substatus	[alm_license]	Prevents Substatus field from being set to be Pre-allocated for license assets. Also displays an error message.
Null out allocated_to	[alm_entitlement]	Does the following when the Assigned to field is set:

**Asset Management client scripts (continued)**

Name	Table	Description
		<ul style="list-style-type: none"> <li>• Clears the Allocated to field and makes it not required.</li> <li>• Makes the Assigned to field required.</li> </ul>
Null out assigned_to	[alm_entitlement]	<p>Does the following when the Allocated to field is set:</p> <ul style="list-style-type: none"> <li>• Clears the Assigned to field and makes it not required.</li> <li>• Makes the Allocated to field required.</li> </ul>
Salvage must be less than cost	[alm_asset]	Displays a warning if a salvage value greater than the cost of an asset is entered.
Set Cost of the Asset	[alm_asset]	Populates the Cost field when the Model field is set.
Set Loc/ CC/Dep/Com from assigned to	[alm_asset]	Populates the Location, Cost center, Department, and Company fields when the Assigned to field is set.
Set Location from stockroom	[alm_asset]	Populates the Location field when the Stockroom field is set.
Update From Location from Stockroom	[alm_transfer_order]	Populates the From location field when the From stockroom field is set.
Update Model and Quantity based on Asset	[alm_transfer_order_line]	Populates the Model field when the Asset field is set. If the asset is a pre-allocated asset, this client script also populates the Quantity field.
Update To Location from Stockroom	[alm_transfer_order]	Populates the To location field when the To stockroom field is set.
Update UI on load and model change	[alm_transfer_order_line]	Runs checks, and updates the user interface, when the transfer order line form is loaded and when a model is selected.
Validate Delivery by Date	[alm_transfer_order]	Validates that the delivery date is in the future.
Verify Stock Available	[alm_transfer_order_line]	Verifies that stock exists to fulfill the quantity requested.
Verify Stock Available (Stockroom)	[alm_transfer_order_line]	Verifies that stock exists to fulfill the quantity requested when the From stockroom value changes.

## Business rules

Asset Management includes the following business rules.

### Asset Management business rules

Name	Table	Description
Allocated more licenses than rights	Software License [alm_license]	Prevents creation or update of a license if the number of licenses allocated is larger than the total rights.
Asset Retirement	Asset [alm_asset]	Clears the Assigned to, Stockroom, and Reserved for fields and sets the retirement date to the current time when the asset is retired.
Automatically Change TOL State	Transfer Order Line [alm_transfer_order_line]	<p>If a transfer order has the same From stockroom and To stockroom and it's a personal stockroom, this business rule:</p> <ul style="list-style-type: none"> <li>• Sets the transfer order line Stage to Delivered.</li> <li>• Sets the asset Substate to Reserved.</li> </ul> <p>If a transfer order has the same From stockroom and To stockroom and it isn't a personal stockroom, this business rule:</p> <ul style="list-style-type: none"> <li>• Sets the transfer order Stage to Received.</li> <li>• Sets the asset Substate to Pending transfer.</li> </ul>
Build bundle components on Insert	Asset [alm_asset]	Creates assets for the components related to a bundle if the model of the created asset is a bundle.
Clear Assigned To on update	Asset [alm_asset]	Clears the Assigned to field if the State field changes to On order, In stock, or In transit.
Clear fields irrelevant for preallocated	Asset [alm_asset]	Clears the value of fields that are irrelevant for pre-allocated assets.
Create Asset on insert	Configuration Items [cmdb_ci]	Creates a corresponding asset when a new configuration item with no asset is created.
Create asset on model change	Configuration Items [cmdb_ci]	Creates a new associated asset when the Model ID field changes.
Create CI on insert	Asset [alm_asset]	Creates a corresponding configuration item when a new asset with no configuration item is created.
Create Stockroom Model Relation	Asset [alm_asset]	Creates a record (if none exists) in the Stockroom Model table indicating the stockroom that holds the model when an asset is created or updated.
Delete all Transfer Order Lines	Transfer Order [alm_transfer_order]	Deletes all related transfer order lines when a transfer order is deleted.
Ensure Entitlements	License Entitlement [alm_entitlement]	Checks that the total number of entitlements for the related license doesn't exceed the number of

**Asset Management business rules (continued)**

Name	Table	Description
do not exceed rights		rights given by the license when an entitlement is created.
GenerateAssets	Model Categories [cmdb_model_category]	Executes a scheduled script job to create assets for configuration items.
Inherit information from parent	Asset [alm_asset]	Assigns some parent values to the asset when assigning a new parent to an asset.
Managed Stockroom for Vendor	Stock Rule [alm_stock_rule]	Validates that a vendor replenishing stock rule has a stockroom selected and the stockroom has an related manager with a valid email address.
Mandate allocated to or assigned to	License Entitlement [alm_entitlement]	Makes a value in either the Allocated to field or the Assigned to field required.
Merge Records	Consumable [alm_consumable]	Merges consumables that have matching fields and aren't In Transit into one record containing the total count.
Null out asset on insert and stay	Configuration Items [cmdb_ci]	Clears the Asset field on insert when the field includes an asset that has a CI.
Null out Ci on insert and stay	Asset [alm_asset]	Nulls out the asset field so a new asset is created for the CI when an insert is performed on an existing CI.
Populate reserved for field	Transfer Order Line [alm_transfer_order_line]	If the transfer order line has an related request line, this business rule populates the related asset's Reserved for field with the appropriate information from the request line.
Push Status to Asset/ Consumable	Transfer Order Line [alm_transfer_order_line]	Changes the corresponding asset to reflect the current state of transit when a transfer order line moves to another state.
Release Asset on TOL cancel/delete	Transfer Order Line [alm_transfer_order_line]	Places the corresponding asset back into stock and unsources the part requirement when a transfer order line in the draft state is canceled or deleted.
Rollup TOL cancellation to TO	Transfer Order Line [alm_transfer_order_line]	Signals to the corresponding transfer order that the transfer order line has been canceled.
Salvage value must be less than cost	Asset [alm_asset]	Prevents saving an asset record if the salvage value is greater than the cost.
Sanity check on pre-allocated	Asset [alm_asset]	Prevents creation or update of pre-allocated assets if they don't satisfy the conditions to be pre-allocated.
Set Class	License Entitlement [alm_entitlement]	Sets the class for this entitlement depending on the entitlement is assigned or allocated.

**Asset Management business rules (continued)**

Name	Table	Description
Set Transfer Order Type	Transfer Order [alm_transfer_order]	Sets the type of the transfer order depending on whether there's a related service order or work order task.
Sync model category	Product Models [cmdb_model]	When the model category changes, this business rule creates assets if they didn't previously exist for configuration items associated with the model.
Transfer Order Stockroom Rules	Transfer Order [alm_transfer_order]	Prevents the From stockroom field from being changed if the transfer order has multiple transfer order lines.
Transition reserved to assigned	Asset [alm_asset]	Populates the Assigned to field with the value from the Reserved for field when the asset is in the appropriate state.
Trickle information down to components	Asset [alm_asset]	Updates components of an asset to reflect any changes that have been made to the asset record.
Update Asset fields on change	Configuration Items [cmdb_ci]	Synchronizes fields so changes made on the Configuration Item form trigger the same update on the corresponding Asset form, ensuring consistent reporting. You must update statuses on the Asset form.
Update CI fields on change	Asset [alm_asset]	Synchronizes fields so changes made on the Asset form trigger the same update on the corresponding Configuration Item form, ensuring consistent reporting.
Update location as needed	Asset [alm_asset]	Updates the location of the asset, if the asset is set to a new stockroom or assigned to a new user.
Validate Field Agent Type	Stockroom [alm_stockroom]	Ensures that you don't create a stockroom of the type Field Agent without Work Management or Field Service Management activated. Allows for only one personal stockroom per user.
Validate TOL and check availability	Transfer Order Line [alm_transfer_order_line]	Validates changes made to the transfer order line and checks the availability of the assets to be transferred in the specified stockroom.
Validate transfer order	Transfer Order [alm_transfer_order]	Validates that the Delivery by date isn't earlier than the current date.
Validate Unique Users	Default Stockroom [alm_user_stockroom]	Prevents the creation of multiple records with the same user.
Verify Entitlement (Allocated)	License Entitlement [alm_entitlement]	Ensures that the allocation of the entitlement follows the allocation condition on the license when a condition exists.
Verify Entitlement (Assigned)	License Entitlement [alm_entitlement]	Ensures that the assignee of the entitlement follows the assignment condition on the license when a condition exists.

**Asset Management business rules (continued)**

Name	Table	Description
Verify Entitlements (Allocated)	Software License [alm_license]	Ensures that the allocations of all the license's entitlements follow the allocation condition on the license when a condition exists.
Verify Entitlements (Assigned)	Software License [alm_license]	Ensures that the assignees of all the license's entitlements follow the assignment condition on the license when a condition exists.
Verify Not Field Agent	Default Stockroom [alm_user_stockroom]	Verifies that the selected default stockroom isn't of the Field Agent type.

**Installed with Hardware Asset Management**

Several types of components are installed with activation of the sn\_hamp plugin, including tables, user roles, and scheduled jobs.

**Roles installed**

Role title	Description	Contains roles
ham_admin	Grants full access to the respective features of the Hardware Asset Management application including the ability to Opt-in for the Content Service. This role is used for Hardware Asset Management.	<ul style="list-style-type: none"> <li>• inventory_admin: Access to create, edit, manage, and delete stockrooms.</li> <li>• catalog_manager: Access to view and assign catalog editors to their categories. Also, create, modify, and publish items within those categories.</li> <li>• report_user</li> <li>• sn_hamp.ham_user: Access to manage hardware assets and reports.</li> <li>• asset: Access to create, edit, manage, and delete the hardware and consumable asset records.</li> <li>• procurement_admin</li> </ul>
sn_hamp.ham_user	Manage hardware assets and reports. This role enables users to view, create, update, and delete hardware asset records, and to generate and view asset-related reports. This role is tailored for everyday asset management tasks.	asset

## Scheduled jobs installed

Scheduled job	Description
HAM - Content Upload	Publishes the normalized hardware models.
HAM - Daily Job	Calculates number of hardware and consumable models for each model category, active life cycle phase for models, and sets client schedule pull-time.
HAM - Hardware Lifecycles	Generates hardware life cycles.
HAM - Hardware Normalization	Normalizes hardware and consumables models.
HAM - Loaner Asset Order Allocations	Allocates assets to Loaner Asset Orders.
HAM - Populate Licensing Data	Populates licensing details.
HAMP - Content File Manager	Job is triggered from the Manage Hardware Library.
Purge Asset Audits More Than Year Old or with More Than 10k Assets	Removes old asset audit records or asset audits with more than 10K assets.
[PA HAM] Daily collection job	Daily job that collects scores for different parameters.

## Tables installed

Table	Description
Bundle [alm_bundle]	Details of bundle assets.
Asset Audits [sn_hamp_asset_audit]	Details of the asset audits.
Hardware Asset Reclamation Line [sn_hamp_asset_reclaim_line]	Details of the Hardware Asset Reclamation Lines created for each reclaimed asset.
Hardware Asset Reclamation Task [sn_hamp_asset_reclaim_task]	Details of the tasks created for each Hardware Asset Reclamation Line.
Asset RMA Task [sn_hamp_asset_rma_task]	List of RMA asset task records.


Table	Description
Hardware Asset Configuration [sn_hamp_configuration]	Configuration records of Hardware Asset Management.
HAM Content Audit [sn_hamp_content_audit]	Details of content values that changed.
Contract Renewal Request [sn_contract_renewal_request]	Stores all the contract renewal requests through the contract renewal workflow.
Contract Renewal Request Line [sn_contract_renewal_request_line]	Stores all the contract renewal request lines through the contract renewal workflow.
Contract Renewal Task [sn_contract_renewal_task]	Stores all the contract renewal request tasks through the contract renewal workflow.
Custom Device Type [sn_hamp_custom_hw_device_type]	List of custom hardware device type records.
Custom Hardware Manufacturer [sn_hamp_custom_hw_manufacturer]	List of custom hardware device manufacturer records.
Custom Hardware Product [sn_hamp_custom_hw_product]	List of custom hardware product records.
Custom Hardware Model Library [sn_hamp_custom_hw_prod_model]	List of custom hardware model library records.
Hardware Disposal Order [sn_hamp_hardware_disposal]	List of Hardware Disposal Order records.
Hardware Disposal Tasks [sn_hamp_hw_asset_disposal_task]	Details of the tasks associated with the Hardware Disposal Order flow.
Device Type [sn_hamp_hw_device_type]	List of hardware device type records.  <b>i Important:</b> You mustn't modify the records of this table.
Hardware Manufacturer [sn_hamp_hw_manufacturer]	List of hardware device manufacturer records.




Table	Description
Hardware Normalization Map [sn_hamp_hw_normalization_map]	Product details such as hardware product and hardware product model IDs.
Hardware Product [sn_hamp_hw_product]	Product details such as name of the product and type of device.
Hardware Model Library [sn_hamp_hw_product_model]	Product details such as product and model number.
Hardware Asset Refresh Line [sn_hamp_hw_refresh_line]	Hardware Asset Refresh Line details such as stage, requested item, replacement model, and replacement asset.
Refresh Line Tasks [sn_hamp_hw_refresh_line_task]	Details of Refresh Line tasks associated with the Hardware Asset Refresh Lines.
Import Staging [sn_hamp_import_template]	Template for importing assets and model records.
Hardware Lifecycle Definition [sn_hamp_lifecycle_definition]	Life cycle phase of a hardware or consumable model and the associated dates.
Loaner Asset Order [sn_hamp_loaner_asset_order]	List of Loaner Asset Order records.
Loaner Asset Task [sn_hamp_loaner_asset_task]	List of Loaner Asset Order task records.
Audits to Scanned Assets [sn_hamp_m2m_audit_asset]	List of audit records of scanned assets.
Planned Assets [sn_hamp_m2m_hw_asset_disposal]	Details of the assets included in Hardware Asset Disposal Orders.
Replacement Models [sn_hamp_m2m_ztr_replacement_model]	List of replacement records for Zero Touch Refresh models.

Table	Description
Manage Hardware Library [sn_hamp_manage_hw_library]	List of Hardware Library content import records.
Model Category Normalization Summary [sn_hamp_model_ctg_norm_summary]	Summary of normalization of model category.
HAM Resource Category [sn_hamp_resource_category]	Subscription unit ratio and other licensing-related details of each Resource category.
RMA Request [sn_hamp_rma_request]	List of RMA request records.
RMA Request Line [sn_hamp_rma_request_line]	List of RMA request line records of RAM requests.
HAM Success Activity [sn_hamp_success_activity]	List of HAM Success Activity records.
HAM Success Goal [sn_hamp_success_goal]	List of HAM Success Goal records.
Zero Touch Refresh Model [sn_hamp_ztr_refresh_model]	Details of refresh model records for the Zero Touch Refresh flow.
Zero Touch Refresh Request [sn_hamp_ztr_request]	List of Zero Touch Refresh request records.
Zero Touch Refresh Task [sn_hamp_ztr_task]	Details of tasks associated with the Zero Touch Refresh flow.
RFID asset [rfid_asset]	Stores the RFID information of assets.

### Asset record fields

Fields on the Hardware Asset Details form help you create hardware, software, consumable, bundle, pallet, mobile, and facility assets.

Field	Description
Display name	Name of the asset as it appears in the record lists. This field is automatically set when you create an asset, based on the <b>Asset Tag</b> and <b>Model</b> fields.
Model category	Model grouping of the asset. Based on the model category you select, the asset is linked to a configuration item.
Model	Specific product model of the asset.
Configuration Item	CI is automatically created when you create an asset. Point to the reference icon to view the configuration item details inherited from the asset record. The CI value is populated as follows: <ul style="list-style-type: none"> <li>• By default, the CI value is based on the <b>Model</b> field.</li> <li>• If the model category of the asset is associated with a CI and the Serial number field isn't empty, then the CI value is based on the <b>Serial number</b> and <b>Model</b> field values.</li> <li>• If an asset is created in the On Order state, then the CI value is based on the <b>Model</b> field.</li> </ul>
Quantity	The number of items this asset represents. An asset has a quantity of one unless one or more of these points are true. <ul style="list-style-type: none"> <li>• If the asset is a consumable, the quantity is unrestricted because consumables are tracked in groups.</li> <li>• If the asset is pre-allocated, the quantity is unrestricted when the <b>Model category</b> and <b>Model</b> values are defined and <b>Substate</b> is set to <b>Pre-allocated</b>.</li> </ul>
<p>General</p> <p>All the fields aren't available for each type of asset.</p>	
Asset tag	Alphanumeric information assigned by your organization to help track the asset.
State	Current state of the asset, such as <b>On order</b> or <b>In use</b> .
Assigned to	The person using or primarily responsible for this item. This field appears when the <b>State</b> is <b>In Use</b> . <p><b>Note:</b> When the <b>State</b> field value is updated from <b>In Use</b> to <b>On Order</b>, <b>In Stock</b>, or <b>In Transit</b>, this field value is automatically cleared. For more information about the business rules for updating the <b>Assigned to</b> field, see the <a href="https://support.servicenow.com/nav_to.do?uri=%2Fkb%3Fid%3Dkb_article_view%26sysparm_article%3DKB0719392">https://support.servicenow.com/nav_to.do?uri=%2Fkb%3Fid%3Dkb_article_view%26sysparm_article%3DKB0719392</a>  article in the Now SupportKnowledge Base.</p>
Stockroom	Name of the stockroom. This field appears only when the state of the asset is <b>In stock</b> or <b>Build</b> .
Aisle and space	Aisle and space details of the asset within the stockroom. This field appears only when the state of the asset is <b>In stock</b> or <b>Build</b> . <p><b>Note:</b> This field would appear only when the Hardware Asset Management Professional plugin (com.sn_hamp) is installed.</p>

Field	Description
Managed by	The person who maintains the asset. This field value can be different from the person in the <b>Owned by</b> field.
Owned by	The person who has financial ownership of the asset. This field value can be different from the person in the <b>Managed by</b> field.
Parent	Parent asset of the asset. For example, a monitor or peripheral can have a workstation as their parent asset. When a parent link is defined, the fields related to the assignment and state of the child assets is set to read-only and are populated based on the parent assignment and state fields. For more information, see <a href="#">Bundled models</a>  .
Asset function	<p>Function of the asset.</p> <p>The available values are as follows:</p> <ul style="list-style-type: none"> <li>• Primary</li> <li>• Secondary</li> <li>• Shared</li> <li>• Loaner</li> <li>• Asset Bundle</li> </ul>
Class	Asset group, for example, base, hardware, license, or consumable.
Comments	Information about the asset that would be helpful for others to know.
Serial number	Serial number of this asset.
Substate	Current substate of the asset. The available substate settings depend on the state selected. For example, the <b>Retired</b> state contains the <b>Substate</b> options <b>Disposed, Sold, Donated, and Vendor credit</b> .
Location	<p>Current physical location of the asset.</p> <p> <b>Note:</b> You can set the location to a place, floor, building, or campus. When you set the location to any of the options except the campus, the Location hierarchy section is shown on the asset form. The location hierarchy shows the hierarchical relationship between the specified location and its parent locations.</p> <p>If you meet the following criteria, the asset form displays an interactive map that shows the real-time location of the asset:</p> <ul style="list-style-type: none"> <li>• The location is set to a specific place.</li> <li>• Access indoor maps through the Indoor Mapping for Assets (com.sn_ima) application. This application gets installed on your ServiceNow instance along with Hardware Asset Management. You can also install this application explicitly from the ServiceNow Store.</li> <li>• The <code>sn_itam_common.sn_enable_indoormap_for_assets</code> system parameter is set to <b>true</b> on your ServiceNow instance.</li> </ul> <p>The Location map doesn't appear by default. To view the map, select the Location map  icon on the contextual sidebar of the asset record.</p> <p>Location map doesn't appear for excluded assets.</p>

Field	Description
Department	Department to which the asset belongs.
Company	Company or organization to which this asset belongs.
Assigned	The date on which the asset was assigned to a user.
Installed	The date on which the asset was installed.
<p><b>Location Hierarchy</b></p> <p>The Location Hierarchy section is available only for hardware, consumables, bundles, and pallet assets. This section appears only under the following conditions:</p> <ul style="list-style-type: none"> <li>• When the <code>sn_itam_common.sn_enable_indoormap_for_assets</code> system parameter is set to <b>true</b> on your ServiceNow instance</li> <li>• When you select any location except the campus</li> </ul>	
Floor	<p>Floor where the place specified in the Location field is located.</p> <p><b>Note:</b> This field appears only when you select a place in the Location field and is populated automatically based on the location.</p>
Building/ Structure	<p>Building to which the floor belongs.</p> <p><b>Note:</b> This field appears only when you select a place or floor in the Location field and is populated automatically based on the location.</p>
Campus	<p>Campus where the building is located.</p> <p><b>Note:</b> This field appears only when you select a place, floor, or building in the Location field and is populated automatically based on the location.</p>
<p><b>Financial</b></p> <p>The Financial section is available only for hardware, software entitlement, and facility assets.</p>	
Request line	Requested item to which the asset is linked.
Invoice number	Invoice under which the asset was billed.
Cost	The price at which the asset was purchased.
Vendor	Vendor from which the asset was purchased. The assets that are automatically created from purchase orders in Procurement, the default value of the <b>Vendor</b> field is the vendor specified on the purchase order.
Opened	The date on which the requested item record was opened. The system automatically populates the field when a request line is specified.
GL account	General ledger account number with which the asset is associated.
Cost center	Group financially responsible for the asset.
Acquisition method	<p>The way of acquiring the asset. Base system choices are <b>Purchase, Lease, Rental, Bring Your Own Asset</b> and <b>Loan</b>.</p> <p>The assets that are automatically created from purchase orders in Procurement, the default value is <b>Purchase</b></p>

Field	Description
Expenditure type	<p>The type of expenditure.</p> <ul style="list-style-type: none"> <li>• <b>Capex:</b> Capital expenditure is a one-time expenditure, where the value is realized over the years. For example, a photocopier.</li> <li>• <b>Opex:</b> Operational expenditure is an on-going expenditure. For example, toners for the photocopier.</li> </ul>
Eligible for refresh	
Asset TCO	<p>The total cost of ownership of the asset, where the total cost includes initial capital cost and operation cost.</p> <p>For more information about Asset TCO, see <a href="#">Asset Total Cost of Ownership for Hardware Asset Management</a>.</p>
TCO benchmark cost	<p>Predefined benchmark cost of the asset model.</p> <p><b>Note:</b> This field is referenced from the Hardware model details form. For more information, see <a href="#">Hardware model details</a>.</p>
TCO benchmark threshold	<p>The threshold value of your asset model cost identifying that the asset is reaching the TCO benchmark cost value. The benchmark threshold is set to 75% of the TCO benchmark cost by default.</p> <p>For example, if you set the TCO benchmark cost of an asset model as \$1000, the TCO benchmark threshold is set to \$750 automatically.</p> <p>Use the system property <code>sn_itam_common.asset_tco_benchmark_threshold_percentage</code> to update the benchmark threshold value. This field is referenced from the Hardware model details form. For more information, see <a href="#">Hardware model details</a>.</p>
TCO benchmark status	<p>Status of the asset TCO.</p> <ul style="list-style-type: none"> <li>• <b>Reached:</b> If the <b>Asset TCO</b> value is equal to or more than the <b>TCO benchmark cost</b> value, the TCO benchmark status shows as <b>Reached</b>.</li> <li>• <b>Approaching:</b> If the <b>Asset TCO</b> value is less than the <b>TCO benchmark cost</b> and more than the <b>TCO benchmark threshold</b> value, the TCO benchmark status shows as <b>Approaching</b>.</li> <li>• <b>Not reached:</b> If the <b>Asset TCO</b> value is less than the <b>TCO benchmark threshold</b> value, the TCO benchmark status shows as <b>Approaching</b>.</li> </ul>
Disposal	
Disposal order number	<p>A unique number assigned to the asset disposal order.</p> <p><b>Note:</b> This field appears only if you've installed Hardware Asset Management from ServiceNow Store.</p>
Disposal vendor	<p>The vendor assigned to carry out the asset disposal order.</p>

Field	Description
	<p><b>Note:</b> This field appears only if you've installed Hardware Asset Management from ServiceNow Store.</p>
Vendor disposal order ID	<p>The order number assigned by the vendor to carry out the asset disposal order.</p> <p><b>Note:</b> This field appears only if you've installed Hardware Asset Management from ServiceNow Store.</p>
Disposal date	<p>The date when the asset disposal order process is completed.</p> <p><b>Note:</b> This field appears only if you've installed Hardware Asset Management from ServiceNow Store.</p>
Disposal reason	Text explaining why the asset is being retired.
Beneficiary	Organization that receives the asset when it's retired.
Resale price	Value of the asset when it's retired. For example, if the asset is donated, the value is used when reporting taxes.
Scheduled retirement	Scheduled date on which the asset is retired.
Retired date	Actual date on which the asset was retired.
<p><b>Depreciation</b></p> <p>The Depreciation section is available only for hardware and facility assets.</p>	
Depreciation	Depreciation method that is applied. Base system choices are <b>Declining Balance</b> and <b>Straight Line</b> . The depreciation value is defaulted from the associated Model.
Depreciation effective date	The date on which the specified depreciation method begins.
Salvage value	Estimated value of an asset at the end of its useful life. This value must be less than or equal to the Cost of the asset.
Residual date	Date on which the residual value was calculated.
Residual value	Residual value of the asset.
Depreciated amount	Amount the asset has depreciated.
<p><b>Contracts</b></p> <p>The Contract section is available only for hardware, software entitlement, or facility assets.</p>	
Lease contract	Name of the lease contract that applies to the asset.

Field	Description
Warranty expiration	Expiration date of the asset warranty.
Lease expiration date	The date on which the contract gets expired.  <b>i Note:</b> This field would appear only when Hardware Asset Management (sn_hamp) is installed.
Lease term (months)	The period in months the lease contract is active for.  <b>i Note:</b> This field would appear only when Hardware Asset Management (sn_hamp) is installed.
Monthly lease payment	Amount that you pay monthly for the contract.  <b>i Note:</b> This field would appear only when Hardware Asset Management (sn_hamp) is installed.
Support group	The group managing the contract covering the asset.
Like-kind exchange	A similar asset that you want to return to the contract vendor instead of the asset that you brought in lease.  <b>i Note:</b> This field would appear only when Hardware Asset Management (sn_hamp) is installed.
Supported by	The person managing the contract covering the asset.
Activities	
Work notes	Work notes are updated for the following cases: <ul style="list-style-type: none"> <li>• Updates to <b>Assigned To, Managed To State, Substate,</b> and <b>Reserved</b> fields of asset. The columns for these fields are audited by default and any updates is recorded in the work notes.</li> <li>• Work notes for hardware and software assets are updated when the asset is received by a purchase order and transfer order. These work notes help in tracking the life cycle of the asset.</li> </ul>
Audit	
Audit number	Audit number of the asset.
Audit type	Type of audit that was carried out on the asset.
Last audit date	The date on which the last audit was done.
Last audit state	State of the last audit.
Audited by	The person who performed the last audit.
Mobile	

Field	Description
<p>The Mobile section is available only for the Mobile Device model category.</p> <p><b>Note:</b> This section appears only when Hardware Asset Management (sn_hamp) is installed.</p>	
Carrier	Name of the carrier company.
Ownership	Ownership of the asset. The available values are: <ul style="list-style-type: none"> <li>• Employee</li> <li>• Corporate</li> </ul>
IMEI	Unique number for tracking the mobile device.
Pre-enrollment ID	The user who conducted the last audit.
MAC Address	MAC address of the mobile device.
Enrollment ID	User conducting the current audit.
Phone number	The phone number associated with the mobile device.
Enrollment name	Name of the mobile device enrollment.
Platform	Platform of the mobile device. The available options are: <ul style="list-style-type: none"> <li>• Android</li> <li>• iOS</li> <li>• Windows</li> <li>• ChromeOS</li> <li>• Other</li> </ul>
Enrollment state	Current enrollment state of the device. The available options are: <ul style="list-style-type: none"> <li>• Enrolled</li> <li>• Unenrolled</li> <li>• Expired</li> <li>• Pending enrollment</li> <li>• Pending unenrollment</li> </ul>
Purchased	The date on which the mobile device was purchased.
Enrollment date	Initial enrollment date.
Upgrade eligible date	The date on which the mobile device is eligible for an upgrade.
Last enrolled	Date of last enrollment.

Field	Description
Service contract	Contract number associated with the mobile device.
Device activated	<p>Activation status of the mobile device. The available options are:</p> <ul style="list-style-type: none"> <li>• Yes- The mobile device is activated.</li> <li>• No- The mobile device isn't activated.</li> </ul>
<p>DaaS</p> <p><b>i Note:</b> This section appears only when Hardware Asset Management for DaaS application (com.sn_daas_ham) is installed.</p>	
DaaS asset	Option for selecting the asset as a DaaS asset.
DaaS account	The account to which the DaaS asset is associated to.
Related links	
Calculate Depreciation	Select to calculate the depreciation amount and residual value.
Delete Assets Only	Select to delete the assets and not the associated CI.
Related lists	
Assets	Assets that 's related to the asset you created.
Expense lines	Expense line associated with the asset.
RMA	Return Merchandise Authorization associated with the asset.

### Consumable model fields

Consumable Models form and related list field descriptions.

#### Consumables section

Field	Description
Display name	Name of the model that is dependant on name of the asset and the manufacturer.
Model category	Model category of the asset. The type of category depends if the asset is linked to a CI.
State	Current state of the asset.
Substate	Current substate of the asset.
Stockroom	Name of the stockroom where the asset is located if the asset is in stock.
Quantity	Number of assets.

## Vendor Catalog Item related list

Field	Description
Name	Display name of the vendor catalog item.
Vendor	Name of the product vendor.
Product Model	Product model associated with the vendor catalog item.
Out of Stock	Option that indicates if the product is out of stock.
Application	Application that contains the product record.
Product ID	Manufacturer product ID.
List Price	List price of the product before any discounts are applied.
Vendor Price	Vendor price of the product.
Rank tier	Vendor rank tier.
Short Description	Description of the product.
General	
Product Catalog Item	Product catalog item that was created when the item was published.
UPC	Universal Product Code (UPC) of the product.
Description	Description of the product.
Picture	Picture of the product.
Active	Option that indicates if the product is active or not.
Information	
Specifications	Product specifications that come from the vendor.
Features	Product features that come from the vendor.

## Consumable Model Lifecycles related list

Field	Description
Model	Name of the model.
Lifecycle type	Type of lifecycle. <ul style="list-style-type: none"> <li>• <b>Internal</b></li> <li>• <b>Publisher</b></li> </ul>
Lifecycle phase	Phase of the lifecycle. <ul style="list-style-type: none"> <li>• <b>General Availability</b></li> <li>• <b>End of Sale</b></li> <li>• <b>End of Support</b></li> <li>• <b>End of Extended support</b></li> <li>• <b>End of Life</b></li> </ul>

Field	Description
Source	Source of the lifecycle of the model.
Description	Description of the lifecycle.
Phase start date	Date the lifecycle phase starts.
Phase end date	Date the lifecycle phase ends.
Risk	Risk associated with the lifecycle.
Active	Option that indicates the lifecycle of the model is active.

## Hardware model details

Find the hardware model details and related list field descriptions.

### Details

Field	Description
Display name	Display name of the model. The display name is generated from the <b>Manufacturer</b> and <b>Name</b> field.
Manufacturer	Name of the model manufacturer.
Short description	Description of the model.
Model categories	Model categories that the model can be associated with. Model categories are used to create configuration items (CIs) and assets.
Asset tracking strategy	Asset tracking for the model.
Useful life (months)	Number of months that the hardware model can be used for.
Asset tracking unit	Unit that is used to measure the asset.
Acquisition method	Method the assets or CIs were procured.
Cost	Cost of the an individual model.
Depreciation	Depreciation scheme of the model.
Salvage value	An estimate of the residual value of the model.
Name	Name of the model.
Model number	The number that identifies the model. This number can be defined internally or by the manufacturer of the model.
Barcode	Bar code that identifies the model.
Owner	The person responsible for the model.
Status	Status of the hardware model, which is being inherited from the product model.  This field is hidden when you've opted in for the Common Service Data Model (CSDM).

Field	Description
Life Cycle Stage	<p>Stage in the overall life cycle of hardware assets and CIs as related to their products.</p> <p>This field appears only when you've opted in for the Common Service Data Model (CSDM).</p>
Life Cycle Stage Status	<p>Status in the overall life cycle of hardware assets and CIs as related to their products.</p> <p>This field appears only when you've opted in for Common Service Data Model (CSDM).</p>
Expenditure type	Type of expenditure.
Certified	Option that indicates if a model is certified for use.
Calculated lifecycle template	Applied template to calculate life cycle dates.
Calculated lifecycle start date	Date to apply the template and derive the final dates for each phase defined in the template.
TCO benchmark cost	Benchmark cost of the asset model.
TCO benchmark threshold	<p>The threshold value of your asset model cost identifying that the asset is reaching the TCO benchmark cost value.</p> <p>The benchmark threshold is set to 75% of the TCO benchmark cost by default.</p> <p>For example, if you set the TCO benchmark cost of an asset model as \$1000, the TCO benchmark threshold is set to \$750 automatically.</p> <p>Use the system property <code>sn_itam_common.asset_tco_benchmark_threshold_percentage</code> to update the threshold percentage.</p>
Hazardous materials	Option to indicate if your asset model contains hazardous materials.
Comments	Comments about the model.
Normalization	
Normalized manufacturer	Normalized name of the model manufacturer.
Product	Normalized name of the product.
Model	Normalized name of the model.
Normalization status	Normalization status of the model.
Device type	Type of device.

Field	Description
Exclude from content service	Option indicating whether the normalization information is excluded from the content service.
<b>Dimensions</b>	
Height	Height of the model populated from the content service.
Width	Width of the model populated from the content service.
Depth	Depth of the model populated from the content service.
Electrical Specifications	Electrical specifications of the model (such as voltages and frequencies) populated from the content service.
Weight	Weight of the model populated from the content service.
<b>Environmental Social Governance (ESG)</b>	
Energy star	Energy Star certified status of the model populated from content service.
EPEAT compliant	Electronic Product Environmental Assessment (EPEAT) compliant status of the model populated from the content service.
EPEAT level	EPEAT level (Gold, Silver, or Bronze) of the model populated from the content service.
<b>Additional Details</b>	
Manufacturer warranty	Manufacturer warranty terms of the model populated from content service.
Features	Product overview, specifications, or attributes of the model populated by the content service.
Information	
Power (watts)	Power requirement of the model in watts.
Height (U)	Height of the model in rack units.
Flow Rate (cfm)	Flow rate of the model in cubic feet per minute.
Sound Power (bels)	Sound power of the model in bels.
Weight (lbs)	Weight of the model in lbs.
Expected lifetime CO2e	Consumed Carbon dioxide equivalent (CO <sub>2</sub> e) over the life of the model.
Energy use	Energy consumed by this model.
Energy Star	Requirements to be Energy Star certified by the Environmental Protection Agency (EPA).
Product Catalog	
Catalog Item	Name of the catalog item.
Description	Description of the catalog item.

## Compatibles

Field	Description
Model	Name of the hardware model.
Model	Name of the hardware model that is compatible with the hardware model record.

## Substitutes

Field	Description
Model	Name of the hardware model.
Substitute	Name of the hardware model that can be substituted for the hardware model.
Domain	Domain of the hardware model record.

## Assets

For information about the fields on the Assets tab, see [Create assets](#).

## Configuration Items

Field	Description
Name	Name of the CI. This name is often the Domain Name System (DNS) or computer host name.
Manufacturer	Name of the manufacturer.
Location	Location of the manufacturer.
Description	Description of the CI.
Class	Type of asset class.

## Model Components

Field	Description
Is main component	Option for indicating if this component is the one that other components are attached to.
Component	Model that the child component will be instantiated as when the asset is created.
Model category of component	Model category that the child component will be instantiated as when the asset is created.
Component parameter	Component parameter requirement. <ul style="list-style-type: none"> <li>• <b>Mandatory</b></li> <li>• <b>Optional</b></li> </ul>
Main component	Name of the bundle if the model is an abstract model.

Field	Description
	<p><b>Note:</b> This field is only used if an abstract model has been defined.</p>

## Vendor Catalog Items

Field	Description
Name	Name of the vendor catalog item.
Product ID	The item identification number assigned by your organization.
Short Description	A brief description of the item.
Vendor Price	The price at which the item is available in the vendor catalog. If the vendor offers a discount, the vendor price reflects the discounted price.
Rank Tier	<p>Displays the overall ranking for products and services of this vendor, such as Valued Partner or Tactical Supplier.</p> <p>Rank tier expresses the opinion of your organization of the vendor performance. It can be used to decide if the vendor's products should be promoted or discontinued. Users with the vendor_manager role can edit this field.</p>

## Hardware Model Lifecycles

Field	Description
Model	Name of the hardware model.
Lifecycle type	Type of life cycle.
Lifecycle phase	<p>Phase of the life cycle.</p> <ul style="list-style-type: none"> <li>• <b>General Availability</b></li> <li>• <b>End of Sale</b></li> <li>• <b>End of Support</b></li> <li>• <b>End of Extended Support</b></li> <li>• <b>End of Life</b></li> </ul>
Source	Source of the hardware model.
Phase start date	Start date of the life cycle phase.
Phase end date	End date of the life cycle phase.
Risk	Risk associated with the life cycle.

Field	Description
Active	Option that indicates if the hardware model life cycle is active.
Description	Description of the hardware model.

### Hardware disposal order stages

A hardware disposal order goes through various stages in the disposal process before it's completed. With each stage, the task that's associated with that stage changes too.

Closing a task in the hardware disposal process completes that task and automatically creates the next task in the process. For example, after you close the Schedule Pickup task, the state for that task changes to Closed Complete and the next task, Asset Departure, is created. This process continues until you close all the tasks required for disposing of the selected assets. After you close all the tasks, the disposal order is completed.

#### Hardware disposal order stages

Hardware disposal stages	Task	Description
Draft	Verify Assets	Hardware disposal record is created.
Scheduling	Schedule Pickup	Scheduling details for the hardware asset disposal order.
Transit	Asset Departure	Verified assets are ready for departure.
Confirmation	Vendor Confirmation	Hardware disposal order is confirmed by the vendor.
Documentation	Disposal Documentation	Documentation for the disposal record is attached.
Completed	None	Hardware disposal record request is completed.
Cancelled	None	Disposal order can be canceled only until the transit stage.

### Components installed with Hardware Model Normalization

Several types of components are installed with activation of the Hardware Model Normalization plugin, including tables.

**Note:** To view all other components that are installed with this application, see the Application Files table. For instructions on how to access this table, see [Find components installed with an application](#).

#### Tables installed

Table	Description
Device Type	Type of the device, such as computer, printer, or monitor.
Hardware Lifecycle Definition	Lifecycle phase of a hardware or consumable model and the associated dates.

Table	Description
Hardware Manufacturer	Name of the hardware manufacturer.
Hardware Model Library	Name of the product and model number.
Hardware Normalization Map	Hardware product and hardware product model IDs.
Hardware Product	Name of the product and type of device, such as Apple Mac or Lenovo Printer.

### HAM Success Goal Details

Fields on the HAM Success Goal Details form help you create success goals for tracking the success of the Hardware Asset Management application in your instance.

#### HAM Success Goal Details form

Field	Description
Number	A unique identifier of the success goal.
Status	Status of the success goal. By default, the success goal is in draft status.
Title	The title for the success goal.
Category	The category the success goal belongs to. Choose from the following options: <ul style="list-style-type: none"> <li>Automation</li> <li>Inventory Improvement</li> <li>Loss Reduction</li> <li>Normalization</li> <li>Process Improvement</li> <li>Vendor/Contract Negotiation</li> </ul>
Vendor	Vendor or publisher associated to the success goal.
Goal Type	Defines the metrics of your goal. <ul style="list-style-type: none"> <li>Savings</li> <li>Count</li> </ul>
Goal Description	A detailed explanation of the success goal.
Group	The group the goal is to be assigned to.
Owner	The user from the assigned group the goal is assigned to.
Projected Start Date	The projected start date for the success goal.
Projected End Date	The projected end date for the success goal.
Actual Start Date	The actual start date of the success goal.

### HAM Success Goal Details form (continued)

Field	Description
Actual End Date	The actual end date of the success goal.
Projected Savings	Anticipated savings from the success goal.  This field appears only when <b>Goal Type</b> is selected as <b>Savings</b> .
Actual Savings	The actual savings from the success goal.  This field appears only when <b>Goal Type</b> is selected as <b>Savings</b> .
Projected Count	Anticipated count from the success goal.  This field appears only when <b>Goal Type</b> is set to <b>Count</b> .
Actual Count	The actual count from the success goal.  This field appears only when <b>Goal Type</b> is set to <b>Count</b> .
Achievement Description	A description of how the success goal was achieved.

### HAM Success Activity

Fields on the HAM Success Activity form help you create success activities to track the success of your created goals.

#### HAM Success Activity form

Field	Description
Number	A unique identifier of the success activity.
Success Goal	The success goal that the activity is being associated to.
State	The current state of the success activity.  Choose from the following options: <ul style="list-style-type: none"> <li>• Open</li> <li>• Pending</li> <li>• Work in progress</li> <li>• Closed Complete</li> <li>• Closed Incomplete</li> <li>• Closed Skipped</li> </ul>
Assignment group	The group this activity is assigned to.
Assigned to	A particular person in the assigned group.

### HAM Success Activity form (continued)

Field	Description
Short description	A short description of the success activity.
Description	A detailed description of the success activity.
Work notes	Notes relating to the success activity.

### Maturity item details

Fields on the Maturity item details form help you view and update the state and success goal of the maturity item.

#### Maturity item details

Field	Description
Name	Name of the maturity item.
Type	Type of the maturity item. <ul style="list-style-type: none"> <li>• Process</li> <li>• End user</li> </ul>
Short description	A brief summary of the maturity item.
Success goal	Success goal associated to the maturity item. For more information about creating a success goal, see <a href="#">Create a success goal for Hardware Asset Management</a> .
State	Current stage of the maturity item. <ul style="list-style-type: none"> <li>• New</li> <li>• Work in Progress</li> <li>• Closed Complete</li> <li>• Closed Skipped</li> </ul>
Maturity level	Current maturity level. <ul style="list-style-type: none"> <li>• Crawl</li> <li>• Walk</li> <li>• Run</li> </ul>
Suggested maturity level	Suggested maturity level for improved value return of your HAM application. <ul style="list-style-type: none"> <li>• Crawl</li> <li>• Walk</li> <li>• Run</li> </ul>
Start date	The start date of the maturity item.

**Maturity item details (continued)**

Field	Description
Completed date	Completed date of the maturity item.
Purpose	Description of the purpose and outcome for the maturity item.
Steps to complete	List of steps of how to accomplish the purpose of the maturity item.
Work notes	Notes about the maturity item, which are visible to all users within your organization.

**Maturity stages of your Hardware Asset Management program**

The maturity of your Hardware Asset Management (HAM) program is divided into three stages such as Crawl, Walk, and Run.

**Maturity stages**

Stage	Description
Crawl	Begin your HAM journey, such as implementing or developing a new HAM program. At this stage, you can define models, create stockrooms, identify tools to discover data, and establish processes and roles. You can set up a normalization process to normalize models and get the date or time of asset lifecycles.
Walk	Begin establishing processes, procedures, policies, resources, and tools to execute on the roadmap of the Hardware Asset Management program. You can automate the manual processes and procedures, which you’ve established during the Crawl stage. Move to automating more complex processes by using HAM workflow.
Run	At this stage, you establish and use mature, advanced, and automated processes and procedures for centralized hardware asset tracking and system management. You use advanced capabilities like zero-touch refresh, asset bundles, mobile classes, and contract renewal workflows. You must also be evaluating processes and establishing HAM goals regularly.

**Task closures that create shipment records**

A shipment record is created automatically when any shipment task is closed. You can track a shipment easily by specifying a tracking number and shipping carrier on the shipment task.

Sources of shipments

Source flow	Task source for shipment record creation	Source for updating the shipment record to Closed or Delivered
Asset Donation	The Select the assets departing for donation task is closed.	The Confirmation from charity organization task is closed.
Asset disposal	The Asset departure task is closed.	<p>The Vendor confirmation task is closed.</p> <p><b>i Note:</b> You can change the tracking number until this task is closed. If you don't specify any tracking number, a shipment record is created with the Vendor order ID as the tracking number.</p>
Purchase order	<ul style="list-style-type: none"> <li>• <b>Create hardware assets prior to delivery:</b> When the hardware asset records are automatically created.</li> <li>• <b>Advanced shipment notification:</b> When the assets are imported for every unique tracking number specified in the import file.</li> </ul> <p><b>i Note:</b></p> <p>If the shipping carrier specified for a row in the import file isn't available in the Shipping carrier [sn_itam_shipping_carrier] table, then that row isn't imported. Also, no shipment record is created. You must do one of the following and reimport the file:</p> <ul style="list-style-type: none"> <li>○ The shipping carrier must be included in the Shipping Carriers list. For more details, see <a href="#">Create a shipping carrier record</a>.</li> <li>○ The value of the sn_hamp.enable_shipping_carrier_validation_asn system property must be set to <b>false</b>.</li> </ul>	The purchase order is received.

Sources of shipments (continued)

Source flow	Task source for shipment record creation	Source for updating the shipment record to Closed or Delivered
	<ul style="list-style-type: none"> <li>• <b>Receive an asset:</b> When the assets are received.</li> </ul> <p><b>Note:</b> The shipment record is created in the Delivered stage.</p>	
Transfer order	The Ship task of the Transfer order line item is closed.	<p>The transfer order line item is delivered.</p> <p><b>Note:</b> You can change the tracking number until the Transfer order line item is in the In Transit stage.</p>
Lease expiration	The Ship task of the Return lease action is closed.	Return confirmation task is closed.
Return Merchandise Authorization (RMA)	<ol style="list-style-type: none"> <li>1. The Shipment task of the Off-site return action is closed.</li> <li>2. The Vendor RMA decision task is closed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Vendor RMA decision task is closed.</li> <li>2. The Receive task is closed.</li> </ol>
Asset reclamation	The Schedule shipment task for the Ship reclaim method is closed.	The Receive asset task is closed.
Zero Touch Refresh	The Request shipment task is closed.	The User asset receive task is closed.

Remote task definition inbound and outbound fields

The inbound and outbound fields of the remote task definition required for the Zero Touch Refresh flow.

Inbound field values

For each field, the source table and target table are the Zero Touch Refresh Fulfillment Request table [sn\_itam\_ztr\_fulfillment\_req].

The **Target field** value is the same as the **Source field** value. The value in the source field is sent from the source table on the requester's ServiceNow instance to the target field in the table on the provider's instance to which the source field is synced.

The **Sync when** value is **Insert**, which updates the target field on the remote task's parent record only when the remote task is initially inserted.

### Inbound fields

Field label	Field name	Max length	Source field
Customer request number	customer_request_number	40	Customer request number
Model	model	255	Model
State	state	40	State
Name	name	151	Name
Email	email	100	Email
Mobile	mobile	40	Mobile
Street	street	255	Street (street)
City	city	40	City (city)
State or Province	state_loc	40	State/Province (state_loc)
Country	country	40	Country (country)
Zip or Postal code	zip	40	Zip/Postal code
Return name	return_name	151	Name (return_name)
Return street	return_street	255	Street (return_street)
Return city	return_city	40	City (return_city)
Return state or province	return_state_loc	40	State/Province (return_state_loc)
Return country	return_country	40	Country (return_country)
Return zip or postal code	return_zip	40	Zip/Postal code (return_zip)

### Outbound field values

For each field, the source table and target table are Zero Touch Refresh Fulfillment Request table [sn\_itam\_ztr\_fulfillment\_req].

The **Target field** value is the same as the **Source field** value. The value in the Source field is sent from the source table on the provider's ServiceNow instance to the target field on the table on the requester's instance to which the source field is synced.

The **Sync when** value is **Insert and Update**, which updates the target field on the remote task's parent record every time the remote task is updated.

### Outbound fields

Field label	Field name	Max length	Source field
Serial number	serial_number	100	Serial number
Asset tag	asset_tag	40	Asset tag
State	state	40	State
Tracking number	tracking_number	40	Tracking number (tracking_number)
Carrier	carrier	80	Carrier (carrier)
Return tracking number	return_tracking_number	40	Tracking number (return_tracking_number)
Return carrier	return_carrier	80	(return_carrier)

### Decision tables for Hardware Asset Management flows

These readily available decision tables help you customize the flows in some of the Hardware Asset Management features.

#### Decision tables

Hardware Asset Management features	Decision tables
Hardware Asset Refresh	Hardware Asset Refresh Line Flow
Lease Contract Expiration	Lease Contract Expiration Flow
Leased Asset Buyout	Leased Asset Buyout Flow
Leased Asset Extension	Leased Asset Extension Flow
Leased Asset Return	Leased Asset Return Flow
Loaner Asset Request	Loaner Asset Request Flow
Source request from local stockroom	Asset Local Order Subflow  <b>Note:</b> The Asset Local Order Subflow decision table is available with both Hardware Asset Management and Procurement plugins.
Reclamation	Asset Reclamation Flow
Hardware reclamation flow	Hardware Asset Reclamation Flow, Hardware Asset Reclamation Line Flow
RMA request	Asset RMA Flow
RMA on-site repair	Asset RMA On-site Flow
RMA off-site repair	Asset RMA Off-site Flow
Contract renewal request	Contract Renewal Flow
Contract renewal tasks	Contract Renewal Tasks Flow

## Service Catalog variable form fields

Fields on the variable help you to define variables for a catalog item.

Field	Description
Application	Read-only field that indicates the application can use this variable.
Type	The variable type that you want to create.
Catalog item	Catalog item associated with the variable.
Order	Order in which the variable is placed on the catalog item page. The variables are organized with lowest order value on the top and greatest order value at the bottom.
Active	Option to make the variable available for use.
Mandatory	Option to mark the variable as required to order the catalog item.
Read only	Option to make the variable read only.
Hidden	Option to hide the variable.
Question tab	
Question	Question to ask when ordering the catalog item.
Name	Name to identify the question.  <b>Note:</b> If this field is empty, its value is auto-populated based on the <b>Question</b> field.
Tooltip	Tooltip text to display when you hover over the variable. Enter a brief note to describe the purpose of the Question.
Example text	Hint that is displayed in the question field before you enters a value. Applicable for the following variables: <ul style="list-style-type: none"> <li>• IP Address</li> <li>• Email</li> <li>• URL</li> <li>• Single Line Text</li> <li>• Wide Single Line Text</li> <li>• Multi Line Text</li> <li>• Date</li> <li>• Date/Time</li> </ul>
Annotation	
Show help	Option to provide additional help and instructions for the variable.
Help tag	Tag to display the Help text. For example, "More information."
Help text	Help information for a service catalog variable.

Field	Description
Instructions	Information that requires rich text formatting or adding images to support help information.
<p>Type specifications</p> <p>The fields in this section vary for each variable type.</p>	
Variable Width	Width of the variable on the catalog item page, to specify what percentage of the screen size that it can span.
Enable also request for	Option to allow a catalog item request to be submitted for multiple users. After you select this option, the <b>Also request for Requested For</b> variable in a catalog item.
Roles to use also request for	Option to specify the roles that can submit a catalog item request for multiple users.
Choice direction	<p>The direction in which the list is arranged.</p> <ul style="list-style-type: none"> <li>• <b>Across:</b> Arranges choices horizontally.</li> <li>• <b>Down:</b> Arranges choices vertically.</li> </ul> <p>This field appears for lookup multiple choice variables.</p>
Choice field	<p>Table field to populate options for the variable. If no choices are defined for a field, then the variable loads field-related distinct values from the table.</p> <p>This field appears for select box variables.</p>
Choice table	<p>Table with values to populate in the <b>Choice field</b>.</p> <p>This field appears for select box variables.</p>
Don't select the first choice	<p>Check box to leave all options for the variable cleared on the catalog item page.</p> <p>If this check box is selected, the first choice for the variable selected by default. This field appears for multiple choice and numeric scale variables.</p>
Dynamic ref qual	<p>Dynamic qualifier. Select a dynamic filter to run a query against the reference field.</p> <p>This field appears for reference variables when <b>Use reference qualifier</b> is set to <b>Dynamic</b>.</p>
Include none	<p>Check box to include the <b>None</b> option in a list of choices.</p> <p>This field appears for lookup multiple choice, lookup select box, multiple choice, and select box variables.</p>
Layout	<p>Layout for a container.</p> <p>This field appears for container start variables.</p>
List table	<p>Table with the values for the list collector.</p> <p>The table should have a display column specified. For more This field appears for list collector variables.</p>

Field	Description
Lookup from table	Table from which values are obtained for users to select. The values from this table are populated in the Lookup value field.  This field appears for lookup multiple choice and lookup select box variables.
Lookup value field	Field in the lookup table that populates options for the variable.  This field appears for lookup multiple choice and lookup select box variables.
Lookup label field(s)	Comma-separated list of fields in the lookup table whose values are used to display options.  This field appears for lookup multiple choice and lookup select box variables.
Lookup price field	Field in the lookup table whose value is used to modify the price of the item being ordered.  This field appears for lookup multiple choice and lookup select box variables.
Lookup recurring price field	Field in the lookup table whose value is used to modify the recurring price of the item being ordered.  This field appears for lookup multiple choice and lookup select box variables.
Macro	UI macro to insert into the catalog item.  This field appears for macro, macro with label, and UI page variables.
Summary macro	Applicable only for Macro, and Macro with Label type variables.
Widget	Applicable only for Marco, and Macro with Label type variables.
Price if checked	Price of the item.  This field appears for check box variables.
Recurring price if checked	Price that increments for the item when you request more than one order of the item.  This field appears for check box variables.
Reference	Reference table for the variable. The table should have a display column specified.  This field appears for reference variables.
Reference qual	Qualifiers to restrict data that is available in the field. Supports reference qualifiers and advance qualifiers.  This field appears for list collector, lookup multiple choice, lookup select box, reference, and Requested For variables. The field also appears for reference variables when <b>Use reference qualifier</b> is set to <b>Dynamic</b> .
Reference qualifier condition	Options to build conditions.  This field appears for reference variables when <b>Use reference qualifier</b> is set to <b>Simple</b> .

Field	Description
Scale max	Highest value on the scale of available options for the variable. This field appears for numeric scale variables.
Scale min	Lowest value on the scale of available options for the variable. This field appears for numeric scale variables.
Unique values only	Check box to require a unique value for the field. When this check box is selected, two records can't have the same value for that field. This field appears for lookup multiple choice, lookup select box, and select box variables.
Use confirmation	Check box to prompt users to reenter data to verify their entries. This field appears for masked variables.
Use encryption	Check box to store the answer in encrypted format in the database. If not encrypted, the answer is stored in plain text format. This field appears for masked variables.
Use reference qualifier	Type of qualifier to use. This field appears for reference variables.
Validation Regex	Regular expression that validates the variable value. This field is displayed only for Single Line Text and Wide Single Line Text variable types.
Variable attributes	Attributes that define the behavior and restrictions for a variable.
Default value	
Default value	Default value for the variable.
Auto-populate	
Dependent question	Reference type variable for the catalog item. This field is used to auto-populate the variable.
Reference	Reference field for auto-populating the variable.
<p>Permission</p> <p>If no role is specified in this tab for the read, write, or create actions, all users who can access the catalog item can perform these actions irrespective of their role.</p> <p>A user with a role that doesn't match any of the following roles can't set variable values even through scripting.</p> <p>These roles aren't available for Label, Break, Container Split, Container End, Macro, Macro with Label, and UI Page variables.</p>	

Field	Description
Read roles	Roles that can view the variable before or after requesting the catalog item or record producer. Only a user with the roles specified in this field can view the variable.
Write roles	Roles that can edit the variable in the variable editor after requesting the catalog item. If a user doesn't have the roles specified in this field, the variable is read-only in the variable editor.
Create roles	Roles that can create values for the variable before requesting the catalog item or record producer. If a user doesn't have the specified role, the variable is read only before requesting the catalog item or record producer.
Availability	
Visible Elsewhere	If selected, the variable appears on the item form before ordering the item, in the Variable Editor after ordering the item, and in the cart view of the item.
Visible on Bundles	If selected, the variable appears when the item is added to a bundle.
Visible on Guides	If selected, the variable appears when it's added to an order guide, or when it's added to a catalog item that is included in the order guide.  <b>Note:</b> If an order guide has too many items and variables, consider clearing this check box on as many items as possible, to improve loading performance on order guides.
Visible on Summaries	If selected, the variable appears on any variable summarizer of the catalog item.

### Asset put away task fields

Fields on the Asset put away task form help you create a put away task for the in stock assets.

#### Create New Asset put away task form

Field	Description
Number	Task number. This field is automatically set.
State	Current state of the Asset put away task. When a new task is created, this field is automatically set to <b>Open</b> .
Asset	Asset for which the put away task is created. All the in stock assets are listed.
Task name	Name of the task. This field value is automatically set to <b>Put away</b> .
Stockroom	Stockroom for the task. This field value is automatically populated when the asset is selected.
Assignment group	Assignment group to which you want to assign the Asset put away task.
Drop off location	Aisle and space in the stockroom where you want to put away the hardware asset. This value is required to close the Asset put away task.

### Create New Asset put away task form (continued)

Field	Description
Assigned to	Person from the assignment group who is primarily responsible for the Asset put away task.
Due date	Date by which the Asset put away task should be closed.
Notes	Notes about the task. The <b>Short description</b> and <b>Description</b> field values are automatically populated.

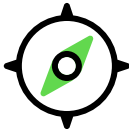


## Now Assist for Hardware Asset Management (HAM)

Use the Now Assist for Hardware Asset Management (HAM) application to streamline and automate the hardware asset request process with the agentic workflows.

Watch this short video for an introduction to agentic AI for Hardware Asset Management.

[https://player.vimeo.com/video/1096608088?h=2b114916d2&badge=0&autoplay=0&player\\_id=0&app\\_id=58479](https://player.vimeo.com/video/1096608088?h=2b114916d2&badge=0&autoplay=0&player_id=0&app_id=58479)

### Get started

<p>Explore</p>  <p>Learn more about Now Assist for HAM</p>	<p>Configure</p>  <p>Configure the Now Assist for HAM application to get started</p>	<p>Use Hardware Asset Management AI agent collection</p>  <p>Use agentic workflows in Now Assist for HAM</p>
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#### **i** Important:

- Not all model providers are available for customers with in-country SKUs, and some Now Assist products/features are currently unavailable for in-country customers. For more information, see the [KB1584492](#) article in the Now Support Knowledge Base. Be sure to check for model provider availability updates in future releases.
- Some Now Assist products/features are currently unavailable for customers in the FedRAMP, NSC DOD IL5, or Australia IRAP-Protected data centers, self-hosted customers, or in other restricted environments. For more information, see the [KB0743854](#) article in the Now Support Knowledge Base. Be sure to check for availability updates in future releases.
- Some Now Assist products/features are currently available only for customers in some regions. Be sure to check for availability updates in future releases.
- Some AI products and skills are not available in Regulated Markets. For more information, see [KB2593939: Regulated Markets AI Products/Skills Not Available](#). Be sure to check for availability updates in future releases.

## Troubleshoot and get help

- [ServiceNow Community on AI and Intelligence](#) ↗
- [Search the Known Error Portal for known error articles](#) ↗
- [Contact Customer Service and Support](#) ↗

### AI limitations

This application uses artificial intelligence (AI) and machine learning, which are rapidly evolving fields of study that generate predictions based on patterns in data. As a result, this application may not always produce accurate, complete, or appropriate information. Further, there is no guarantee that this application has been fully trained or tested for your use case. To mitigate these issues, it is your responsibility to test and evaluate your use of this application for accuracy, harm, and appropriateness for your use case, employ human oversight of output, and refrain from relying solely on AI-generated outputs for decision-making purposes. This is especially important if you choose to deploy this application in areas with consequential impacts such as healthcare, finance, legal, employment, security, or infrastructure. You agree to abide by [ServiceNow's AI Acceptable Use Policy](#) ↗, which may be updated by ServiceNow.

### Data processing

This application requires data to be transferred from ServiceNow customers' individual instances to a centralized ServiceNow environment, which may be located in a different data center region from the one where your instance is, and potentially to a third-party cloud provider, such as Microsoft Azure. This data is handled per ServiceNow's internal policies and procedures, including our policies available through our [CORE Compliance Portal](#) ↗.

### Data collection

ServiceNow collects and uses the inputs, outputs, and edits to outputs of this application to develop and improve ServiceNow technologies including ServiceNow models and AI products. In addition, this application will collect information about legal request and/or legal matter (including related field information, comments, and work notes). Customers can opt out of future data collection at any time, as described in the [Now Assist Opt-Out page](#) ↗.

For more information, see the [Now Assist documentation](#) ↗.

## Exploring Now Assist for Hardware Asset Management (HAM)

The Now Assist for Hardware Asset Management (HAM) application includes an agentic workflow driven by AI agents that can manage hardware asset requests autonomously. This automation helps asset managers skip manual tasks, enhancing their productivity and efficiency.

### Now Assist for HAM overview

The agentic workflow in the Now Assist for HAM application operates in a structured manner. It first verifies licenses and models, then checks stock availability, and finally triggers the necessary AI agents to fulfill hardware asset requests automatically.

### Now Assist for HAM benefits

The collection of AI agents included in the Now Assist for HAM application offers the following benefits:

- Automation of repetitive and complex tasks involved in sourcing hardware assets, reducing the workload on asset managers.
- Reduced need for human involvement in tasks, enabling asset managers to focus on activities of higher priority.
- Faster resolution of hardware asset requests, leading to quicker turnaround times.
- Increased employee satisfaction, with quicker resolution of asset requests.
- Improved asset utilization, for effective allocation of hardware assets.

## Supporting information for Now Assist for Hardware Asset Management (HAM)

Get a quick overview of the important information related to the Now Assist for Hardware Asset Management (HAM) application.

### Supported versions

The Now Assist for HAM application is supported starting with the Xanadu Patch 9 release.

### Supported user interfaces

You can access the agentic workflow included in the Now Assist for HAM application through the Now Assist panel in the Hardware Asset Workspace.

### Licensing requirements

The Now Assist for HAM application requires a Hardware Asset Management Pro Plus license.

### Application information

Activate the Now Assist for Hardware Asset Management (HAM) store application (sn\_now\_assist\_ham) to use the agentic workflow.

This store application has the following dependencies:

- Hardware Asset Management (com.sn\_hamp)
- Now Assist for Platform (com.sn\_genai\_platform)
- AI Agents for IT Asset Management (com.sn\_itam\_aia)

Activate the applications in the following order:

- Hardware Asset Management (com.sn\_hamp)
- Now Assist for Platform (com.sn\_genai\_platform)
- AI Agents for IT Asset Management (com.sn\_itam\_aia)
- Now Assist for Hardware Asset Management (HAM) (sn\_now\_assist\_ham)

## Configuring Now Assist for Hardware Asset Management (HAM)

Configure the Now Assist for Hardware Asset Management (HAM) application to use the agentic workflow capabilities for managing your hardware asset requests autonomously.


### Install Now Assist for Hardware Asset Management (HAM)

If you have the admin role, you can install the Now Assist for Hardware Asset Management (HAM) application. Now Assist for HAM enables asset managers and procurement users to use the capabilities of agentic workflows in Hardware Asset Management.

### Before you begin

Role required: admin

### Procedure

1. Go to the [ServiceNow Store](#) .
2. In the search bar, enter Now Assist for Hardware Asset Management (HAM) and then select **Search**.
3. Select the Now Assist for Hardware Asset Management (HAM) widget and then select **Get** to make this application available for installation on your ServiceNow instance.

4. On your ServiceNow instance, navigate to **All > System Definitions > Plugins**.
5. Search for the Now Assist for Hardware Asset Management (HAM) application.
6. Select **Install**.

**Result**

The agentic workflow and the AI agents included in the Now Assist for Hardware Asset Management (HAM) application are installed on your ServiceNow instance.

**What to do next**

1. Enable the Now Assist panel to access the AI agents. For details, see [Turn on the Now Assist panel](#).
2. Activate the AI Search application on your ServiceNow instance enabling the AI agents to search and get related records.
  - a. Navigate to **All > AI Search > AI Search Status**.
  - b. Trigger the automatic AI Search activation process on your ServiceNow instance by selecting **Request AI Search**.

**Note:** The activation process can take up to 24 hours.

**Using agentic workflows in Now Assist for HAM**


Use the Now Assist for HAM AI agent collection to complete hardware asset sourcing tasks autonomously, leading to faster resolution of hardware asset requests and increased productivity for asset managers.


**Available agentic workflows for Now Assist for Hardware Asset Management (HAM) AI agent collection**

Agentic workflow name	Description	Available AI agents
Help manage hardware asset requests	Automatically fulfills hardware asset requests by either using the available local stock, or by generating transfer orders to move assets from other stockrooms, or purchase orders to acquire assets from vendors.	<ul style="list-style-type: none"> <li>• Hardware asset management sourcing AI agent</li> <li>• Transfer order creation AI agent</li> <li>• Purchase order creation AI agent</li> </ul>



**i Important:** By default, all agentic workflows and AI agent records are inactive. To use the agentic workflows and AI agents, follow these steps:

- Activate the agentic workflow.
- Activate all agents within the agentic workflow.
- Activate the trigger to invoke the agentic workflow automatically. If you prefer to invoke it manually, activating the trigger isn't necessary.

By default, all agentic workflows and AI agent records are read only. To customize them, you must first [duplicate the agentic workflow](#) , and then activate the duplicated workflow.

After you duplicate the agentic workflow, you can test it in the AI Agent Studio to analyze its performance as it executes the instructions that you have defined. For details on testing your agentic workflow, see [Test an agentic workflow](#) .

Looking for an AI agent?

- There might be AI agents installed with the Now Assist application that are not used in agentic workflows. To learn how to see all agents that are available on your instance, see [Find AI agents](#) .
- To find agents that might not be installed on your instance, visit the [AI Agent Marketplace](#)  on the ServiceNow Store.

## Now Assist for Hardware Asset Management (HAM) AI agent collection Help manage hardware asset requests agentic workflow

Use the Help manage hardware asset requests agentic workflow, driven by AI agents, to handle your employees' hardware asset requests automatically. The AI agents fulfill requests by either consuming the available local stock, or by generating transfer orders or purchase orders.

### Help manage hardware asset requests agentic workflow overview

The AI agents in the Help manage hardware asset requests agentic workflow help to speed up request resolution, improve operational efficiency, and enhance user satisfaction. This agentic workflow processes and fulfills requests for hardware, consumables, bundles, and pallets.

**i Note:** The `itil`, the `procurement_user`, and the `now_assist_panel_user` roles have access to the Now Assist panel. The fulfiller needs the `itil` and `procurement_user` roles if you have the Now Assist for IT Service Management (ITSM) store application installed. If you have the Now Assist for Hardware Asset Management (HAM) store application but not the Now Assist for IT Service Management (ITSM) store application, then the fulfiller requires the `itil`, `procurement_user`, and `now_assist_panel_user` roles to fulfill the request via the Now Assist panel trigger.

### Auto-sourcing scenarios

To enable AI agents to perform sourcing autonomously, the following options are available at the stockroom level:

- **Auto-consume:** Automatically use the available local stock.

Automatic consumption of local stock happens when a minimum of one stockroom serving the location of the requester has the **Auto-consume** option enabled. If several stockrooms at the location of the requester have the **Auto-consume** option enabled, assets are first consumed from the stockroom with the highest available quantity. If there are still assets needed, they're consumed from the stockroom with the next highest quantity.

- **Auto-transfer:** Automatically transfer stock from another stockroom.

Automatic transfer of assets happens under the following conditions:

- There's only one destination stockroom serving the location of the requester that has the **Auto-transfer** option enabled.
- The destination stockroom must be linked to distribution channels that serve as source stockrooms. Sourcing from these channels is based on their rank, beginning with the distribution channel having the lowest rank and moving on to the next ranks.
- The **Auto-transfer** option is enabled on both the source and destination stockrooms.

- **Auto-purchase:** Automatically create purchase orders to procure assets from a vendor.

Automatic purchase of assets happens under the following conditions:

- There's only one stockroom serving the location of the requester that has the **Auto-purchase** option enabled.
- There's only one vendor from whom the model of the requested item can be purchased.

### Requested item (RITM) validations

Before sourcing any hardware asset requests, the Help manage hardware asset requests agentic workflow validates the requested item (RITM). The agentic workflow doesn't proceed with sourcing under the following conditions:

- The RITM number is missing or invalid.
- More than one requested items have the same RITM number.
- The requested item is already sourced.
- The request isn't sourceable.
- The request isn't approved.
- The model that's requested is invalid or missing.
- The model isn't associated with any model category.
- The resource category of the requested model isn't opted in.
- The model associated with the catalog item isn't licensed.

### Stages in the agentic workflow

The fulfillment of hardware asset requests through the agentic workflow includes the following stages:

#### 1. Hardware asset request initiation

- a. An employee creates a hardware asset request in the Service Catalog application.
- b. The request is either automatically approved or, when necessary, approved by the asset manager.
- c. The requested item is assigned to a procurement user, which triggers the Help manage hardware asset requests agentic workflow.

#### 2. Asset availability checks by the AI agent

- a. The AI agent verifies whether the requested item is available in the inventory.
  - b. The AI agent also checks the stockrooms that are set up for automatic consumption of local stock, transfer, and purchase.
3. Asset sourcing and allocation
- a. When stockrooms are configured to consume, transfer, and purchase assets automatically through the AI agents, the following events occur:
    - i. The AI agent first uses the available stock in the stockroom.
    - ii. For any remaining assets that can be transferred from another stockroom, the AI agent creates a transfer order.
    - iii. If there are still assets to be sourced, the AI agent creates a purchase order to buy them from a vendor.
  - b. When assets are available in stockrooms that aren't set up for automatic sourcing, the AI agent creates a sourcing plan and asks for confirmation from the assignee of the requested item (RITM) or the person who started the conversation through the Now Assist panel before proceeding.
- Note:** To access the Now Assist panel after it has been activated, you should have the `now_assist_panel_user` role. To access the Help manage hardware asset requests agentic workflow in the Hardware Asset Workspace, select the sparkle icon (✨).

### Conversations in the Now Assist panel

RITM0010060 - Help ... + ↻ 3

Answers generated by AI. Review for accuracy.

View AI Agent Processing Steps

Hi there! I'm your Hardware asset management sourcing AI agent. I found that RITM0010060 includes a request for MacBook Pro 15" of quantity 3.

View AI Agent Processing Steps

Consume asset tasks have been created. For more details, please open RITM0010060

View AI Agent Processing Steps

I've created a plan to source the items you requested. Here's the sourcing plan:

- \* Transfer 1 items from the Sydney Warehouse to the Melbourne Warehouse

Do you wish to continue with the plan?

Sources

Ask Now Assist to... ➤

- i. If the AI agent receives the confirmation to proceed and there have been no changes to the plan, it sources the assets according to the sourcing plan.

**i Note:** If there's a change in the plan, the agentic workflow stops, and the conversation should be reinitiated through the Now Assist panel.

- ii. If the AI agent receives a confirmation not to proceed with the sourcing plan, or if there's still some quantity of assets remaining to be sourced, the agentic workflow continues as follows:

1. The AI agent first verifies whether the assets can be sourced through a transfer order or purchase order.

If the transfer is possible, the following events happen:

- a. The AI agent asks to confirm whether it can proceed with the transfer.
- b. If the AI agent receives confirmation to proceed, it asks to confirm both the source and destination stockrooms.
- c. After receiving confirmation, the AI agent creates a transfer order.


**i Note:** If there's only one stockroom available as the source or destination, it's automatically selected. The AI agent displays only the source stockrooms that have the quantity of assets to be sourced. Only the stockrooms that serve the location of the requester are shown as destination stockrooms.

2. If the AI agent receives a confirmation not to proceed with the transfer order:
  - a. The AI agent further requests confirmation to proceed with the purchase order.
  - b. If the AI agent receives confirmation to proceed, it asks to confirm the vendor and the destination stockroom.
  - c. After receiving confirmation, the AI agent creates a purchase order.

**i Note:** If there's only one stockroom or vendor available, these values are automatically selected. The AI agent displays the list of vendors for the requested item. Only the stockrooms that serve the location of the requester are shown as destination stockrooms.

3. If the user doesn't agree to either the transfer order or the purchase order, the request must be sourced manually.

Refer to the information provided here on the AI agents related to the Help manage hardware asset requests agentic workflow.

To modify the Help manage hardware asset request agentic workflow [duplicate it](#) , and adjust the settings according to your requirements.

**i Important:** In the Edit trigger form, make sure that the **Active** button is turned on to enable the AI agent to trigger autonomously.

## AI agents used in the Help manage hardware asset requests agentic workflow

The Help manage hardware asset requests agentic workflow uses specific AI agents to consume local stock, transfer assets between stockrooms, and procure assets from vendors.

### Role of AI agents the Help manage hardware asset requests agentic workflow

AI agent	AI agent role
Hardware asset management sourcing AI agent	<ul style="list-style-type: none"> <li>• The AI agent checks if the requested item is available in the stockroom. Depending on the automatic sourcing set up in the stockroom, the AI agent either uses the local stock autonomously or creates a sourcing plan and requests user confirmation to consume the assets.</li> <li>• Triggers the Transfer order creation AI agent to create transfer orders.</li> <li>• Triggers the Purchase order creation AI agent to create purchase orders.</li> </ul>
Transfer order creation AI agent	Sources the requested item by either creating a transfer order autonomously or according to the sourcing plan created by the Hardware asset management sourcing AI agent. If there are multiple source or destination stockrooms, the AI agent requests user input to create the transfer order.
Purchase order creation AI agent	Sources the requested item by either creating a purchase order autonomously or according to the sourcing plan created by the Hardware asset management sourcing AI agent. If there are multiple destination stockrooms or vendors, the AI agent requests user input to create the purchase order.

### Access the Help manage hardware asset requests agentic workflow in the AI Agent Studio

- Navigate to **All > AI Agent Studio > Create and manage**.
- Select **Help manage hardware asset requests**.

## Hardware Asset Management integration with Zero Touch Mobility

ServiceNow® Hardware Asset Management is integrated with Samsung SDS Zero Touch Mobility to manage the complete life-cycle of mobile devices.

The benefits of Hardware Asset Management integration with Zero Touch Mobility are as follows:

- Deploy, manage, and monitor mobile assets on a single platform leveraging automated workflows for day-to-day mobile device management tasks like the following:
  - Onboarding new devices
  - Unenrolling devices
  - Requesting new orders, upgrades, or replacements with self-service options
- Manage and report on the mobile device life-cycle with an integrated solution that improves visibility and collaboration across the organization.
- Optimize costs and utilization of all your mobile devices.

### Requirements and limitations

Requirements and limitations for Hardware Asset Management integration with Zero Touch Mobility solution are as follows:

- The solution is dependent on the Hardware Asset Management (sn\_hamp) application.
- Only the Mobile Device resource category is available. This resource category is opted-in automatically.

Based on the acquisition method of assets, the following resource subcategories are available for the Mobile Device:

- Bring Your Own Asset
- Corporate Asset
- Only mobile devices are licensed under this solution. You can view the subscription details using the ITAM license report. For more information, see [View the license report for the Hardware Asset Management application](#).

**i Note:** Even if Hardware Asset Management is activated explicitly on your ServiceNow instance, the mobile devices are licensed only under the Mobile Device resource category of the Hardware Asset Management integration with Zero Touch Mobility solution. For more information, see [Licensing framework for Hardware Asset Management solutions](#).

- The following Hardware Asset Management features aren't available:
  - Hardware Model Normalization
  - Content upload and download
  - Performance Analytics Dashboard
  - Asset Executive Dashboard
  - Success Portal

**i Note:** HAM Guided Setup is available. However, it isn't required to run the setup.

For more information on the Hardware Asset Management workflows and features, see [Hardware Asset Management subscription](#).

## Supported Hardware Asset Management features

The following Hardware Asset Management features are available without any restrictions:

- [Stock order](#)
- [Advanced Shipment Notification](#)
- [Standard Asset Request flow](#)
- [Shipment carrier integration](#)
- [Advanced inventory and distribution](#)
- [Asset reclamation](#)

The following Hardware Asset Management features have limited availability:

- **HAM workflows:** Non-mobile devices are excluded from the HAM workflows.
- **Lease expiration flow:** Non-mobile devices are excluded from this flow.
- **Hardware Asset Workspace:** Reports and dashboards related to normalization of assets aren't available.

**Related topics**

[Exploring Hardware Asset Management](#)

**Now Assist for Hardware Asset Management (HAM)**




Use the Now Assist for Hardware Asset Management (HAM) application to streamline and automate the hardware asset request process with the agentic workflows.

Watch this short video for an introduction to agentic AI for Hardware Asset Management.

[https://player.vimeo.com/video/1096608088?](https://player.vimeo.com/video/1096608088?h=2b114916d2&badge=0&autoplay=0&player_id=0&app_id=58479)

[h=2b114916d2&badge=0&autoplay=0&player\\_id=0&app\\_id=58479](https://player.vimeo.com/video/1096608088?h=2b114916d2&badge=0&autoplay=0&player_id=0&app_id=58479)

**Get started**

<p style="text-align: center;">Explore</p>  <p style="text-align: center;">Learn more about Now Assist for HAM</p>	<p style="text-align: center;">Configure</p>  <p style="text-align: center;">Configure the Now Assist for HAM application to get started</p>	<p style="text-align: center;">Use Hardware Asset Management AI agent collection</p>  <p style="text-align: center;">Use agentic workflows in Now Assist for HAM</p>
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**Important:**

- Not all model providers are available for customers with in-country SKUs, and some Now Assist products/features are currently unavailable for in-country customers. For more information, see the [KB1584492](#) article in the Now Support Knowledge Base. Be sure to check for model provider availability updates in future releases.
- Some Now Assist products/features are currently unavailable for customers in the FedRAMP, NSC DOD IL5, or Australia IRAP-Protected data centers, self-hosted customers, or in other restricted environments. For more information, see the [KB0743854](#) article in the Now Support Knowledge Base. Be sure to check for availability updates in future releases.
- Some Now Assist products/features are currently available only for customers in some regions. Be sure to check for availability updates in future releases.
- Some AI products and skills are not available in Regulated Markets. For more information, see [KB2593939: Regulated Markets AI Products/Skills Not Available](#). Be sure to check for availability updates in future releases.

**Troubleshoot and get help**

- [ServiceNow Community on AI and Intelligence](#)
- [Search the Known Error Portal for known error articles](#)
- [Contact Customer Service and Support](#)

### AI limitations

This application uses artificial intelligence (AI) and machine learning, which are rapidly evolving fields of study that generate predictions based on patterns in data. As a result, this application may not always produce accurate, complete, or appropriate information. Further, there is no guarantee that this application has been fully trained or tested for your use case. To mitigate these issues, it is your responsibility to test and evaluate your use of this application for accuracy, harm, and appropriateness for your use case, employ human oversight of output, and refrain from relying solely on AI-generated outputs for decision-making purposes. This is especially important if you choose to deploy this application in areas with consequential impacts such as healthcare, finance, legal, employment, security, or infrastructure. You agree to abide by [ServiceNow's AI Acceptable Use Policy](#), which may be updated by ServiceNow.

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### Data collection

ServiceNow collects and uses the inputs, outputs, and edits to outputs of this application to develop and improve ServiceNow technologies including ServiceNow models and AI products. In addition, this application will collect information about legal request and/or legal matter (including related field information, comments, and work notes). Customers can opt out of future data collection at any time, as described in the [Now Assist Opt-Out page](#).

For more information, see the [Now Assist documentation](#).

## Exploring Now Assist for Hardware Asset Management (HAM)

The Now Assist for Hardware Asset Management (HAM) application includes an agentic workflow driven by AI agents that can manage hardware asset requests autonomously. This automation helps asset managers skip manual tasks, enhancing their productivity and efficiency.

### Now Assist for HAM overview

The agentic workflow in the Now Assist for HAM application operates in a structured manner. It first verifies licenses and models, then checks stock availability, and finally triggers the necessary AI agents to fulfill hardware asset requests automatically.

### Now Assist for HAM benefits

The collection of AI agents included in the Now Assist for HAM application offers the following benefits:

- Automation of repetitive and complex tasks involved in sourcing hardware assets, reducing the workload on asset managers.
- Reduced need for human involvement in tasks, enabling asset managers to focus on activities of higher priority.
- Faster resolution of hardware asset requests, leading to quicker turnaround times.
- Increased employee satisfaction, with quicker resolution of asset requests.
- Improved asset utilization, for effective allocation of hardware assets.

### Supporting information for Now Assist for Hardware Asset Management (HAM)

Get a quick overview of the important information related to the Now Assist for Hardware Asset Management (HAM) application.

### Supported versions

The Now Assist for HAM application is supported starting with the Xanadu Patch 9 release.

## Supported user interfaces

You can access the agentic workflow included in the Now Assist for HAM application through the Now Assist panel in the Hardware Asset Workspace.

## Licensing requirements

The Now Assist for HAM application requires a Hardware Asset Management Pro Plus license.

## Application information

Activate the Now Assist for Hardware Asset Management (HAM) store application (sn\_now\_assist\_ham) to use the agentic workflow.

This store application has the following dependencies:

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## Configuring Now Assist for Hardware Asset Management (HAM)

Configure the Now Assist for Hardware Asset Management (HAM) application to use the agentic workflow capabilities for managing your hardware asset requests autonomously.


### Install Now Assist for Hardware Asset Management (HAM)

If you have the admin role, you can install the Now Assist for Hardware Asset Management (HAM) application. Now Assist for HAM enables asset managers and procurement users to use the capabilities of agentic workflows in Hardware Asset Management.

### Before you begin

Role required: admin

### Procedure

1. Go to the [ServiceNow Store](#) .
2. In the search bar, enter Now Assist for Hardware Asset Management (HAM) and then select **Search**.
3. Select the Now Assist for Hardware Asset Management (HAM) widget and then select **Get** to make this application available for installation on your ServiceNow instance.
4. On your ServiceNow instance, navigate to **All > System Definitions > Plugins**.
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6. Select **Install**.

**Result**

The agentic workflow and the AI agents included in the Now Assist for Hardware Asset Management (HAM) application are installed on your ServiceNow instance.

**What to do next**

1. Enable the Now Assist panel to access the AI agents. For details, see [Turn on the Now Assist panel](#).
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  - a. Navigate to **All > AI Search > AI Search Status**.
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**Using agentic workflows in Now Assist for HAM**

Use the Now Assist for HAM AI agent collection to complete hardware asset sourcing tasks autonomously, leading to faster resolution of hardware asset requests and increased productivity for asset managers.


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**Important:** By default, all agentic workflows and AI agent records are inactive. To use the agentic workflows and AI agents, follow these steps:

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The AI agents in the Help manage hardware asset requests agentic workflow help to speed up request resolution, improve operational efficiency, and enhance user satisfaction. This agentic workflow processes and fulfills requests for hardware, consumables, bundles, and pallets.

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To enable AI agents to perform sourcing autonomously, the following options are available at the stockroom level:

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Automatic consumption of local stock happens when a minimum of one stockroom serving the location of the requester has the **Auto-consume** option enabled. If several stockrooms at the location of the requester have the **Auto-consume** option enabled, assets are first consumed from the stockroom with the highest available quantity. If there are still assets needed, they're consumed from the stockroom with the next highest quantity.

- **Auto-transfer:** Automatically transfer stock from another stockroom.

Automatic transfer of assets happens under the following conditions:

- There's only one destination stockroom serving the location of the requester that has the **Auto-transfer** option enabled.
- The destination stockroom must be linked to distribution channels that serve as source stockrooms. Sourcing from these channels is based on their rank,

beginning with the distribution channel having the lowest rank and moving on to the next ranks.

- The **Auto-transfer** option is enabled on both the source and destination stockrooms.

- **Auto-purchase:** Automatically create purchase orders to procure assets from a vendor.

Automatic purchase of assets happens under the following conditions:

- There's only one stockroom serving the location of the requester that has the **Auto-purchase** option enabled.
- There's only one vendor from whom the model of the requested item can be purchased.

### Requested item (RITM) validations

Before sourcing any hardware asset requests, the Help manage hardware asset requests agentic workflow validates the requested item (RITM). The agentic workflow doesn't proceed with sourcing under the following conditions:

- The RITM number is missing or invalid.
- More than one requested items have the same RITM number.
- The requested item is already sourced.
- The request isn't sourceable.
- The request isn't approved.
- The model that's requested is invalid or missing.
- The model isn't associated with any model category.
- The resource category of the requested model isn't opted in.
- The model associated with the catalog item isn't licensed.

### Stages in the agentic workflow

The fulfillment of hardware asset requests through the agentic workflow includes the following stages:

#### 1. Hardware asset request initiation

- a. An employee creates a hardware asset request in the Service Catalog application.
- b. The request is either automatically approved or, when necessary, approved by the asset manager.
- c. The requested item is assigned to a procurement user, which triggers the Help manage hardware asset requests agentic workflow.

#### 2. Asset availability checks by the AI agent

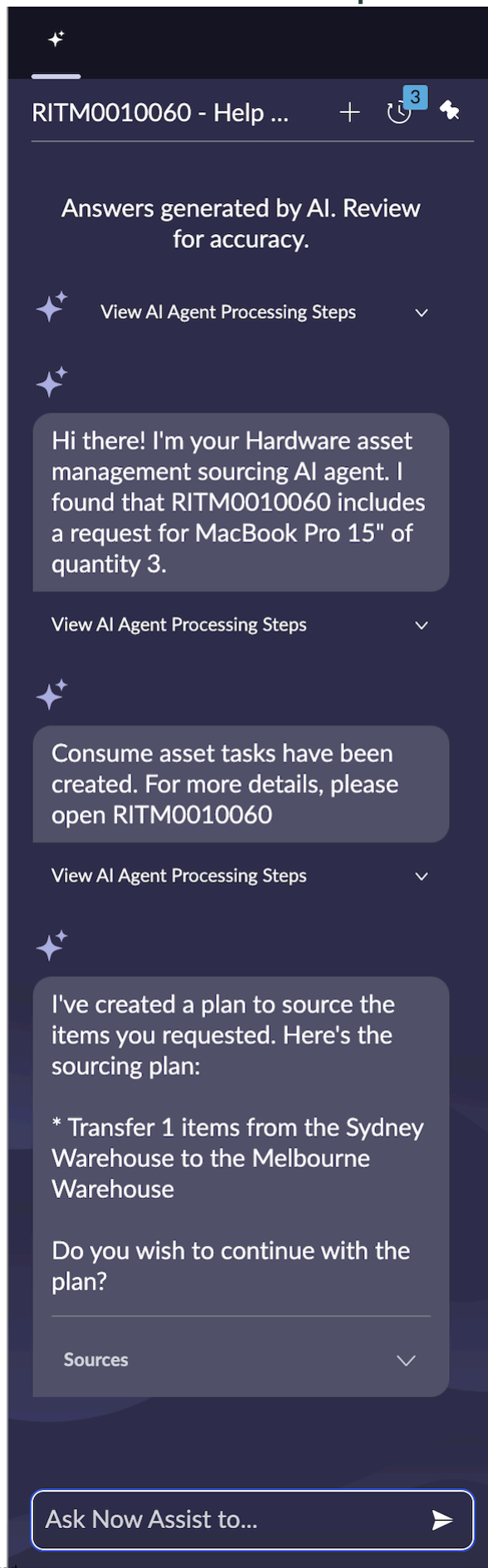
- a. The AI agent verifies whether the requested item is available in the inventory.
- b. The AI agent also checks the stockrooms that are set up for automatic consumption of local stock, transfer, and purchase.

#### 3. Asset sourcing and allocation

- a. When stockrooms are configured to consume, transfer, and purchase assets automatically through the AI agents, the following events occur:
  - i. The AI agent first uses the available stock in the stockroom.
  - ii. For any remaining assets that can be transferred from another stockroom, the AI agent creates a transfer order.
  - iii. If there are still assets to be sourced, the AI agent creates a purchase order to buy them from a vendor.
- b. When assets are available in stockrooms that aren't set up for automatic sourcing, the AI agent creates a sourcing plan and asks for confirmation from the assignee of the requested item (RITM) or the person who started the conversation through the Now Assist panel before proceeding.

**Note:** To access the Now Assist panel after it has been activated, you should have the `now_assist_panel_user` role. To access the Help manage hardware asset requests agentic workflow in the Hardware Asset Workspace, select the sparkle icon (✨).

### Conversations in the Now Assist panel



- i. If the AI agent receives the confirmation to proceed and there have been no changes to the plan, it sources the assets according to the sourcing plan.

**i Note:** If there's a change in the plan, the agentic workflow stops, and the conversation should be reinitiated through the Now Assist panel.

- ii. If the AI agent receives a confirmation not to proceed with the sourcing plan, or if there's still some quantity of assets remaining to be sourced, the agentic workflow continues as follows:

1. The AI agent first verifies whether the assets can be sourced through a transfer order or purchase order.

If the transfer is possible, the following events happen:

- a. The AI agent asks to confirm whether it can proceed with the transfer.
- b. If the AI agent receives confirmation to proceed, it asks to confirm both the source and destination stockrooms.
- c. After receiving confirmation, the AI agent creates a transfer order.

**i Note:** If there's only one stockroom available as the source or destination, it's automatically selected. The AI agent displays only the source stockrooms that have the quantity of assets to be sourced. Only the stockrooms that serve the location of the requester are shown as destination stockrooms.


2. If the AI agent receives a confirmation not to proceed with the transfer order:

- a. The AI agent further requests confirmation to proceed with the purchase order.
- b. If the AI agent receives confirmation to proceed, it asks to confirm the vendor and the destination stockroom.
- c. After receiving confirmation, the AI agent creates a purchase order.

**i Note:** If there's only one stockroom or vendor available, these values are automatically selected. The AI agent displays the list of vendors for the requested item. Only the stockrooms that serve the location of the requester are shown as destination stockrooms.

3. If the user doesn't agree to either the transfer order or the purchase order, the request must be sourced manually.

Refer to the information provided here on the AI agents related to the Help manage hardware asset requests agentic workflow.

To modify the Help manage hardware asset request agentic workflow [duplicate it](#) , and adjust the settings according to your requirements.

**i Important:** In the Edit trigger form, make sure that the **Active** button is turned on to enable the AI agent to trigger autonomously.

## AI agents used in the Help manage hardware asset requests agentic workflow

The Help manage hardware asset requests agentic workflow uses specific AI agents to consume local stock, transfer assets between stockrooms, and procure assets from vendors.

### Role of AI agents the Help manage hardware asset requests agentic workflow

AI agent	AI agent role
Hardware asset management sourcing AI agent	<ul style="list-style-type: none"> <li>The AI agent checks if the requested item is available in the stockroom. Depending on the automatic sourcing set up in the stockroom, the AI agent either uses the local stock autonomously or creates a sourcing plan and requests user confirmation to consume the assets.</li> <li>Triggers the Transfer order creation AI agent to create transfer orders.</li> <li>Triggers the Purchase order creation AI agent to create purchase orders.</li> </ul>
Transfer order creation AI agent	Sources the requested item by either creating a transfer order autonomously or according to the sourcing plan created by the Hardware asset management sourcing AI agent. If there are multiple source or destination stockrooms, the AI agent requests user input to create the transfer order.
Purchase order creation AI agent	Sources the requested item by either creating a purchase order autonomously or according to the sourcing plan created by the Hardware asset management sourcing AI agent. If there are multiple destination stockrooms or vendors, the AI agent requests user input to create the purchase order.

### Access the Help manage hardware asset requests agentic workflow in the AI Agent Studio

- Navigate to **All > AI Agent Studio > Create and manage**.
- Select **Help manage hardware asset requests**.

## Device as a Service

The Device as a Service (DaaS) feature provides assets and asset management services to the customers of DaaS providers via a subscription model.

### DaaS overview

[https://player.vimeo.com/video/985181543?h=c47ec1ec8f&badge=0&autoplay=0&player\\_id=0&app\\_id=58479](https://player.vimeo.com/video/985181543?h=c47ec1ec8f&badge=0&autoplay=0&player_id=0&app_id=58479)

Managing your DaaS offerings on a single platform through provider-focused views and tasks brings significant advantages to both providers and customers. DaaS providers can manage their asset inventory from sourcing through disposal to support their DaaS offerings. By consolidating all DaaS - related activities and information onto one platform, DaaS providers can streamline their operations and improve efficiency. For more information, see [DaaS provider view](#).

### DaaS benefits

Benefit	Users
Plan the desired subscription level for the customers of the DaaS provider.	DaaS Asset manager

Benefit	Users
Automate the procurement process of the DaaS assets.	DaaS Asset manager
Manage inventory levels and prepare assets for shipment as requested by customers.	<ul style="list-style-type: none"> <li>• DaaS Asset manager</li> <li>• Inventory user</li> </ul>
Receive and pick assets at the customer site.	<ul style="list-style-type: none"> <li>• DaaS Asset manager</li> <li>• Inventory user</li> </ul>
Conduct audits on asset records for compliance and reporting purposes.	DaaS Asset manager
Monitor asset problems and perform repairs or replacements to restore service functionality.	<ul style="list-style-type: none"> <li>• DaaS Asset manager</li> <li>• Inventory user</li> </ul>
Systematically refresh, decommission, and dispose of assets at the end of their usable life according to a predetermined schedule.	<ul style="list-style-type: none"> <li>• DaaS Asset manager</li> <li>• Inventory user</li> </ul>






## Configuring DaaS

Plan and configure the Device as a Service (DaaS) features and functionalities.



### Configuration overview

Here's an overview of the process for configuring DaaS features and functionalities.

#### Configure Hardware Asset Management for DaaS

Step	Action	Resource
 Install Hardware Asset Management	Get the Hardware Asset Management application from the <a href="#">ServiceNow Store</a>  .	<a href="#">Install Hardware Asset Management</a>
 Install Hardware Asset Management for DaaS	Get the Hardware Asset Management for DaaS application from the <a href="#">ServiceNow Store</a>  .	<a href="#">Install Hardware Asset Management for DaaS</a>
 Mark your assets as DaaS assets on the Hardware Asset Details form.		<a href="#">Asset record fields</a>

### Configure Hardware Asset Management for DaaS (continued)

Step	Action	Resource
Mark assets as DaaS assets		
 <p>Explore DaaS provider view in Hardware Asset Workspace</p>	Explore the intuitive DaaS provider view in Hardware Asset Workspace to manage the DaaS assets.	<a href="#">DaaS provider view</a>
 <p>Use Hardware Asset Management for DaaS</p>	Use Hardware Asset Management for DaaS to offer assets and asset management services to the customers of DaaS providers.	<ul style="list-style-type: none"> <li>• <a href="#">Managing inbound asset orders for DaaS assets</a></li> <li>• <a href="#">Managing RMA response orders for DaaS assets</a></li> </ul>

### Install Hardware Asset Management for DaaS

You can install the Hardware Asset Management for DaaS application (com.sn\_daas\_ham) if you have the admin role. The application includes demo data and installs related ServiceNow® Store applications and plugins if they aren't already installed.

#### Before you begin

- Ensure that the application and all of its associated ServiceNow Store applications have valid ServiceNow entitlements. For more information, see [Get entitlement for a ServiceNow product or application](#).
- Review the application listing in the ServiceNow Store for information on dependencies, licensing or subscription requirements, and release compatibility.

Role required: admin

#### About this task

The following items are installed with Hardware Asset Management for DaaS:

- Store applications
- Roles
- Tables

For more information, see [Components installed with Hardware Asset Management for DaaS](#).

#### Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.
2. Find the Hardware Asset Management for DaaS application (com.sn\_daas\_ham) using the filter criteria and search bar.

You can search for the application by its name or ID. If you can't find the application, you might have to request it from the ServiceNow Store.

In the list next to the **Install** button, the available versions are displayed.

### 3. Select a version from the list and select **Install**.

In the Review Installation Details dialog box, any dependencies installed with your application are listed.

### 4. If you're prompted, follow the links to the ServiceNow Store to get any additional entitlements for dependencies.

### 5. **Optional:** If demo data is available and you want to install it, select the **Load demo data** check box.

Demo data comprises the sample records that describe application features for the common use cases. Load the demo data when you first install the application on a development or test instance.

### 6. Select **Install**.

## Managing inbound asset orders for DaaS assets

Following a request for a hardware asset, an inbound asset order is associated with this request by creating an order in the DaaS provider interface.

Completing the following tasks in the Inbound asset order workflow results in the successful completion of an asset order:



1. [Create an inbound asset order](#)
2. [Create an inbound asset order line](#)
3. [Select an asset](#)
4. [Pick the selected asset](#)
5. [Prepare the picked asset](#)
6. [Ship the prepared asset](#)
7. [Receive the shipped asset](#)

### Create an inbound asset order

Create an inbound asset order to associate a customer request to an asset order.

#### Before you begin

Role required: sn\_daas\_ham.daas\_asset\_manager

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

#### About this task

For an inbound asset order to be considered complete, all its inbound asset order lines must reach the **Complete** stage.

#### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **Inbound asset orders** tab.
4. Select **New**.
5. On the form, fill in the fields.

### Create New Inbound asset order form

Field	Description
Number	Unique number for the inbound asset order.
External request reference	Customer-provided reference for the asset request that helps you track the source.  For example, the customer has requested an asset through an email. Here, the external request reference would be xyz@gmail.com.
DaaS account	Associated DaaS account of the customer.
Delivery address	Designated delivery address for the asset.
State	Status of the inbound asset order.  This field is automatically set to Open.
Requested for	The name of the customer associated with the DaaS account, for whom the asset is requested.
Estimated delivery date	Estimated delivery date of the asset that's being sent to the specified delivery address.

#### 6. Select **Save**.

#### Result

- An inbound asset order with a unique number is created.
- **Inbound asset order line** tab is created.

#### What to do next



[Create an inbound asset order line](#)

#### Create an inbound asset order line

Create an inbound asset order line for every asset in an inbound asset order.

#### Before you begin

Role required: sn\_daas\_ham.daas\_asset\_manager

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

#### About this task

For an inbound asset order line to be considered complete, the **State** field of all its tasks must be **Closed Complete**.

#### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.

3. Select the **Inbound asset orders** tab.
4. Select an inbound asset order number.
5. Select the **Inbound asset order lines** tab.
6. Select **New**.
7. On the form, fill in the fields.

**Create New Inbound asset order line form**

Field	Description
Number	Unique number for the inbound asset order line.
Inbound asset order	Unique number for the inbound asset order, which is associated with this order number line.
Model	Model of the asset as requested by the DaaS provider.
Quantity	Quantity of the asset.  This field is automatically set to 1.
Stage	Status of the inbound asset order.  This field is automatically set to <i>Draft</i> .
Assigned to	The individual responsible for working on the inbound asset order line.
Asset	Asset that is selected matching the model.  This field automatically populates when you select an asset in the Asset selection task.

8. Select **Save**.

**Result**

- An inbound asset order line with a unique number is created for the requested asset.
- The **Stage** field is set to *Selection*.
- The **Asset tasks** tab is created, displaying a unique asset task number with the task type as **Asset selection task**.

**What to do next**



Select a DaaS asset matching the model specified by the DaaS provider.

**Select an asset**

Select a DaaS asset matching the model specified by the DaaS provider by using the Asset selection task.

**Before you begin**

Role required: `sn_daas_ham.daas_asset_manager` or `inventory_user`

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **Inbound asset orders** tab.
4. Select an inbound asset order number.
5. Select the **Inbound asset order lines** tab.
6. Select an inbound asset order line number.
7. Select the **Asset tasks** tab.
8. Select the asset task number with the Task type as **Asset selection task**.
9. On the form, fill in the fields.

**Asset Task Details form**

Field	Description
Number	Unique number for the Asset selection task.
Asset order line	The inbound asset order line number associated with this task.
Due date	Estimated date of completing this task.
Stockroom	The designated stockroom where the asset is allocated.
Model	This field is automatically populated with the details of the model provided while creating an inbound asset order line.  For more information, see <a href="#">Create an inbound asset order line</a> .
Task name	Name of the current task.  This field is automatically set to <code>Select</code> .
State	Status of the Asset selection task.  This field is automatically set to <code>Open</code> .
Assignment group	The assignment group for the individual who is responsible for working on the Asset selection task.
Assigned to	The individual responsible for working on the Asset selection task.
Asset	List of DaaS assets that fulfill one or more of the following conditions:

Field	Description
	<ul style="list-style-type: none"> <li>Assets with <b>Status</b> as <b>In stock</b> and <b>Substate</b> as <b>Available</b></li> <li>An account is selected in the <b>DaaS account</b> field while creating an inbound asset order.</li> <li>The <b>DaaS account</b> field is empty while creating an inbound asset order.</li> </ul>
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes (Private)	Notes about the task that are visible to all users within your organization.

**10. Select Close Task.**

**Result**

- After the Asset selection task is completed and you refresh the list, a task is created displaying a unique asset task number with the task type as **Asset pick task**.
- The **State** field of the Asset Selection task is set to **Closed Complete**.
- The **Stage** field of the Inbound asset order line is set to **Pick**.

**What to do next**



[Pick the selected asset](#)

**Pick the selected asset**

Pick the selected asset by using the Asset pick task.

**Before you begin**

Role required: sn\_daas\_ham.daas\_asset\_manager or inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

**Procedure**

- Navigate to **Workspaces > Hardware Asset Workspace**.
- Select the **DaaS provider** view.
- Select the **Inbound asset orders** tab.
- Select an inbound asset order number.
- Select the **Inbound asset order lines** tab.
- Select an inbound asset order line number.
- Select the **Asset tasks** tab.
- Select the asset task number with the Task type as **Asset pick task**.
- On the form, fill in the fields.

**Pick form**

Field	Description
Number	Unique number for the Asset pick task.
Task name	Name of the current task.  This field is automatically set to <b>Pick</b> .
Asset order	The inbound asset order number associated with this task.
Asset order line	The inbound asset order line number associated with this task.
Stockroom	The designated stockroom where the asset is allocated.
Asset	The asset that is selected in the Asset selection task. For more information, see <a href="#">Select an asset</a> .
State	Status of the Asset pick task.  This field is automatically set to <b>Open</b> .
Assignment group	The assignment group for the individual who is responsible for working on the Asset pick task.
Assigned to	The individual responsible for working on the Asset pick task.
Due date	Estimated date of completing this task.
Drop off location	Location where the asset must be delivered.
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes (Private)	Notes about the task that are visible to all users within your organization.

**10. Select Close Task.**

**Result**

- After the Asset pick task is completed and you refresh the list, a task is created displaying a unique asset task number with the task type as **Asset prepare task**.
- The **State** field of the Asset pick task is set to **Closed Complete**.
- The **Stage** field of the Inbound asset order line is set to **Prepare**.

**What to do next**



[Prepare the picked asset by using the Asset prepare task.](#)

**Prepare the picked asset**

Prepare the picked asset by inspecting the checklist and also check for any defects by using the Asset prepare task.

**Before you begin**

Role required: sn\_daas\_ham.daas\_asset\_manager and inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **Inbound asset orders** tab.
4. Select an inbound asset order number.
5. Select the **Inbound asset order lines** tab.
6. Select an inbound asset order line number.
7. Select the **Asset tasks** tab.
8. Select the asset task number with the Task type as **Asset prepare task**.
9. On the form, fill in the fields.

**Prepare form**

Field	Description
Number	Unique number for the Asset prepare task.
Asset order line	The inbound asset order line number associated with this task.
Due date	Estimated date of completing this task.
Stockroom	The designated stockroom where the asset is allocated.
Model	This field is automatically populated with the details of the model provided while creating an inbound asset order line. For more information, see <a href="#">Create an inbound asset order line</a> .
Task name	Name of the current task.  This field is automatically set to Prepare.
State	Status of the Asset prepare task.  This field is automatically set to Open.
Assignment group	The assignment group for the individual who is responsible for working on the Asset prepare task.
Assigned to	The individual responsible for working on the Asset prepare task.
Asset	The asset that is selected in the Asset selection task. For more information, see <a href="#">Select an asset</a> .

Field	Description
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes (Private)	Notes about the task that are visible to all users within your organization.

**10. Select Close Task.**

**Result**

- After the Asset prepare task is completed and you refresh the list, another task is created displaying a unique asset task number with the task type as **Asset ship task**.
- The **State** field of the Asset prepare task is set to **Closed Complete**.
- The **Stage** field of the Inbound asset order line is set to **Ship**.

**What to do next**



[Ship the prepared asset](#)

**Ship the prepared asset**

Ship the prepared asset and capture the shipment details by using the Asset ship task.

**Before you begin**

Role required: sn\_daas\_ham.daas\_asset\_manager and inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **Inbound asset orders** tab.
4. Select an inbound asset order number.
5. Select the **Inbound asset order lines** tab.
6. Select an inbound asset order line number.
7. Select the **Asset tasks** tab.
8. Select the asset task number with the Task type as **Asset ship task**.
9. On the form, fill in the fields.

**Ship form**

Field	Description
Number	Unique number for the Asset ship task.
Asset order line	The inbound asset order line number associated with this task.
Due date	Estimated date of completing this task.

Field	Description
Asset	The asset that is selected in the Asset selection task. For more information, see <a href="#">Select an asset</a> .
Shipping carrier	Organization that's responsible for shipping the assets to your customers. For example, FedEx.
Ship from	The origin location for shipping the assets.
Ship date	The shipment date for delivering the assets to your customers.
Task name	Name of the current task.  This field is automatically set to Ship.
State	Status of the Asset ship task.  This field is automatically set to Open.
Assignment group	The assignment group for the individual who is responsible for working on the Asset ship task.
Assigned to	The individual responsible for working on the Asset ship task.
Tracking number	Tracking number or reference number of the shipment of the asset.
Ship to	Destination for the asset shipment.
Shipment order	Reference to the shipment record created in the Shipment [sn_itam_common_shipment] table.  This field is automatically populated when the Asset ship task is closed.
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes (Private)	Notes about the task that are visible to all users within your organization.

**10. Select Close Task.**

**Result**

- After the Asset ship task is completed and you refresh the list, another task is created displaying a unique asset task number with the task type as **Receive task**.
- The **State** field of the Asset ship task is set to **Closed Complete**.
- The **Stage** field of the Inbound asset order line is set to **Receive confirmation**.

**What to do next**

[Receive the shipped asset](#)

### Receive the shipped asset

Once the shipment of the asset is complete, confirm the receipt of the asset by using the Receive task.

### Before you begin

Role required: sn\_daas\_ham.daas\_asset\_manager or inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#).
- Install the Hardware Asset Management application from [ServiceNow Store](#).

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **Inbound asset orders** tab.
4. Select an inbound asset order number.
5. Select the **Inbound asset order lines** tab.
6. Select an inbound asset order line number.
7. Select the **Asset tasks** tab.
8. Select the asset task number with the Task type as **Receive task**.
9. On the form, fill in the fields.

#### Receive confirmation form

Field	Description
Number	Unique number for the Receive task.
Asset order line	The inbound asset order line number associated with this task.
Due date	Estimated date of completing this task.
Asset	The asset that is selected in the Asset selection task. For more information, see <a href="#">Select an asset</a> .
Asset received	Option to confirm the receipt of the asset.  Values: <ul style="list-style-type: none"> <li>○ <b>Yes:</b> The asset is received by the customer.</li> <li>○ <b>No:</b> The asset isn't received by the customer.</li> </ul> <p><b>Note:</b> You must select <b>Yes</b> to close this task.</p>
Task name	Name of the current task.  This field is automatically set to <b>Receive confirmation</b> .
State	Status of the Receive task.

Field	Description
	This field is automatically set to Open.
Assignment group	The assignment group for the individual who is responsible for working on the Receive confirmation task.
Assigned to	The individual responsible for working on the Receive task.
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes (Private)	Notes about the task that are visible to all users within your organization.

**10. Select Close Task.**

**Result**

- The **State** field of the Receive task is set to **Closed Complete**.
- The **Stage** field of the Inbound asset order line is set to **Completed**.
- The **State** field of the Inbound asset order is set to **Closed Complete**.

**Managing RMA response orders for DaaS assets**

Following a request for a hardware asset return or replacement, a Return Merchandise Authorization (RMA) order is associated with this request by creating an RMA response order in the DaaS provider interface.

Completing the following tasks in the RMA order workflow results in the completion and success of an RMA response order:

1. [Create an RMA response order](#)
2. [Create an RMA response order line](#)
3. [Assess the RMA asset](#)
4. [Schedule a visit to the customer site](#) or [Ship the asset to the DaaS provider](#)



**i Note:** Follow the next steps according to the values you select when scheduling a visit to the customer site or shipping the asset to the DaaS provider for assessing the RMA asset.

**Create an RMA response order**

Create a Return Merchandise Authorization (RMA) response order to associate an RMA request for an asset.

**Before you begin**

Role required: sn\_daas\_ham.daas\_asset\_manager

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

**About this task**

For an RMA response order to be considered as complete, all its RMA response order lines must reach the **Complete** stage.

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **RMA orders** tab.
4. Select **New**.
5. On the form, fill in the fields.

**Create New RMA response form**

Number	Unique number for the RMA response order.
External RMA number	Customer-provided reference for the RMA request that helps you track the source.
DaaS account	Associated DaaS account of the customer.
Contact Email	Email of the customer who initiated the RMA request.
Delivery address	Address of the customer associated with the RMA request.
State	Status of the RMA response order.  This field is automatically set to Open.
Requested for	Name of the customer associated with the DaaS account, for whom the asset is requested.
Opened by	Estimated delivery date of the asset that's being sent to the specified delivery address.
Customer mobile number	Mobile number of the customer who initiated the RMA request.
Device location	The physical whereabouts of the device currently in operation.
RMA justification	Reason of the RMA request creation provided by the customer.

6. Select **Save**.

**Result**

- An RMA response order with a unique number is created.
- **RMA response order lines** tab is displayed.

**What to do next**

[Create an RMA response order line.](#)

### Create an RMA response order line

Create a Return Merchandise Authorization (RMA) response order line for every asset in an RMA response order.

#### Before you begin

Role required: sn\_daas\_ham.daas\_asset\_manager

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#).
- Install the Hardware Asset Management application from [ServiceNow Store](#).

#### About this task

For an RMA response order line to be considered as complete, the **State** field of all its tasks must be **Closed Complete**.

#### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **RMA orders** tab.
4. Select an RMA order number.
5. Select the **RMA response order lines** tab.
6. Select **New**.
7. On the form, fill in the fields.

#### Create New RMA response order line form

Field	Description
Number	Unique number for the RMA response order line.
Parent	Unique number for the RMA response order, which is associated with this order number line.
Model	Model of the asset for which the customer has initiated an RMA request.
Quantity	Quantity of the asset. This field is automatically set to 1.
Stage	Status of the RMA response order line. This field is automatically set to <b>Draft</b> .
Assigned to	The individual responsible for working on the RMA response order line.
Asset	List of assets that are in use and assigned to the customer.
Notes	

Field	Description
Work notes	Notes about the task that are visible to all users within your organization.

8. Select **Save**.

**Result**

- An RMA response order line with a unique number is created.
- The **Stage** field is set to **Assess**.
- The **Asset tasks** tab is created, displaying a unique asset task number with the task type as **RMA assessment**.

**What to do next**

[Assess the RMA asset.](#)

**Assess the RMA asset**

Assess the Return Merchandise Authorization (RMA) asset using either an on-site or off-site assessment procedure.

**Before you begin**

Role required: sn\_daas\_ham.daas\_asset\_manager or inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#).
- Install the Hardware Asset Management application from [ServiceNow Store](#).

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **RMA orders** tab.
4. Select an RMA order number.
5. Select the **RMA response order lines** tab.
6. Select the asset task number with the Task type as **RMA assessment**.
7. On the form, fill in the fields.

**RMA assessment form**

Field	Description
Number	Unique number for the RMA assessment task.
Asset order line	The RMA response order line number associated with this task.
Due date	Estimated date of completing this task.
Asset	The asset that is selected while creating the associated RMA response order line.  For more information, see <a href="#">Create an RMA response order line</a> .

Field	Description
Assessment action	<p>Assessment procedure to be followed for the RMA asset.</p> <ul style="list-style-type: none"> <li>○ <b>On site:</b> A representative from the DaaS provider visits the customer's premises to assess the asset.</li> <li>○ <b>Off site:</b> The asset arrives at the DaaS provider site for assessment.</li> <li>○ <b>Denied:</b> The RMA request is rejected.</li> </ul>
Task name	<p>Name of the current task.</p> <p>This field is automatically set to RMA assessment.</p>
State	<p>Status of the RMA assessment task.</p> <p>This field is automatically set to Open.</p>
Assignment group	<p>The assignment group for the individual who is responsible for working on the RMA assessment task.</p>
Assigned to	<p>The individual responsible for working on the RMA assessment task.</p>
Short description	<p>Brief description of the task.</p>
Description	<p>Detailed description of the task.</p>
Work notes	<p>Notes about the task that are visible to all users within your organization.</p>

## 8. Select **Close Task**.

### Result

- The result of the task completion changes according to the value selected in the **Assessment action** field:
  - If you select **On site**, a task is created displaying a unique asset task number with the task type as **Schedule** after you refresh the list. The **Stage** field of the RMA response order line is set to **Schedule**.
  - If you select **Off site**, a task is created displaying a unique asset task number with the task type as **Ship** after you refresh the list. The **Stage** field of the RMA response order line is set to **Ship**.
  - If you select **Denied**, the RMA response order line is set to **Closed Complete**. If there are no more open RMA response order lines, then the RMA response order is closed.
- The **State** field of the RMA assessment task is set to **Closed Complete**.

### What to do next



[Schedule a visit to the customer site](#) or [Ship the asset to the DaaS provider](#)

#### Schedule a visit to the customer site

Schedule a visit of the DaaS provider representative to the customer location.

### Before you begin

Role required: sn\_daas\_ham.daas\_asset\_manager or inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **RMA orders** tab.
4. Select an RMA order number.
5. Select the **RMA response order lines** tab.
6. Select the asset task number with the Task type as **Schedule**.
7. On the form, fill in the fields.

#### Schedule task form

Field	Description
Number	Unique number for the Schedule task.
Asset order line	The RMA response order line number associated with this task.
Due date	Estimated date of completing this task.
Scheduled date	The scheduled date for the DaaS provider representative to visit the customer's location.
Task name	Name of the current task.  This field is automatically set to <code>Schedule</code> .
State	Status of the Schedule task.  This field is automatically set to <code>Open</code> .
Assignment group	The assignment group for the individual who is responsible for working on the Schedule task.
Assigned to	The individual responsible for working on the Schedule task.
Asset	The asset that is selected while creating an RMA response order line.  For more information, see <a href="#">Create an RMA response order line</a> .
Short description	Brief description of the task.
Description	Detailed description of the task.

Field	Description
Work notes	Notes about the task that are visible to all users within your organization.

**8. Select Close Task.**

**Result**

- After the Schedule task is completed and you refresh the list, a task is created displaying a unique asset task number with the task type as **Evaluate RMA asset**.
- The **State** field of the Schedule task is set to **Closed Complete**.
- The **Stage** field of the Inbound asset order line is set to **Evaluation**.

**What to do next**

[Evaluate the RMA asset](#)

**Evaluate the RMA asset**

Evaluate the Return Merchandise Authorization (RMA) asset on the scheduled date at the customer location.

**Before you begin**

Role required: sn\_daas\_ham.daas\_asset\_manager or inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#).
- Install the Hardware Asset Management application from [ServiceNow Store](#).

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **RMA orders** tab.
4. Select an RMA order number.
5. Select the **RMA response order lines** tab.
6. Select the asset task number with the Task type as **Evaluate RMA asset**.
7. On the form, fill in the fields.

**Evaluate RMA asset form**

Field	Description
Number	Unique number for the Evaluate RMA asset task.
Asset order line	The RMA response order line number associated with this task.
Due date	Estimated date of completing this task.
State	Status of the Evaluate RMA asset task.  This field is automatically set to Open.

Field	Description
Assignment group	The assignment group for the individual who is responsible for working on the Evaluate RMA asset task.
Evaluation result	<ul style="list-style-type: none"> <li>○ <b>Repairable:</b> The asset can be repaired.</li> <li>○ <b>Replace:</b> The asset can't be repaired and the old asset would be returned to the DaaS provider. A new inbound asset order would get created for requesting a new asset with the same model.</li> </ul>
Task name	<p>Name of the current task.</p> <p>This field is automatically set to Evaluate RMA asset.</p>
Assigned to	The individual responsible for working on the Evaluate RMA asset task.
Asset	<p>The asset that is selected while creating an RMA response order line.</p> <p>For more information, see <a href="#">Create an RMA response order line</a>.</p>
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

## 8. Select Close Task.

### Result

- The result of the task completion changes according to the value selected in the **Evaluation result** field:
  - If you select **Repairable**, a task is created displaying a unique asset task number with the task type as **Repair asset** after you refresh the list. The **Stage** field of the RMA response order line is set to **Repair**.
  - If you select **Replace**, a task is created displaying a unique asset task number with the task type as **Ship** after you refresh the list. The **Stage** field of the RMA response order line is set to **Inbound shipment**. A new inbound asset order is created.
- The **State** field of the Evaluate RMA asset task is set to **Closed Complete**.

### What to do next



[Repair the RMA asset](#) or [Ship the asset to the DaaS provider](#)

### Repair the RMA asset

Indicate whether the Return Merchandise Authorization (RMA) asset has been repaired or considered unrepairable.

### Before you begin

Role required: sn\_daas\_ham.daas\_asset\_manager or inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **RMA orders** tab.
4. Select an RMA order number.
5. Select the **RMA response order lines** tab.
6. Select the asset task number with the Task type as **Repair asset**.
7. On the form, fill in the fields.

**Repair asset form**

Field	Description
Number	Unique number for the Repair asset task.
Asset order line	The RMA response order line number associated with this task.
State	Status of the Repair asset task.  This field is automatically set to Open.
Assignment group	The assignment group for the individual who is responsible for working on the Repair asset task.
Task name	Name of the current task.  This field is automatically set to Repair asset.
Stockroom	This field is automatically populated with the stockroom details that you provided in the Receive task.  For more information, see <a href="#">Receive asset</a> .  <b>Note:</b> This field doesn't include any information for the On-site assessment flow. For more information about selecting the assessment action, see <a href="#">Assess the RMA asset</a> .
Due date	Estimated date of completing this task.
Assigned to	The individual responsible for working on the Repair asset task.
Repair result	Indication of whether the Return Merchandise Authorization (RMA) asset has been repaired or considered unrepairable.

Field	Description
	<ul style="list-style-type: none"> <li>○ Repaired</li> <li>○ Unrepairable</li> </ul>
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

## 8. Select **Close Task**.

### Result

- The result of the task completion changes according to the value selected in the **Repair result** field:
  - If you select **Repaired**, a task is created displaying a unique asset task number with the task type as **Evaluate asset** after you refresh the list. The **Stage** field of the RMA response order line is set to **Quality check**.
  - If you select **Unrepairable**, a task is created displaying a unique asset task number with the task type as **Ship** after you refresh the list. The **Stage** field of the RMA response order line is set to **Inbound shipment**. A new inbound asset order is created.
- The **State** field of the Repair asset task is set to **Closed Complete**.

### What to do next



[Evaluate the repaired asset](#) or [Ship the asset to the DaaS provider](#)

#### Evaluate the repaired asset

Evaluate the status of the repaired asset and indicate the evaluation result as redeployable or identified for disposal.

#### Before you begin

Role required: sn\_daas\_ham.daas\_asset\_manager or inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

### Procedure

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **RMA orders** tab.
4. Select an RMA order number.
5. Select the **RMA response order lines** tab.
6. Select the asset task number with the Task type as **Evaluate asset**.
7. On the form, fill in the fields.

**Evaluate asset form**

Field	Description
Number	Unique number for the Evaluate asset task.
Asset order line	The RMA response order line number associated with this task.
State	Status of the Evaluate asset task.  This field is automatically set to Open.
Assignment group	The assignment group for the individual who is responsible for working on the Evaluate asset task.
Evaluation result	Indication of whether the asset has to be redeployed or disposed. <ul style="list-style-type: none"> <li>○ <b>Redeployable:</b> The asset is functioning properly.</li> <li>○ <b>To be disposed:</b> The asset didn't pass certain quality checks and can't be returned to the customer.</li> </ul>
Task name	Name of the current task.  This field is automatically set to Evaluate asset.
Stockroom	This field is automatically populated with the stockroom details that you provided in the Receive task.  For more information, see <a href="#">Receive asset</a> .  <b>Note:</b> This field doesn't include any information for the On-site assessment flow. For more information about selecting the assessment action, see <a href="#">Assess the RMA asset</a> .
Due date	Estimated date of completing this task.
Assigned to	The individual responsible for working on the Repair asset task.
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

**8. Select Close Task.**

**Result**

The result of the task completion changes according to the value selected in the **Evaluation result** field:

- If you select **Redeployable**, the **State** field of the Evaluate task is set to **Closed Complete**. The **Stage** field of the RMA response order line is set to **Completed**.
- If you select **To be disposed**, a task is created displaying a unique asset task number with the task type as **Ship** after you refresh the list. The **Stage** field of the RMA response order line is set to **Inbound shipment**. A new inbound asset order is created.

**What to do next**



[Ship the asset to the DaaS provider](#)

**Ship the asset to the DaaS provider**

Return the asset to the DaaS provider and record the shipment details using the Ship task.

**Before you begin**

Role required: sn\_daas\_ham.daas\_asset\_manager or inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **RMA orders** tab.
4. Select an RMA order number.
5. Select the **RMA response order lines** tab.
6. Select the asset task number with the Task type as **Ship**.
7. On the form, fill in the fields.

**Asset Task Details form**

Field	Description
Number	Unique number for the Ship task.
Asset order line	The inbound asset order line number associated with this task.
Due date	Estimated date of completing this task.
Asset	The asset that is selected while creating the associated RMA response order line.  For more information, see <a href="#">Create an RMA response order line</a> .
Shipping carrier	Organization that's responsible for shipping the assets to the DaaS provider. For example, FedEx.
Ship from	The origin location for shipping the assets.
Ship date	The shipment date for delivering the assets to the DaaS provider.
Task name	Name of the current task.

Field	Description
	This field is automatically set to Ship.
State	Status of the Ship task. This field is automatically set to Open.
Assignment group	The assignment group for the individual who is responsible for working the Ship task.
Assigned to	The individual responsible for working on the Ship task.
Tracking number	Tracking number or reference number of the shipment of the asset.
Ship to	Destination for the asset shipment.
Shipment order	Reference to the shipment record created in the Shipment [sn_itam_common_shipment] table. This field is automatically populated when the Ship task is closed.
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

## 8. Select **Close Task**.

### Result

- After the Ship task is completed and you refresh the list, a task is created displaying a unique asset task number with the task type as **Receive asset**.
- The **Shipment assets** tab is displayed, which includes the shipment information.
- The **State** field of the Ship task is set to **Closed Complete**.
- The **Stage** field of the RMA response order line is set to **Receive**.

### What to do next



[Receive asset](#)

### Receive asset

After the shipment of the asset to the DaaS provider is complete, confirm the receipt of the asset by using the Receive task.

### Before you begin

Role required: sn\_daas\_ham.daas\_asset\_manager or inventory\_user

- Install the Hardware Asset Management for DaaS application from [ServiceNow Store](#) .
- Install the Hardware Asset Management application from [ServiceNow Store](#) .

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace**.
2. Select the **DaaS provider** view.
3. Select the **RMA orders** tab.
4. Select an RMA order number.
5. Select the **RMA response order lines** tab.
6. Select the asset task number with the Task type as **Receive asset**.
7. On the form, fill in the fields.

**Receive asset form**

Field	Description
Number	Unique number for the Receive asset task.
Asset order line	The RMA response order line number associated with this task.
Due date	Estimated date of completing this task.
Asset	The asset that is selected while creating the associated RMA response order line.  For more information, see <a href="#">Create an RMA response order line</a> .
Asset received	Option to confirm the receipt of the asset.  Values: <ul style="list-style-type: none"> <li>○ <b>Yes:</b> The asset is received by the DaaS provider.</li> <li>○ <b>No:</b> The asset isn't received by the DaaS provider.</li> </ul> <p><b>Note:</b> You must select <b>Yes</b> to close this task.</p>
Task name	Name of the current task.  This field is automatically set to <b>Receive confirmation</b> .
State	Status of the Receive task.  This field is automatically set to <b>Open</b> .
Assignment group	The assignment group for the individual who is responsible for working the Receive confirmation task.
Assigned to	The individual responsible for working on the Receive task.
Stockroom	Brief description of the task.
Short description	Detailed description of the task.

Field	Description
Description	Notes about the task that are visible to all users within your organization.
Work notes	Unique number for the Receive task.

**8. Select Close Task.**

**Result**

- The result of the task completion changes according to the value selected in the **Asset received** field:
  - If you select **Yes** for an on-site assessment of your asset, the **State** field of the Receive task is set to **Closed Complete**. The **Stage** field of the Inbound asset order line is set to **Completed**. The **State** field of the Inbound asset order is set to **Closed Complete**.
  - If you select **Yes** for an off-site assessment of your asset, a task is created displaying a unique asset task number with the task type as **Evaluate RMA asset** after you refresh the list. The **Stage** field of the Inbound asset order line is set to **Evaluation**.
- The **State** field of the Receive asset task is set to **Closed Complete**.

**What to do next**

[Evaluate the RMA asset](#)

**DaaS reference**

Reference topics provide additional information about the lists and forms that you use to configure and administer Asset as a Service.

**Components installed with Hardware Asset Management for DaaS**

Several types of components are installed with activation of the Hardware Asset Management for DaaS (com.sn\_daas\_ham) plugin, including tables and user roles.

**Roles installed**

Role title [name]	Description	Contains roles
DaaS Manager [sn_daas_ham.daas_asset_manager]	<ul style="list-style-type: none"> <li>• Manages all aspects of DaaS, including access and execution of important actions, reports, and requests such as inbound asset orders and Return Merchandise Authorization (RMA) orders.</li> <li>• Marks assets as DaaS assets.</li> </ul>	Asset Manager [asset]

**Tables installed**

Table	Description
RMA response [sn_daas_common_rma_response_order]	Information about the Return Merchandise Authorization (RMA) request with multiple order

Table	Description
	lines, including details, such as the originating account and the delivery address.
RMA response order line [sn_daas_common_rma_response_orderline]	Model and asset information associated with the RMA creation.
Inbound asset order [sn_itam_common_inbound_asset_order]	Information about the asset request with multiple order lines, such as the originating account and the delivery address.
Inbound asset order line [sn_itam_common_inbound_asset_orderline]	Information about the model for which the asset is requested.

## Asset Management

The Asset Management application integrates the physical, technological, contractual, and financial aspects of information technology assets. Asset Management focuses on the financial tracking of company property.

### Get started

Explore



Learn the key features and business values that the Asset Management application offers.

### Troubleshoot and get help

- [Ask or answer questions in the Asset Management ServiceNow Community](#)
- [Search the Known Error Portal for known error articles](#)
- [Contact Customer Service and Support](#)

## Exploring Asset Management Workspace

The user interface of the Asset Management application is enhanced to make it more user-friendly and intuitive, enabling you to manage your hardware installations better.

You can use the Asset Management new user interface, referred to as Asset Workspace, or continue using the classic Asset Management.

The Asset Management application's core functionality remains the same in both the user interfaces.

If you're using the Asset Management application newly from the Vancouver release, the Asset Management Workspace is installed by default.

**Note:** The Asset Workspace is installed by default only on the zBoot ServiceNow instances and not on the ServiceNow instances upgraded to the latest version. When the Hardware Asset Management application is activated, the Hardware Asset Workspace replaces the Asset Workspace.

## Using the Asset Management Workspace

The Asset Workspace is a unified medium with multiple views that help you manage your assets efficiently. The views provide you with visibility into all the important aspects of your assets, such as dashboards on Stockroom, Asset count by model, lifecycle state, model category, and overall performance of assets.

The Asset Workspace contains the following views:

- [Hardware asset overview](#)
- [Inventory view](#)
- [Asset estate view](#)
- [Model management view](#)
- [Contract management view](#)

If you're upgrading to the Vancouver release, you must activate the Asset Management Workspace (sn\_itam\_workspace) plugin to use the Asset Workspace.

**Note:** After moving to Asset Management Workspace, you can still use the Asset Management classic. For more information, see [Asset Management](#).

### Related topics

[Customize tabs in Asset Workspace](#)

## Hardware asset overview

Enhance your Asset Management experience by using the modernized and user-friendly Hardware asset overview view. The Hardware asset overview is a simplified and intuitive environment that helps you use the application more effectively by reducing complexity.

Use the Hardware asset overview view to:

- Act on discrepancies such as when an asset is missing PO number, model number, asset function, or manufacturer.
- Navigate to specific dashboards on asset functions such as Asset requests, Transfer orders, and Stock orders.
- View the 360 asset view section displaying asset counts by model category and asset value by model category.
- View the overall performance section displaying the Discovered and undiscovered asset count and Assets eligible for refresh by model category.

Select any widget or chart to view detailed information and take appropriate actions. You can also use **Location**, **Stockroom**, and **Model category** lists to filter your results.

# Hardware asset overview

servicenow All Favorites History Workspaces Admin Asset Workspace

## Hardware asset overview

**Important Actions** 19

Last refreshed: 2023-06-07 10:30:04 | Next scheduled refresh: 2023-06-08 10:30:00

**Fill in missing model number**  
1 model is missing a model number. Add this information for improved model data accuracy.  
Model count: 1

View records

**Fill in missing useful life**  
80 models are missing useful life data. Add this information for improved model data accuracy.  
Model count: 80

View records

**Fill in missing manufacturer**  
6 models are missing manufacturer data. Add this information for improved model data accuracy.  
Model count: 6

View records

**Fill in missing location**  
45 assets are missing location data. Add this information for improved asset data accuracy.  
Asset count: 45

View records

**Fill in acquisition**  
941 assets have an acquisition date. Add this information for improved asset data accuracy.  
Asset count: 941

View records

All locations
All stockrooms
All model categories

**Quick links**

Asset requests

# 1

Asset dashboard

Transfer orders

# 6

Inventory dashboard

Stock orders

# 5

Inventory dashboard

**360 asset view**

Asset count by model category

Asset value by model category

**Overall performance**

Discovered and undiscovered asset count

Assets eligible for refresh by model category

## Quick links

Widget or chart	Description
Asset requests	Number of requested items where the item's model is hardware, consumable, or bundle.
Transfer orders	Number of active transfer orders.
Stock orders	Number of requested hardware inventory stock order items.

### 360 asset view

Widget or chart	Description
Asset count by model category	Number of assets grouped by the model category such as Consumable, Computer, and Mobile Device.
Asset value by model category	Cost of assets grouped by the model category such as Software License, Consumable, and Server.

### Overall performance

Widget or chart	Description
Discovered and undiscovered asset count	Comparison of the number of discovered and undiscovered assets grouped by model category. Undiscovered assets are the assets that aren't discovered at all or not discovered within one month.
Assets eligible for refresh by model category	Number of assets that have already expired or the current day is the expiry date, and are eligible for a refresh.

### Load reports on Hardware asset overview

You can load charts or widgets that fetch a huge set of asset records on demand instead of loading them along with the page. This approach enables you to reduce the loading time for the Hardware asset overview page.

The system property

`sn_itam_workspace.asset_overview_enable_lazy_loading` provides you with an option to either selectively load reports you want to view or load reports concurrently with the page. By default, this system property is set to **False**. When this system property is enabled on your ServiceNow instance, you can view reports by using the **Load report** option.

## Load reports on Hardware Asset overview

The screenshot displays the 'Hardware asset overview' dashboard in the ServiceNow Asset Workspace. The interface includes a top navigation bar with 'servicenow', 'All', 'Favorites', 'History', 'Workspaces', 'Admin', and 'Asset Workspace'. A search bar is located in the top right corner.

The main content area is titled 'Hardware asset overview' and features an 'Important Actions' section with 19 items. Below this are five action cards:

- Model Management - Fill in missing model number:** 2 models are missing a model number. Model count: 2.
- Model Management - Fill in missing useful life:** 81 models are missing useful life data. Model count: 81.
- Model Management - Fill in missing manufacturer:** 6 models are missing manufacturer data. Model count: 6.
- Asset estate - Fill in missing location:** 56 assets are missing location data. Asset count: 56.
- Asset estate - Fill in acquisition m:** 1149 assets have acquisition information missing. Asset count: 1149.

Below the action cards are filter buttons for 'All locations', 'All stockrooms', and 'All model categories'. A 'Quick links' section contains three cards: 'Asset requests' (1), 'Transfer orders' (23), and 'Stock orders' (5). The '360 asset view' section includes 'Asset count by model category' and 'Asset value by model category', each with a 'Load report' button. The 'Overall performance' section includes 'Discovered and undiscovered asset count' and 'Assets eligible for refresh by model category', each with a 'Load report' button.

## Inventory view

Use the Inventory view in the Asset Workspace to view and manage inventory-related functions such as stockrooms and transfer orders.

The Inventory view provides access to actions for filling in missing stockroom details such as assignment group, stockroom name, manager, and type.

Select any widget or chart to view the details. You can also use Location, Stockroom, Model category, and Domain filters to narrow down your results.

**Note:** The Domain filter is available only when you've enabled the Domain Extensions Installer (com.glide.domain.msp\_extensions.installer) and Domain Separation (plugin com.snc.pa.domain\_support) plugins.

## Inventory view

### Inventory overview

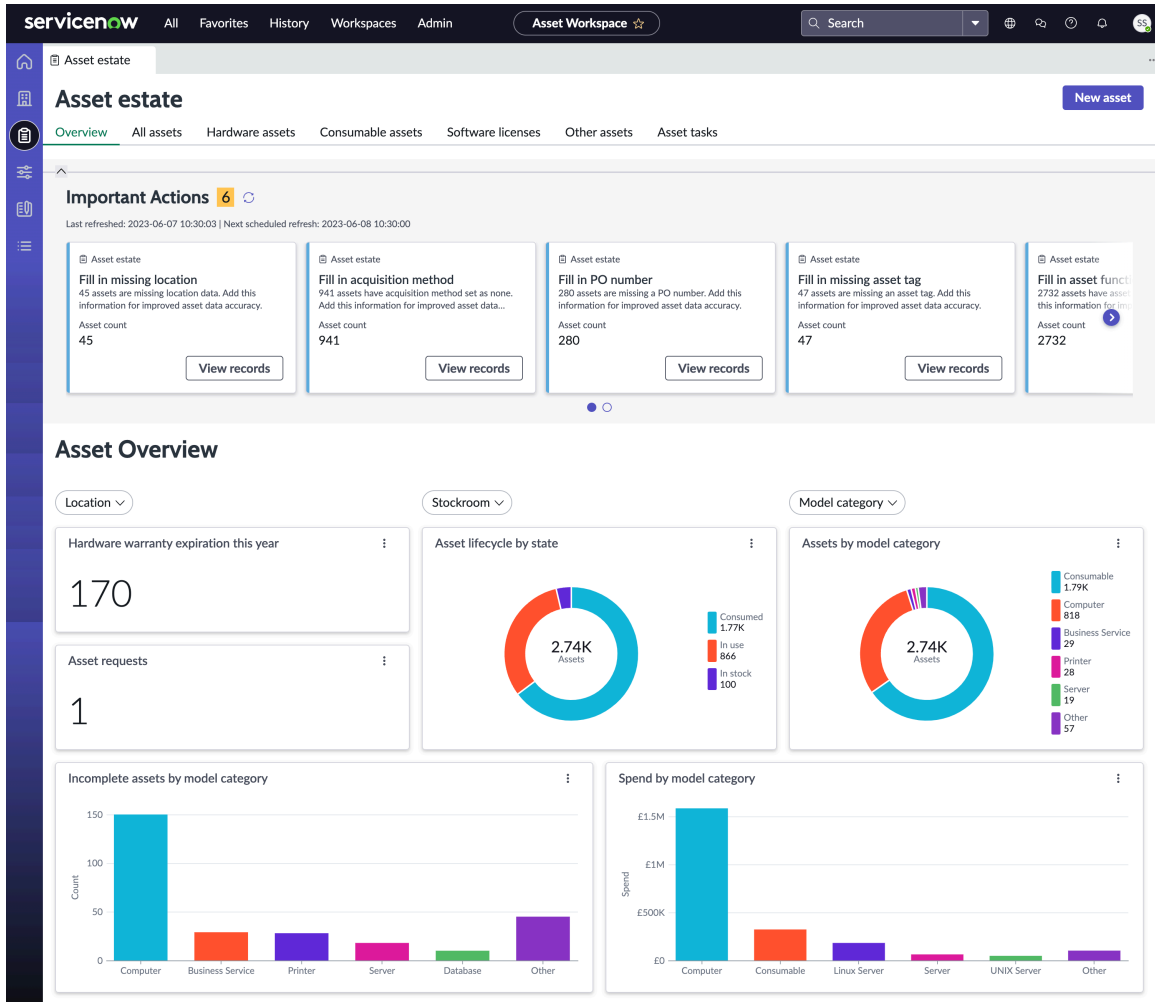
Widget or chart	Description
Open hardware requests from stock (YTD)	Number of transfer orders of Procurement type that are already delivered and created this calendar year.
Open transfer orders	Number of canceled or undelivered transfer orders.
Active stock rules by model category	All active stock rules grouped by their model category.

### Asset estate view

Use the Asset estate view in the Asset Workspace to create, view, and modify the assets and also manage asset functions and notifications.

**Note:** Software license tab is hidden when Software Asset Management (com.snc.software\_asset\_management) or Software Asset Management Professional (com.snc.pa.samp) is active. You can view this Software license tab in Software Asset Workspace.

## Asset estate view



### Asset overview

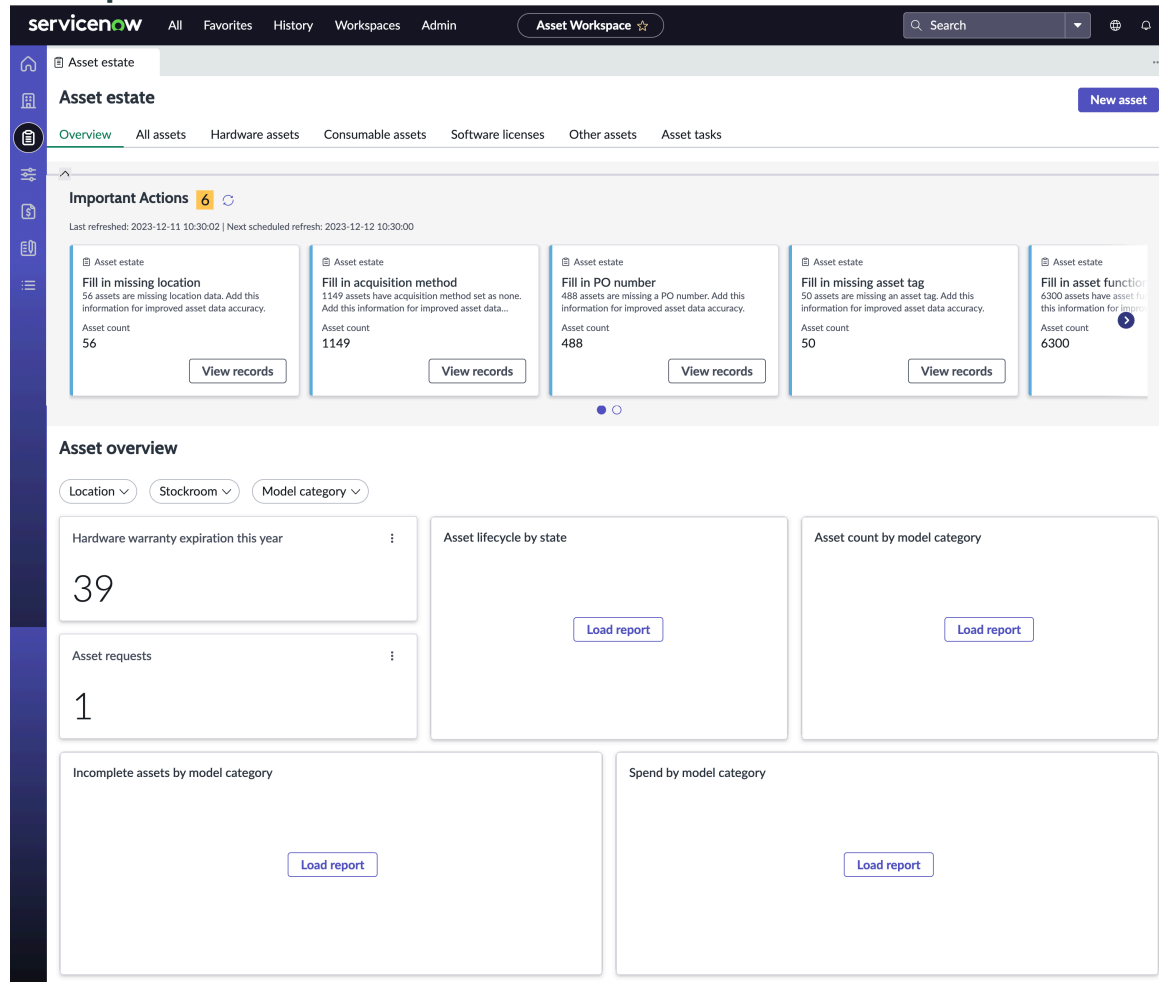
Chart or widget	Description
Hardware warranty expiration this year	Count of hardware and consumable assets that are expiring this current year.
Asset requests	Count of hardware, consumable, and bundle requests in the catalog.
Asset lifecycle by state	Number of assets grouped by the lifecycle state such as Retired, In use, In stock.
Assets by model category	Number of assets grouped by the model category such as Software License, Consumable, Server.
Incomplete assets by model category	Asset models without purchase order number, purchase order line, or receiving line.
Spend by model category	Cost of assets grouped by their model category.

### Load reports on Asset estate view

You can load charts or widgets that fetch a huge set of asset records on demand instead of loading them along with the page. This approach enables you to reduce the loading time for the Asset estate view.

The system property `sn_itam_workspace.asset_estate_enable_lazy_loading` provides you with an option to either selectively load reports you want to view or load reports concurrently with the page. By default, this system property is set to **False**. When this system property is enabled on your ServiceNow instance, you can view charts or widgets by using the **Load report** option.

### Load reports on Asset estate view



### Exclude Install Base Item (IBI) assets from reports

Any item that is provided as a service or sold to your customer is tracked as an Install Base Item (IBI). The Model category table associates Asset class, CI class, and Install Base Item (IBI) class.

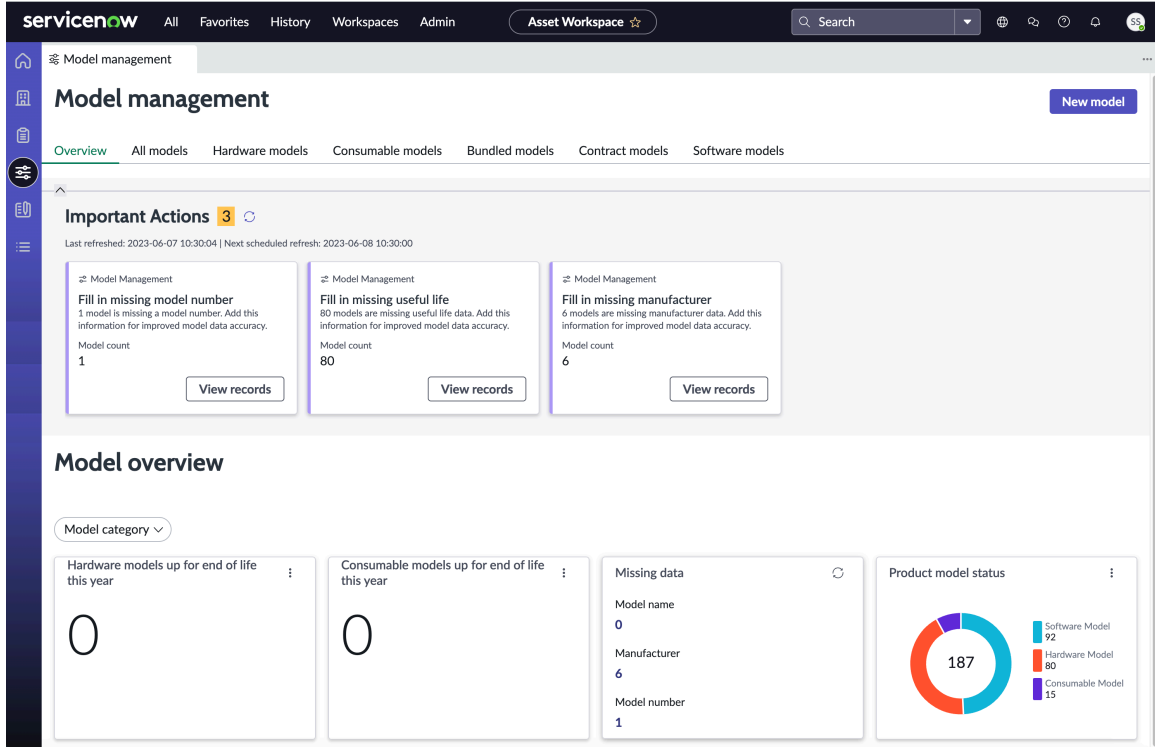
By default, the reports and Important Actions in the Asset estate view include all the assets in the Asset [alm\_asset] table. However, you can filter IBI assets from reports and Important Actions cards. For details on configuration required to filter IBI assets, see the [Sold products exclusion from the reports and Important Actions of Asset Workspace \[KB1584331\]](#) article in the Now Support Knowledge Base

### Model management view

Use the Model management view in the Asset Workspace to create or modify models, view and manage the asset model-related functions such as hardware and consumable models nearing the end of life.

**Note:** Software model tab is hidden when Software Asset Management (com.snc.software\_asset\_management) or Software Asset Management Professional (com.snc.pa.samp) is active. You can view this Software model tab in Software Asset Workspace.

### Model management view



### Model overview

Widget or chart	Description
Hardware models up for end of life this year	Count of hardware models whose start date of the end of life phase is the current year.
Consumable models up for end of life this year	Count of consumable models whose start date of the end of life phase is the current year.
Missing data	Count of models that have missing model name, manufacturer, and model number.
Product model status	Current count of hardware, consumable, and software models based on the status of the models.

### Contract management view

Use the Contract management view in the Asset Workspace to view and manage details of contracts such as Contract number, Contract start and end dates, terms and conditions statements.

The Contract management view includes important actions for managing your contract, contract expenditure by type and vendor, and the list of expiring contracts.

## Contract management view

**Contract management**

Overview | All contracts | Leases | Insurance | Maintenance | Warranties | Purchasing agreements | Purchase orders | Service | Software licenses | Subscriptions | More

**Important Actions** 6

Last refreshed: 2023-06-07 10:30:04 | Next scheduled refresh: 2023-06-08 10:30:00

- 30 days to renew contracts**  
5 contracts need to renew in 30 days.  
Contract count: 5
- 90 days to renew contracts**  
8 contracts need to renew in 90 days.  
Contract count: 8
- Duplicate contracts**  
4 duplicate contracts.  
Contract count: 4
- Fill in missing contract administrator**  
30 contracts are missing contract administrator. Add this information for improved contract data...  
Contract count: 30
- Fill in missing end date**  
4 contracts are missing information for improved contract data...  
Contract count: 4

**Contract overview**

Type | Vendor

**Contract expenditure by type**

£4.14K Contract

- NDA: £2.33K
- Insurance: £690.64
- Maintenance: £388.27
- Purchase Order: £310.08
- Warranty: £310.08
- Other: £169.14

**Contract expenditure by vendor**

£4.14K Contract

- Asus: £1.89K
- (empty): £789.3
- Altiris: £775.2
- AT&T: £310.01
- Cisco: £281.8
- Other: £98.67

**Expiring contract**

Last refreshed 2m ago

Number	Contract model	Vendor	Name	End date
CNTR0010059	Insurance	Altiris		2023-06-11
CNTR0010058	Maintenance	AT&T		2023-06-12
CNTR0010057	NDA	Cisco		2023-06-13
CNTR0010060	NDA	Altiris		2023-06-14
CNTR0010062	Purchase Order	Asus		2023-07-02
CNTR0010061	Insurance	Amazon		2023-07-10
CNTR0010049	Lease	(empty)		2023-07-19
CNTR0010063	Insurance	APC		2023-08-12

## Customize tabs in Asset Workspace

Adjust the content shown in the tabs of Asset Workspace or Hardware Asset Workspace views to meet your specific business needs.

### Before you begin

Role required: admin

### About this task

In the Asset Management Workspace, the content displayed in tabs such as All Assets and Hardware Assets in the Asset Estate view is determined by functions in the `AssetWorkspaceUtil` script include. These functions specify which table to use and what title to display for each tab. For example, the Asset estate page uses the `getAssetEstateTabs` function to fetch tab details, while other pages like Model Management and Inventory have their own specific functions. When a tab is selected, its index is used to fetch the corresponding item from the list, determining the displayed content.

**Note:** This task shows how to hide the All Assets tab on the Asset estate page. Using the same approach, you can hide other tabs in Asset estate, Model management, or Inventory pages. Modify the content displayed in a tab by updating the script include where details such as list titles and data sources are defined.

- To properly hide a tab, you must deactivate the tab in UIB and comment out the corresponding JSON structure in the Script Include file.
- The order of tab details in the functions within the Script Include file must match with the tab order in UI Builder. If not, the tabs displayed won't match their corresponding configurations.

## Procedure

1. In UIB settings, deactivate the All Assets tab by deselecting the **Active** check box for the Availability option.

The screenshot shows the configuration for the 'All assets default' variant. On the left, under 'Page variants (1)', the 'All assets default' variant is selected with a 'global' scope. Below this, a note states: 'These settings allow you to customize the page name, routes, as well as variants, or the page content based on different conditions and audiences.'

The main configuration area is titled 'Variant: All assets default'. It contains a table with the following data:

Application scope	Domain	Protection policy	Last modified	Scripted screen conditions
Asset Management Workspace	global	None	Aug 10, 2021 16:40:32	None

Below the table, there are 'Actions' for 'Open records', 'Duplicate', and 'Delete'. Further down, the 'Name' is 'All assets default', 'Availability' is checked (Active), and 'Order' is 0.

2. The tab details in the Asset Estate page are fetched using the `getAssetEstateTabs` function defined in the script include.

```
getAssetEstateTabs: function() {
    var assetEstateTabs = {
        '': {
            listTitle: '',
            table: '',
            listView: '',
            query: '',
        },
        indoor_map: {
            listTitle: gs.getMessage('Indoor map'),
            table: 'alm_hardware',
            listView: 'itam_workspace',
            query: '',
        },
        alm_asset: {
            listTitle: gs.getMessage('All assets'),
            table: 'alm_asset',
            listView: 'itam_workspace',
            query: 'model.sys_class_nameNOT INjavascript: new sn_hamp.HAMReportFilters().getEnterpriseModelClassesToBeExcluded();',
        },
        alm_hardware: {
            listTitle: gs.getMessage('Hardware assets'),
            table: 'alm_hardware',
            listView: 'itam_workspace',
            query: '',
        },
        alm_consumable: {
            listTitle: gs.getMessage('Consumable assets'),
            table: 'alm_consumable',
            listView: 'itam_workspace',
            query: 'model.sys_class_nameNOT INjavascript: new sn_hamp.HAMReportFilters().getEnterpriseModelClassesToBeExcluded();',
        },
    },
}
```

3. Comment out the JSON section containing details related to the All Assets tab and save the Script Include file.

```

getAssetEstateTabs: function() {
  var assetEstateTabs = [
    {
      listTitle: '',
      table: '',
      listView: '',
      query: ''
    },
    indoor_map: {
      listTitle: gs.getMessage('Indoor map'),
      table: 'alm_hardware',
      listView: 'itam_workspace',
      query: ''
    },
    // alm_asset: {
    //   listTitle: gs.getMessage('All assets'),
    //   table: 'alm_asset',
    //   listView: 'itam_workspace',
    //   query: 'model.sys_class_nameNOT INjavascript: new sn_hamp.HAMReportFilters().getEnterpriseModelClassesToBeExcluded();',
    // },
    alm_hardware: {
      listTitle: gs.getMessage('Hardware assets'),
      table: 'alm_hardware',
      listView: 'itam_workspace',
      query: ''
    }
  ],

```

4. Reload the Asset estate page in the workspace.  
The All Assets tab has been hidden, but all the other tabs remain visible.




## Enterprise Asset Management




Enterprise Asset Management is a business application that manages the entire life cycle of your enterprise connected and non connected assets.

Watch this short video for an introduction to the Enterprise Asset Management application.

The Enterprise Asset Management application provides a comprehensive and end to end solution for maintaining your assets, minimizing costly downtime, and maximizing the asset usable life.

You can also listen to the Enterprise Asset Management TechBytes podcast on the [ServiceNow Community](#).

<p style="text-align: center;">Explore</p>  <p style="text-align: center;">Learn the key features and business value that the Enterprise Asset Management application offers.</p>	<p style="text-align: center;">Configure</p>  <p style="text-align: center;">Configure the Enterprise Asset Management application to meet your specific needs.</p>	<p style="text-align: center;">Manage enterprise assets</p>  <p style="text-align: center;">Create and manage your enterprise assets.</p>
--	--	--

<p>Manage enterprise models</p>  <p>Create and manage your enterprise models.</p>	<p>Manage work orders</p>  <p>Create and manage work orders for enterprise assets.</p>	<p>Reference</p>  <p>Get additional details about field descriptions, domain separation, and terminology.</p>
--	---	--

## Exploring Enterprise Asset Management

Use the Enterprise Asset Management application to optimize the quality and performance of assets by reducing downtime, increasing asset utilization, and extending asset lifespan while reducing operating costs for asset-intensive organizations.

### Enterprise Asset Management overview

The Enterprise Asset Management automates the full lifecycle of your physical business assets with prescriptive workflows. With Enterprise Asset Management, you can maximize the return on your enterprise assets, control capital and operating costs, and reduce risk by tracking and managing your assets from planning to disposal.

### Enterprise Asset Management Users

User	Description
Enterprise administrators	Work involves planning strategic initiatives, managing capital planning, and optimizing asset returns.
Enterprise asset managers	Work involves decreasing downtime, extending asset life, and rationalizing inventory.
Enterprise technicians	Work involves increasing productivity and improving response time.
Medical asset managers	Similar to the tasks carried out by an enterprise asset manager, though specifically within the healthcare sector.
Medical technicians	Similar to the tasks carried out by an enterprise asset technician, though specifically within the healthcare sector.
Facility asset manager	Similar to the tasks carried out by an enterprise asset manager, though specifically within the facility management sector.
Facility technician	Similar to the tasks carried out by an enterprise asset technician, though specifically within the facility management sector.

User	Description
Operational technology asset manager	Similar to the tasks carried out by an enterprise asset manager, though specifically within the operation technology sector.
Operational technology asset technician	Similar to the tasks carried out by an enterprise asset technician, though specifically within the facility management sector.

## Enterprise Asset Management benefits

Benefit	Feature	Users
Get visibility into all aspects of your assets such as dashboards, asset count by model, lifecycle state, model category, and the overall performance of assets.	<a href="#">Enterprise Asset Workspace</a>	<ul style="list-style-type: none"> <li>• Enterprise administrator</li> <li>• Enterprise asset manager</li> </ul>
Use your own customized workspace for medical and facility industries.	<a href="#">Personalized workspaces for medical and facility industries</a>	<ul style="list-style-type: none"> <li>• Medical asset manager (for the Medical Asset Workspace)</li> <li>• Medical asset technician (for the Medical Asset Workspace)</li> <li>• Facility asset manager (for the Facility Asset Workspace)</li> <li>• Facility asset technician (for the Facility Asset Workspace)</li> <li>• Enterprise administrator</li> <li>• System administrator</li> </ul>
Maximize asset value with comprehensive cost analysis of owning and managing assets.	<a href="#">Asset Total Cost of Ownership for Enterprise Asset Management</a>	Enterprise asset manager
Track, manage, and maintain discrete enterprise and linear assets.	<a href="#">Linear assets in Enterprise Asset Management</a>	Enterprise asset manager
Onboard single and multiple assets using playbooks.	<a href="#">Playbooks for Enterprise Asset Management</a>	Enterprise asset manager
Simplify enterprise asset offboarding process using a reclamation workflow.	<a href="#">Enterprise asset reclamation</a>	Enterprise asset manager

Benefit	Feature	Users
Rate assets by risk level and generate color-coded heatmaps.	<a href="#">Risk scoring</a>	Enterprise administrator
Track and manage work for your enterprise assets by using work orders.	<a href="#">Managing work orders for your enterprise assets</a>	Enterprise asset manager
Create and manage enterprise asset contracts.	<a href="#">Create and manage contracts for enterprise assets</a>	<ul style="list-style-type: none"> <li>• Enterprise administrator</li> <li>• Enterprise asset manager</li> </ul>
Get defective enterprise assets in a stockroom repaired quickly using the Repair flow.	<a href="#">Repair flow</a>	Enterprise asset manager
Locate and pick the assets in your stockroom efficiently by using the ServiceNow Mobile Agent application.	<a href="#">Inventory picking for Enterprise Asset Management</a>	Inventory user
Track asset movement from the receiving bay of the inventory to the designated space within the stockroom using the Asset put away task.	<a href="#">Manage asset put away using the Enterprise Asset Workspace</a>	Inventory user
Return assets that are in your personal stockroom easily by creating Drop off tasks.	<a href="#">Drop off tasks</a>	Enterprise asset technician/ Enterprise asset manager

**Related topics**


[Configuring Enterprise Asset Management](#)

**Enterprise Asset Workspace**

Use the Enterprise Asset Workspace to get a comprehensive view of all your assets and manage them efficiently.

**Enterprise Asset Workspace landscape**

The Enterprise Asset Workspace is a unified medium with multiple views. The views give you visibility into all your assets, models, stockroom and stockroom types. You can also create multiple workflows such as transfer orders, disposal orders, and also provides access to analytics via dashboards.

**i Note:** Include the *Enterprise Asset Classes* and *Enterprise Model Classes* properties from the Asset Properties table in update sets whenever you move any changes from one environment to another. For details on update sets, see [Update Sets transfer](#) .

You can navigate to the Enterprise Asset Workspace in the following two ways:

- If the Next Experience UI Framework is turned on your instance: Select **Workspaces** and then select **Enterprise Asset Workspace**.
- If the Next Experience UI Framework is turned off on your instance: On the left navigation bar, enter Enterprise Asset Workspace. Select to open the Enterprise Asset Workspace menu in a new tab.

The Enterprise Asset Workspace contains the following views:

- [Enterprise asset overview for Enterprise Asset Workspace](#)
- [Asset Analytics overview for Enterprise Asset workspace](#)
- [Inventory overview for Enterprise Asset Workspace](#)
- [Enterprise asset estate overview for Enterprise Asset Workspace](#)
- [Enterprise model management overview for Enterprise Asset Workspace](#)
- [Normalization overview for Enterprise Asset Management](#)
- [Contract and lease management overview for Enterprise Asset Workspace](#)

## Inline editing

Ensure that you enable Inline editing in your ServiceNow instance to directly make changes to fields instead of opening the record and changing the field on the form.

- **Note:** Once you enable inline editing in your ServiceNow instance, it is enabled for all ServiceNow applications.

## Enterprise asset overview for Enterprise Asset Workspace

Use the Enterprise asset overview as the landing page for the Enterprise Asset Workspace to get insights into key metrics.

Use the Enterprise asset overview dashboard to perform the following tasks:

- Identify and attend to critical action items that require your immediate attention such as entering missing manufacture data, model number, or asset tag information.
- Search for and track asset requests, transfer orders, stock orders, asset refresh requests, disposal orders, and Return Merchandise Authorization (RMA) orders.

## Enterprise asset overview

To access detailed information and take relevant action, select the relevant widget. You can also narrow down your results by using the **Location**, **Stockroom**, **Model category**, and **Classification** filters. For detailed information on the Classification filter, see [Classification codes](#).

### Quick links on the dashboard

Widget	Description
Asset requests	Number of requested items where the item's model is a consumable or an enterprise model.
Transfer order lines	Number of active transfer order lines.
Stock orders	Number of requested inventory stock order items.
Refresh requests	Number of open assets refresh order requests.
Recall orders	Number of open recall orders.
Disposal orders	Number of open disposal orders.
Loaner asset orders	Number of requested loaner asset orders.
RMA orders	Number of open Return Merchandise Authorization (RMA) orders.

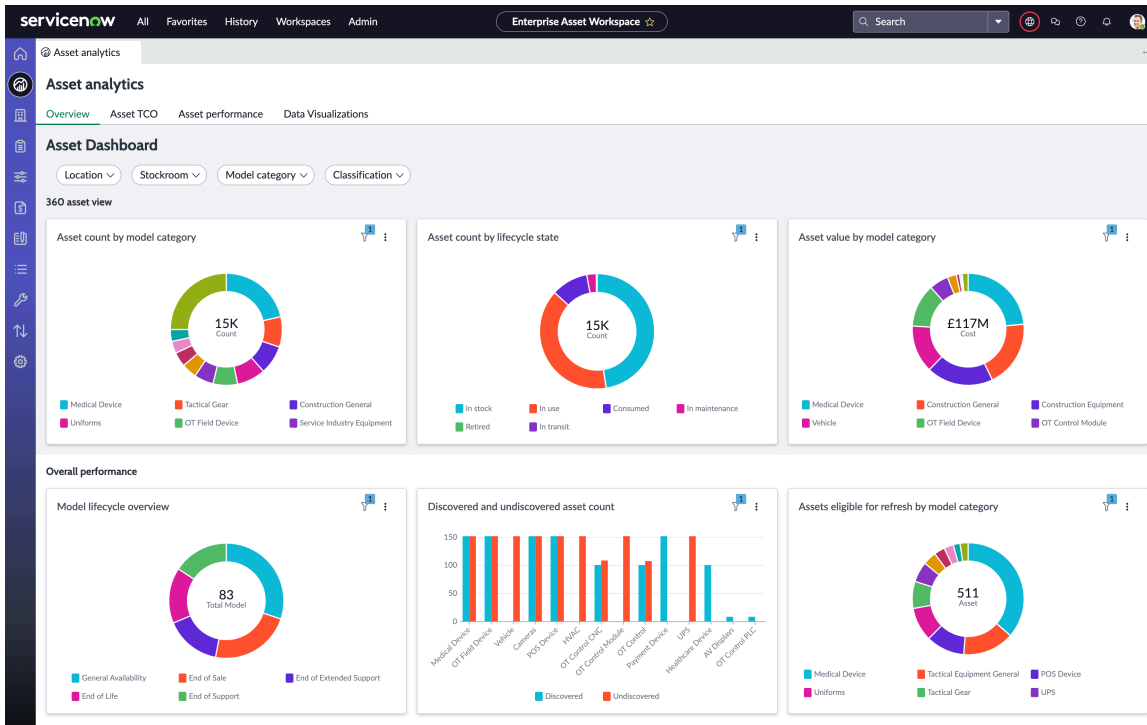
### Asset Analytics overview for Enterprise Asset workspace

Use the Asset Analytics view to get a detailed view of all your assets, their overall performance, and the asset total cost of ownership (TCO).

### Enterprise Asset Dashboard

Use the Enterprise Asset Dashboard to get comprehensive information on all your enterprise assets.

You can filter the data based on location, stockroom, model category, and classification.



### 360 asset view

Widget	Description
Asset count by Gear model category	Number of assets grouped by the model category such as Medical General, Medical Diagnostic.
Asset count by lifecycle state	Number of assets grouped by the lifecycle state such as Retired, In use, and In stock.
Asset value by model category	Cost of assets grouped by the model category such as Vehicle, Cameras, and Field Devices.

### Overall performance

Widget	Description
Model lifecycle overview	Overview of the model lifecycle grouped by the lifecycle phase such as <b>General Availability, End of Life, End of Support, and End of Sale.</b>
Discovered and undiscovered asset count	Comparison of the number of discovered and undiscovered assets grouped by model category.
Assets available for refresh by model category	Number of assets that have already expired or the current day is the expiry date, and are eligible for a refresh.

### Asset TCO

This tab provides a detailed view of the TCO and displays key metrics that show the real-time status of assets regarding TCO benchmarks.

You can create new comparative reports and view existing ones.

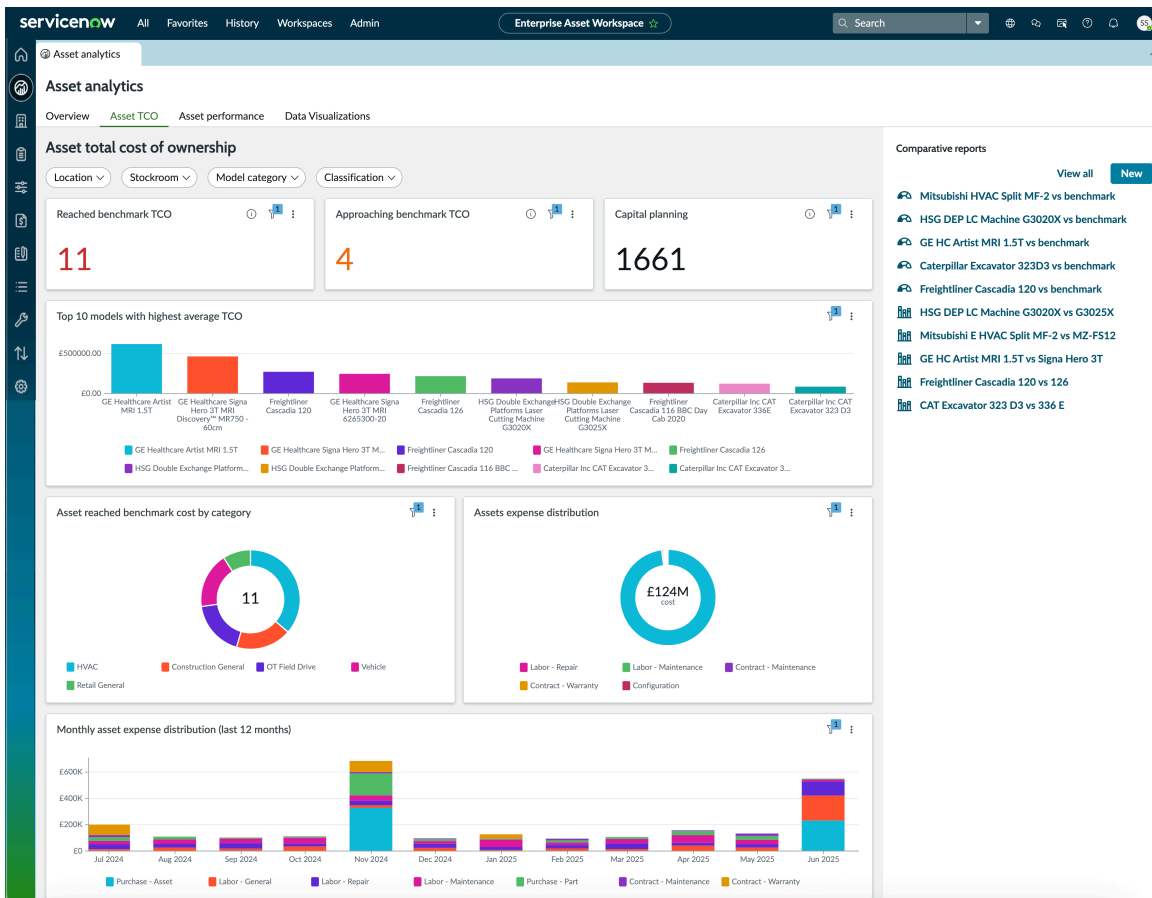
You can filter the data based on location, stockroom, model category, and classification.

Select **View all** to view a list of all the comparative reports. Only reports that have at least one active report source are displayed with the exception of an offline report (where the cost type is either **Actual TCO** or **Projected TCO**). To update data sources on an offline report, open the report and select **Run update job**. This button only appears on an offline report. Once this job is complete, the latest collection date gets updated.

**Note:** Offline reports will not appear in the list of comparative reports until the latest collection date is populated.

You can select **New** to create a TCO report.

Select a report icon to directly open a report or select the report name to open the report form.



Widget	Description
Reached benchmark TCO	Number of assets that reached the benchmark TCO.
Approaching benchmark TCO	Number of assets that are approaching the benchmark TCO
Capital planning	Number of assets for capital planning. The Assets for capital planning are assets that are not retired and their current life cycle phase is true.

Widget	Description
Top 10 models with highest average TCO	A bar chart showing the top 10 models with the highest average TCO.
Assets reached benchmark cost by category	Number of assets by category that reached the benchmark cost.
Assets expense distribution	<p>The asset expense distribution based on the following cost types:</p> <ul style="list-style-type: none"> <li>• Purchase - Asset</li> <li>• Purchase - Part</li> <li>• Configuration</li> <li>• Software</li> <li>• Contract - Lease</li> <li>• Contract - Warranty</li> <li>• Contract - Maintenance</li> <li>• Contract - Service</li> <li>• Contract - Other</li> <li>• Utilities</li> <li>• Shipment</li> <li>• Labor - Maintenance</li> <li>• Labor - Repair</li> <li>• Labor - General</li> <li>• Resold value</li> </ul>
Monthly asset expense distribution (last 12 months)	<p>Distribution of assets over the last 12 months, based on the following cost types:</p> <ul style="list-style-type: none"> <li>• Purchase - Asset</li> <li>• Purchase - Part</li> <li>• Configuration</li> <li>• Software</li> <li>• Contract - Lease</li> <li>• Contract - Warranty</li> <li>• Contract - Maintenance</li> <li>• Contract - Service</li> <li>• Contract - Other</li> <li>• Utilities</li> <li>• Shipment</li> <li>• Labor - Maintenance</li> <li>• Labor - Repair</li> </ul>

Widget	Description
	<ul style="list-style-type: none"> <li>• Labor - General</li> <li>• Resold value</li> </ul>

## Asset performance

**i Important:** The Asset performance tab is available with Enterprise Asset Management version 9.0 and later.

The Asset performance tab provides details on the average values of the following key performance indicators (KPIs):

- Availability
- Mean time between failures (MTBF)
- Mean time to repair (MTTR)

**i Note:** For more details on calculation of KPIs, see [Asset performance reports in the Enterprise Asset Workspace](#).

By default, the **Model category** filter is applied to the KPI reports. To further narrow down and focus on specific data, you can also select any one of the following filters:

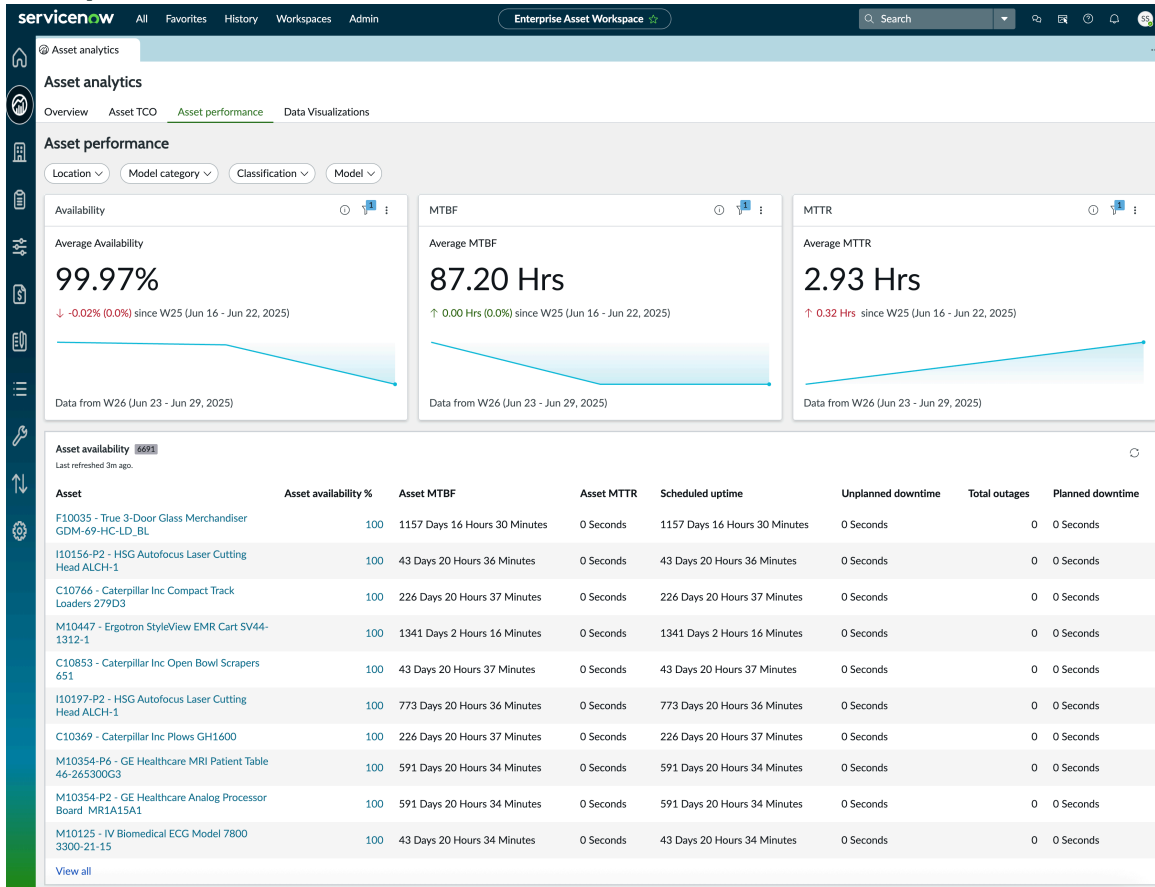
- **Domain**
- **Location**
- **Classification**
- **Model**

**i Note:** You can apply a maximum of two filters to any KPI report.

You can see a weekly trend of the average KPI values in the report. The Asset Availability list provides KPI details for all enterprise assets that are tracked. The average KPI values are calculated based on the assets in this list.

When you select any KPI report, the **KPI Details** page appears. This page enables you to explore the information within that KPI. You can set targets you want to achieve and also set signals to notify you of any significant changes in the KPI.

## Asset performance dashboard



Widget	Description
Availability	Average availability percentage of all enterprise assets that are tracked, calculated by dividing the total asset availability percentage by the number of assets listed in the Asset availability report.
MTBF	Average MTBF of all enterprise assets that are tracked, calculated by dividing the total Asset MTBF by the number of assets listed in the Asset availability report.
MTTR	Average MTTR of all enterprise assets that are tracked, calculated by dividing the total Asset MTTR by the number of assets listed in the Asset availability report.
Asset availability	Report that lists the availability and other related KPIs of all enterprise assets that are tracked.

## Data Visualizations

**i Important:** The Data Visualizations tab is available with Enterprise Asset Management version 9.0 and later.

The Data Visualizations tab enables the asset managers to view and create data visualizations in the Visualization Designer. As an asset manager, you can view the visualizations that are bookmarked, certified, owned by you, and shared with you. You can only edit the visualizations that you created.

## Data Visualizations tab

Name	Type	Description	Created by	Updated
% Escalations acknowledged (by groups)	Column		admin	2024-08-22 10:36:02
% Escalations not acknowledged (by groups)	Column		admin	2024-08-22 10:36:02
% Failed changes	Column	Percentage of the change requests that are not successfully completed	admin	2023-12-22 10:59:35
% high priority incidents	Column		admin	2023-12-21 15:28:57
% Incidents associated with problem	Column	Percentage of the incidents that are associated with problem.	admin	2023-12-22 05:51:52
% Successful change distributed by type	Column	Distribution of the change requests that are successfully closed by change type	admin	2023-12-13 15:26:49
% Successful change with issues (by model and type)	Column	Distribution of the change requests closed with issues distributed by change model and change type	admin	2024-05-23 13:50:03
% Successful change with issues distributed by type	Column	Distribution of the change requests that are successfully closed with some issues by change type	admin	2023-12-26 13:01:34
% Successful change without issues (by model and type)	Column	Distribution of the change requests that are successfully closed without issues by change model and change type	admin	2024-05-23 13:50:02
% Unauthorized changes	Column	Percentage of the unauthorized change requests that are created	admin	2024-01-08 06:05:03
30/60/90 Day Desired State Task Aging	Horizontal bar		admin	2025-06-19 06:27:00
30/60/90 Day Task Aging	Horizontal bar		admin	2025-06-19 06:26:48
Achieved SLAs by Type	Vertical bar		glide.maint	2025-06-19 06:26:45
Acknowledged escalations (by channel)	Column	Number of acknowledged escalations in a specified period of time.	admin	2024-08-28 02:08:03
Acknowledged escalations (by level, shift or groups)	Column	Distribution of acknowledged escalations based on level/shift/groups.	admin	2024-01-09 08:51:49
Acknowledged escalations level (by user)	Column	The average level at which the user acknowledges the escalation.	admin	2024-08-21 17:03:14
Active Change Requests	List		glide.maint	2025-06-19 06:27:07
Active escalations (by priority and acknowledgement status)	Heatmap		admin	2023-12-26 18:12:01
Active Releases	List		glide.maint	2025-06-19 06:27:35
Active Releases by Status	List		glide.maint	2025-06-19 06:27:36

### Inventory overview for Enterprise Asset Workspace

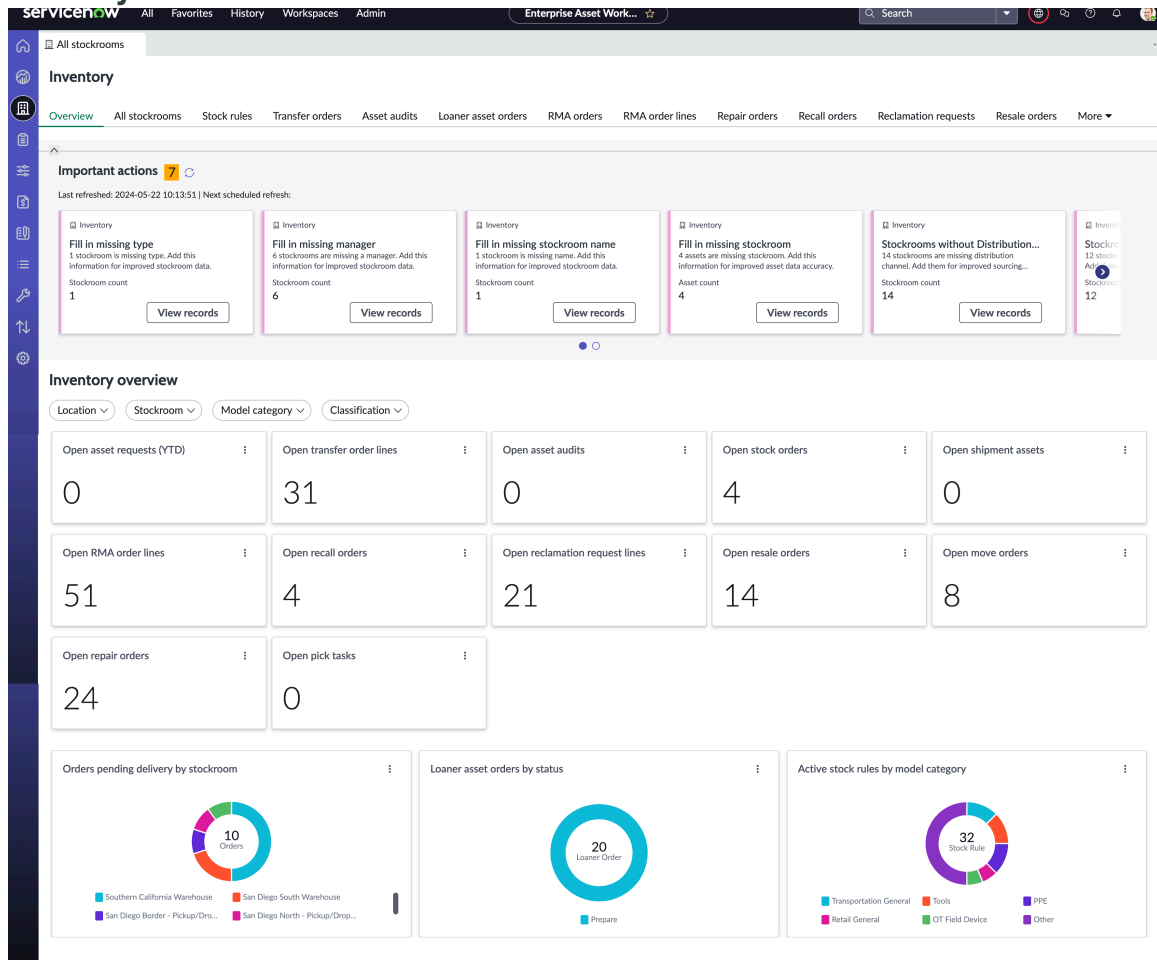
Use the Inventory view in the Enterprise Asset Workspace to optimize inventory thresholds and automate re-order process. You can create workflows and view detailed information on your inventory.

Take care of any urgent inventory related action items such as entering a missing stockroom type or stockroom name.

You can access the Inventory view by navigating to **Enterprise Asset Workspace > Inventory**.

To access detailed information and take relevant action, select any widget. You can also narrow your results by using the **Location**, **Stockroom**, and **Model category** filters.

## Inventory view



Use the following tabs to view your inventory:

- **Overview:** Get a glimpse of all your inventory data such as open transfer order lines, open asset audits, and loaner asset orders by status.
- **All stockrooms:** Create new stockroom and view stockrooms where your inventory is stored.
- **Stockroom types:** Create new storeroom types and view the various types of storerooms available for your inventory.
- **Stock rules:** Create new stock rules and view a list of existing stock rules.
- **Asset audits:** Create new asset audit records and view existing ones.
- **Disposal orders:** Create disposal order workflows for assets that have reached their end of life cycle or are no longer functional.
- **Loaner asset orders:** View all loaner asset orders and take appropriate actions.
- **RMA orders:** View all Return Merchandise Authorization (RMA) orders for your defective assets and take appropriate actions.
- **RMA order lines:** View all Return Merchandise Authorization (RMA) order lines within your RMA orders and take appropriate actions.
- **Transfer orders:** Create transfer order workflows for moving assets between your stockrooms.
- **Recall orders:** Create recall order workflows for assets that have been recalled by the asset vendor.
- **Reclamation requests:** View and fulfill all your reclamation requests.
- **Resale orders:** View and fulfill all your asset resale requests.

- **Move orders:** Create and view move orders for assets that need to be moved from one location to another.
- **Repair orders:** View the list of repair orders submitted for repair of assets with your stockroom. You can also create repair orders.

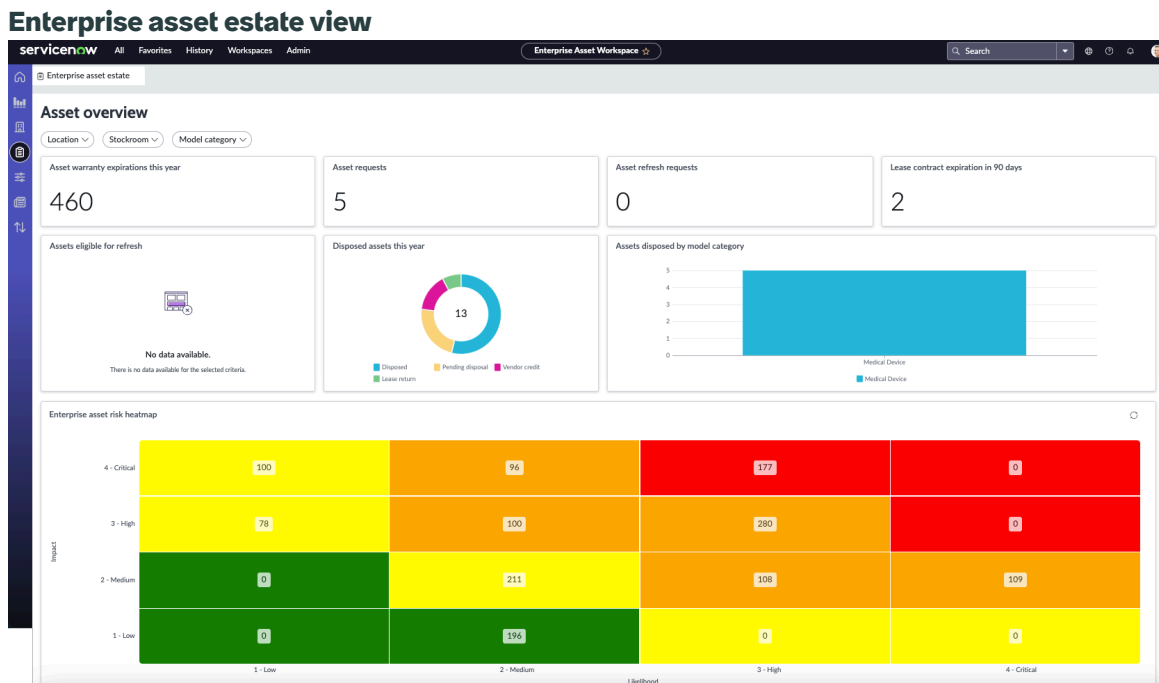
**Enterprise asset estate overview for Enterprise Asset Workspace**

Use the Enterprise asset estate view in the Enterprise Asset Workspace to create and manage your assets. You can also view details such as asset life cycle by state, disposed assets this year, and asset requests.

Take care of any urgent asset related action items such as entering a missing asset tag or asset function.

You can access the Enterprise asset estate view by navigating to **Enterprise Asset Workspace > Enterprise asset estate**.

To access detailed information and take relevant action, select any widget. You can also narrow your results by using the **Location, Stockroom, and Model category** filters.



**Enterprise asset estate overview**

Widget or chart	Description
Asset warranty expirations this year	Count of assets that are expiring this current year.
Asset requests	Count of enterprise and consumable requests in the catalog.
Assets refresh request	Count of assets that are pending refresh.
Lease contract expiration in 90 days	Contracts expiring in 90 days.
Assets eligible for refresh	Assets nearing end of life and which are eligible for refresh.

**Enterprise asset estate overview (continued)**

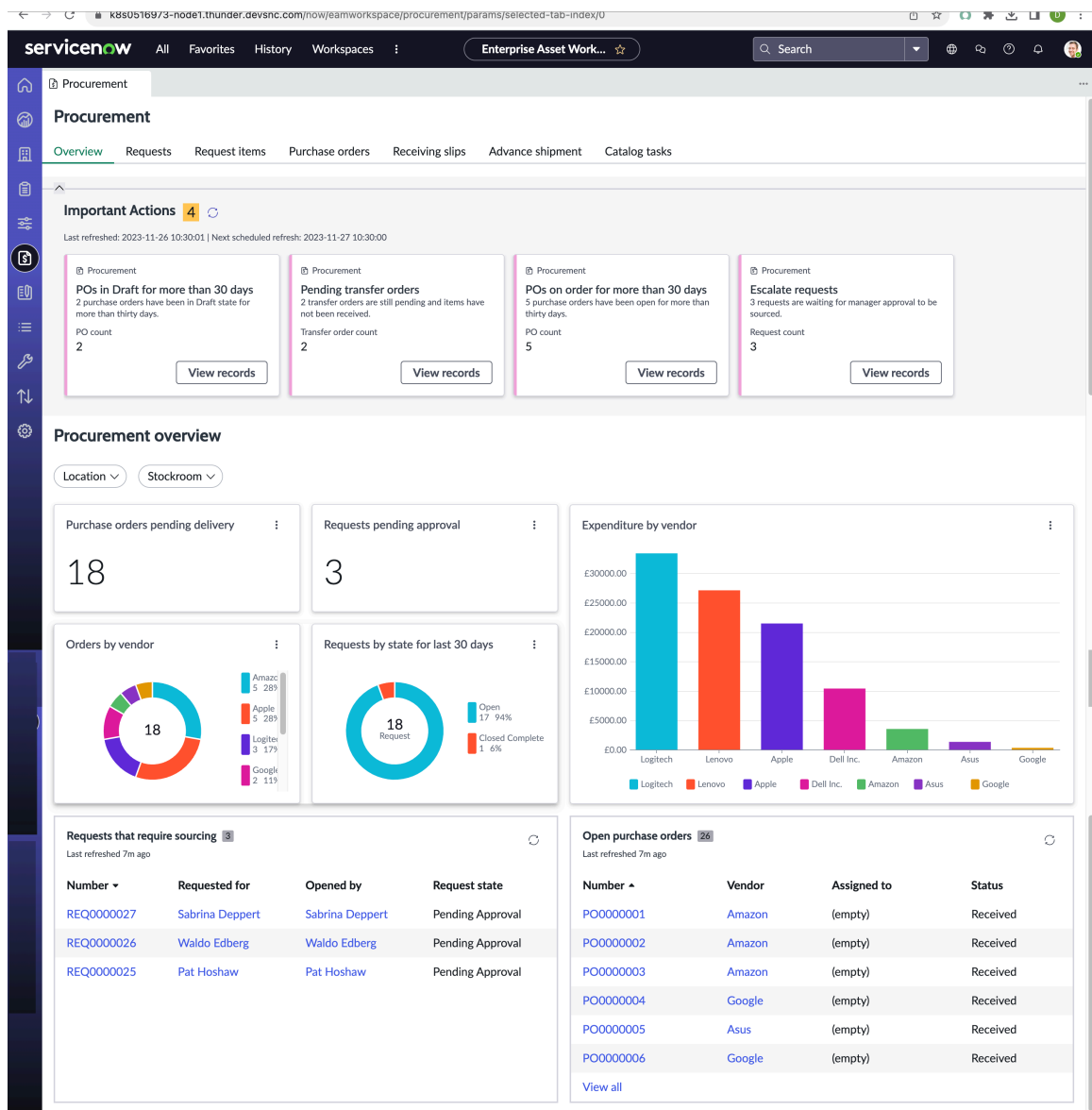
Widget or chart	Description
Disposed assets this year	Assets disposed this current year.
Assets disposed by model category	Assets disposed until the current date in this year and grouped by their model category.
Enterprise asset risk heat map	Displays the risk heat map for number of assets that have the likelihood and impact values. To view this heat map, ensure that the band score records in the Risk Score module are frozen.

**Procurement overview for Enterprise Asset Workspace**

View and manage procurement-related details such as procurement requests, purchase orders, sourcing tasks, and receiving slips through the Enterprise Asset Workspace.

The Procurement view in the Enterprise Asset Workspace provides access to actions for managing your open requests, pending purchase orders and transfer orders, and requests that need manager approval.

## Procurement view



Select any widget or chart to view more specific details. You can also narrow down your results by using the **Location**, **Stockroom**, and **Domain** filters.

**Note:** The Domain filter is available only when you've enabled the Domain Extensions Installer (com.glide.domain.msp\_extensions.installer) and Domain Separation (plugin com.snc.pa.domain\_support) plugins.

### Procurement overview

Widget or chart	Description
Purchase order pending delivery	Count of purchase orders that aren't received and aren't canceled. Only purchase orders that have a status of Requested, Ordered, or Pending Delivery are displayed.
Requests pending approval	Count of sourceable and active requests with the request state of Pending approval.

**Procurement overview (continued)**

Widget or chart	Description
Expenditure by vendor	Cost that you've paid to each of your vendors for procuring the inventory. Only purchase orders that have a status of Ordered, Pending Delivery, or Received are listed.
Orders by vendor	Counts of purchase orders that have been ordered, are pending delivery, or have been received by individual vendors.
Requests by state for last 30 days	Requests created in the last 30 days grouped by their state.
Requests that require sourcing	List of requests for which a purchase order, local order, or transfer order hasn't been initiated.
Open purchase orders	List of purchase orders that have been requested or ordered or have not been delivered.

**Enterprise model management overview for Enterprise Asset Workspace**

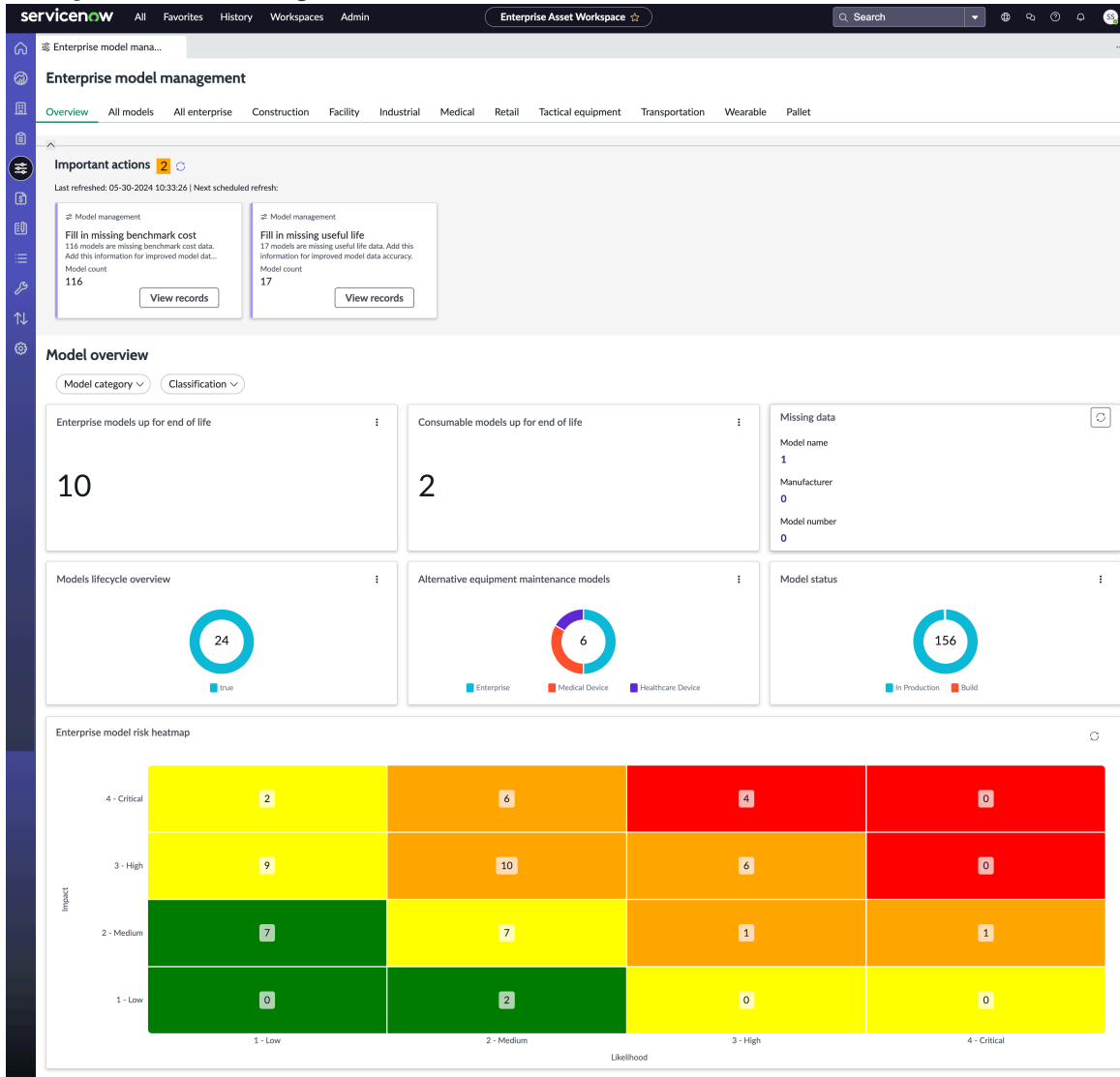
Use the Enterprise model management view in the Enterprise Asset Workspace to create and manage enterprise models. You can also view details such as model lifecycle overview, model status, and enterprise models up for end of life.

Take care of any urgent model related action items such as entering a missing model number or manufacture name.

You can access the Enterprise model management view by navigating to **Enterprise Asset Workspace > Enterprise model management**.

To access detailed information and take relevant action, select any widget. You can also narrow your results by using the **Model category** filter.

# Enterprise model management view



## Model overview

Widget or chart	Description
Enterprise models up for end of life this year	Count of enterprise models whose start date of the end of life phase is the current year.
Consumable models up for end of life this year	Count of consumable models whose start date of the end of life phase is the current year.
Missing data	Count of models that have missing model name, manufacturer, and model number.
Model lifecycle overview	Count of models that are present in each life cycle stage such as General Availability, End of Support, End of Life, and End of Sale.
Alternate equipment maintenance models	Count of models for which alternate equipment maintenance is enabled and are grouped by model categories.
Model status	Current count of models based on the status of the models.

### Model overview (continued)

Widget or chart	Description
Enterprise model risk heat map	<p>Displays the risk heat map for number of models that have the likelihood and impact values. To view this heat map, ensure that the band score records in the Risk Score module are frozen.</p> <p><b>Note:</b> If risk likelihood, risk impact, and risk score are not frozen, the heat map is rendered in a draft mode with no risk values in the model record. If only one of these vectors is frozen, the heat map is not rendered. If all three vectors are frozen, the heat map is rendered in a production mode and the risk values are populated in the model record.</p>

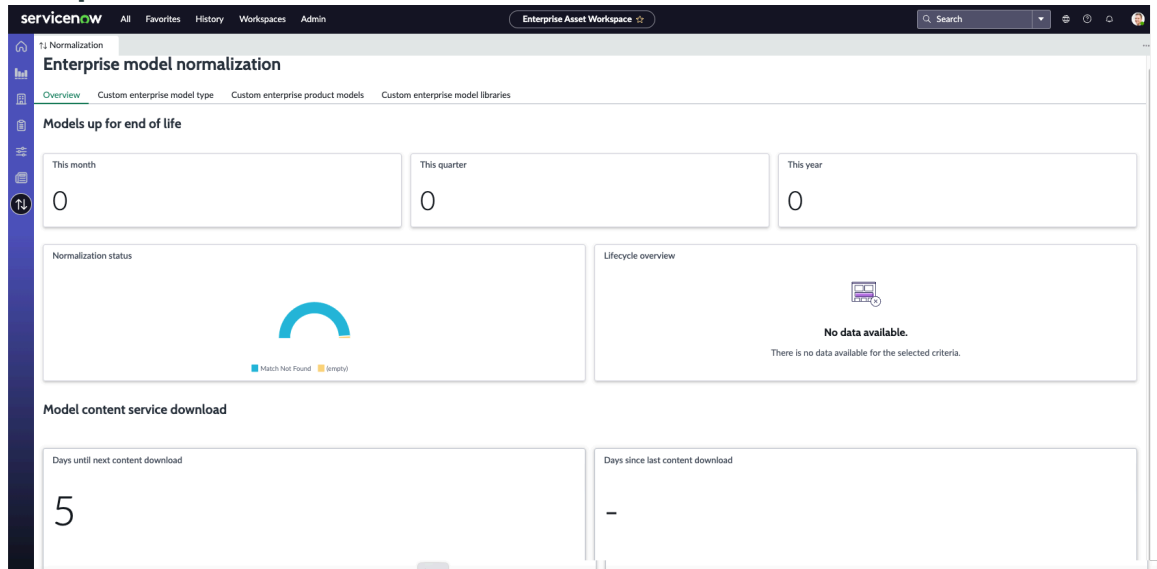
### Normalization overview for Enterprise Asset Management

Use the Normalization view in the Enterprise Asset Workspace to view information related to normalization such as normalization status, model content service download, lifecycle overview.

You can also create custom enterprise model types, product models, and model libraries from this view.

You can access the Normalization view by navigating to **Enterprise Asset Workspace > Normalization**.

### Enterprise model normalization



### Normalization widgets

Widget	Source	Description
Enterprise models up for end of life	Enterprise Model Lifecycle [sn_eam_model_lifecycle]	The beginning phase of the end of life for enterprise

**Normalization widgets (continued)**

Widget	Source	Description
		<p>models. Shows the count of enterprise models whose start date of the end of life phase is either the current month, quarter, or year.</p> <p><b>Note:</b> Only enterprise model life cycle records that are active, model status is in production, and life cycle type is Publisher appear in <b>This month, This quarter,</b> or <b>This year</b></p>
Normalization status		<p>Normalization status of all the enterprise models. View the count of enterprise models that were normalized and those models that didn't get normalized. For details on the normalization status, see <a href="#">Normalization status for enterprise models</a>.</p>
Lifecycle overview	Enterprise Model Lifecycle [sn_eam_model_lifecycle]	<p>The count of enterprise models that are present in each life cycle stage: General availability, end of support, end of extended support, and end of sale.</p> <p><b>Note:</b> Only enterprise model life cycle records that are active appear in this widget.</p>
<p>Enterprise model content service download.</p> <ul style="list-style-type: none"> <li>• Days until next content download</li> <li>• Days since last content download</li> </ul>	Data Services Download Schedules [cds_client_schedule]	<p>The days since the content service library was last downloaded on your instance and the days remaining for the next download to take place.</p>

**Contract and lease management overview for Enterprise Asset Workspace**

Use the Contract and lease management view in the Enterprise Asset Workspace to create and manage your enterprise asset contracts.

You can access the Contract and lease management view by navigating to **Enterprise Asset Workspace > Contract and lease management**.

## Contract and lease management view

**Contract and lease management**

Overview | All contracts | Lease contracts | Leased assets | Lease-end assets | My contracts | My contract tasks | My contract approvals | Terms and conditions

**Important Actions** 4

Last refreshed 2023-04-24 10:30:00 | Next scheduled refresh at 2023-04-25 10:30:00

- Contract management**  
30 days to renew contracts  
5 contracts need to renew in 30 days.  
Contract count: 5
- Contract management**  
90 days to renew contracts  
8 contracts need to renew in 90 days.  
Contract count: 8
- Contract management**  
Duplicate contracts  
4 duplicate contracts.  
Contract count: 4
- Contract management**  
Fill in missing contract administrator  
30 contracts are missing contract administrator. Add this information for improved contract data...  
Contract count: 30
- Contract management**  
Fill in missing end date  
4 contracts are missing end date. Add this information for improved contract data accuracy.  
Contract count: 4
- Contract management**  
Fill in missing vendor  
5 contracts are missing vendor data. Add information for improved contract data accuracy.  
Contract count: 5

**Contract overview**

Type ▾ Vendor ▾

Contract expenditure by type

\$4143.84 Contract

- NDA \$225.62
- Insurance \$490.64
- Maintenance \$338.27
- Purchase Order \$310.08
- Warranty \$310.08
- Other \$169.14

Contract expenditure by vendor

\$4143.84 Contract

- Asus \$188.68
- empty \$789.30
- Altiris \$775.21
- AT&T \$310.08
- Cisco \$281.89
- Other \$98.67

**Expiring contract**

Last refreshed just now

Number	Contract model	Vendor	Name	End date
CNTR0010059	Insurance	Altiris		2023-04-28
CNTR0010058	Maintenance	AT&T		2023-04-29
CNTR0010057	NDA	Cisco		2023-04-30
CNTR0010060	NDA	Altiris		2023-05-01
CNTR0010062	Purchase Order	Asus		2023-05-19
CNTR0010061	Insurance	Amazon		2023-05-27
CNTR0010049	Lease	(empty)		2023-06-05
CNTR0010063	Insurance	APC		2023-06-29

Use the following tabs to view and manage your enterprise asset contracts:

- **Overview:** Get a glimpse of all your contract data, including the contract expenditure by type, contract expenditure by vendor, and expiring contracts. You can narrow down this data by using the Domain, Type, and Vendor filters.

In addition, view all important actions for your enterprise asset contracts.

- **All contracts:** Create and view contracts for your enterprise assets. Supported contract types include lease, insurance, maintenance, warranty, purchase agreement, non-disclosure, terms & conditions, service, purchase order, software license, and subscription.
- **Lease contracts:** Create and view contracts for your leased enterprise assets.
- **Leased assets:** View all leased enterprise assets across your organization.
- **Lease-end assets:** View all leased enterprise assets that are associated with contracts for which the lease-end process has begun. Take action on any of the leased enterprise assets that do not have a State of Complete.
- **My contracts:** View all enterprise asset contracts that you are managing.
- **My contract tasks:** View all open tasks for the enterprise assets that are associated with the contracts you are managing.
- **My contract approvals:** View all enterprise asset contract and contract renewal requests that are waiting for your approval.
- **Terms and conditions:** Create and view terms and conditions for your enterprise asset contracts.

For more information on contracts, see [Contract Management](#).

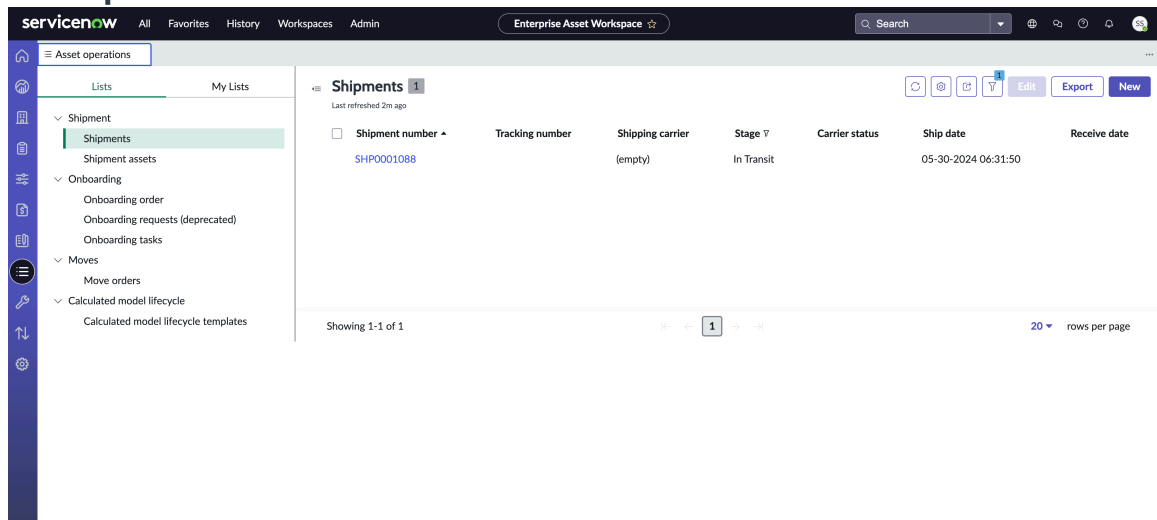
## Asset operations overview for Enterprise Asset Workspace

Use the Asset operations view in the Enterprise Asset Workspace to track and manage shipments, service catalog requests, requested items, catalog tasks, and contract renewal requests.

Use the Asset operations view to perform the following tasks:

- View and create shipments
- Create shipment notifications
- View onboarding requests and tasks
- Create and view move orders.
- Create onboarding orders to onboard multiple enterprise assets at one go. For more details, see [Onboarding multiple enterprise assets in the Enterprise Asset Workspace](#).
- Create Calculated model lifecycle templates for enterprise models. For more details, see [Manage the lifecycle of enterprise models with calculated lifecycle templates](#).

### Asset operations view



After you’ve created your request in the Service Catalog application, you can view the request, the requested items, the catalog tasks, and source the request from the Enterprise Asset Workspace.

**Note:** All requests created for hardware assets and enterprise assets are listed in the **Requests** list section. Similarly all catalog tasks created for hardware assets and enterprise assets are listed in the **Catalog tasks** list section. The Requested items list section only shows the requested items pertaining to enterprise assets.

## Work management overview for Enterprise Asset Workspace

Use the Work management view in the Enterprise Asset Workspace to create and manage maintenance plans, work orders, and work order tasks.

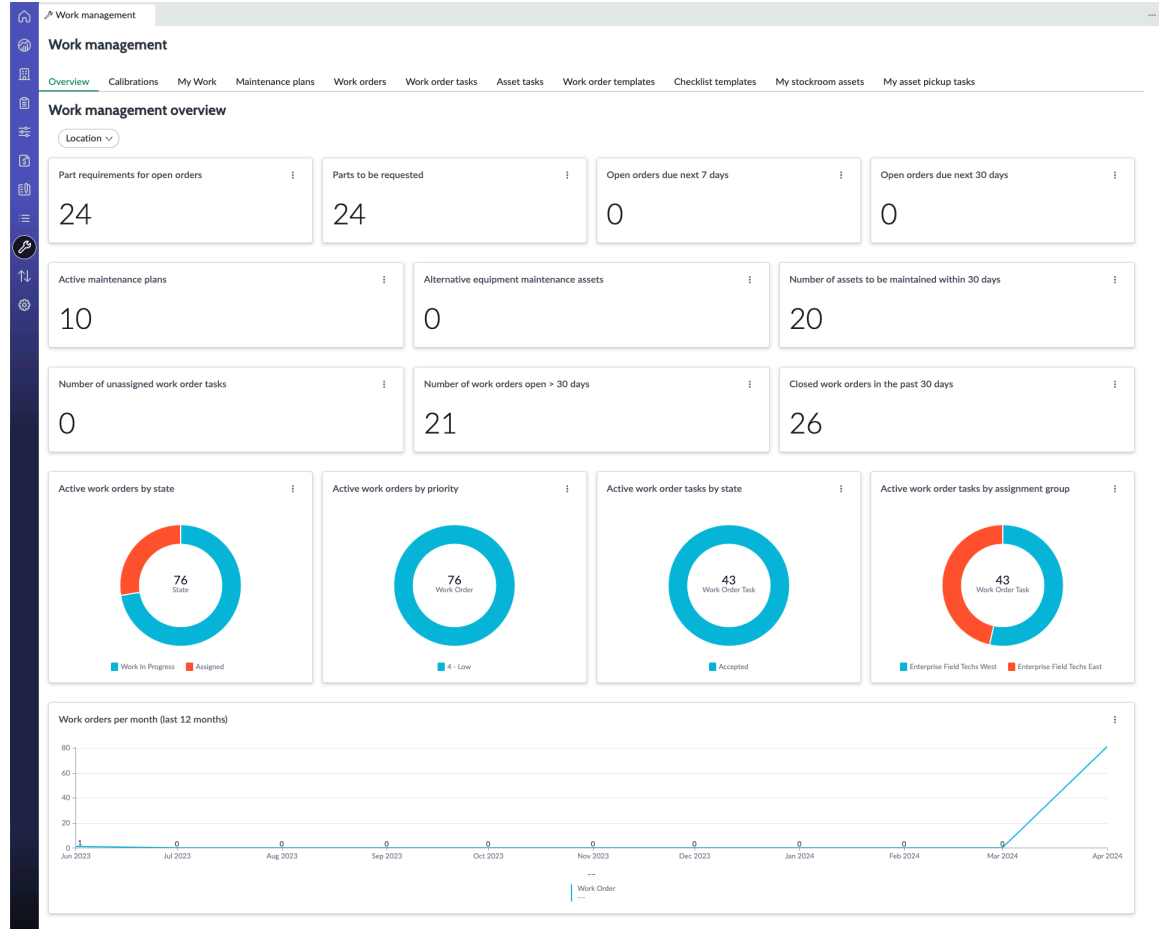
**Important:** Before you can access and use the Work management view, edit your Field Service Management configurations as needed. See [Edit Field Service Management configurations for the Work management view](#) for detailed instructions.

You can access the Work management view by navigating to **Enterprise Asset Workspace > Work management**.

**Note:** Only users with the system administrator (admin), enterprise asset manager (sn\_eam.enterprise\_asset\_manager), and agent (wm\_agent) roles can access the Work management view.

To access detailed information and take relevant action, click any widget. You can also narrow your results by using the **Location** filter.

### Work management view



Use the following tabs to view and manage your work orders, work order tasks, maintenance plans, and other relevant work order information:

**Note:** The tabs that appear on the Work management view differ based on your assigned role.

- **Overview:** Get a glimpse of all your work order data, such as part requirements for open orders, active work orders by state, work orders per month, and active maintenance plans.

**Note:** This tab appears if you have the system administrator (admin) or enterprise asset manager (sn\_eam.enterprise\_asset\_manager) role.

- **Calibrations:** Get a glimpse of all your calibration data, such as all calibration events and calibrations pending verification.

**Note:** This tab appears if you have the system administrator (admin) or enterprise asset manager (sn\_eam.enterprise\_asset\_manager) role.

- **My work:** View all open requests and tasks that are associated with your work orders.

- Note:** This tab appears if you have the system administrator (admin) or agent (wm\_agent) role.
- **Maintenance plans:** Create and view maintenance plans for your enterprise assets.
- Note:** This tab appears if you have the system administrator (admin) or enterprise asset manager (sn\_eam.enterprise\_asset\_manager) role.
- **Work orders:** Create and view work orders for any planned or ad-hoc work that you want to perform on your enterprise assets.
- Note:** This tab appears if you have the system administrator (admin), enterprise asset manager (sn\_eam.enterprise\_asset\_manager), or agent (wm\_agent) role.
- **Work order tasks:** View all work order tasks that are associated with your work orders.
- Note:** This tab appears if you have the system administrator (admin), enterprise asset manager (sn\_eam.enterprise\_asset\_manager), or agent (wm\_agent) role.
- **Asset tasks:** View all tasks for the enterprise assets that are associated with your work orders.
- Note:** This tab appears if you have the enterprise technician (enterprise\_asset\_technician) or agent (wm\_agent) role.
- **Work order templates:** Create and view templates for your work orders.
- Note:** This tab appears if you have the system administrator (admin) or enterprise asset manager (sn\_eam.enterprise\_asset\_manager) role.
- **Checklist templates:** Create and view checklist templates for your work orders.
- Note:** This tab appears if you have the system administrator (admin) or enterprise asset manager (sn\_eam.enterprise\_asset\_manager) role.
- **My stockroom assets:** View enterprise assets that are available within your stockrooms.
- Note:** This tab appears if you have the system administrator (admin) or agent (wm\_agent) role.
- **My asset pickup tasks:** View all scheduled pickup tasks for the enterprise assets that are associated with your work orders.
- Note:** This tab appears if you have the system administrator (admin) or agent (wm\_agent) role.

### Admin center overview for Enterprise Asset Workspace

Use the Admin center view in the Enterprise Asset Workspace to perform all your configuration and administrative tasks.

Only the Enterprise admin [sn\_eam.enterprise\_admin] and the Enterprise asset manager [sn\_eam.enterprise\_asset\_manager] roles can view and perform operations in the Admin center view.

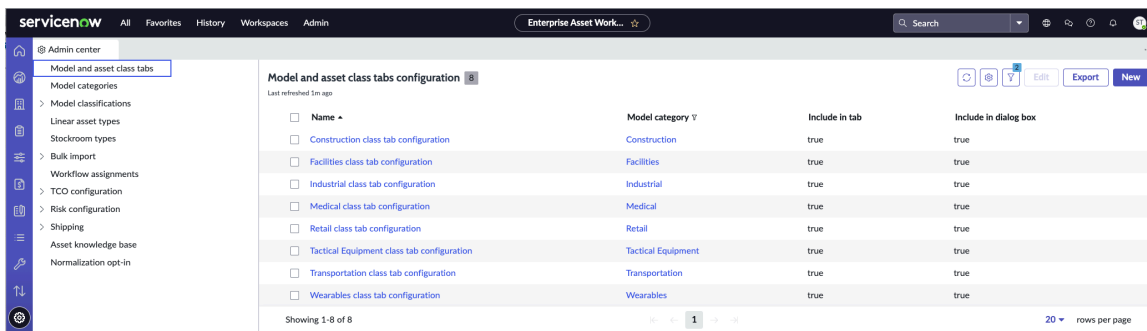
Use the Admin center to perform the following tasks:

- Configure model and asset tabs
- Create model categories
- Create and import classification codes
- Create sources for classification codes
- Create linear asset types
- Create stockroom types
- Import enterprise models and assets
- Workflow assignments
- Create and view task rate and labor rate cards
- Create configuration values for risk likelihood, risk impact, and risk scores
- Create shipment carriers
- Integrate with third-party shipping carriers
- Create a knowledge article
- Opt-in to Enterprise Asset Management
- **Create failure and resolution codes**

**i Important:** Options to create failure and resolution codes are available in Enterprise Asset Management version 9.0 and later.

- **Set up the configurations to monitor the key performance indicators (KPIs) of the enterprise assets**

**i Important:** The KPI configuration options are available in Enterprise Asset Management version 9.0 and later.



## Expanded Model and Asset Classes Store application

The Expanded Model and Asset Classes Store application adds enterprise model classes, service model child classes, API model categories, and enterprise asset classes that extend out-of-the-box model and asset classes within the Configuration Management Database (CMDB) class hierarchy. These extensions include class descriptions, identification rules, identifier entries, and dependent relationships.

**i Note:** This application is compatible with the Rome and later family releases.

For more information on the CMDB, see [Configuration Management Database \(CMDB\)](#).

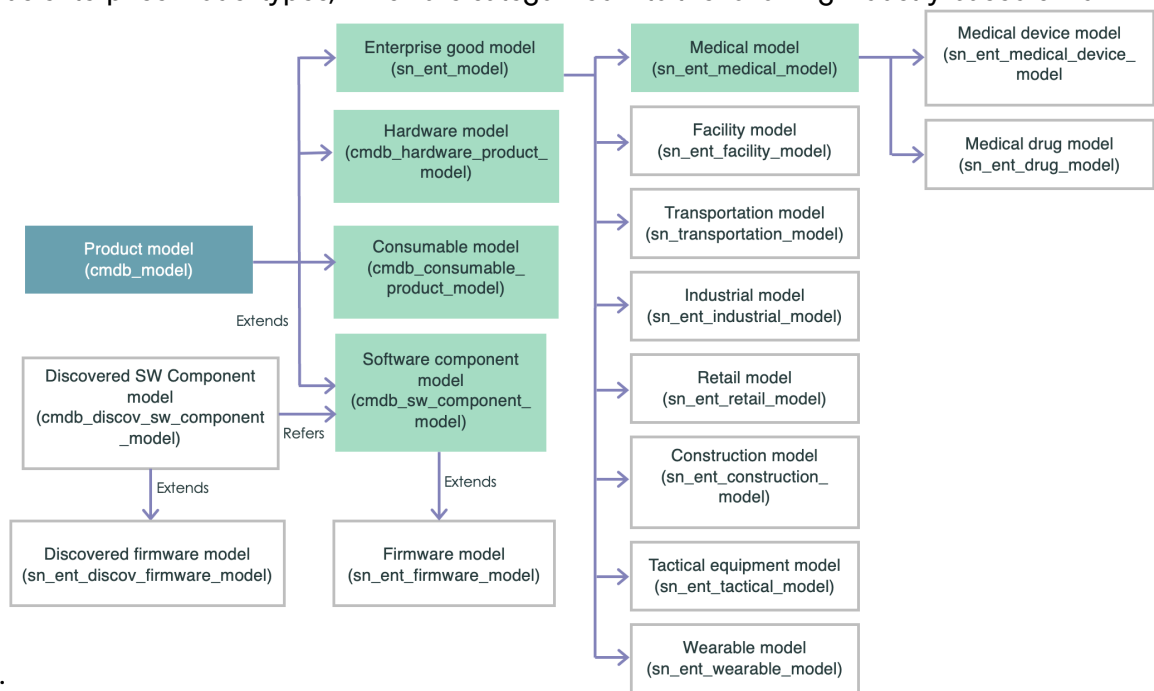
In addition to extending CMDB model and asset classes, the Expanded Model and Asset Classes application creates model categories that associate model and asset classes with

CMDB configuration item (CI) classes. The Enterprise Asset Management application uses these classes and model categories to create asset and model records that can be used to track and manage enterprise assets. Discovery tools, such as the ServiceNow® Discovery application, can also use these classes and model categories to create asset and model records for discovered CIs. See [Model categories](#) for more information on model categories.

The Expanded Model and Asset Classes application also adds the API and Managed API model categories, which allow the Configuration Management Database (CMDB) application to create and associate application models with API and Managed API CMDB CI classes. API CMDB CI classes provide classifications for APIs (application programming interfaces), which are sets of definitions and protocols that enable computer programs to communicate with each other. Managed API CMDB CI classes provide classifications for APIs that are discovered through gateways or management services, such as Amazon API Gateway. By associating application models with these CMDB CI classes, the Configuration Management Database (CMDB) application can create version-agnostic representations of your APIs. These representations can then provide a more holistic view of each API during reporting and analysis. For more information on API and Managed API CMDB CI classes, see [API extension classes](#).

### Enterprise model classes added by the application

The Expanded Model and Asset Classes application adds the Enterprise good model [sn\_ent\_model] class, Firmware model [sn\_ent\_firmware\_model] class, and Discovered firmware model [sn\_ent\_discov\_firmware\_model] class, which extends the base Product model [cmdb\_model] class. The Enterprise good model [sn\_ent\_model] class includes classifications for various enterprise model types, which are categorized into the following industry-based child



classes:

#### Enterprise Good Model Child Classes

Enterprise good model child class	Description
Medical model [sn_ent_medical_model]	Classifies medical-based enterprise models, such as ER Medical Cart Kit and ECG Electrodes.
Medical device model	Classifies medical device-based enterprise models, such as Blood Pressure Monitor and MRI Patient Table.

Enterprise Good Model Child Classes (continued)

Enterprise good model child class	Description
[sn_ent_medical_device_model]	<p><b>Note:</b> When you upgrade to version 1.2.0 or later of the Expanded Model and Asset Classes application, the application automatically runs the <code>Update medical device category</code> fix script to associate the Medical Device model [sn_ent_medical_device_model] class with the existing Medical device model category. However, you may need to manually reclassify existing enterprise models under the Medical device model category from the Medical model [sn_ent_medical_model] class to the Medical Device model [sn_ent_medical_device_model] class. Refer to <a href="#">KB1182183</a> for detailed instructions.</p> <p>Product Instance Identifier (PID) which is a unique and common identifier that links the asset, CI, and IBI classes is generated for the assets of Medical Device model category. PID is generated based on the PID configurations applicable for the Medical Device model category.</p> <p>The Product Instance Identifier Configurations [product_instance_identifier_configuration] table stores the PID configurations. By default, the following configurations are available:</p> <ul style="list-style-type: none"> <li>• <b>PID - Serial number</b> that includes a parameter defined based on the Serial number field of the Asset [alm_asset] table.</li> <li>• <b>PID - Parent</b> that includes parameters defined based on the Parent and Model Component ID fields of the Asset [alm_asset] table.</li> </ul> <p>When many PID configurations are associated with the Medical Device model category, the configuration with the highest priority is considered first during the generation of the PID. The PID - Serial number configuration is mostly given the highest priority.</p>
Medical drug model [sn_ent_drug_model]	Classifies medical drug-based enterprise models, such as Amoxicillin and Prilosec.
Facility model [sn_ent_facility_model]	Classifies facility-based enterprise models, such as HVAC Split System and Wire Shelf.
Transportation model [sn_ent_transportation_model]	Classifies transportation-based enterprise models, such as Disc Brake Rotor Front and Fuel Cell Car.
Industrial model [sn_ent_industrial_model]	Classifies industrial-based enterprise models, such as CNC Milling Machine and Laser Cutting Machine.

**Enterprise Good Model Child Classes (continued)**

Enterprise good model child class	Description
Retail model [sn_ent_retail_model]	Classifies retail-based enterprise models, such as Retail Counter Scale and 80mm Thermal Receipt Printer.
Tactical equipment model [sn_ent_tactical_model]	Classifies tactical equipment-based enterprise models, such as K19 Plate Carrier and Triple Mag Pouch.
Construction model [sn_ent_construction_model]	Classifies construction-based enterprise models, such as Excavator and Hex Breaker Hammer Kit.
Wearable model [sn_ent_wearable_model]	Classifies wearable asset-based enterprise models, such as N95 Respirator and High-vis Safety Vest.

**Firmware model and Discovered firmware model classes**

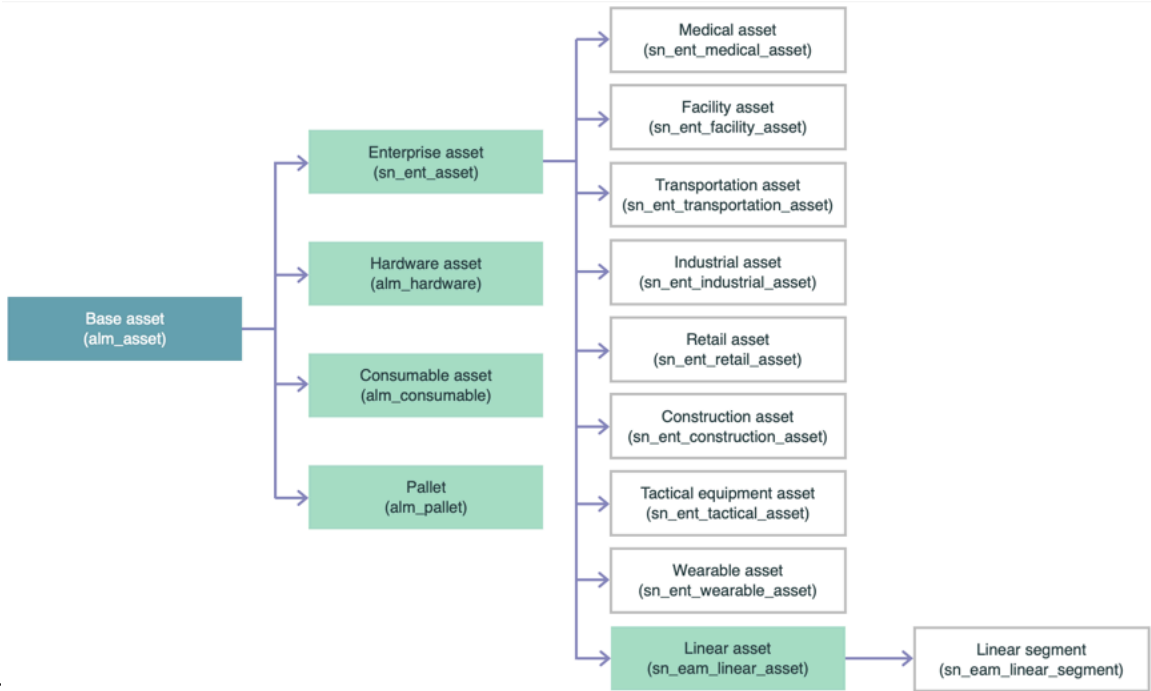
The Expanded Model and Asset Classes application adds the Firmware model [sn\_ent\_firmware\_model] and Discovered firmware model [sn\_ent\_discov\_firmware\_model] classes. These firmware model class tables extend the tables that the CMDB CI Data Foundation application installs.

The Firmware installation [cmdb\_firmware\_install] table added with the CMDB CI class model application stores the installation records based on the firmware embedded into assets. Based on the records in the Firmware installation table, the Discovered firmware model and Firmware model tables store the details of the firmware.

**Enterprise asset classes added by the application**

The Expanded Model and Asset Classes application adds the Enterprise asset [sn\_ent\_asset] class, which extends the Base asset [alm\_base] class. The Enterprise asset [sn\_ent\_asset] class includes classifications for various enterprise

asset types, which are categorized into the following industry-based child



classes:

### Enterprise Asset Child Classes

Enterprise asset child class	Description
Medical asset [sn_ent_medical_asset]	Classifies medical-based enterprise assets, such as hospital beds and X-ray machines.
Facility asset [sn_ent_facility_asset]	Classifies facility-based enterprise assets, such as coffee makers and HVAC systems.
Transportation asset [sn_ent_transportation_asset]	Classifies transportation-based enterprise assets, such as airplanes and brake pads.
Industrial asset [sn_ent_industrial_asset]	Classifies industrial-based enterprise assets, such as forklifts and casting machines.
Retail asset [sn_ent_retail_asset]	Classifies retail-based enterprise assets, such as display cases and clothing racks.
Tactical equipment asset [sn_ent_tactical_asset]	Classifies tactical equipment-based enterprise assets, such as hydration carriers and tactical plate carriers.
Construction asset [sn_ent_construction_asset]	Classifies construction-based enterprise assets, such as sledgehammers and hand saws.
Wearable asset [sn_ent_wearable_asset]	Classifies wearable enterprise assets, such as helmets and uniforms.

## Service model classes added by the application

The Expanded Model and Asset Classes application adds the following child classes to the base Service model [cmdb\_service\_product\_model] class. These child classes provide classifications for various service model types.

### Service Model Child Classes

Service model child class	Role required for read access	Description
Card service model [sn_ent_card_service_model]	sn_ent.card_service_model_viewer	Classifies service models that are based on card offerings from banks and financial institutions, such as credit cards and gift cards.
Deposit model [sn_ent_deposit_account_model]	sn_ent.deposit_account_model_viewer	Classifies service models that are based on deposit accounts offered by banks and financial institutions, such as savings and checking accounts.
Loan model [sn_ent_loan_account_model]	sn_ent.loan_account_model_viewer	Classifies service models that are based on loan options offered by banks and financial institutions, such as personal loans and mortgage loans.
Line of credit model [sn_ent_line_of_credit_model]	sn_ent.line_of_credit_model_viewer	Classifies service models that are based on lines of credit offered

**Service Model Child Classes (continued)**

Service model child class	Role required for read access	Description
		by banks and financial institutions, such as overdrafts on savings and checking accounts.
Financial service model [sn_ent_financial_services_model]	sn_ent.financial_services_model_viewer	Classifies service models that are based on financial services offered by banks and financial institutions, such as safe lockers and wire services.
Investment model [sn_ent_investment_model]	sn_ent.investment_model_viewer	Classifies service models that are based on wealth management options offered by banks and financial institutions, such as mutual funds and retirement planning.
Personal lines insurance product model [sn_ent_b2c_ins_policy_model]	sn_ent.b2c_ins_policy_model_viewer	Classifies service models that are based on personal lines insurance policies offered by insurance carriers, such as coverage and payment plans for

**Service Model Child Classes (continued)**

Service model child class	Role required for read access	Description
		personal auto insurance.
Commercial lines insurance product model [sn_ent_b2b_ins_policy_model]	sn_ent.b2b_ins_policy_model_viewer	Classifies service models that are based on commercial lines insurance policies offered by insurance carriers, such as coverage and payment plans for commercial property insurance.
Group life insurance product model [sn_ent_group_life_ins_policy_model]	sn_ent.group_life_ins_policy_model_viewer	Classifies service models that are based on group life insurance policies offered by insurance carriers, such as coverage and payment plans for group term life insurance.
Individual life product model [sn_ent_indiv_life_ins_policy_model]	sn_ent.indiv_life_ins_policy_model_viewer	Classifies service models that are based on individual life insurance policies offered by insurance carriers, such as coverage and payment plans for individual whole life insurance.

**Service Model Child Classes (continued)**

Service model child class	Role required for read access	Description
Medical insurance model [sn_ent_medical_insurance_model]	sn_ent_medical_insurance_model_viewer	Classifies medical insurance models, including health insurance plans and government insurance programs such as Medicare or Medicaid.
Social benefit model [sn_ent_social_benefit_model]	sn_ent.social_benefit_model_viewer	Classifies service models that are based on social insurance programs and means-tested assistance programs, such as social security and the Supplemental Nutrition Assistance Program (SNAP).

**Contract model classes added by this application**

Contract model class	Role required for read access	Description
Permit model [sn_ent_permit_model]	contract_manager	The Permit model is an extension of the Contract model table and is used to model licenses and permits that have been issued and entitles the recipients to perform certain activities or make use of specific resources.

## Requesting the Expanded Model and Asset Classes application

You must request the Expanded Model and Asset Classes application from the ServiceNow Store.

Visit the [ServiceNow Store](#) website to view all available applications and for information about submitting requests to the Store. For cumulative release notes information for all released applications, see the [ServiceNow Store version history release notes](#).

1. From a web browser, go to the [ServiceNow Store](#).
2. Log in using your HI credentials.
3. In the search bar, enter `Expanded Model and Asset Classes` and then click **Search**.
4. Select the result called **Expanded Model and Asset Classes**.
5. On the Expanded Model and Asset Classes page, click **Request Install**.

The ServiceNow Request for App Installation - Expanded Model and Asset Classes dialog box opens.

6. In the dialog box, fill in the fields.

### ServiceNow Request for App Installation - Expanded Model and Asset Classes dialog box

Field	Description
Instance Name	Name of the instance on which you want to install the application. After you enter the instance name, click <b>Validate Instance</b> to verify that the instance exists.
Reason for request	Reason for requesting the application.

7. Click **Request**.
8. Click **Close**.

If your request is approved, you will receive an email with detailed instructions on how to install the application. You can then install the application according to the instructions in the email.

## Verifying successful application installation

After you request and install the Expanded Model and Asset Classes application, verify that all enterprise model and asset classes have been added to the CMDB class hierarchy successfully.

1. From your ServiceNow instance, navigate to **All > Configuration > CI Class Manager**.
2. Click **Hierarchy** to display the CI Classes list, where you can view all classes within the CMDB class hierarchy.
3. Verify that all enterprise model and asset classes have been added to the list.
4. (Optional) Select a class to verify the corresponding class description, identification rules, identifier entries, and dependent relationships.

**Warning:** Uninstalling the Expanded Model and Asset Classes application may compromise the integrity of the Enterprise Asset Management application, resulting in unexpected behavior.

## OT Asset Management

Operational Technology (OT) Asset Management is a specialized offering within the suite of Enterprise Asset Management solutions for managing Operational Technology (OT) and Operational Equipment (OE) assets. With OT Asset Management, you can effectively manage the lifecycle of OT and OE assets.

OT Asset Management is a licensable application that helps you to manage assets of the Industrial model category for Operational Technology. The OT Asset Management (com.sn\_otam) application is available on the ServiceNow Store. When this application is installed on your ServiceNow instance, the Enterprise Asset Management application also gets installed. For more information, see [Install OT Asset Management](#).

The OT Asset Management application provides the functionalities, features, and workflows of Enterprise Asset Management that support roles related to Operational Technology.

### OT Asset Management licensing

The ServiceNow® platform uses a licensing method where your organization is charged for using the OT Asset Management application. In this licensing model, all assets of the Industrial model categories are charged based on the Subscription unit ratio.

The ServiceNow® OT Asset Management licensing is based on resource categories. A resource category is a group of related model categories. The OT Asset Management application supports some default resource categories. These resource categories enable assets of the Industrial model categories to utilize the features and workflows of the OT Asset Management application. Any asset of the Industrial model category is counted toward a Subscription Unit based on the predefined ratio of number of assets to subscription units.

When you create a custom model category with a licensable Industrial model category as its parent, the custom model category is automatically associated with the resource category of the parent model category. Based on the resource category, the assets of these custom model categories are licensed and counted toward a Subscription Unit.

**Note:** When the OT Asset Management application is activated on your ServiceNow instance, all the OT Asset Management license resource categories are opted in by default.

### OT Asset Management license resource categories

Resource category	Subscription unit ratio	Model category
Unclassed OT	1:1	<ul style="list-style-type: none"> <li>Industrial</li> <li>Industrial General</li> </ul>
OT Supervisory System	1:1	<ul style="list-style-type: none"> <li>OT Supervisory</li> <li>OT Supervisory EWS</li> <li>OT Supervisory Historian</li> <li>OT Supervisory HMI</li> </ul>

**OT Asset Management license resource categories (continued)**

Resource category	Subscription unit ratio	Model category
		<ul style="list-style-type: none"> <li>• OT Supervisory OPC</li> <li>• OT Supervisory SCADA</li> </ul>
OT Control System	3:1	<ul style="list-style-type: none"> <li>• OT Control</li> <li>• OT Control 3D Printer</li> <li>• OT Control CNC</li> <li>• OT Control DCS</li> <li>• OT Control DPU</li> <li>• OT Control IED</li> <li>• OT Control Module</li> <li>• OT Control PLC</li> <li>• OT Control RTU</li> <li>• OT Control SCADA</li> <li>• OT Control Server</li> </ul>
OT Field Devices	10:1	<ul style="list-style-type: none"> <li>• OT Field Actuator</li> <li>• OT Field Device</li> <li>• OT Field Drive</li> <li>• OT Field Robot</li> <li>• OT Field Sensor</li> </ul>
Industrial Consumable	25:1	Any consumable asset created using any of the preceding model categories.
Operational Equipment	1:1	Not applicable

The Subscription unit ratio is the ratio of the number of assets to the number of subscription units. For example, the subscription unit ratio of Industrial Consumable is 25:1, where 25 assets require a single unit of license. If 1 license costs \$100, then 25 industrial consumable assets cost \$100 and 50 industrial consumable assets cost \$200.

You can view the subscription details of your OT Asset Management application using the ITAM License Report. For more details, see [View the license report for the OT Asset Management application](#).

**OT Asset Workspace**

The OT Asset Workspace is the intuitive and streamlined user interface of the OT Asset Management application to manage your Operational Technology (OT) and Operational Equipment (OE) assets.

The OT Asset Workspace is a unified medium with multiple views that help you manage your OT and OE assets efficiently. The views provide you with visibility into all the important aspects of your assets, such as dashboards on Asset count by model, lifecycle state, model category, and overall performance of assets.

You can manage your assets efficiently by using the following views of the OT Asset Workspace:

- OT asset overview: View important actions and quick links to active tasks.
- Asset analytics: Manage resources efficiently by tracking the Total Cost of Ownership (TCO) of assets.
- Inventory: View details of the entire asset inventory and stockrooms that enable you to perform inventory tasks.
- OT asset estate: View the asset functions and maintain accurate hardware and consumable records.
- OT model management: View details of different types of OT models that are being managed.
- Procurement view: View and manage details of all ongoing procurement activities.
- Contract and lease management: View and manage all asset contracts.
- Asset operations: View asset operations related to shipment, onboarding, Move orders, and calculated model lifecycle.
- Work management: Create and manage maintenance plans, work orders, and work order tasks.
- Admin center: Perform configuration and administrative tasks. As an OT asset manager and OT asset technician, you can only make changes to the Task rate card and Labor rate card options under the **TCO Configuration** list.

## OT Asset Workspace roles

Access to the OT Asset Workspace depends on the role assigned to you.

- OT asset manager [sn\_otam.ot\_asset\_manager]: Provides full access to the OT Asset Workspace.
- OT asset technician [sn\_otam.ot\_asset\_technician]: Provides limited access to the OT Asset Workspace.

### Related topics

[Enterprise Asset Workspace](#)

## Enterprise Asset Management for Healthcare

The Enterprise Asset Management for Healthcare application is a licensable application that on activation enables you to manage healthcare-specific models, assets, and workflows.

The Enterprise Asset Management for Healthcare (com.sn\_eamhc) application is available on the ServiceNow Store. When you install this application on your ServiceNow instance, the Enterprise Asset Management application also gets installed. For more information, see [Installed with Enterprise Asset Management for Healthcare](#).

This application provides functionalities, features, and workflows of Enterprise Asset Management that support healthcare-related roles and asset models.

### Related topics

[Exploring Enterprise Asset Management](#)

## Personalized workspaces for medical and facility industries

Use personalized workspaces for creating and managing medical and facility assets and models.

### Overview

Personalized workspaces help you to work on specific industry functional areas where the asset and model tabs are configured based on your industry.


Use the following workspaces tailored for the medical and facility industries:

- **Medical Asset Workspace:** Create and manage your medical assets and models.
- **Facility Asset Workspace:** Create and manage your facility assets and models.

**Note:** The normalization process only runs in the Enterprise Asset Workspace and doesn't run for medical models and facility models within their specific workspaces.

If you're logged in as a medical asset manager or a medical asset technician, by default you only get to see the medical asset category in the **Medical asset estate** view and the medical model category in the **Medical model management** view. Similarly if you're logged in as a facility asset manager or a facility asset technician, you only get to see the facility asset category in the **Facility asset estate** view and the facility model category in the **Facility model management** view.

If you're logged in to a specific workspace, you may see other assets and model categories that aren't specific to your industry and have been added by the Enterprise admin or the system administrator role. As an example, if you're logged in as a medical asset manager or a medical asset technician, you may see other assets and model categories such as construction, transportation, or facilities. However, you can't create or modify anything in these categories as these are read only.

You can evaluate how effectively your assets are functioning and being used through the reports based on asset key performance indicators in the **Asset performance** tab of the **Asset analytics** view. The asset performance report is also available on the contextual sidebar of the asset record, displayed by selecting the **Asset availability and related KPIs** icon [].

You can receive assets from any workflow directly at the stockroom using the unified receiving functionality in the Medical Asset Workspace and Facility Asset Workspace. You can receive assets in any of the following ways:

- Receive a single asset
- Receive multiple assets in the shipments
- Import assets in bulk and receive them

You can also manage supply and demand in your stockrooms effectively with inventory demand reports. To view the reports, follow these steps

1. Navigate to the **Inventory** view.
2. Select the **All stockrooms** tab.
3. Select a stockroom for which you want to view the inventory reports.
4. Select the **Inventory insights** tab.

### Workspace roles

The workspace that you can access depends on the role with which you log in to your ServiceNow instance. You can only view the workspace for which you have access.

### Roles needed for accessing workspaces

Workspace	Role needed
Medical Asset Workspace	<ul style="list-style-type: none"> <li>• Medical asset manager (sn_eamhc.medical_asset_manager)</li> <li>• Medical asset technician (sn_eamhc.medical_asset_technician)</li> <li>• Enterprise admin [sn_eam.enterprise_admin]</li> <li>• System administrator [sys_admin]</li> </ul>
Facility Asset Workspace	<ul style="list-style-type: none"> <li>• Facility asset manager (sn_eamhc.facility_asset_manager)</li> <li>• Facility asset technician (sn_eamhc.facility_asset_technician)</li> <li>• Enterprise admin (sn_eam.enterprise_admin)</li> <li>• System administrator (sys_admin)</li> </ul>
Medical Asset Workspace and Facility Asset Workspace	<ul style="list-style-type: none"> <li>• Medical asset manager (sn_eamhc.medical_asset_manager) and facility asset manager (sn_eamhc.facility_asset_manager)</li> <li>• Medical asset technician (sn_eamhc.medical_asset_technician) and facility asset technician (sn_eamhc.facility_asset_technician)</li> <li>• Enterprise admin (sn_eam.enterprise_admin)</li> <li>• System administrator (sys_admin)</li> </ul>
Medical Asset Workspace, Facility Asset Workspace, and Enterprise Asset Workspace	<ul style="list-style-type: none"> <li>• Enterprise admin (sn_eam.enterprise_admin)</li> <li>• System administrator (sys_admin)</li> </ul>

### Accessing the Admin center

Only the Enterprise admin role and the system administrator role can make configuration changes in the Admin center of the Medical Asset Workspace and the Facility Asset Workspace.

The Medical asset manager, Medical asset technician, Facility asset manager, or Facility asset technician can't make any changes in the Admin center except for the Task rate card and the Labor rate card options under the **TCO configuration** list.

## Mobile Agent application for Enterprise Asset Management

You can use the ServiceNow<sup>®</sup> Mobile Agent application to create, update, and view your enterprise assets. You can also use the application to scan enterprise assets for inventory audits and to complete verifications and departures for asset disposals.

The ServiceNow Mobile Agent application is supported on both iOS and Android devices. You can download the application from the [Apple App Store](#) or [Google Play Store](#).

See [Mobile Agent app](#) for more information on the Mobile Agent application.

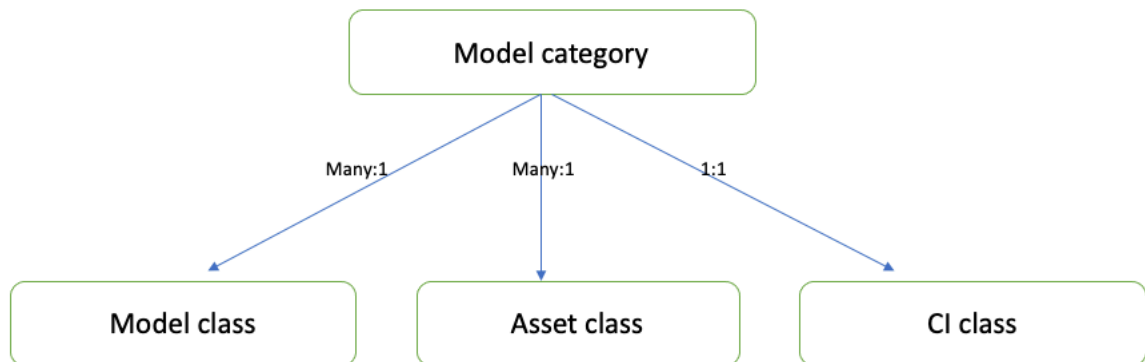
### Related topics

[Managing enterprise assets and tasks using the Mobile Agent application](#)

## Model categories

Model categories define relationships between asset classes, product model classes, and Configuration Management Database (CMDB) configuration item (CI) classes in the Enterprise Asset Management application.

Each model category is divided into sub-categories that correspond to a model class, an asset class, and an existing CMDB CI class. Multiple model categories can be assigned to a single model class and a single asset class. A CI class can be assigned to only a single model category. However, it is not mandatory to assign a CI class to a model category.



Various base model categories are available for you to choose from. The top tier model categories are as follows:

- Medical
- Facility
- Transportation
- Industrial
- Retail
- Construction
- Tactical equipment
- Wearable

For the complete list of available model categories and their corresponding CMDB CI, asset, and model classes, see [Enterprise model categories and corresponding classes](#).

**Note:** If you do not wish to use any of the existing sub-categories within a top tier model category, you can create your own sub-categories. See [Create model categories](#) for detailed instructions.

**Warning:** ServiceNow strongly recommends that you use only the existing top tier model categories.

## Multi-component models and assets in Enterprise Asset Management

Multi-component models and multi-components assets help you track the maintenance of your enterprise assets.

### Multi-component model

An Enterprise Asset Management model associated with one or more model components is defined as a multi-component model.

A model component can be a consumable or an enterprise model. The same model can be listed more than once as a model component of a multi-component model. For example, consumable model component A can be repeated thrice for the multi-component model.

Every model component has the following three relationships with a multi-component model each with a true or false value:

- **Required:** If the value is true, then the model component is essential for the multi-component model to work and can't be permanently removed.
- **Hot Swappable:** If the value is true, then the model component can be swapped while the multi-component model is operational
- **Repairable:** If the value is true, then the model component can be repaired.

A model component's relationship to a multi-component model is mutually exclusive. For example if a multi-component model comprises of two model component A's, each model component A can have its own relationship with the multi-component model.

There are two types of multi-component models: Pre-assembled and user-assembled models.

You can change a pre-assembled or a user-assembled multi-component model to a simple model by disassociating all its model components, while the model is still in the **Build** state. Once you save the model record, the multi-component model is changed to a simple model and all associations to model components are removed.

### Multi-component asset

Multi-component assets are created from a multi-component model.

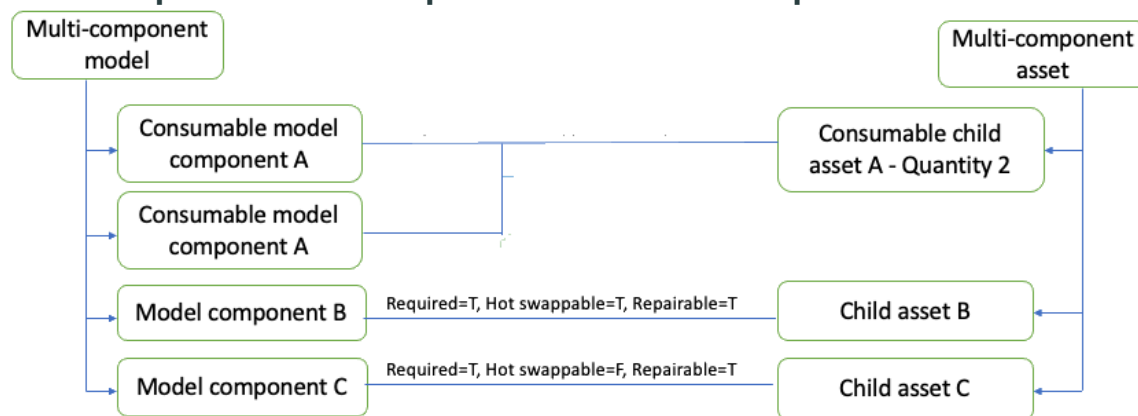
If a consumable model component is listed more than once in a multi-component model, they are merged into a single record regardless of whether the **Required**, **Hot Swappable**, or **Repairable** fields are the same or not.

There are two kinds of assets: consumable assets and serialized assets.

For enterprise model components, serialized child assets are created that are based on the model component. For example, Child Asset B is the child asset created for Model Component B.

The model component relationship defined with the multi-component model is extended and visible in the child asset records. Swapping of child assets can only be performed with the same model component. A child asset can't be swapped with a different model component.

### Relationship between multi-component model and multi-component asset



## Pre-assembled and user-assembled assets

Assets associated with pre-assembled and user-assembled multi-component models are referred to as pre-assembled and user-assembled multi-components assets, respectively.

- **Pre-assembled asset:** when the parent asset is created, the child assets are automatically created. Child assets are created in the same stockroom where the parent asset is created. The child assets inherit the parent asset's properties such as stockroom, state, sub status. No asset tag or serial tag is attached to the child asset when it's created. You can add additional child assets, add-ons, even if it's not defined in the model component. When an add-on asset is added, the **Asset type** field displays the value **Pre-assembled with add-on**.
- **User-assembled asset:** assemble assets using assets present in the parent asset stockroom.
  - Assemble the assets yourself by using the **Assemble** button in the asset record. For details, see [Select assets for user-assembled asset](#).
  - Automatically assemble assets via the **Auto-assemble** button to trigger a process to automatically select assets from a stockroom and associate the assets to a parent asset. If the required quantity of assets isn't available in the stockroom, an error appears and you can't automatically assemble assets. Use the **Assemble** button to assemble the assets on your own.
  - Release all child and add-on assets from the parent asset. For details on releasing assets, see [Release assets from the parent asset](#).

You can swap child assets for any multi-component asset that is in one of the following states:

- In-Use
- In-Maintenance
- In Stock Defective
- In Stock Pending Repair

**Note:** For more details on swapping assets, see [Swap assets for parent multi-component asset](#).

## Multiple model components for an enterprise model

You can add multiple model components to an enterprise model at one go by specifying the quantity. The **Quantity** field in the Add model components dialog lets you create multiple serialized components and consumable components for a single enterprise model.

- For serialized components: each row in the Add model components dialog box is split into multiple model components based on the quantity. For example, if the Quantity field has a value of 10 for a row, then 10 model component records are created.
- For consumable components: one model component is created per row. For example, if the quantity field has a value of 10 for a row, then only one model component record is created with the quantity as 10.

For consumable child models, one child asset is created per component, with a quantity equal to the quantity of the component. For serialized child models, assets are created per component.

When you create assets, the consumable assets do not merge. Consumable assets are individual assets with a quantity. For example, model component A record has a quantity value of two and the model component B record has a quantity value of three. So two assets are created. One asset record with quantity two and the other asset record one with quantity three.

The add on assets of consumables are however merged as they are not linked to a model component. For example, model A has two components of consumable model C. When you create a complex asset from that model, two child assets get created of that same model C.

## Component number usage for consumable components

Since consumables don't have an asset tag or serial numbers, the **Component number** field in the model component form helps you to identify and keep track of child consumables. While creating a consumable component record, ensure to enter a value in the **Component number** field.

For consumable components, the component number gets propagated to the display name of the child asset as a prefix.

## Component number usage for serialized components

For serialized components, it's optional to enter a component number. You can specify a component number if the value you enter in the **Quantity** field is 1. If you enter a value of more than one in the **Quantity** field, then the **Component number** field is disabled. However, the component numbers are automatically generated by the system. You can go to the model component form and change the component number if you want.

For serialized components, if an asset tag isn't mentioned, then the component number is propagated as the asset tag. If you later decide to add an asset tag, the component number gets overridden by the asset tag.

## Bulk import of your enterprise models and assets

Use a subflow to import enterprise models and assets of multiple types to your ServiceNow instance at one go. You can also perform a bulk update on existing models and assets.

### Overview

Use the Enterprise Asset workspace to do a bulk transfer of all your enterprise models and asset from a different database to the ServiceNow instance.

Create an import record by downloading a template in the form of a spreadsheet (.xlsx). Ensure that you enter valid values in all the mandatory fields before uploading the template. Attach the template to the import record and select **Import** to begin the import process.

After you select **Import**, the EAM Bulk Import subflow gets triggered. Scheduled jobs are initiated and data in the spreadsheet is copied to the appropriate staging tables. The staging tables are validated and records are created in the ServiceNow instance.

## Modes

Modes refer to the type of import that you want to process. There are modes for only importing models, assets, and a combined mode for both models and assets. You can choose from the following available modes:

- Create models
- Update models
- Create assets
- Update assets
- Create models and assets
- Update models and assets

## Templates

Based on the mode you select in the import record, you can download the corresponding template.

**i Note:** Ensure that you enter valid values in all the mandatory fields for the import process to run effectively. For a list of all the mandatory fields, see [Mandatory fields in the bulk import spreadsheets](#).

### Modes and templates

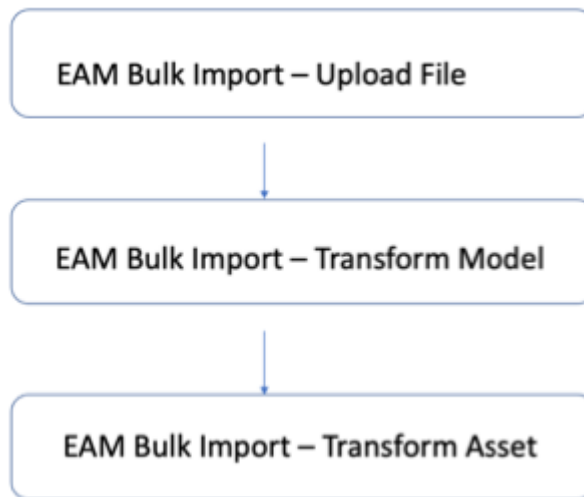
Modes	Corresponding template
<ul style="list-style-type: none"> <li>• Create models</li> <li>• Update models</li> </ul>	Model template
<ul style="list-style-type: none"> <li>• Create assets</li> <li>• Update assets</li> </ul>	Asset template
<ul style="list-style-type: none"> <li>• Create models and assets</li> <li>• Update models and assets</li> </ul>	Model and asset template

You can customize the templates to add more columns. Make the following modifications to add more columns:

1. Add the new columns to the staging tables.
2. Modify the list view on the Database view table [sn\_eam\_import\_template] to include the columns you want to display in the spreadsheet. Enter the string `sn_eam_import_template.list` in the filter field on your instance's navigation bar.
3. Add field mappings in the Model or Asset transform map.

## Scheduled jobs

The following scheduled jobs execute as part of the EAM Bulk Import subflow.



The scheduled jobs execute based on the mode that you select.

The EAM Bulk Import - Upload File job is executed for all modes. For the Create Model or Update Model modes, the EAM Bulk Import - Transform Asset doesn't execute. Similarly, for the Create asset or Update asset modes, the EAM Bulk Import - Transform Model doesn't execute.

For example, if you select the Create models and assets mode, the scheduled job, *EAM Bulk Import - Upload file* uploads the data from the spreadsheet to the three staging tables. Then the Scheduled job, *EAM Bulk Import - Transform Model* executes the model and model component transform maps. After the model transform maps are complete, the *EAM Bulk Import - Transform Asset* scheduled job executes the asset transform map.

## Staging tables

The data that you enter in the spreadsheet is copied to one or more of the following staging tables:

- Model Import Staging [sn\_eam\_model\_import\_row]
- Model Component Import Staging [sn\_eam\_mc\_import\_row]
- Asset Import Staging [sn\_eam\_asset\_import\_row]

## Enterprise Asset Management normalization

The Enterprise Asset Management normalization process enables you to normalize your manufacturer, model name, model number, and model type data of your enterprise models.

### Overview

The normalization process compares the discovered manufacturer, discovered model, discovered model type, and the discovered model number values against the ServiceNow repository of normalized equivalents in the Enterprise Asset Management Content Service.

To standardize your enterprise models, the data must be normalized. You can manually update the model records with the normalization content, or you can compare your data against the Enterprise Asset Management Content Service.

## Scheduled jobs for Normalization

The following are the scheduled jobs that run during the normalization process.

Scheduled job	Description
EAM - Daily Job	<p>Sets the time when data is pulled by the Enterprise Asset Management Content Service. This job runs only once, when the normalization process is started for the first time.</p> <p>If a model has gone beyond its end of its lifecycle date, this job enables the <b>Content lifecycle phase</b> check box in the <b>Enterprise Model Lifecycle</b> tab in a model record.</p>
EAM - Content Upload	<p>A daily job that uploads any content to the Enterprise Asset Management Content Service that you have added in the following custom tables:</p> <ul style="list-style-type: none"> <li>• Custom Enterprise Model Type [sn_eam_cd_custom_model_type]</li> <li>• Custom Enterprise Manufacturer [sn_eam_cd_custom_manufacturer]</li> <li>• Custom Enterprise Product Model [sn_eam_cd_custom_product_model]</li> <li>• Custom Enterprise Model Library [sn_eam_cd_custom_model_library]</li> </ul> <p><b>Note:</b> This job only runs if you have opted in to the Enterprise Asset Management Content Service.</p>
EAM - Enterprise Lifecycles	<p>Updates the model record with information about newly created or deleted life cycles.</p>
EAM - Normalization	<p>Normalizes all the models that haven't been normalized.</p>
EAM - Apply latest content changes	<p>Updates any changes in the content tables to the Enterprise Asset Management Content Service.</p>

## Tables installed with Enterprise Asset Management normalization

Several normalization tables are installed with the activation of the Enterprise Asset Management application.

**Tables installed**

Table	Description
Custom Enterprise Model Type [sn_eam_cd_custom_model_type]	Stores custom enterprise model type records.
Custom Enterprise Manufacturer [sn_eam_cd_custom_manufacturer]	Stores custom enterprise manufacturer records.
Custom Enterprise Product Model [sn_eam_cd_custom_product_model]	Stores custom enterprise product model records.
Custom Enterprise Model Library [sn_eam_cd_custom_model_library]	Stores enterprise model library records.
Enterprise Model Type [sn_eam_cd_model_type]	Stores enterprise model type records.
Enterprise Manufacturer [sn_eam_cd_manufacturer]	Stores enterprise model manufacturer records.
Enterprise Product Model [sn_eam_cd_product_model]	Stores enterprise product model records.
Enterprise Model Library [sn_eam_cd_model_library]	Stores enterprise model library records.
Enterprise Lifecycle Definition [sn_eam_cd_lifecycle_definition]	Stores lifecycle phase of an enterprise model and associated dates.
EAM Content Audit [sn_eam_content_audit]	Stores the content values that changed.
Manage Enterprise Library [sn_eam_manage_cd_library]	Stores import and export content data.
Enterprise Asset Configurations [sn_eam_configuration]	Stores opt-in and opt-out data.

**Risk scoring**

Calculate a risk score for an enterprise model record based on two vectors: likelihood and impact.

Assets associated to a model inherit the risk score values of the model. However, you can override the model risk scores by defining risk scores for the assets that are different from the risk score values specified on the model.

Access the Risk modules for the Enterprise Asset Management application by navigating to **Asset > Enterprise Risk Configuration**. Use the following modules to enter configuration values for likelihood, impact, and score.

- **Risk Likelihood**
- **Risk Impact**
- **Risk Score**

**Note:** For details on configuring values for likelihood, impact, and score, see [Create configuration values for risk likelihood](#), [Create configuration values for risk impact](#), or [Create configuration values for risk scores](#).

After you've configured the values in the Risk modules and frozen them, the heat maps are rendered on the following views on the Enterprise Asset Workspace:

- Enterprise asset estate view: heat map for asset scores
- Enterprise model management view: heat map for model risk scores.

If a model is no longer in the **Build** stage and you update the Model's risk scores, you can propagate the updated values to the associated assets using the **Update risk** button on the model form. On clicking this button, the *EAM - Update model risk values to asset* scheduled job runs and updates the risk values for all the assets associated with this model.

**Note:** If the model is in the **Build** stage, the **Update risk** button doesn't appear.

## Zebra MotionWorks RFID integration for Enterprise Asset Management

You can integrate your ServiceNow instance with third-party Zebra MotionWorks location solutions to import and view real-time radio-frequency identification (RFID) location data for your enterprise assets.

RFID is an asset tracking technology that uses radio frequencies to transfer location and identification data for your assets. This data is stored and transferred through RFID tags, which are small devices that are either attached to or embedded in each asset. Each RFID tag consists of the following components:

- An antenna that receives and transmits radio frequencies so that you can transfer location and identification data for the associated asset. The antenna receives and transmits these radio frequencies each time you scan the RFID tag.
- A unique microchip or integrated circuit (IC) that stores location and identification data for the associated asset.
- A substrate that holds the other two components together.

Zebra MotionWorks location solutions use RFID technology to track the real-time locations of your assets and inventory automatically. When you integrate your ServiceNow instance with Zebra MotionWorks location solutions, this RFID location data is imported into your instance so that you can identify and track your enterprise assets. Any data changes that Zebra MotionWorks location solutions detect are automatically updated on your ServiceNow instance.

For more information on Zebra MotionWorks, refer to the [Zebra MotionWorks Location Solutions website](#).

## Importing RFID location data from Zebra MotionWorks location solutions

When you import RFID location data from Zebra MotionWorks location solutions, the data is added to the RFID Stage Asset [sn\_itam\_common\_rfid\_stg\_asset] table based on the enterprise assets that it is associated with. The Enterprise Asset Management application automatically creates a separate table entry for each enterprise asset that you import this RFID location data for.

After the RFID location data is added to the RFID Stage Asset [sn\_itam\_common\_rfid\_stg\_asset] table, the Enterprise Asset Management application uses the RFID Resource Data transform map to process and then map this data to the RFID Asset [sn\_itam\_common\_rfid\_asset] table. However, RFID location data can be mapped to the RFID Asset [sn\_itam\_common\_rfid\_asset] table only for enterprise assets that contain serial numbers.

On successful mapping, you can run the *RFID Asset Mapping Jobs* scheduled job daily or on-demand to then map the resulting data from the RFID Asset [sn\_itam\_common\_rfid\_asset]

table to the Asset [alm\_asset] table. However, this data mapping is dependent on the existence of corresponding asset records within the Asset [alm\_asset] table.

- If a corresponding asset record already exists for an enterprise asset that you want to map data for, it automatically updates each time the RFID location data for that enterprise asset changes. In addition, the **Status** of the enterprise asset changes from **New** to **Matched** in the RFID Asset [sn\_itam\_common\_rfid\_asset] table.
- If a corresponding asset record does not already exist, data for that enterprise asset cannot be mapped from the RFID Asset [sn\_itam\_common\_rfid\_asset] table to the Asset [alm\_asset] table. The **Status** of the enterprise asset changes from **New** to **Unmatched** in the RFID Asset [sn\_itam\_common\_rfid\_asset] table.

You can view and take action on these unmatched enterprise assets by using the **Unmatched RFID tags** important action that appears on the **Overview** tab of the Enterprise asset estate view. For more information on the Enterprise asset estate view, see [Enterprise asset estate overview for Enterprise Asset Workspace](#).

You can view your asset records in the [Enterprise asset estate view](#) of the Enterprise Asset Workspace. For details on the RFID fields that are included in each asset record, see [Asset fields for enterprise assets](#).

- Note:** If you are importing RFID location data for parent enterprise assets with one or more child enterprise assets, RFID location data for those child enterprise assets is based on the RFID tags that they are associated with.
- If a child enterprise asset contains an RFID tag, RFID location data for that asset is based on that RFID tag.
  - If a child enterprise asset does not contain an RFID tag, RFID location data for that asset is based on the RFID tag of the parent enterprise asset. If you remove the parent enterprise asset, all RFID location data is cleared for the child enterprise asset.

## Enterprise asset reclamation

Use a reclamation workflow to coordinate an employee's offboarding process that lets you request, assess, and reclaim enterprise assets.

When an employee leaves an organization or moves to a different role, retrieving the assets assigned to the employee needs extensive coordination between the Human Resources department and the enterprise asset managers. You can create an offboarding service catalog request, which initiates a prescriptive workflow to efficiently retrieve assets and restock them in the inventory, reassign them, send them for repair, or dispose as required.

You can create an asset reclamation request via the Service Catalog application. After the request is created, reclamation line items are created that comprise a series of tasks. These tasks can only be accessed and performed by the sam\_user role. After all the tasks are closed, the reclamation line item is complete. After all the reclamation line items are complete, the catalog request is also completed.

- Note:** To use the Service Catalog application to reclaim enterprise assets, you must install the Enterprise Asset Management application.

When you [create a reclaim asset](#) request via the Service Catalog application, an asset reclamation request is created. For each enterprise asset assigned to the departing employee, an enterprise asset reclamation line is created for the assets you select in the Reclaim Asset Service Catalog. Each enterprise asset reclamation line is closed through the following Enterprise Asset Reclamation Tasks:

- Schedule drop off, Schedule pickup, or Schedule shipment task based on which reclamation method you select in the Reclaim Asset form
- Receive asset
- Evaluate

The Enterprise Asset Reclamation Line also has a stage field, which changes when you [close a Enterprise Asset Reclamation Task](#) as follows:

- Pending
- Pending evaluation
- Complete

## Asset conditions in Enterprise Asset Management

Assessing the condition of assets in your organization aids in effective maintenance planning, resource allocation, and managing the asset life cycle.

### Overview of asset conditions

You need to evaluate assets based on specific conditions to ensure reliability. Asset health helps your organization in various ways:

- Maximizes asset life.
- Reduces unplanned downtime.
- Improves operational effectiveness and safety.
- Helps to comply with regulations and industry standards.

### Roles for asset conditions

The following are the two new roles added for the asset conditions feature:

- Asset technician (sn\_smart\_asmt.actor) role added to the Enterprise technician (sn\_eam.asset\_technician) role
- Asset manager (sn\_smart\_asmt.template\_manager) role added to the Enterprise asset manager (sn\_eam.asset\_manager) role

### Asset condition workflow

The asset condition workflow comprises of the following stages:

#### Create condition templates

Create condition templates and associate condition attributes that you have defined to a condition template. Create questions and enable scoring in the templates to indicate whether the condition attributes for a model or asset passed or failed. For more details, see [Create condition templates for condition attributes](#).

#### Define condition attributes

Enterprise asset managers define condition attributes for evaluating models and assets. For more details, see [Define condition attributes on enterprise models and assets](#).

#### Schedule condition evaluations

The Enterprise asset manager schedules evaluations via maintenance plans or work orders. For more details, see [Schedule condition evaluations for enterprise models or assets](#).

### Perform condition evaluations

The technician performs the evaluation via the web interface or through the mobile application. Once the evaluation is complete, a score and a result are calculated. The Enterprise asset manager either accepts or rejects the evaluation. For more details, see [Perform condition evaluation from the Enterprise Asset Workspace](#) and [Perform condition evaluation from a mobile application](#).

### View the evaluation reports

The Enterprise asset manager views the report for the evaluation. For more details, see [Review the asset condition results](#).

## Plugin dependencies for asset conditions

The following are the plugin dependencies that are required to use asset conditions:

Plugin Name	Plugin ID
app-smart-assessment-core	com.sn_smart_asmt
sn-smart-assessment-connected	com.sn_smart_assessment_connected
sn-smart-assessment-designer	com.sn_smart_assessment_designer
app-smart-assessment-scoring	com.sn_smart_scoring
mobile scripted screen	com.glide.sg.scriptedscreen

### Domain separation supported

The asset conditions feature supports domain separation.

## Asset groups in Enterprise Asset Management

Asset groups in Enterprise Asset Management provide organizations with a systematic approach to asset structuring for complex asset ecosystems thereby improving data integrity and providing actionable insights.

### Overview of asset groups in Enterprise Asset Management

An asset group is a logical grouping of assets.

Asset groups can be used in the Enterprise Asset Workspace, Facility Asset Workspace, Medical Asset Workspace, and the Operational Technology (OT) Asset Workspace.

An asset group can have multiple subgroups; however a subgroup can be a part of only one asset group. Asset groups and subgroups can have assets and an asset can belong to multiple groups.

Asset groups are listed in the Asset groups subtab, located within the Asset groups tab in the Enterprise asset estate view. The asset groups and the descendant asset groups are displayed in a content tree. For details on creating asset groups and subgroups, see [Create an asset group in Enterprise Asset Management](#) and [Create an asset subgroup in Enterprise Asset Management](#).

Enterprise Asset Management administrators can configure the **Asset groups** tab to show or hide in the Enterprise Asset Workspace, Facility Asset Workspace, Medical Asset Workspace, and the OT Asset Workspace. For more details, see [Configure tabs in the Enterprise Asset Workspace](#).

An asset group or subgroup can optionally refer to a service instance that helps in pulling in all related assets from a chosen node in that hierarchy. Alternatively, a subgroup can be defined without referencing the subgroup to a service instance, allowing users to manually select assets. For details on adding assets to asset groups, see [Add assets to an asset group or subgroup](#).

A subgroup inherits some fields from its parent group. For details on the fields that get inherited, see [Fields inherited from a parent asset group to a sub group](#).

## Sites in asset groups

A site is an ISA-95 hierarchical entity model. Sites are entity records in the Equipment Model Entity [cmdb\_ci\_ot\_isa\_entity] table, organized in a hierarchical structure with site being the top-level entity, followed by area, work center, and work unit. Each level of the ISA-95 entity model can be associated with CIs.

You can associate an asset group to a site. Associating an asset group to a site enables all CIs associated with that specific site to be also associated with the asset group.

**Note:** Only assets from the associated site and its specific location can be added to the asset group. You don't have access to add assets from outside the associated site and location.

If an asset group references a service instance, and that service instance is an entity record in the Equipment Model Entity [cmdb\_ci\_ot\_isa\_entity] table, the **Site** field in the asset group record is automatically populated.

If an asset group doesn't refer to a service instance, or it's referring to a service instance that doesn't have entity records in the cmdb\_ci\_ot\_isa\_entity table, then a site for that asset group doesn't exist and that asset group gets listed under the Unassigned site group in the Asset groups subtab.

All sites for asset groups are listed in the Sites subtab, located within the Asset groups tab in the Enterprise asset estate view. For details on creating sites, see [Create sites in the Enterprise Asset Management](#).

## Considerations for asset groups

The following are some considerations to keep in mind for asset groups:

- An asset group can't contain itself as a sub group.
- An asset group can't have a model or model category as it's a separate entity.
- An asset group can have a service instance link only if its parent group has one or if it has no parent.
- An asset group can't be deleted if it contains subgroups and assets. To delete an asset group, the sn\_eam.enterprise\_asset\_manager or the sn\_eam.enterprise\_admin role must first remove the subgroups and assets within the asset group.

## Considerations for adding assets to asset groups

The sn\_eam.enterprise\_admin role and the sn\_eam.enterprise\_asset\_manager role can create asset groups and add assets to asset groups.

The **Service instance** field on the asset form refers to the Application Service [cmdb\_ci\_service\_auto] table and to its following descendant tables:

- Mapped Application Service [cmdb\_ci\_service\_discovered] table
- Calculated Application Service [cmdb\_ci\_service\_calculated] table
- Equipment Model Entity [cmdb\_ci\_ot\_isa\_entity] table

Keep the following considerations in mind while adding assets to asset groups:

- If the asset group isn't referring to a service instance, the cmdb\_ci\_service\_auto table, or any of its descendent tables, you can add any asset that is not included in any asset group.
- If the asset group is referring to a service instance, the cmdb\_ci\_service\_auto table, or any of its descendent tables, you can add assets whose asset CI has a CI relationship to the service instance, the cmdb\_ci\_service\_auto table, or any of its descendent tables, referenced by the asset group.
- You can only add assets without a parent. The child assets won't be added automatically to the asset group. Any assets that have as their parent the asset that was just added to the asset group won't be added automatically. For example, you add a pre-assembled asset that has no parent. The child assets of that pre-assembled asset won't also be added.
- Assets that are from the same location as the asset group's location or a descendent of the asset group's location.
- Only hardware and enterprise assets can be added.
- Consumable asset, linear assets, linear segments, and pallets can't be added.
- If a subgroup isn't referring to a service instance, the cmdb\_ci\_service\_auto table, or any of its descendent tables, but an ancestor asset group is referring to a service instance, the cmdb\_ci\_service\_auto table, or any of its descendent tables, you can only add assets whose asset CI has a CI relationship to a service instance, the cmdb\_ci\_service\_auto table, referenced by the ancestor asset group.
- Asset should only be in the **In use** or **In maintenance** state.

## Considerations for asset groups in flows and in the Enterprise Asset Workspace

Asset groups won't be available in the following flows and scenarios:

- Asset resale flow.
- Transfer order lines.
- Repair order lines.
- Disposal orders.
- While creating shipment assets.
- Contracts.
- Move orders.
- Any flow where the asset requires a model.

Additionally, the asset hierarchy contextual side panel doesn't appear for asset groups and all assets and enterprise assets lists don't show asset groups.

## Plugin dependencies for asset groups

Install the sn\_isa\_model plugin for using asset groups.

## Classification codes

Use classification codes to organize and categorize your enterprise models and use them effectively.

### Overview

Create classification codes to increase the visibility and efficiency of your enterprise models.

Classification codes are assigned to models, are based on model categories, and each code has a source.

A classification code can be based on one or more model categories. For example, the facility model category is assigned to Code A and the medical model category is assigned to Code B. You can assign a code to each model you create. When you create a facility model, you can assign the classification code, Code A to that model. Similarly, when you create a medical model, you can assign Code B to that model.

A source is a system of classification for a particular industry. OmniClass, for example, is a classification system for the construction sector. Some sources have a hierarchical structure with a parent-child relationship. In such a hierarchical system, there's only one parent for each code. Your data infrastructure determines whether a source adheres to a hierarchical structure or not.

Use the parent-child relationship between models to filter out models and assets based on a classification code. You can filter reports on dashboards based on classification codes.

You can create and edit classification codes in the Enterprise Asset Workspace by navigating to **Enterprise model management view > Classification**.

When a classification code is created, the ancestor list for that code is generated automatically. When a parent of an existing code is updated, the ancestor list of that code and all its children gets updated.

### Filter using classification codes

You can filter models based on classification codes in the following Enterprise Asset Workspace views:

- Enterprise asset overview
- Enterprise asset dashboard
- Inventory
- Enterprise model management
- Enterprise asset estate

When you select a code in the **Classification** filter and apply the filter, you see reports for all the models aligned to that code, as well as all their ancestors.

### Roles used

You need the following roles to work with classification codes.

Role title	Contains roles	Description
Classification manager [sn_eam.enterprise_classification_manager]	sn_eam.enterprise_admin	This role has complete access to the classification code table. This role can create

Role title	Contains roles	Description
		classification codes as well as edit and view them.
Model manager [model_manager]	sn_eam.enterprise_asset_manager	This role can only view classification codes.

## Failure and resolution codes in Enterprise Asset Management

Enhance maintenance efficiency with standardized and predefined failure and resolution codes.

Failure codes are used to identify the exact reason an asset has failed, while resolution codes specify the method used to resolve the issue.

**i Important:** The failure and resolution codes are available with Enterprise Asset Management version 9.0 and later.

### Benefits of failure and resolution codes

- The predefined codes help in consistent reporting, analysis, and tracking of issues and their resolutions.
- The hierarchical structure of the codes, with each code having a parent-child relationship, offers a detailed and organized approach to maintenance.
- The **Failure code** and **Resolution code** fields in the Repair flow task forms help asset technicians to record the reason for failure of an asset and the resolution used for its repair.

### Hierarchy of codes

A code can have a parent and a path. For example, Major engine failure can be a parent failure code, with child codes like Engine oil dried out or Carburetor broken down.

When a code is created, its path is generated by tracing back to the root code. For example:

- For Code A that doesn't have any parents, the path is Code A.
- For Code B that has a parent Code A, the path is Code A, Code B.
- For Code C that has a parent Code B, the path is Code A, Code B, Code C.


**i Note:** The parent code is of the same type as the child code. For example, the parent of a failure code is another failure code, and the same applies to resolution codes. If the parent changes, the path of the children is automatically updated. A failure code or resolution code can be linked to only one parent code.

For more details, see [Manage failure and resolution codes](#).

## Playbooks for Enterprise Asset Management

Playbooks provide a step-by-step guidance for setting up your assets with important information.

### Playbook overview

A playbook takes a workflow and breaks it into multiple lanes. The workflow for a playbook is generally created using the [Exploring playbooks](#) . Each lane in a playbook includes:

- A list of activities that you review.
- Status indicators that display the current state of each activity.
- Check marks that indicate where you are in the workflow.

As you mark an activity complete in a lane, you move to the next activity. You can save an activity at any time and return to the playbook later. After you complete all the activities in a lane, you move to the next lane. As you keep completing activities and lanes, the status keeps getting reflected in the left-hand panel. An Activity log, on the right-hand side of the playbook shows all the data that you've entered for each activity.

## Playbook layout

The playbook is divided into the following parts:

- lanes on the left-hand side.
- work area in the center.

## Available playbooks for Enterprise Asset Management

Use the following playbooks to complete various Enterprise Asset Management workflows:

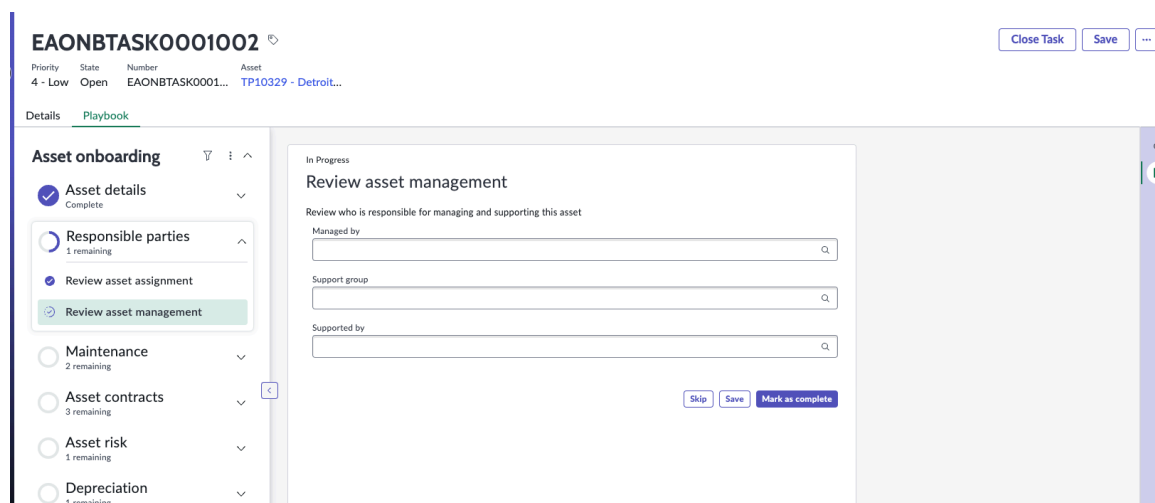
- Asset onboarding playbook: Allows you to onboard a single asset.
- Multi-asset onboarding playbook: Allows you to onboard multiple assets at one go.
- Calibration event playbook: Allows you to track and manage the asset calibrations that you are performing as part of your work orders.

## Asset onboarding playbook

The asset onboarding playbook provides context at each step of the process and helps you enter critical information for your assets.

Each asset can have only one onboarding process and for each onboarding process, there's an onboarding task to track the process.

The Asset Onboarding Task [sn\_itam\_common\_asset\_onboarding\_task] table tracks the asset onboarding process.



## Multi-asset onboarding playbook

The multi-asset onboarding playbook enables you to onboard multiple assets for a single model at one go.

As an enterprise asset technician, you can perform any of the following tasks to onboard multiple assets:

- [Create a catalog request.](#)
- [Create an Onboarding order in the Enterprise Asset Workspace.](#)

After the catalog request or the Onboarding order is submitted, an Onboard Asset Task is created. The enterprise asset manager can complete the Onboard Asset task by using the playbook associated with the task. After the onboarding task is completed, the catalog request and the requested item's state changes to **Closed Complete**.

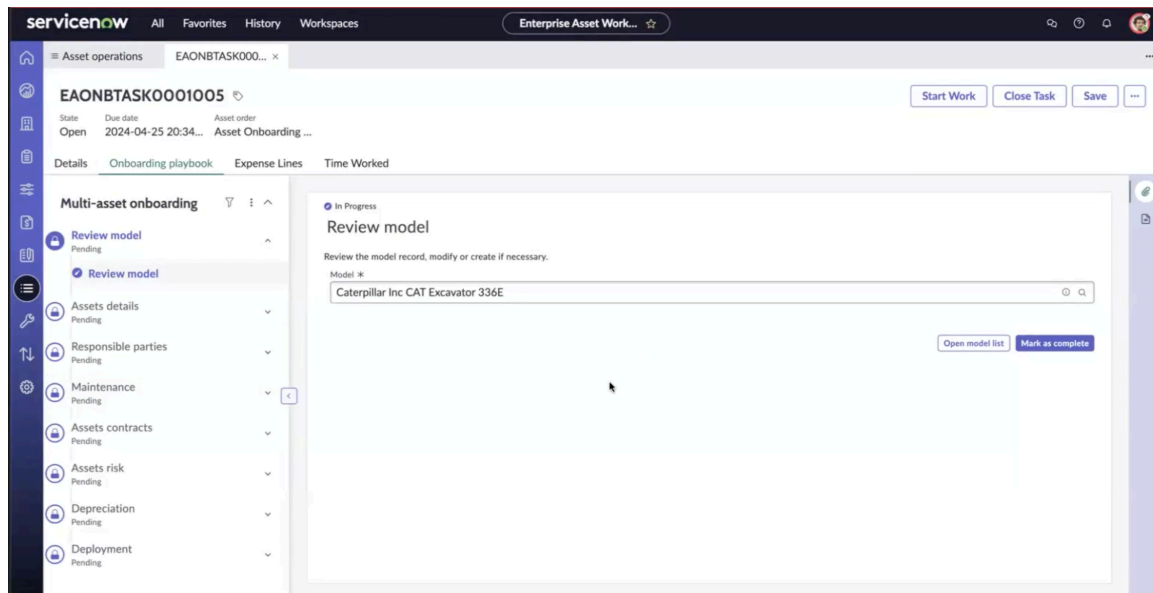
The Multi-asset onboarding playbook has a series of activities that can be either skipped or marked as complete. The Deployment activity in the playbook enables the enterprise asset manager to specify the following details and create a deploy task:

- The person for whom the asset is assigned
- Location where the asset should be deployed

**Note:** You can work on the Deployment activity only after you have reviewed all the preceding activities in the Multi-asset onboarding playbook.

The deploy task for multi-asset onboarding can be either created as an Enterprise asset deployment task or a Work order task by configuring the `com.sn_eam.default_deployment_task` asset property using the `enterprise_admin` role. By default, the **Value** field of this asset property is set to `sn_eam_deploy_asset_task` and an Enterprise asset deployment task is created. However, you can create a work order task by setting the **Value** field to `wm_task`.

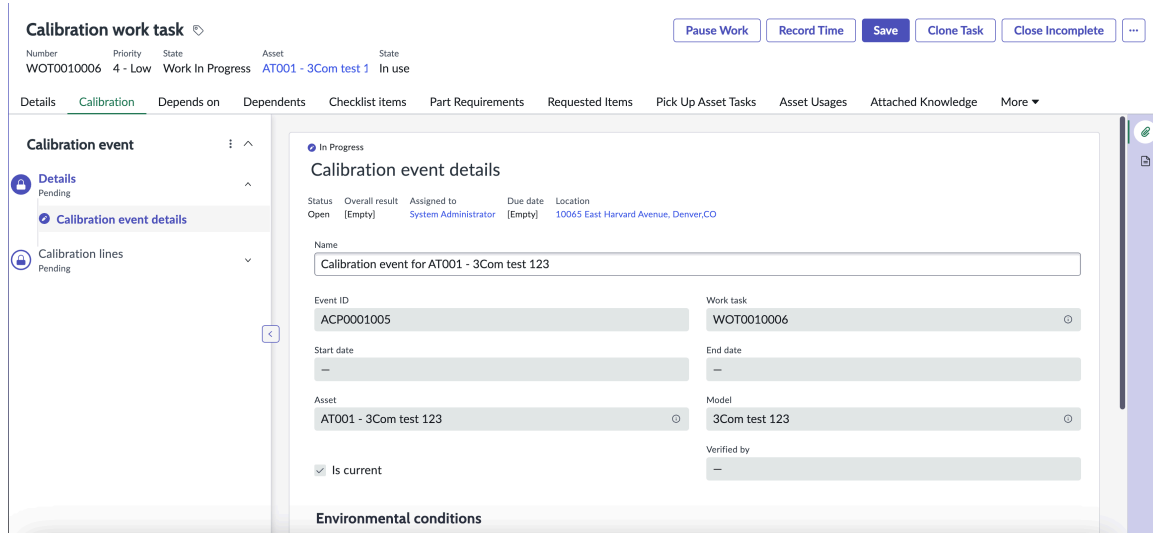
For details on using the multi-asset playbook, see [Create a multi-asset onboarding process](#).



## Calibration event playbook

The Calibration event playbook enables you to track and manage the asset calibrations that you are performing as part of your work orders. This playbook is available in any work order task that has a Work type of Calibration.

For more details on using the Calibration event playbook on your ServiceNow instance, see [Complete and close a work order for an enterprise asset](#). For more details on using the Calibration event playbook in the ServiceNow® Mobile Agent® application, see [Take action on an enterprise asset using the Mobile Agent application](#).



## Linear assets in Enterprise Asset Management

Use linear assets to expand your asset management portfolio and increase diversification by creating and managing linear assets.

### Overview of linear assets

A linear asset is an asset that has a physical length or dimension, such as roads, railways, pipelines, power transmission lines, and telecommunication networks. These assets are often characterized by their linear topology, which means that they have a defined starting point and ending point, and can be represented as a sequence of interconnected segments or nodes.

You can create segments on linear assets, associate discreet asset to linear assets, and find relationships between linear assets such as overlapping assets, continuing assets, and intersecting assets. For details on the terminology used for linear assets, see [Terminology for linear assets](#).

You can create and manage linear assets and segments using geographic (geo) maps. Geo maps are integrated into the Enterprise Asset Management.

### Extent of support for linear assets

Linear assets are supported keeping the following considerations in mind:

- Support for linear assets that are modeled by geopoints.
- Support for signed decimal degree geopoints up to seven digits after the decimal point. For example [37.3800091, -121.9635865].

- Support for each linear asset extends to up to 1000 geopoints, 500 markers, and 500 segments.
- Support for up to 1000 work orders on a linear asset per month.

## Geo maps for linear assets

Geo maps are visual representations of the Earth's surface or a specific region, displaying various features such as landforms, bodies of water, cities, roads, and other geographical elements.

sn-geo-map is the UI component used to support the map visualization in linear assets.

The Enterprise Asset Manager [sn\_eam.enterprise\_asset\_manager] has access to the geo map.

A geo map helps you perform the following actions on the workspace:

- Draw linear assets to define coordinates.
- Pick up segment start and end markers.
- Pick up markers for discrete assets.
- View related assets such as discrete assets, overlapping assets, intersecting assets, continuing assets, and segments.

For more information on using the Geomap icon to connect geo coordinate points on a map, watch this short video

## Knowledge articles for Enterprise Asset Management

Create and attach knowledge articles about enterprise models.

Use the Enterprise Asset Workspace or the Knowledge Management application to create articles about Enterprise Asset Management application. You can create articles on subjects such as troubleshooting, configuration. For information on creating knowledge articles, see<<link to creating knowledge article>>.

The enterprise asset manager [sn\_eam.enterprise\_asset\_manager] role can create articles and the Enterprise technician [enterprise\_asset\_technician] role can view articles.

After an article is created and published, the enterprise technician [enterprise\_asset\_technician] role can attach the articles to enterprise models.

To search or view articles in your instance, type **Enterprise Asset Knowledge Base** in the navigation bar. All articles on Enterprise Asset Knowledge Base are listed.

You can also see the asset's model knowledge articles in the Model Knowledge related list in the asset form. The work order and the work order task forms also has the Parts Knowledge related list.

## Asset Total Cost of Ownership for Enterprise Asset Management

Asset managers like to know the Total Cost of Ownership (TCO) for assets to gain insights into the total cost of assets and enable capital planning.

During an asset's life span, assets incur costs, which include initial capital costs, costs associated with purchasing new parts, labor costs, and contract costs. TCO for an asset is the sum of all these expenses.

## Benefits of TCO

- Track and analyze expenses such as procurement, maintenance, repairs, and disposal across the asset hierarchy.
- Gain better visibility and control over asset-related expenses throughout the life-cycle.
- Bench mark asset costs against similar assets and asset models to compare performance.

## TCO calculation

TCO is the sum of all the expenses that occurred on the asset during its lifetime. TCO is calculated for the asset by adding the amount for all the expense lines that are created against the asset. The total cost of an asset is updated whenever an expense line is added.

Considerations while calculating TCO:

- Initial TCO includes the purchase cost coming from the expense line created when an asset record is created.
- When a new asset record is created, a new expense line is created using the cost field on the asset record.
- When the cost field is updated, the existing expense line record is also updated.
- For simple and complex assets, TCO is calculated by aggregating all the expense lines associated with the asset. Whenever a new expense line is added to the asset, the TCO reflects the updated total automatically.
- For serialized assets, asset TCO is the sum of all expense lines under that asset.
- For complex assets, the cost incurred on the child is also added to the TCO of the parent asset.
- If a child asset is swapped, there will be one expense line created that is the operational cost. The capital cost of new child assets is also added to the parent TCO. The **last\_used** field in the swap asset is populated and this field is used to query any expense lines created after that. The **last\_used** field on the swapped out asset is populated as it goes back to the stockroom.
- The cost of child assets is part of the parent asset cost for a complex asset and thus expense lines for child assets are empty.
- If a child asset is removed, its expense lines persist and the parent TCO doesn't get affected.
- In the case of user-assembled assets, parent and child both have expense lines and the child expense line roll ups to the parent and the amount is added to the parent TCO.
- For multi-hierarchy assets, any expense line created on the child asset is referenced by a many-to-many relationship between all the parents in the hierarchy.
- Consumables are set to merge and split and so are the expense lines. Any expense lines created by task rate cards are added to the TCO. The calculation applies for simple assets. In case consumables are used as child assets, then their expense lines are rolled up to the parent. TCO won't be tracked for individual consumables.
- The value obtained by reselling assets is added as a negative cost to TCO. For leased assets that have a monthly lease payment, create expense lines on the start date of the lease for every month.
- The **Asset** field on expense lines is populated with the asset reference from the task record.
- Expense lines created after closing a work order task or an incident will have its **Asset** field populated from the asset reference on the work order task or incident.

## TCO benchmark and threshold

After you specify a TCO benchmark cost, the TCO benchmark threshold is automatically calculated by multiplying the TCO Benchmark by the TCO benchmark threshold percentage. You can manually override the TCO benchmark threshold by changing the percentage in the *asset\_tco\_benchmark\_threshold\_percentage* system property.

You can manually override the TCO benchmark threshold by changing the value on the **TCO benchmark threshold** field in the Financial section of a model form.

If you update the TCO benchmark, the TCO benchmark threshold gets recalculated.

## Rate cards, expense lines, and expense categories

The Enterprise Asset Management application automatically sums the time worked records and calculates the total cost by multiplying the rate cards. Rate cards are created for each task across all workflows. Rate cards capture costs on a per task basis or on the time consumed. The Enterprise Asset Management application supports the following rate cards:

- **task rate cards:** Cost captured by tasks.
- **labor rate cards:** Cost captured by the time consumed on an hourly basis. Labor rates can be defined at the user level.

**Note:** To use rate cards, you must activate the ServiceNow® Cost Management (com.snc.cost\_management) plugin.

By default, the task rate card is used. To change to using the labor rate card, open a task rate record and select the **Use time worked** field.

After a task is closed, an expense line is created based on the task time worked captured. An expense category is then attributed to the expense line. The expense lines amounts are added to the total cost on the asset. The expense lines appear under the Expense line related list under the asset.

## Time capturing for tasks

Each task has a time capturing capability that creates time worked records for you.

You can start, record time, pause, resume, and close your tasks as described below:

1. Select **Start Work** to begin your work. This moves the status of the task from **Open** to **Work in Progress**. You can then either select **Start Timer** or **Record Time** to capture time.
  - **Start Timer:** Automatically captures time. After you select this button, the timer is initialized.
  - **Record Time:** Manually enter the time in hours, minutes, and seconds in the Record Time dialog box and select **Save** to capture the time record.
2. Select **Pause Work** to pause work. After you pause your work, the timer stops and a task work record automatically gets created in the Time Worked tab. Every time you pause your work, a task work record gets created. Based on the number of times you pause work, multiple task work records get created.
3. Select **Resume** to resume your work and restart the timer. You can also select **Close Task** to close your task.

When you select **Close task**, the time as well as the task gets closed. To arrive at the total time spent on a task, all task work record entries created for that task are added up and then multiplied with the labor rate to arrive at the total cost for a task.

## TCO reports

There are two types of TCO reports; TCO comparison and TCO vs benchmark. TCO comparison reports are stacked by expense category.

## Normalize TCO

Normalizing TCO refers to averaging the cost over the useful life and the asset life. The normalized calculation is for Projected TCO reports, which are only offline.

## Domain separation

TCO reports support domain separation.

## Upgrade considerations

If you're upgrading to Xanadu, after the scheduled job **TCO Upgrade for Enterprise Assets** runs, the following updates are made:

- The **Asset** field on task records is populated on all the expense lines using the source table mentioned in the **Source ID** field. The source table defines from where the expense line has been created. Whether it's being created for a task, a configuration item, a contract, or for a purchase asset. When the scheduled job **TCO Upgrade for Enterprise Assets** runs, it searches for all task records and populates asset references from the task record to the corresponding expense line for the task. Similarly, the same scheduled job searches for all configuration items (CI) and populates asset references from the CI to the corresponding expense lines.
- The **Expense category** field, introduced in Xanadu, is populated based on the source of the expense line. There are several expense categories for tasks. For example, the expense lines created for a purchase asset and for a contract asset have different expense categories. Similarly, there are different expense categories for CIs too.
- The following three fields in an asset record get populated:
  - **cmn\_asset\_tco**: View this field in the Financial section in an asset record.
  - **cmn\_end\_of\_useful\_life**: View this field in an asset record by selecting the vertical ellipsis next to **Asset Details** and then select **Show XML**.
  - **cmn\_first\_used**: View this field in an asset record by selecting the vertical ellipsis next to **Asset Details** and then select **Show XML**.
- Any expense lines created on simple assets will be added up to **asset\_tco**.
- For pre-assembled and user-assembled assets, any expense lines created on assets will also roll up to the parent TCO.

## Related topics

[Configuring Total Cost of Ownership for enterprise assets](#)

## Repair flow to fix defective enterprise assets within a stockroom

Use the repair flow to get the defective enterprise assets in your stockroom fixed so that the repaired assets can be used in different Enterprise Asset Management workflows.

By using the Repair flow, your organization can internally fix the assets that are damaged or out of the warranty period. The repaired assets can be put back to use after validation. There's no external vendor involved in the repair of defective assets.

As an asset manager, you can request repair of assets that are either defective or pending repair in your stockroom by submitting repair orders. For more details, see [Request repair of defective enterprise assets](#). The repair flow is triggered when you submit a repair order. A repair order has repair order lines that are associated with repair tasks for the assets. The asset technician completes the repair tasks associated with the repair order. The repair flow completes after the repaired asset is evaluated. For more details, see [Manage repair of defective assets in your stockroom in the Enterprise Asset Workspace](#) and [Manage enterprise asset repair tasks using the Mobile Agent application](#).

## Stages in the Repair flow

**1. Troubleshoot:** Stage to evaluate the defective asset and assess the following:

- Issues with the asset
- Parts required
- Steps to repair the defective asset

At this stage, an asset technician confirms if the asset is repairable, redeployable, or unrepairable. The Repair flow proceeds to the next stage only if the asset is repairable. Otherwise the repair order is marked as Complete.

**2. Repair:** Stage to confirm repair of the defective asset. In this task, the asset is either repaired, redeployed, or marked as unrepairable.

The repair flow proceeds to the next stage only if the asset is repaired. Otherwise the repair order is marked as Complete.

**3. Evaluate:** Stage to perform a quality control check of the repaired asset. Based on the evaluation results, the asset is either redeployed or disposed of. The Repair flow is completed after asset evaluation.

**i Note:** You can specify the reason for the asset failure using failure codes in the Troubleshoot asset and Repair asset tasks. You can also specify the solution that you applied to address the asset issue using the resolution codes in the Repair asset task. These details are also available on the repair order line form. For more details, see [Failure and resolution codes in Enterprise Asset Management](#).

The failure and resolution codes are available with Enterprise Asset Management version 9.0 and later.

## Inventory picking for Enterprise Asset Management

As an inventory user working in large stockrooms, use the Inventory picking feature to pick the assets in the stockroom easily and facilitate the asset pick-up by technicians.

The Inventory picking feature includes adding an Asset pick task in the following Enterprise Asset Management workflows:

- [Standard Enterprise Asset Request](#)
- [Enterprise Refresh Request](#)
- [Sourcing workflow](#)

**i Note:** The Asset pick task is available only if it's enabled explicitly for a stockroom that's used to source asset requests, refresh requests, or sourcing requests. For details, see [Enable the Asset pick task for your stockroom in the Enterprise Asset Workspace](#).

The Asset pick task enables you to pick the assets from any aisle and space within your stockroom. You can then drop the picked asset to a specified place within the stockroom. After you complete the Asset pick task, asset technicians can pick up the assets to fulfill the requests assigned to them.

For more information on the Asset pick task, see [Manage picking enterprise assets within your stockroom for Enterprise Asset Management workflows](#) and [Manage enterprise asset pick tasks using the Mobile Agent application](#).

## Managing inventory by putting away enterprise assets in the stockroom drop-off location

Use the Asset put away feature to track asset movement efficiently in the inventory.

**i Important:** The Asset put away feature is available with Enterprise Asset Management version 9.0 onwards.

The Asset put away task enables you to track asset movement from the receiving bay of the inventory to the designated space within the stockroom. The Asset put away task confirms that when an asset is received in the inventory, you have filled the aisle-space information for it. An Asset put away task is automatically created in the Enterprise Asset Management when the following required business rules are met:

- When an enterprise asset is created in the Enterprise Asset Management and the **Aisle-space** field value isn't available, an Asset put away task is created. Open the Asset put away task and updated the **Drop off location** field value, to move the asset to designated aisle-space in the stockroom.

**i Note:** You can create an Asset put away task manually for the in stock assets in the inventory. For more information about manually creating an Asset put away task in the Enterprise Asset Management, see [Create an Asset put away task in the Enterprise Asset Workspace](#).

- When the **Stockroom** field is updated for an enterprise asset in the [Asset Details](#) form, an Asset put away task is created. Open the Asset put away task and update the **Drop off location** field value, to move the asset to the designated aisle-space in the stockroom.

**i Note:** You can create the Asset put away task for a stockroom only if the stockroom is enabled to perform warehouse tasks. For more information about enabling the feature, see [Enable the asset put away task for your stockroom in the Enterprise Asset Workspace](#).

In the Enterprise Asset Workspace, the inventory users can perform the following actions:

- Create an Asset put away task manually for the in stock assets. For more information, see [Create an Asset put away task in the Enterprise Asset Workspace](#).
- View the open put away tasks related to the inventory and stockroom. For more information, see [View open put away tasks for your stockroom in the Enterprise Asset Workspace](#).
- Update the **Drop off location** field for the open task in the Put away form and close it. For more information, see [Close an Asset put away task in the Enterprise Asset Workspace](#).

Using the ServiceNow Agent application, you can scan the in stock assets in the inventory and put away them in the scanned drop-off location. After the asset is placed in the drop-off location within the stockroom, you can close the Asset put away task. For more information on the mobile experience for Asset put away task, see [Manage enterprise asset put away using the ServiceNow Agent application](#).

## Receiving enterprise and consumable assets at stockrooms

As an enterprise asset manager or enterprise asset technician, you can receive assets at a stockroom from any workflow using the unified and standardized receiving mechanism.

**i Important:** The standardized asset receiving mechanism is available with Enterprise Asset Management version 9.0 and later.

With the standardized receiving process, you don't need to be familiar with the specific workflow to which the assets belong. Therefore, you can receive hardware and consumable assets from different shipments originating from sources, like transfer orders, purchase orders, or any other workflows seamlessly.

### Requirements and limitations

- You can receive enterprise assets in the Hardware Asset Workspace only if the Enterprise Asset Management applications is activated.
- You can receive hardware assets in the Enterprise Asset Workspace only if the Hardware Asset Management application is activated.
- You can only receive complete quantity of consumables.
- You can receive assets from a purchase order line only in the Zurich or later releases.

### Asset receiving mechanisms

You can receive a single asset or multiple assets in bulk using any of the following options on the enhanced stockroom form:

- **Receive assets:** You can either search for an asset using its Asset Tag, Serial Number, or MAC address and receive it, or select one or more assets from the list of inbound shipment assets and receive them. For more details, see [Receive an enterprise asset at a stockroom in the Enterprise Asset Workspace](#) and [Receive assets from inbound shipments at your stockroom in the Enterprise Asset Workspace](#).
- **Import assets:** You can download the Excel template, add the asset details that you want to receive, and import the Excel template. During the import process, the system performs validations, and you can view the imported asset records, validation status, and comments in the Import asset row [sn\_itam\_cmn\_import\_asset\_row] table. Based on the validation status, you can select and receive the assets. If there are any issues with the asset records, you must address those issues before you can receive the assets. For more details, see [Import and receive assets in bulk at your stockroom in the Enterprise Asset Workspace](#).

When any asset is received at the stockroom, the following changes happen:

- The State of the asset changes from **In transit** to **In stock**.
- The stockroom field on the asset form is automatically updated.
- The receive tasks in the source workflows associated with the asset that you received are automatically closed.

### Asset performance reports in the Enterprise Asset Workspace

Gain insights into the overall operational efficiency of your organization's enterprise assets by using the asset performance reports available in the Asset analytics view.

**i Important:** Asset performance reports are available with Enterprise Asset Management version 9.0 and later.

Asset performance involves assessing how effectively and efficiently assets fulfill their intended functions within an organization. The evaluation includes measuring and analyzing key performance indicators (KPIs), such as:

- Asset availability to determine when the asset is operational.
- Mean time between failures (MTBF) to measure reliability.
- Mean time to repair (MTTR) to measure repair efficiency.
- Total asset task time summary to measure the total time worked on the related tasks for an asset and its child assets.

## Benefits of tracking asset performance

### Reduce unplanned downtime

Monitoring asset health in real-time help prevent and predict issues before they cause downtime.

### Improve maintenance efficiency

Metrics like MTTR and MTBF help you schedule maintenance more effectively, reducing wasted time, and improving technician efficiency.

### Maximize asset life and return on investment (ROI)

By detecting early signs of wear and tear and scheduling timely repairs, organizations can make their equipment last longer and delay the need for replacements.

### Enhance financial planning

Insights into performance help identify models or locations that aren't performing well or have ongoing problems, guiding better investment choices.

### Align operations with service levels

Tracking availability helps assets meet the required uptime targets set by service level agreements (SLAs), compliance standards, or production schedules.

## Considerations, requirements, and limitations

- Asset key performance indicators (KPIs) aren't calculated for pallets, consumable, and bundle assets.
- Asset KPIs aren't calculated by default.
- To track the asset KPIs that include Asset availability, MTBF, and MTTR, you must perform the following configurations:

### 1. Opt in to the model categories of the assets for which you want to monitor the KPIs.

**Note:** If a model category has child categories, selecting the parent category for performance tracking doesn't automatically include the child categories. You should to opt in to the specific child categories you want to track.

2. Define an operation schedule, which is a collection of schedule entries that specify the operational status and total operational duration for any entity that references the schedule. The schedule entries define calendar hours of operation within a schedule.

For details, see [Create an operational schedule for enterprise assets](#)

**Note:** If an operational schedule isn't defined, the Default operation schedule is applied.

### 3. Create an Asset schedule to associate the assets with an operational schedule.

**Note:** If an asset isn't associated with an operational schedule, the Default asset schedule will be applied.

- The calculation of asset KPIs for enterprise assets begins when the asset transitions to the In use state for the first time.
- KPIs are tracked until the state of the asset changes to Retired or Missing.

## Calculation of asset KPIs

The KPIs are calculated based on the tasks associated with the asset and the operational schedule of the asset. The KPI values are stored in the Asset availability [sn\_ent\_asset\_availability] table, which extends the Service Availability table.

Performance tracking for assets that belong to a model category opted in for performance tracking begins when the asset's state changes to In use for the first time. A record is then created in the Asset Availability table with **Asset availability %** set to **100**. When the asset's availability % decreases the asset experiences an outage.

### Outage record creation

An outage record is created in the Outages [cmdb\_ci\_outage] table when:

- The state of an asset changes from In use to any of the following:
  - In stock - Pending repair
  - In stock - Pending disposal
  - In stock - Defective
- A work order task is created
- An incident is created

The outage record is closed when:

- The status of the asset changes back to In use.
- The work order task is closed.
- The incident is closed.

The duration of the outage is calculated when the repair task is closed.

Classification of outages

- Planned outage: The task type is Planned maintenance or Calibration.
- Unplanned outage: The task type is Break-Fix.

### Handling overlapping outages

Outages can overlap due to multiple events being logged within the same time window. To maintain accurate KPI calculations, overlapping outages are handled with these rules:

**1. Overlaps between unplanned outages:**

- When multiple unplanned outages occur during overlapping time periods, they are not treated as separate outages. Instead, they are merged into a single outage to help prevent downtime from being overstated.
- The total duration of this combined outage is calculated by merging all overlapping time intervals.
- A sample outage calculation is here:
  - a.** Outage A: 10:00 AM – 12:00 PM
  - b.** Outage B: 11:30 AM – 1:00 PM

Result: The resulting outage window is 10:00 AM – 1:00 PM (a single 3-hour outage).

**2. Overlaps between planned and unplanned outages:**

- When a planned outage overlaps with an unplanned outage, the system prioritizes the unplanned outage. The reason is that unplanned failures have a significant impact on asset reliability and performance, and should be fully accounted for in downtime metrics.
- The overlapping period is classified as an unplanned outage, while any remaining time is classified as a planned outage.
- A sample outage calculation is here:
  - a.** Planned outage: 2:00 PM – 4:00 PM
  - b.** Unplanned outage: 3:00 PM – 5:00 PM
  - c.** Overlapping period: 3:00 PM – 4:00 PM
  - d.** Resulting outage window: 2:00 PM – 5:00 PM

Result:

- The period from 2:00 PM to 3:00 PM is counted as planned outage time.
- The period from 3:00 PM to 5:00 PM is counted as unplanned outage time.

**Passing on outages through the asset hierarchy**

In an asset hierarchy, outage on assets or their child assets are handled as follows:

- If a child asset with the **Required** field set to **true** experiences an outage, its parent asset will also have the outage.
- If a parent asset has an outage, all its child assets will also have the outage.

**Asset KPIs**

Asset KPI	Formula
Asset availability (in %)	$\frac{(\text{Operating hours} - \text{Total planned downtime} - \text{Total unplanned downtime})}{(\text{Operating hours} - \text{Total planned downtime})}$
Mean time between failures (MTBF) (in hours)	$\frac{(\text{Operating hours} - \text{Total planned downtime} - \text{Total unplanned downtime})}{(\text{Total unplanned outages})}$

### Asset KPIs (continued)

Asset KPI	Formula
Mean time to repair (MTTR) (in hours)	$(\text{Total unplanned downtime}) / (\text{Total unplanned outages})$

Definition of the variables used in the KPI calculations is as follows:

Variable	Definition
Operating hours	The duration from when the asset first transitioned to the In use state until the current date and time within the asset schedule.
Planned downtime	The duration from when the asset transitioned from the Work in progress state to the Closed complete state for work order tasks of the work types Planned Maintenance or Calibration, within the asset schedule.
Unplanned downtime	<p>The duration from when the asset transitions from the In use state to any repair state, such as In stock - Pending repair, In stock - Pending disposal, or In stock - Defective, until it returns to the In use state, within the asset schedule.</p> <p>If there's no repair state present on the asset through a repair order or other processes, the Work in progress duration of the Breakfix work order task type is used to determine the outage duration. However, if there are overlapping durations between the repair state and the Breakfix work order tasks, the combined duration of both is considered. The asset schedule is also considered when determining the outage duration.</p>
Total unplanned outages	The count of total outage records for an asset excluding planned outages accounting for overlaps. Overlapping and concurrent outages are consolidated as one outage.

### Accessing asset KPI reports

- Contextual side bar: You can view the following reports on the contextual side bar:
  - [Asset availability and related KPIs report for an individual asset.](#)
  - [Asset task time summary report for all enterprise assets.](#)
- Asset performance tab on the Asset analytics view: You can view the average values of the KPIs, including Average availability, Average MTTR, and Average MTBF, for all the assets that are being tracked. Additionally, you can see a list of the assets that contributed to the calculation of these KPIs. For details, see [Asset Analytics overview for Enterprise Asset workspace.](#)

### Scheduled job for calculation of asset KPIs

- The *Calculate asset performance KPIs* scheduled weekly job runs every Saturday to calculate the KPIs for the assets that belong to the model categories opted in for performance tracking. These KPIs are then reflected in the Asset availability and related KPIs report, which displays the most recent KPI values.

**Note:** To track historical KPIs for existing assets in the opted-in model categories, run the *Calculate availability for historical data* job. This job considers the following tasks associated with an asset to calculate the outages and KPIs:

- RMA task
- Work order task
- Repair task
- Troubleshoot task
- Evaluate task
- Recall task

- The *Asset availability data collection* scheduled weekly job runs every Sunday to calculate the average values of the KPIs that includes Average availability, Average MTTR, and Average MTBF. The job then generates the reports in the Asset performance tab of the Asset analytics view.

## Configuring Enterprise Asset Management

Configure the Enterprise Asset Management application to manage the life cycle of your enterprise connected and non connected assets.

Based on your role, you can configure the Enterprise Asset Management application.

### Configuring Enterprise Asset Management by system administrators

The system administrator role installs and sets up the Enterprise Asset Management application.

The System administrator role also has the capability to install the Enterprise Asset Management for Healthcare application and the OT Asset Management application.

#### Install Enterprise Asset Management

Request the Enterprise Asset Management application from the ServiceNow® Store so that you can track and manage your enterprise assets.

#### Before you begin

Role required: sys\_admin

#### About this task

The following plugins and applications are automatically installed with the ServiceNow Enterprise Asset Management application:

Name	Description
Plugins	
Asset Management (com.snc.asset_management)	Provides functionalities to integrate the physical, technological, contractual, and financial aspects of information technology assets. See <a href="#">Asset Management</a> for more information on asset management.
Procurement (com.snc.procurement)	Provides the capability to source and receive requested assets so that you can fulfill service catalog requests. See <a href="#">Procuring enterprise assets</a> for more information on procurement.

Name	Description
Field Service Management (com.snc.work_management)	Provides the capability to manage work orders and related tasks. See <a href="#">Field Service Management</a> for more information on Field Service Management.
Enterprise Asset Management Core (com.sn_eam_core)	Provides core functionalities, such as normalization, for the Enterprise Asset Management application.
Asset Management Workspace - Recommendations plugin (com.sn_itam_recomm)	Provides actionable recommendations for users in configurable workspaces.
SM Planned Maintenance (com.snc.planned_maintenance)	Provides the capability to manage regular preventative maintenance of assets. See <a href="#">Planned Maintenance</a> for more information on Planned Maintenance.
Physical Assets (com.sn_phy_assets)	Marker that aligns features for physical asset-based applications, including the Hardware Asset Management and Enterprise Asset Management applications.
Indoor Mapping for Assets com.sn_ima	Provides the capability to track the location of the assets using indoor maps.
<b>Applications</b>	
Expanded Model and Asset Classes	Adds enterprise model and asset classes that extend out-of-the-box product model and asset classes within the CMDB class hierarchy. In addition, creates model categories that associate these enterprise model and asset classes with CMDB configuration item (CI) classes. See <a href="#">Expanded Model and Asset Classes Store application</a> for more information on this application.
CMDB CI Class Models	Adds class models that extend the CMDB class hierarchy, including class descriptions, identification rules, identifier entries, and dependent relationships. See <a href="#">CMDB CI Class Models store app</a> for more information on this application.
Asset Management Common	Provides features that are common to the Hardware Asset Management, Software Asset Management, and Enterprise Asset Management applications, including the catalog item to request asset reclamation.
GRC: Risk Heatmap	Provides a heatmap component that enables you to visualize the risk posture of your organization. See <a href="#">Risk heatmap for classic risk assessment</a> or <a href="#">Operational risk heatmap for Advanced Risk Assessment in the Risk Workspace</a> for more information on risk heatmaps.

**Procedure**

1. From a web browser, go to the [ServiceNow Store](#).
2. Log in using your HI credentials.
3. In the search bar, enter **Enterprise Asset Management** and then select **Search**.

4. Select the result called **ServiceNow Enterprise Asset Management**.
5. On the ServiceNow Enterprise Asset Management page, select **Request Install**.  
The ServiceNow Request for App Installation - ServiceNow Enterprise Asset Management dialog box opens.
6. In the dialog box, fill in the fields.

**ServiceNow Request for App Installation - ServiceNow Enterprise Asset Management dialog box**

Field	Description
Instance Name	Name of the instance on which you want to install the application. After you enter the instance name, select <b>Validate Instance</b> to verify that the instance exists.
Reason for request	Reason for requesting the application.

7. Select **Request**.

8. Select **Close**.

**Result**

If your request is approved, you will receive an email with detailed instructions on how to install the application.

**What to do next**

Install the application according to the instructions in the email.

**Install Enterprise Asset Management for healthcare**

You can install the Enterprise Asset Management for Healthcare application (com.sn\_eamhc) if you have the admin role. The application includes demo data and installs related ServiceNow® Store applications and plugins if they are not already installed.

**Before you begin**

- Ensure that the application and all of its associated ServiceNow Store applications have valid ServiceNow entitlements. For more information, see [Get entitlement for a ServiceNow product or application](#).
- Review the application listing in the ServiceNow Store for information on dependencies, licensing or subscription requirements, and release compatibility.

Role required: sys\_admin

**About this task**

The following items are installed with Enterprise Asset Management for Healthcare:

- Store applications
- Roles
- Plugins

For more information, see [Installed with Enterprise Asset Management for Healthcare](#).

## Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.
2. Find the Enterprise Asset Management for Healthcare application (com.sn\_eamhc) application (com.sn\_eamhc) using the filter criteria and search bar.

You can search for the application by its name or ID. If you cannot find the application, you might have to request it from the ServiceNow Store.

In the list next to the **Install** button, the versions that are available to you are displayed.

3. Select a version from the list and select **Install**.

In the Review Installation Details dialog box, any dependencies installed with your application are listed.

4. If you're prompted, follow the links to the ServiceNow Store to get any additional entitlements for dependencies.
5. **Optional:** If demo data is available and you want to install it, select the **Load demo data** check box.  
Demo data comprises the sample records that describe application features for the common use cases. Load the demo data when you first install the application on a development or test instance.
6. Select **Install**.

## Install OT Asset Management

You can install the OT Asset Management application (com.sn\_otam) if you have the admin role. The application includes demo data and installs related ServiceNow® Store applications and plugins if they aren't already installed.

### Before you begin

Review the application listing in the ServiceNow Store for information on dependencies, licensing or subscription requirements, and release compatibility.

Role required: sys\_admin

### About this task

The following items are installed with OT Asset Management:

- Plugins
- Store applications
- Roles

For more information, see [Installed with OT Asset Management](#).

## Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.
2. Find the OT Asset Management application (com.sn\_otam) using the filter criteria and search bar.

You can search for the application by its name or ID. If you cannot find the application, you might have to request it from the ServiceNow Store.

In the list next to the **Install** button, the versions that are available to you're displayed.

### 3. Select a version from the list and select **Install**.

In the Review Installation Details dialog box, any dependencies installed with your application are listed.

### 4. If you're prompted, follow the links to the ServiceNow Store to get any additional entitlements for dependencies.

### 5. **Optional:** If demo data is available and you want to install it, select the **Load demo data** check box.

Demo data comprises the sample records that describe application features for the common use cases. Load the demo data when you first install the application on a development or test instance.

### 6. Select **Install**.

## Configuring Enterprise Asset Management by enterprise administrators

The enterprise administrator role has complete access to the Enterprise Asset Management application thereby allowing this role to create multi-component assets and models along with other related configurations.

Enterprise administrators have the capability to configure the following:

- Opt-in to Enterprise Asset Management
- Create multi-component models to specify one or more model components based on the same model
- Create multi-component assets from multi-components model
- Create and import classification codes
- Configure model and asset tabs
- Import enterprise models and assets in bulk
- Import and export content data
- Use Advanced Shipment Notification
- Revert normalization
- Create linear asset types
- Create configuration values for risk likelihood, risk impact, and risk score
- Create shipping carrier records and view integration profiles for third-party shipping carriers
- Create knowledge articles
- Create calibration categories for enterprise asset calibrations
- Create a calibration attribute library
- Create a quality standard for your enterprise asset calibrations
- Create a service frequency for your enterprise asset calibrations
- View license report for the OT Asset Management application

### Opt-in to Enterprise Asset Management Content Service

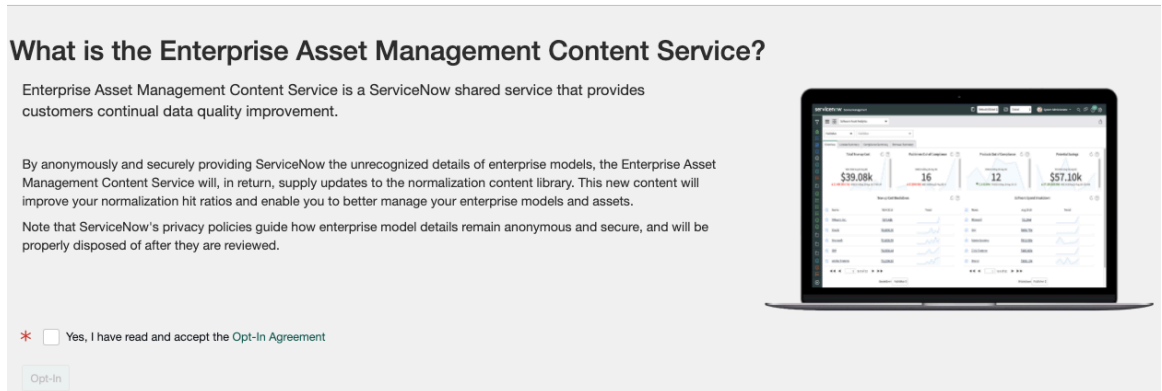
Opt in to the Enterprise Asset Management Content Service to share unnormalized enterprise model data such as enterprise models, enterprise model lifecycles, and custom enterprise product models from your organization with ServiceNow to improve the normalization process.

## Before you begin

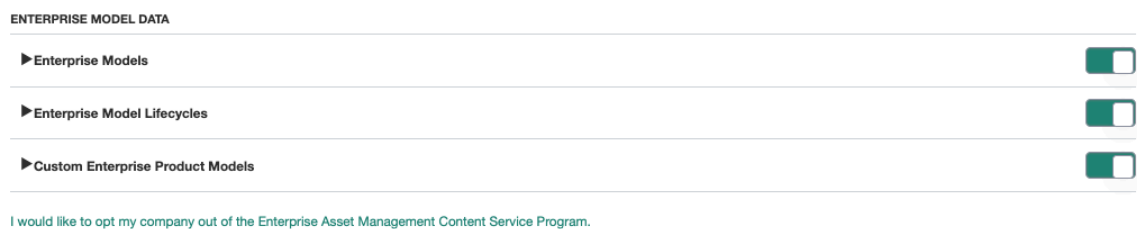
Role required: sn\_eam.enterprise\_admin

## Procedure

1. Navigate to **Enterprise Asset Workspace > Admin center > Normalization opt-in.**



2. Select **Opt-In Agreement** to read the agreement and then select the check box, **Yes, I have read and accept the Opt-in Agreement.**
3. Select **Opt-In.**



The enterprise data such as enterprise models, enterprise model lifecycles, and custom enterprise product models KPIs are automatically enabled.

4. To disable a KPI, select the toggle button next to the KPI and then select **Save.**
5. To opt out, select **I would like to opt my company out of the Software Asset Management Content Service Program** and then select **Opt-Out.**

Once you opt out, the enterprise models, enterprise model lifecycles, and custom enterprise product models KPIs are disabled and your company no longer contributes to the improvement of the normalization process. You still receive incremental content updates, based on what the Content Service team can create from other sources. Your company can rejoin the Enterprise Asset Management Content Service at any time.

## Create a multi-component model

Create a multi-component model to define more than one model component based on the same product model.

## Before you begin

For details on multi-component models, see [Multi-component models and assets in Enterprise Asset Management.](#)

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

## Procedure

1. Create a model by navigating to **Enterprise Asset Workspace > Enterprise model management**  
You can create a pre-assembled or an user-assembled model. For details on creating a model, see [Create enterprise models](#).
2. After you created a model, add model components to the model.  
For details on creating model components, see [Create enterprise model components](#).
3. Once you added the model components to the model, change the status of the model to **In Production**.
4. Select **Publish to Enterprise Asset Catalog** to publish your model to the catalog.

## Create a multi-component asset

Track and manage your assets by creating a multi-component asset from a multi-component model.

## Before you begin

For details on multi-component models, see [Multi-component models and assets in Enterprise Asset Management](#).

Role required:

- sn\_eam.enterprise\_admin
- sn\_eam.enterprise\_asset\_manager

## Procedure

1. Create a model by navigating to **Enterprise Asset Workspace > Enterprise model management**  
For details on creating a model, see [Create enterprise models](#).
2. After you created a model, add model components to the model.  
For details on creating model components, see [Create enterprise model components](#).
3. Create assets from the multi-component model.

You can create a pre-assembled or an user-assembled asset.

For details on creating an asset, see [Create enterprise assets](#). Once you create assets, child assets are automatically created.

- a. If you create a user-assembled asset, open the asset record.
- b. Select either of the two to assemble assets:
  - **Assemble:** gives you a choice to choose the assets present in the parent asset's stockroom. Once you select the assets, select **Assemble**. For details on assembling assets, see
  - **Auto assemble:** triggers a process that automatically selects assets from a stockroom and associates those assets with the parent asset. If the required quantity of assets is not available, an error appears.
- c. If you want to release all child assets, select **Release all assets**.

This process releases all child assets from the parent asset and assigns them back to the parent stockroom.

The released assets move to **In Stock** status. **Release all assets** is only visible on screen when assets are associated with a parent asset.

- To swap child assets, in the Details tab select **SWAP**.  
The multi-component asset needs to be in the **In maintenance** state to swap assets. You can swap multiple child assets at one go with other assets from the same model in any stockroom. The model must be in the **In stock** state and **Available** sub state.

### Create sites in the Enterprise Asset Management

Create a site for asset groups in the Enterprise Asset Management application.

#### Before you begin

Role required: sn\_eam.enterprise\_admin

#### About this task

For detailed information on what sites are and how are they used in asset groups, see [Asset groups in Enterprise Asset Management](#).

#### Procedure

- Navigate to **All > Enterprise Asset Workspace > Enterprise asset estate > Asset groups**.
- Select **Sites**.
- Select **New** to open the Create New Equipment Model Entity page.
- On the form, fill in the fields.

Field	Description
Entity name	Name of the equipment model entity.
Short code	Short code that is assigned to this equipment model entity.
Parent	Parent of the entity. Once a parent is selected, the <b>Template</b> field is automatically populated
Path	Auto-generated based on the short code and the hierarchy.
Template	The template that defines the hierarchy of the parent according to the ISA-95 hierarchical entity model.
Location	Location of the equipment model entity. For example, Atlanta Building 64 would be the location for each associated equipment model that is located there.
Level	The hierarchical levels of a site with site being at the highest level, followed by area, work center, and work unit.
Site	Refers to an ISA-95 hierarchical entity model. Sites are entity records in the Equipment

Field	Description
	Model Entity [cmdb_ci_ot_isa_entity] table, organized in a hierarchical structure.
Company	Name of the company that this entity belongs to.
Business Unit	Business unit of the company that this entity belongs to.
Short Description	A description of the site entity.
Assigned to	The person primarily responsible for the entity.
Support group	The group to contact if you encounter any issues with the entity.
Managed by	Name of the assigned person who owns and is responsible for managing this entity.
Managed by group	The group who maintains the entity.
Process criticality	Measure of how critical, or important, the equipment model entity is to the process. Select the process criticality for the entity. For example: <ul style="list-style-type: none"> <li>○ 1 - most critical.</li> <li>○ 2 - somewhat critical.</li> </ul>
Operational status	Current operational status of the entity: <ul style="list-style-type: none"> <li>○ <b>Operational:</b> Entity that is fully operational in the production process.</li> <li>○ <b>Non-Operational:</b> Entity that is non-operational in the production process.</li> </ul>

**5. Select Save.**

The newly created site appears in the Sites tab.

**Create classification codes**

Create classification codes and assign them to enterprise models and model categories to increase the efficiency of enterprise models.

**Before you begin**

Each classification code is assigned to one or many model categories. Classification codes are stored in the Enterprise model classification [sn\_ent\_model\_classification] table.

Role required: sn\_eam.enterprise\_admin

**Procedure**

- 1. Navigate to Enterprise Asset Workspace > Enterprise model management > Classification.**
- 2. Select New.**
- 3. On the form, fill in the details.**

Field	Description
Classification	<p>The display name of the classification code record which is automatically generated after the record is saved.</p> <p>The display name is a concatenation of the classification code, its description, and the source.</p>
Code	<p>The classification code.</p> <p>Based on your data infrastructure, the code may adhere to a hierarchical structure.</p>
Description	Description of the classification code.
Parent	Parent of the classification code. If you select a parent, the model categories assigned to the parent code are automatically populated in the <b>Model categories</b> field. This field is however editable. You can delete a model category that is automatically populated or you can add another model category.
Source	The source system that a classification code is based on. For example, OmniClass is a classification system for the construction industry.
Model categories	Mode categories assigned to the code.

**4. Select Save.**

The display name of the classification code is generated and displayed in the **Classification** field. The display name represents the code, the description, and the source. You can view the new classification code record in the Classifications list view page.

**Import classification codes**

Import multiple classification codes at one go to your ServiceNow instance.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**Procedure**

1. Navigate to *Enterprise Asset Workspace* > **Admin center** > **Model classifications** > **Import**.
2. Select **New**.
3. On the Create New Enterprise Classification Import page, enter a name for the import in the **Import** field.
4. Select **Download template** to download a spreadsheet.
5. Enter the details in the spreadsheet.

Ensure that you fill out either the Code or the Description column in the spreadsheet. Use commas to specify more than one model category in the Model categories column.

6. Select **Attach File** to upload the spreadsheet (.xlsx).
7. Select **Import** to perform a validation check on the spreadsheet.  
After you select Import, the Status field changes from **Draft** and moves to **Pending, Uploading, Transforming**. After the import process is completed, the status changes to either **Completed, Completed with errors**, or **Failed**. The details of the import process are displayed in the **Enterprise Classification Import** and **Classification import results** sections.
8. Select the **Classification Import Stagings** related list to view the details of the spreadsheet that you uploaded and also view any errors you received.
9. Open any record for which you got an error.
10. Fix the error, upload the spreadsheet, and import the record again.

### Import enterprise models and assets in workspace

Import multiple enterprise models and assets at one go in the Enterprise Asset Workspace.

#### Before you begin

You can import enterprise models and assets of different types such as simple, pre-assembled, user-assembled assets, and consumables. You can also view the import errors and status.

The enterprise models and asset import records are stored in Enterprise Bulk Import [sn\_eam\_bulk\_import] table.

The Flow Designer application is used to initiate the EAM Bulk Import sub flow to assist you in importing enterprise models and assets. As the flow takes you through the various stages, the import details are automatically updated. You can open the EAM Bulk Import flow to view the status of the stages in the flow.

Role required: sn\_eam.enterprise\_admin

#### Procedure

1. Navigate to **Enterprise Asset Workspace > Asset operations**.
2. Select any of the import actions under **Bulk Import**.
3. Select **New**.  
The Create New Enterprise Bulk Import page opens.
4. Enter a unique name for the import process in the **Name** field.
5. Select a mode for the import in the **Mode** field.
6. Select **Download template** to download a spreadsheet.  
Based on the mode you select, a spreadsheet is available. Templates are available for models, for assets, and a combined template for models and assets.
7. Enter the details in all the mandatory fields in the spreadsheet.  
If you don't enter values in all the mandatory columns in the template, the import fails, and an error message appears asking you to check the template format. For details on mandatory fields, see [Mandatory fields in the bulk import spreadsheets](#).
8. Select **Attach File** to upload the spreadsheet (.xlsx).
9. Select **Import** to perform a validation check on the spreadsheet.  
After you select Import, the Status field changes from **Draft** and moves to **Pending, Uploading, Transforming**. After the import process is completed, the status changes to either **Completed, Completed with errors**, or **Failed**. You can view details regarding the result of the import process for models and assets in the **Model import result** and **Asset import result** sections.

10. Select **Model Import staging**, **Model component Import staging**, or **Asset Import Staging** related lists to view the details of the spreadsheet that you uploaded and also view any errors you received.
11. Open any record for which you got an error.
12. Fix the error, upload the spreadsheet, and import the record again.

### Configure tabs in the Enterprise Asset Workspace

Configure the options to hide or display various tabs, including tabs that are associated with specific model categories, in the Enterprise model management view and Enterprise asset estate view of the Enterprise Asset Workspace.

#### Before you begin


Role required: sn\_eam.enterprise\_admin

#### Procedure

1. Navigate to **Enterprise Asset Workspace > Admin center**.
2. In the navigation panel of the Admin center view, select **Model and asset tabs**.
3. From the list of available tab configurations, select the configuration that you want to modify. The Enterprise Asset Management application includes the following tab configurations by default:
  - Asset groups tab configuration
  - Asset indoor map tab configuration
  - Construction class tab configuration
  - Enterprise class tab configuration
  - Facilities class tab configuration
  - Firmware class tab configuration
  - Industrial class tab configuration
  - Linear assets tab configuration
  - Medical class tab configuration
  - Retail class tab configuration
  - Tactical Equipment class tab configuration
  - Transportation class tab configuration
  - Wearables class tab configuration





#### Important:

You can also select **New** to create an additional tab configuration for any custom top tier model category that you have added under the enterprise model category. However, ServiceNow strongly recommends that you use only existing top tier model categories, such as Medical or Construction, with custom sub-categories instead. For more information on creating custom model categories, see [Create model categories](#).

If you choose to create an additional tab configuration, you must also use UI Builder to manually add the corresponding model and asset tabs to the Enterprise model management view and Enterprise asset estate view. For detailed instructions, see [Add tabbed content to UI Builder pages](#) .

4. On the tab configuration record, modify the fields as needed.

**Tab configuration fields**

Field	Description
Name	Name of the tab configuration.
Model category	<p>Model category that is associated with the tab configuration. The specified model category corresponds with a model tab in the Enterprise model management view and an asset tab in the Enterprise asset estate view.</p> <p> <b>Note:</b> This field is editable only if you are creating a tab configuration.</p>
Include in tab	<p>Option to display the given tab in the Enterprise model management view or Enterprise asset estate view. If you enable this option, the tab appears in the applicable views. If you disable this option, the tab no longer appears in the applicable views.</p> <p>For example, if you enable this option in the Retail class tab configuration, the <b>Retail</b> tab appears in both the Enterprise model management view and Enterprise asset estate view.</p> <p> <b>Warning:</b> If you enable the <b>Include in tab</b> option but disable the <b>Include in dialog box</b> option, the resulting tab configuration is invalid.</p>
Include in dialog box	<p>Option to display the associated model category in the dialog boxes for creating enterprise models and assets. If you enable this option, the model category appears in the <b>Model category</b> drop-down list of these dialog boxes. If you disable this option, the model category no longer appears in the drop-down list. You can access these dialog boxes by navigating to either the Enterprise model management view or Enterprise asset estate view, selecting the <b>All enterprise</b> tab, and then selecting <b>New</b>.</p> <p> <b>Note:</b> This option is editable only for tab configurations that are associated with a model category, such as the Tactical Equipment class tab configuration.</p> <p> <b>Warning:</b> If you enable the <b>Include in tab</b> option but disable the <b>Include in dialog box</b> option, the resulting tab configuration is considered invalid.</p>
Domain	Domain that the tab configuration is available in.

5. Select **Save**.

**Import and export content data for Enterprise Asset Management**

Import and export content data to the ServiceNow Enterprise Asset Management Content Service to improve the normalization process. On-premise users can use the Manage Enterprise Library module to import or export data via a zip file.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

## Procedure

1. Navigate to **All > Modules > Manage Enterprise Library**.
2. Open the Manage Enterprise Library form layout and select the **Active** check box to activate the module.
3. Select **Save** and refresh the form layout.
4. Navigate to the Manage Enterprise Library module.
5. Import the content data to get the new data into your system.
  - a. Select **Import Enterprise Library Content**.
  - b. Select **Attach Content File** and then select the zip file that contains the content.
  - c. Select **Run Import**.  
After the data is imported, the content update schedule job, *EAM - Apply latest content changes*, is triggered to process the content updates.
6. Export content to send the custom data or any enterprise models that are not fully normalized to the ServiceNow content service team.
  - a. Select **Content Service Opt-in: Export Enterprise Normalization Content**.
  - b. If you already haven't opted in to share the data with ServiceNow content service, select **opt-in** and refresh the Manage Enterprise Library page.  
For details on opting-in, see [Opt-in to Enterprise Asset Management Content Service](#).
  - c. Select **Run Export**.
  - d. After the status changes to Ready for Download, refresh the page.  
A zip file is created and appears at the top of the Manage Enterprise Library page. If there is no content to export, an error message appears informing you that no content exists.
  - e. Download and send this zip file to the ServiceNow content service team.

## Use Advanced Shipment Notification in Enterprise Asset Management

Use Advanced Shipment Notification (ASN) to automate and create enterprise asset records for when your assets are in transit.

### Before you begin

Download your ASN template and have your asset vendor update it. Upload the updated template to your ServiceNow instance. Before using the ASN template to import asset records, ensure that your ServiceNow instance has the model ID defined and that the same model ID is mentioned in the template.

Role required: sn\_eam.enterprise\_admin

### About this task

Creating enterprise asset records manually is time consuming and can lead to errors. Use ASN to reduce the risk of shipment going missing or misplaced and increase inventory accuracy.

## Procedure

1. Navigate to **Enterprise Asset Workspace > Asset operations > Shipment Notifications**.
2. Select **New**.  
The Create New Shipment Notification Upload page appears.
3. Enter a unique name for the ASN in the **Name** field.
4. Select **Attach File** to upload a spreadsheet (.xlsx).  
The spreadsheet should be in the format of the download template. If you do not have a sample spreadsheet, select **Download template** to download a sample spreadsheet, fill in the details in the spreadsheet, and then select **Attach File** to upload the spreadsheet. Ensure that in the spreadsheet the format for **Ship date**, **Order date**, and **Warranty end date** fields is month/date/year.  
The upload may take some time. Once the file is uploaded, the name of the spreadsheet appears in the **File** field.
5. Select **Import** to perform a validation check on the spreadsheet.

After you select **Import**, the **Status** field changes from **Draft** and moves to **Pending, Extracting Rows and Importing**. Once the import process is completed, the status changes to either **Completed, Completed with errors, or Failed**.

The **Shipment Upload Result** section appears that gives information on the import process. Information such as how many records were inserted, ignored or skipped.

6. Select **Shipment Notification Upload Stagings** related link to view any errors you received as well as to view the details of the spreadsheet that you uploaded.
7. If you got an error, select the record in **Shipment Notification Upload Stagings** related link.
8. Scroll down to the **Errors** section and view the error in the **Comment** field.
9. Fix the error, upload the spreadsheet, and import the record again.  
Serialized assets do not have duplicate enterprise import records created, but consumables do have duplicate entries.

## Revert normalization

You can revert the normalization of enterprise models in the Enterprise Asset Workspace.

### Before you begin

Role required: sn\_eam.enterprise\_admin

### About this task

Enterprise models with a status of **Fully Normalized, Partially Normalized, Manufacturer Normalized, or Manually Normalized** can be reverted. All the normalized fields present in the model are reverted and the normalization status changes to **Match not Found**.

## Procedure

1. Navigate to **All > Enterprise Asset Workspace > Enterprise model management**.
2. Open a enterprise model record that is already normalized.
3. Select **Revert Normalization**.
4. Select **OK** on the confirmation message box.

Once the revert normalization process is complete, the following changes take place:

- fields are reset to their original values and any rule associated with the enterprise model is deactivated.
- After deactivation of the rule, revert normalization is run on all models that were normalized using that rule before.
- The deactivated rule can no longer normalize any more models. The deactivated rule can't be reactivated. It is a one time procedure.
- The **Revert Normalization** option on the model record is replaced with the **Normalize** option.

## Create linear asset types

Create linear asset types to categorize linear assets.

### Before you begin

The following predefined linear asset types are already part of the base system:

- Railroad
- Roadway
- Sewer
- Sidewalk
- Utility cable
- Trail

Follow these steps to create customized linear asset types.

Role required: sn\_eam.enterprise\_asset\_manager

### Procedure

1. Navigate to **Enterprise Asset Workspace > Enterprise asset estate > Linear asset types**.
2. Select **New**.
3. Enter a name for the linear asset type in the **Name** field.
4. Select a parent for the linear asset type from the **Parent** list.
5. Select **Save**.

The new linear asset type appears in the Linear asset types related list. If you don't see it in the related list, select the Refresh List icon on the right side of the page.

## Create configuration values for risk likelihood

Use the Risk Likelihood module to create configuration values for the likelihood vector.

### Before you begin

Role required: sn\_eam.enterprise\_admin

### Procedure

1. Navigate to **Enterprise Asset Workspace > Admin center > Risk configuration > Risk likelihood**.
2. Select **New**.
3. Enter a label in the Enterprise Risk Likelihood Configuration page.  
The **Value** field is an incremental field and cannot be edited.
4. Select **Submit**.

The **Display Name** field is automatically populated and is a concatenation of the value and the label. For example, if 1 is the value and Low is the label, the **Display Name** field appears as 1 - Low.

5. To add more configuration values, repeat steps 2-4.  
There should be a minimum of three likelihood records and a maximum of ten.
6. Select **Freeze** after you have added the configuration records.
7. Select **OK** in the warning message box to continue freezing your configuration records.

**Note:** You cannot add or delete any likelihood configuration records after you select **Freeze**. You can however edit the **Label** field in the existing records.

### Create configuration values for risk impact

Use the Risk Impact module to create configuration values for the impact vector.

#### Before you begin

Role required: sn\_eam.enterprise\_admin

#### Procedure

1. Navigate to **Enterprise Asset Workspace > Admin center > Risk configuration > Risk impact**.
2. Select **New**.
3. Enter a label in the Enterprise Risk Impact Configuration page.  
The **Value** field is an incremental field and cannot be edited.
4. Select **Submit**.  
The **Display Name** field is automatically populated and is a concatenation of the value and the label. For example, if 1 is the value and Low is the label, the **Display Name** field appears as 1 - Low.
5. To add more configuration values, repeat steps 2-4.  
There should be a minimum of three impact records and a maximum of ten.
6. Select **Freeze** after you have added the configuration records.
7. Select **OK** in the warning message box to continue freezing your configuration records.

**Note:** You cannot add or delete any impact configuration records after you select **Freeze**. You can however edit the **Label** field in the existing records.

### Create configuration values for risk scores

Use the Risk Score module to create configuration values for risk score bands.

#### Before you begin

Before creating configuration values for risk score, ensure that you have added and frozen configuration value for the two vectors: likelihood and impact in the Risk Likelihood and the Risk Impact modules, respectively.

Role required: sn\_eam.enterprise\_admin

#### Procedure

1. Navigate to **Enterprise Asset Workspace > Admin center > Risk configuration > Risk score**.
2. Select **New**.
3. Fill in the form details.

Field	Description
<b>Start</b>	Start value of the risk score band.
<b>End</b>	End value of the risk score band. The value is automatically populated using the maximum likelihood and impact configuration values.
<b>Label</b>	Label of the risk score band.
<b>Color</b>	Color depicting a risk score band. Following are the values to choose from: <ul style="list-style-type: none"> <li><input type="radio"/> Green</li> <li><input type="radio"/> Yellow</li> <li><input type="radio"/> Orange</li> <li><input type="radio"/> Red</li> </ul>

**4. Select **Submit**.**

Based on the other fields, the **Band name** field is automatically populated.

**5. To add more risk score bands, repeat steps 2-4.**

There should be a minimum of two score band records and a maximum of four.

**6. Select **Freeze** after you have added the entire risk range.**

To edit the records, select **Unfreeze**.

**Create a shipment carrier record in Enterprise Asset Workspace**

Create a shipping carrier record in the Enterprise Asset workspace to associate the carrier with an integration profile.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

**Procedure**

- 1. Navigate to **Enterprise Asset Workspace > Admin center**.**
- 2. Select **Shipping carrier** from the Shipping list.**
- 3. Select **New**.**
- 4. On the form fill in the fields.**

**Create New Shipping Carrier form**

Field	Description
Name	Name of the shipping carrier.
Email	Email address of the shipping carrier.
Integration profile	Profile for integrating with the third-party carrier's application.  For more details, see <a href="#">View integration profiles for third-party shipping carriers in the Enterprise Asset Workspace</a> .

Field	Description
Status	Status of the carrier. This field is set to <b>Active</b> by default.
Phone	Phone number of the shipping carrier.
Website	Website of the shipping carrier.
Company	Company name of the shipping carrier.
Notes	Additional information about the carrier.

**5. Select Save.**

The shipping carrier record is created and added to the Shipping carrier list.

**View integration profiles for third-party shipping carriers in the Enterprise Asset Workspace**

View the integration profiles for your third-party shipping carriers in the Asset operations view of the Enterprise Asset Workspace. These integration profiles enable you to connect to third-party shipping carrier applications so that you can retrieve shipment details for your enterprise assets.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_technician, sn\_eam.enterprise\_asset\_manager, or sn\_eam.enterprise\_admin

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Admin center.**
2. Select **Carrier integration** from the Shipping list.
3. View the complete list of integration profiles.  
Select an integration profile to view additional details, including the connection details, associated shipping carriers, scheduled job for fetching shipment details, and logs of the scheduled job.

**Create a knowledge article for Enterprise Asset Management**

Create and edit knowledge articles within a knowledge base to share information across your organization.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Admin center > Asset knowledge base.**
2. Select **New** in the Asset knowledge base page.
3. On the form, fill in the fields.  
For detailed information on the fields, refer to the [Knowledge Management](#) application

Field	Description
<b>Number</b>	Number of the article. This field is automatically populated.
<b>Knowledge base</b>	The knowledge base selected for the article. Enterprise Asset Knowledge Base is selected

Field	Description
	<p>by default. You can select a different knowledge base if you want to.</p> <p><b>Note:</b> An article can only be associated with one knowledge base. You can change the knowledge base, but only if the selected article template is available in the knowledge base.</p>
<b>Category</b>	<p>The category for this article. Select a knowledge base before you can select a category. Articles without a category appear on the knowledge homepage in the (empty) category.</p>
<b>Valid to</b>	<p>The date this knowledge article expires. Articles don't appear in search results after the Valid to date or if the Valid to date is empty.</p> <p>The default value of the this field is derived from the <b>Article Validity</b> field configured for the knowledge base. The Valid to date starts from the date that the article was created until the number of days specified in the <b>Article Validity</b> field. If the <b>Article Validity</b> field is empty, the default date in the <b>Valid to</b> field for the knowledge article is set to January 1, 2100.</p> <p>An article author or editor can select whether to keep or change the default Valid to date.</p> <p>On the first day of each month, the application sends an email notification to a list of authorized recipients to remind them about articles that are expire in the next month. The recipient can then extend the Valid to date to continue using the article.</p> <p><b>Note:</b> If the system date format or user preferences is set to use yy year format, you might face issues when the Valid to date is set to the default date. Contact your administrator or modify the user preferences to use a date format with the yyyy year format.</p>
<b>Article type</b>	<p>The type of article, either HTML or wiki.</p>
<b>Workflow</b>	<p>The publication state of the article, such as Draft, In Review, or Published. When inserting a new article from an existing article, the state of the new article is reset to Draft.</p>
<b>Source task</b>	<p>The task this knowledge article was created in response to, if any. This field is set automat</p>

Field	Description
	ically when you create the knowledge article from a task record.
<b>Attachment link</b>	<p>Option for downloading an attached file automatically when a user accesses the article, instead of opening the article view. Add one or more attachments to the article to use this option.</p> <p><b>Note:</b> You may attach multiple files, but most web browsers permit users to download only the first one. To ensure download of all the files, bundle them in to an archive, such as with WinZip, and attach the archive. The Attachment link option applies to articles accessed from search links only. Articles accessed as links within other knowledge articles won't replicate this behavior.</p>
<b>Display attachments</b>	Option for displaying attachments to users viewing this knowledge article. Attachments appear below the article text. Add one or more attachments to the article to use this option.
<b>Short Description</b>	The title of the article. This title appears when browsing and searching for a knowledge article, and at the top of the article. You can enter up to 100 characters in this field.
<b>Article body</b>	<p>Content for the article. A preview of the content appears when browsing and searching for a knowledge article.</p> <p>Use the editing functions in the HTML editor to create content.</p>

4. Select **Save** to create the article.

### Create a calibration category for your enterprise asset calibrations

Create a calibration category to indicate the type of calibration that you need to perform on your enterprise assets.

#### Before you begin

Role required: sn\_eam.enterprise\_admin

#### About this task

You can specify the calibrations that are required for your enterprise assets by using calibration attributes. When you create a calibration attribute, you must select a calibration category to indicate the type of calibration that you need to perform. The Enterprise Asset Management application includes default calibration categories such as Electrical, Flow, Humidity, and Pressure. You can create additional calibration categories for any calibrations that do not fall under the default categories.

For more details on calibration attributes, see [Add calibration attributes to an enterprise asset](#) or [Add calibration attributes to an enterprise model](#).

**Procedure**

1. From the Enterprise Asset Workspace, open the Admin center view.
2. From the left navigation menu of the Admin center view, navigate to **Calibration configuration > Category**.
3. Select **New**.
4. On the form, fill in the fields.

**Create New Category form**

Field	Description
Name	Name of the calibration category.
Description	Detailed description of the calibration category.

5. Select **Save**.

**Result**

The calibration category is available to use in your calibration attributes.

**Create a quality standard for your enterprise asset calibrations**

Create a quality standard to indicate the requirements and guidelines that you must follow while performing your enterprise asset calibrations.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

**About this task**

You can specify the calibrations that are required for your enterprise assets by using calibration attributes. When you create a calibration attribute, you can apply a quality standard to indicate the set of requirements and guidelines that you must follow during the associated calibrations. By following a quality standard, you can achieve consistent, reliable, and accurate calibrations across your deployment.

For more details on calibration attributes, see [Add calibration attributes to an enterprise asset](#) or [Add calibration attributes to an enterprise model](#).

**Procedure**

1. From the Enterprise Asset Workspace, open the Admin center view.
2. From the left navigation menu of the Admin center view, navigate to **Calibration configuration > Quality standard**.
3. Select **New**.
4. On the form, fill in the fields.

**Create New Quality Standard form**

Field	Description
Name	Name of the quality standard.

Field	Description
Short description	Brief description of the quality standard.
Valid from	Date from which the quality standard is valid.
Valid to	Date on which the quality standard is no longer valid.
Description	Detailed description of the quality standard.

5. Select **Save**.

**Result**

The quality standard is available to apply to your calibration attributes.

**Create a service frequency for your enterprise asset calibrations**

Create a service frequency to specify how often you must perform an enterprise asset calibration.

**Before you begin**

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**About this task**

You can specify the calibrations that are required for your enterprise assets by using calibration attributes. When you create a calibration attribute, you must specify the frequency at which you need to perform the associated calibrations.

For more details on calibration attributes, see [Add calibration attributes to an enterprise asset](#) or [Add calibration attributes to an enterprise model](#).

**Procedure**

1. From the Enterprise Asset Workspace, open the Admin center view.
2. From the left navigation menu of the Admin center view, navigate to **Calibration configuration > Service frequency**.
3. Select **New**.
4. On the form, fill in the fields.

**Create New Service Frequency form**

Field	Description
Name	Name of the service frequency.
Service frequency	Frequency at which you must perform the calibrations.
Service frequency type	Type of frequency.

5. Select **Save**.

**Result**

The service frequency is available to use in your calibration attributes.

**Create a calibration attribute library**

Create a library of common calibration attributes that are not associated with any enterprise models or enterprise assets. Use these attributes to define the details and requirements of your commonly used calibrations.

## Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

## About this task

You can create common calibration attributes that are not associated with any enterprise models or enterprise assets. These calibration attributes can be cloned to any of your available enterprise models. You can also create calibration attributes for a specific enterprise model or enterprise asset. For details on how to create a calibration attribute for a specific enterprise model, see [Add calibration attributes to an enterprise model](#). For details on how to create a calibration attribute for a specific enterprise asset, see [Add calibration attributes to an enterprise asset](#).

## Procedure

1. From the Enterprise Asset Workspace, open the Admin center view.
2. From the left navigation menu of the Admin center view, navigate to **Calibration > Attribute library**.
3. Select **New**.
4. On the form, fill in the fields.

### Create New Calibration Attribute form

Field	Description
Attribute details	
Name	Name of the calibration attribute.
Short description	Brief description of the calibration attribute.
Criticality	Criticality level that indicates how important the calibration attribute is.
Service frequency	Frequency at which you must perform the calibration.
Category	Type of calibration.  <b>Note:</b> The Enterprise Asset Management application includes default calibration categories such as Electrical, Flow, Humidity, and Pressure. You can create additional calibration categories for any calibrations that do not fall under the default categories. For detailed instructions, see <a href="#">Create a calibration category for your enterprise asset calibrations</a> .
Active	Option that indicates if the calibration attribute is active.
Order	Order in which the calibration attribute applies to an enterprise model after it is cloned to the model. If the enterprise model contains more than one calibration attribute, the attribute with the lowest numerical value applies to the model first.
Calibration properties	
Value type	Method by which you want to measure accuracy. Select one of the following options: <ul style="list-style-type: none"> <li>○ <b>Accuracy % full scale:</b> Accuracy is based on a fixed percentage of the enterprise asset's full measurement range. The corresponding tolerance limits remain the same regardless of which point you measure accuracy at. For example, if a measurement range is 100 units and the accuracy</li> </ul>

Field	Description
	<p>percentage is set to <math>\pm 1\%</math>, the tolerance limits are <math>\pm 1</math> unit at every point within the measurement range.</p> <ul style="list-style-type: none"> <li>○ <b>Accuracy % point:</b> Accuracy is based on a fixed percentage of the specific point that you are measuring accuracy at. The corresponding tolerance limits increase or decrease proportionally based on the point that you measure accuracy at. For example, if your accuracy percentage is set to <math>\pm 1\%</math> and you measure accuracy at a point that has a value of 50 units, the tolerance limits for this specific point are <math>\pm 0.5</math> units. If you then measure accuracy at another point that has a value of 60 units, the tolerance limits increase to <math>\pm 0.6</math> units.</li> </ul>
<p>Scale</p> <p><b>Note:</b> This field appears only if you set the <b>Value type</b> field to <b>Accuracy % full scale</b>.</p>	<p>Full measurement range that you can measure accuracy within.</p>
Unit	Unit of measurement that you are using to measure accuracy.
Accuracy (%)	Percentage of accuracy that your enterprise assets must fall within.
Resolution	Smallest distinguishable change in value that you can detect and measure. The higher the resolution is, the more specific the change in value is.
Quality standard	
Quality standard	<p>Set of requirements and guidelines that you must follow while performing the calibrations.</p> <p><b>Note:</b> You can create quality standards manually in the Admin center view of the Enterprise Asset Workspace. See <a href="#">Create a quality standard for your enterprise asset calibrations</a> for detailed instructions.</p>
Instrument	
Instrument model	Model of the instrument that you must use to perform the calibrations.
Instruction	General instructions or instrument settings that you must follow when performing the calibrations.

**5. Select Save.**

The form closes and you are automatically redirected to the new calibration attribute record.


**6. Specify the points at which you can measure accuracy.**

**Important:** You must specify one or more points within each enterprise asset's measurement range. If you do not specify at least one point, the calibration attribute cannot be set to Active.

- a. On the calibration attribute record, select **Add calibration points**. The Calibration points dialog box opens.
- b. In the dialog box, fill in the fields.

**Calibration points dialog box**

Field	Description
Point name	Name of the point.
Expected value	Point value that you want to measure accuracy against.
Order	Order in which you want to use the point to measure accuracy. If your calibration attribute contains more than one point, the point with the lowest numerical value is used first.

- c. To add an additional point to the calibration attribute, select the Add Content icon (  ) and then fill in the fields. Repeat this step for each point that you want to add.
- d. Select **OK**.

The dialog box closes and the points appear on the **Calibration points** tab of the calibration attribute record.

**What to do next**

Clone the calibration attribute to all applicable enterprise models. See [Clone calibration attributes to an enterprise model](#) for detailed instructions.

**View the license report for the OT Asset Management application**

View details of the subscriptions consumed by your organization for the OT Asset Management application by using the ITAM License Report.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

**About this task**

The EAM Populate Licensing Data job runs every Sunday and populates the ITAM License Report. Any changes to the license consumption will reflect on the ITAM license report only after the weekly license count calculation.

**Procedure**

1. Navigate to **All > ITAM Licensing > ITAM License Report**.
2. Search for the OT Asset Management application.

Application	Resource Category	Resource Subcategory	Resource Total Count	Subscription Unit Ratio	Total Subscription Units Consumed
OT Asset Management	Industrial Consumable		102	25:1	5
OT Asset Management	OT Supervisory System		0	1:1	0
OT Asset Management	OT Field Devices		1,016	10:1	102
OT Asset Management	Operational Equipment		0	1:1	0
OT Asset Management	OT Control System		603	3:1	201
OT Asset Management	Unclassed OT		0	1:1	0
Sum					308

You can view the following information on subscriptions consumed for the resource categories for the OT Asset Management application.

- **Application:** Name of the application that is activated on your ServiceNow instance. The ITAM License Report can be grouped by the application.
- **Resource Category:** Managed OT resource types available for the OT Asset Management application. The resource types include the following:
  - Unclassed OT
  - OT Supervisory System
  - OT Control System
  - OT Field Devices
  - Industrial Consumable
  - Operational Equipment
- **Resource Subcategory:** Subcategories of a Resource category.
- **Resource Total Count:** Asset count of the managed OT resources that is grouped by Resource categories and Model categories.
- **Subscription Unit Ratio:** Predefined ratios that determine how many assets of a Resource category require a subscription. For example, the defined ratio of 25:1 for Industrial Consumable means that every 25 assets of that resource category require one Subscription Unit.
- **Total Subscription Units Consumed:** The number of subscriptions per Resource category that your organization consumed. The licensing module calculates this number by applying the Subscription Unit Ratio to the Resource Total Count for each Resource Category.

### Manage failure and resolution codes

Improve maintenance efficiency by managing the failure and resolution codes in the Admin center of the Enterprise Asset Workspace.

**i Important:** The failure and resolution codes are available with Enterprise Asset Management version 9.0 and later.

As an enterprise administrator or inventory administrator, you can perform the following actions in the Admin center:

- [Create a source for failure and resolution codes.](#)
- [Create failure and resolution codes.](#)
- [Import failure and resolution codes through Excel template.](#)

As an inventory user or enterprise asset technician, you can perform the following actions:

- View the available failure and resolution codes by navigating to **Workspaces > Enterprise Workspace > Admin center > Failure and resolution** and selecting the **Codes** list.
- View the sources for failure and resolution codes by navigating to **Workspaces > Enterprise Workspace > Admin center > Failure and resolution** and selecting the **Sources** list.
- Select the failure and resolution codes in the Repair flow task forms. For more details, see [Troubleshoot assets requested for repair in the Enterprise Asset Workspace](#) and [Complete the repair asset task in the Enterprise Asset Workspace](#).

**Create a source for failure and resolution codes**

Create a source to be associated with any failure or resolution code. The source for a code could be internal, external, or even from a manufacturer.

**Before you begin**

**i Important:** The creation of a source for failure and resolution codes is supported in Enterprise Asset Management version 9.0 and later.

Role required: sn\_eam.enterprise\_admin or inventory\_admin

**About this task**

You should have at least one source before creating failure or resolution codes.

**i Note:** Sources of the codes are stored in the Asset service source [sn\_ent\_asset\_service\_source] table.

**Procedure**

1. Navigate to **Workspaces > Enterprise Workspace > Admin center > Failure and resolution**.
2. In the Failure and resolution list, select **Sources**.  
Any existing sources are shown in the sources list.
3. Select **New**.
4. On the form, fill in the fields.

**Create New Asset service source form**

Field	Description
Source	Name of the source.  For example, External or Internal.
Description	Brief description of the source.

5. Select **Save**.

**Result**

The source that you created is shown in the Sources list.

**Create a failure or resolution code**

Create a failure or resolution code to help enterprise asset technicians identify either the asset failure or the solution to the asset problem.

## Before you begin

### Important:

The creation of a failure or resolution code is supported in Enterprise Asset Management version 9.0 and later.

The source for the code that you want to create should already be available. For more details, see [Create a source for failure and resolution codes](#).

Role required: sn\_eam.enterprise\_admin or inventory\_admin



## About this task

Failure and resolution codes are stored in the Asset service source [Asset service code] table.

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Admin center > Failure and resolution**.
2. In the Failure and resolution list, select **Codes**.  
Any existing codes are shown in the Codes list.
3. Select **New**.
4. On the form, fill in the fields.

### Create New Asset service code form

Field	Description
Display name	Name of the code that's automatically generated based on the values in the <b>Code</b> and the <b>Description</b> fields when the code is created. For example, if the <b>Code</b> field has a value F1001 and the <b>Description</b> field is Power failure, then the Display name is F1001-Power failure.
Code	Unique identifier used to identify an asset failure or the solution to it. For example, F1001 or R1001.
Description	Brief description that explains what the code signifies. For example, Power failure.
Type	Type of code. The following values are available: <ul style="list-style-type: none"> <li>○ <b>Failure</b></li> <li>○ <b>Resolution</b></li> </ul>
Parent	Code of the parent. <p> <b>Note:</b> The parent code is of the same type as the child code. For example, the parent of a failure code is another failure code, and the same applies to resolution codes.</p>
Model categories	Model categories to which the code can be applied. <p> <b>Note:</b> When you select a parent on the code, the model category is inherited from the parent code. However, you can still update the this field.</p> <p>If you don't select any model category, the code applies to all model categories.</p>

Field	Description
Source	Source of the code. This field is required.

5. Select **Save**.

### Result

The code that you created is shown in the Codes list.

### Import failure and resolution codes in bulk

Import multiple failure and resolution codes via Excel templates in the Admin center to assist enterprise asset technicians in diagnosing asset issues and their resolutions.

### Before you begin


#### Important:

The bulk import of failure and resolution codes is supported in Enterprise Asset Management version 9.0 and later.

The source for the codes that you want to import should already be available. For more details, see [Create a source for failure and resolution codes](#).

Role required: sn\_eam.enterprise\_admin or inventory\_admin

### About this task

 **Note:** The import records are stored in the Asset service import [sn\_itam\_common\_asset\_service\_import] table.

### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Admin center > Failure and resolution**.
2. In the Failure and resolution list, select **Import**.
3. Create an asset service import.
  - a. Select **New**.
  - b. Download, update, and save the code import template.
    - i. Select **Download Template**.
    - ii. Fill in the template with the details of the codes.

The template has the following fields:

- **Code:** A unique identifier used to identify an asset failure or the solution to it. For example, F1001 or R1001. This field is required to import the template.
- **Description:** A brief description that explains what the code signifies. For example, Power failure.
- **Type:** Type of code. You can either specify Failure or Resolution in this field. This field is required to import the template.
- **Parent code:** Code of the parent.

**i Note:** The parent code is of the same type as the child code. For example, the parent of a failure code is another failure code, and the same applies to resolution codes.

- **Model categories:** Model categories to which the code can be applied.

**i Note:** When you select a parent on the code, the model category is inherited from the parent code. However, you can still update this field.

If you don't specify any model category, the code applies to all model categories.

- **Source:** Source of the code.

iii. Save the template.

c. On the Create New Asset service import form, fill in the details.

- i. In the **Name** field, provide a name for the asset service import.

- ii. Select **Attach file** and then select the code import template that you created in step b.

#### 4. Select **Import**.

#### Result

- The Code import result section shows the following details:
  - Code rows
  - Code inserts
  - Code ignored
  - Code skipped
  - Code errors
- If the import is successful, the Status of the asset import changes from **Draft** to **Completed**.
- If there are no issues with the template, all the codes that you imported are shown in the Codes list.

#### Configure settings to monitor asset key performance indicators (KPIs) in the Enterprise Asset Workspace

Set up the necessary configurations in the Admin Center to enable the tracking of KPIs for your enterprise assets. These settings enable you to monitor and manage the performance your assets.

**i Important:** The settings to enable the tracking of asset performance are available with Enterprise Asset Management version 9.0 and later.

As an enterprise administrator, configure the following settings to monitor asset KPIs:

1. [Opt in to model categories to track performance KPIs for enterprise assets.](#)
2. [Create an operational schedule for enterprise assets.](#)
3. [Map enterprise assets to an operational schedule.](#)

For details on asset performance and the related reports, see [Asset performance reports in the Enterprise Asset Workspace](#) and [Asset Analytics overview for Enterprise Asset workspace](#).

### Opt in to model categories to track performance KPIs for enterprise assets

Monitor the performance KPIs of enterprise assets in your organization by enabling the KPI tracking for the models to which the assets belong.

#### Before you begin

**i Important:** The settings to enable the tracking of asset performance are available with Enterprise Asset Management version 9.0 and later.

Role required: sn\_eam.enterprise\_admin

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Admin center > KPI configuration**.
2. From the KPI configuration list, select **KPI opt in**.
3. From the list of model categories, select the one for which you want to enable the KPI tracking.
4. On the Asset performance tracking form, select the **Track performance KPI** check box.
5. Select **Save**.

#### What to do next

[Create an operational schedule for enterprise assets.](#)

#### Create an operational schedule for enterprise assets

Define the scheduled operational time, which is the duration during which the asset will be in use, by creating an operational schedule.

#### Before you begin

**i Important:** The settings to enable the tracking of asset performance are available with Enterprise Asset Management version 9.0 and later.

Role required: sn\_eam.enterprise\_admin

#### About this task

An operational schedule record is stored in the Asset schedule [sn\_itam\_common\_asset\_schedule] table. If an operational schedule isn't defined, the Default operation schedule (24/7) hours is applied.

**i Note:** The calculation of asset key performance indicators (KPIs) begins when the asset first moves to the In Use state. Therefore, the linked operational schedule must cover the entire period for accurate results.

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Admin center > KPI configuration**.
2. From the KPI configuration list, select **Operational schedules**.
3. Select **New**.
4. On the form, fill in the fields.

#### Create New Operation schedule form

Field	Description
Name	Unique name for the operational schedule.
Parent	Parent schedule that constraints the new schedule.

Field	Description
	For more details, see <a href="#">Parent and child schedules</a> .
Time zone	<p>Time zone for the schedule. If you select <b>Floating</b>, the time zone is relative to whatever process is accessing the item at the time.</p> <ul style="list-style-type: none"> <li>For example, if an enterprise administrator in Amsterdam sets a floating schedule for 8:00A.M. to 5:00P.M., a user in San Jose sees the schedule as 8:00 A.M. to 5:00 P.M.</li> <li>When a schedule is defined in a specific time zone, users in different time zones see the schedule with their own time zone applied.</li> </ul>
Description	Description of the operational schedule.

5. Select **Save**.

6. Add one or more schedule entries to the operational schedule.

a. Select the **Schedule Entries** tab.

b. Select **New**.

c. On the Schedule Entry New record, fill in the fields.

For details on Schedule Entry New record fields, see [Schedule entry fields](#).

d. Select **Submit**.

A schedule entry is created and listed under the Schedule Entries tab.

**Note:**

You can't edit a schedule or its entries. If you want to stop using an asset schedule, you can deactivate it by deselecting the **Active** check box. You can then create a schedule as needed.

7. **Optional:** To view the calendar view of the schedule with the schedule entries, select **Show schedule**.

**What to do next**

[Map enterprise assets to an operational schedule.](#)

**Map enterprise assets to an operational schedule**

Create an asset schedule to map the enterprise assets to an operation schedule.

**Before you begin**

**Important:** The settings to enable the tracking of asset performance are available with Enterprise Asset Management version 9.0 and later.

Role required: sn\_eam.enterprise\_admin

**About this task**

An asset schedule record is stored in the Asset schedule policy [sn\_asset\_cmn\_schedule\_policy] table.

**Note:** If an asset isn't associated with an operational schedule, the Default asset schedule (24 hours, 7 days a week or 24/7) will be applied.

The *Asset performance - Map schedule policies* job runs weekly to sync the mapping between assets and the operational schedule.

**Procedure**

1. Navigate to **Workspaces > Enterprise Asset Workspace > Admin center > KPI configuration**.
2. From the KPI configuration list, select **Asset schedules**.
3. Select **New**.
4. On the form, fill in the fields.

**Create New Asset schedule form**

Field	Description
Name	Unique name for the asset schedule.
Source table	Source table for the assets. You can select any of the following tables: <ul style="list-style-type: none"> <li>○ Enterprise asset [sn_ent_asset]</li> <li>○ Construction asset [sn_ent_construction_asset]</li> <li>○ Facility asset [sn_ent_facility_asset]</li> <li>○ Industrial asset [sn_ent_industrial_asset]</li> <li>○ Linear asset [sn_eam_linear_asset]</li> <li>○ Medical asset [sn_ent_medical_asset]</li> <li>○ Retail asset [sn_ent_retail_asset]</li> <li>○ Tactical equipment asset [sn_ent_tactical_asset]</li> <li>○ Transportation asset [sn_ent_transportation_asset]</li> <li>○ Wearable asset [sn_ent_wearable_asset]</li> <li>○ Hardware [alm_hardware]</li> </ul>
Condition	Set a condition to select the assets that you want to associate with the operational schedule. For example, if you set the <b>Department</b> field to <b>IT</b> , the operational schedule is inked to all assets within the IT department. <p><b>Note:</b> Select the source table before setting the condition.</p>
Schedule	Operational schedule that you want to associate with the assets.
Priority	Order in which schedules should be applied to an asset when there are overlapping schedules.
Active	Indicates whether the asset schedule is active.

5. Select **Save**.
6. **Optional:** To sync the mapping between the assets and the operational schedules on demand, select **Sync KPI records**.

## Configuring Enterprise Asset Management by enterprise asset managers

The enterprise asset manager role can configure your Total Cost of Ownership (TCO) to track your assets.

The enterprise asset managers have the capability to configure the following:

- Create sources for classification
- Create a TCO report and a TCO report source
- Create task rate and labor rate cards
- Create expense lines for closed tasks

### Create sources for classification codes

Create sources that you can then assign to classification codes.

#### Before you begin

A source is a system of classification for a particular industry. For more details on sources, see [Classification codes](#).

Role required: sn\_eam.enterprise\_asset\_manager

#### Procedure

1. Navigate to *Enterprise Asset Workspace* > **Asset operations**.
2. Select **Create sources** under Classifications and then select **New**.
3. On the Create New Enterprise model classification source page, enter a name of the source in the **Source** field.
4. Enter a description of the source in the **Description** field.
5. Select **Save**.  
The source appears in the Create sources page.

### Configuring Total Cost of Ownership for enterprise assets

Configure your Total Cost of Ownership (TCO) to track your assets.

Configuring TCO involves the following procedures:

- Create task rate cards to capture costs per task type.
- Create labor rate cards to capture costs by the time consumed on an hourly basis.
- Create a TCO report to compare the actual or projected TCO of assets and a TCO report source.
- Create a TCO report source to add sources to a TCO report.
- Create expense lines for closed tasks.

### Create a TCO report in Enterprise Asset Workspace

Create a TCO report to compare the actual or projected TCO of assets or to compare the actual or projected asset TCO with the benchmark cost of the enterprise model.

#### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Asset analytics > Asset TCO**.
2. Select **New** on the right side of the page.

Field	Description
<b>Name</b>	Name of the report.
<b>Type</b>	<p>The type of report. Choose from the following options:</p> <ul style="list-style-type: none"> <li>○ TCO comparison: Evaluates cost of multiple group of assets with each other.</li> <li>○ TCO vs benchmark: Evaluates how efficiently an asset or group of assets is managed in relation to industry or market standards.</li> </ul>
<b>Report Table</b>	The table this report is based on. This is a read-only field with the value <b>Enterprise as set</b> .
<b>Total cost type</b>	<p>The total cost type of the report.</p> <ul style="list-style-type: none"> <li>○ Actual TCO: The TCO value of the selected asset. <ul style="list-style-type: none"> <li>▪ If both Actual TCO and Real time report check boxes are selected, the generated TCO report is real-time based on the Real time report selection.</li> <li>▪ If only Actual TCO is selected, the generated TCO report is offline.</li> </ul> </li> <li>○ Projected TCO: This value is referenced from the following formulas and the generated report is only offline. <ul style="list-style-type: none"> <li>▪ When useful life of the asset is equal to or greater than asset life, the Projected TCO (at end of life) is calculated by using the following formula: <math>\text{Normalized TCO} * \text{Useful life}</math>, where Normalized TCO (TCO per month) is <math>(\text{Purchase cost} / \text{Useful life}) + (\text{Sum of operational cost} / \text{Asset life})</math>.</li> <li>▪ When useful life of the asset is lower than asset life, the Projected TCO (at end of life) is calculated by using the following formula: <math>\text{Normalized TCO} * \text{Asset life}</math>, where Normalized TCO (TCO per month) is <math>(\text{Purchase cost} + \text{Sum of operational cost}) / \text{Asset life}</math>.</li> </ul> </li> </ul>
<b>Description</b>	Description of the report.

Field	Description
<b>Show benchmark</b>	Shows the benchmark threshold on the TCO comparison report.  This field appears only if you select TCO comparison as your report type.
<b>Benchmark model</b>	The enterprise model for the benchmark threshold.
<b>Real time report</b>	When selected, generates real-time data on the report. You can deselect this check box to make it an offline report.
<b>Workspace</b>	The workspace that you are currently logged into. By default, the value for this field is <b>EAM</b> . This is a read-only field.

**3. Select Save.**

The report is created and the TCO report sources related list appears. You can now add the report sources.

**Create a TCO report source in Enterprise Asset Workspace**

Create a TCO report source to add report sources to a TCO report.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Asset analytics > Asset TCO**.
2. Open the report for which you want to create report sources from the Comparative reports section.
3. Select the TCO report sources tab.
4. Select **New**.
5. On the form, fill in the fields.

**Create New TCO report source**

Field	Description
Name	Name of the report source
Active	Indicates if the report source is active or not. By default, this check box is selected.  <b>Note:</b> You can have a maximum of four active report sources for a TCO comparison report at any given time. If you want to add another active report source, you need to inactivate a report source.

Field	Description
	For a TCO comparison report, you can have a maximum of four active report sources at any given time. If you want to add another active report source, you need to inactivate an existing report source.  For a TCO vs benchmark report, you can only have only one active report source.
Report table	The table this report is based on.
Set conditions	Specify a filter to select assets with certain conditions.
Description	Description of the report source.

**6. Select Save.**

The new report source is added to the TCO report sources tab.

**Create a task rate card in Enterprise Asset Workspace**

Create a task rate card to capture costs per task type in the Enterprise Asset Workspace.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**About this task**

Task rate cards are included in the base system. Except for the **Number** field, all other fields on the default task rate cards are editable. You can't delete any of the base system task rate cards. The following steps are to create a task rate card.

To use task rate cards, you must activate the ServiceNow® Cost Management (com.snc.cost\_management) plugin.

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Admin center > TCO configuration > Task rate card.**
2. Select **New.**
3. On the form, fill in the fields.

**Create New Task Rate Card**

Field	Description
Number	A unique number automatically created for each task rate card.
Name	Name of the task rate card.
Table	The table this rate card is created for.
Order	Order in which the task rate card applies to the same task.

Field	Description
	When more than one task rate card applies to the same task, the one with the lowest order is used.
Summary type	Select a summary that relates to the task rate card.
Active	Indicates if the task rate card is being used or not. By default, this check box is selected.
Short description	Short description of the task rate card.
Use time worked	By default, this check box isn't selected. This denotes that the task rate is used for capturing costs.  If you want to use the labor rate option where cost is captured based on the time worked, select this check box.
Task rate	Rate of the task along with the currency code.
Default labor rate	The hourly rate to apply to the time worked entries if the worker doesn't have a labor rate card.  This field appears only when the <b>Use time worked</b> check box is selected.
Set conditions	Filter to run on the table selected to determine whether this rate card applies to a given task. This field uses the Condition Count Widget to preview what records would be returned by the conditions.
Description	Detailed description of the task rate card.

**4. Select Save.**

After a task rate card is created, expense lines are created based on the value in the **Use time worked** field.

**Create expense lines for closed tasks in Enterprise Asset Workspace**

Automatically create expense lines for previously closed tasks, that originally had no expense lines, in order to calculate costs for those tasks.

**Before you begin**

If you haven't used task rate cards, then expense lines do not get created. When you upgrade to Xanadu, you can automatically create expense lines in bulk for all your closed tasks. This is only a one time process that runs on active task rate cards with a populated task rate value. Using time worked will not result in creation of expense lines if the time worked records are not present for tasks.

**i Note:** To use task rate cards, you need to activate the ServiceNow® Cost Management (com.snc.cost\_management) plugin.

In order to avoid creation of duplicate expense lines, keep the following factors in mind:

- Configure the task rate cards.
- Configure the conditions within each task rate card.
- Specify the amount you want to use for each task.
- Do not create duplicate task rate cards where you create multiple task rate cards for the same task and condition.

Role required: sn\_eam.enterprise\_asset\_manager

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Admin center > TCO configuration > Task rate card**.
2. Select **Create expense lines for tasks**.  
A confirmation message box opens.
3. Select **Create expense lines**.  
The background job **Asset Common Expense Lines for Historical tasks** runs only once and looks for closed tasks without any expense lines and creates expense lines for all those closed tasks. Once the expense lines are created, the **Create expense lines for tasks** button is no longer visible.

**Create a labor rate card in Enterprise Asset Workspace**

Create a labor rate card to capture costs by the time consumed on an hourly basis.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**About this task**

Labor rate cards are included in the base system. Except for the **Number** field, all other fields on the default labor rate cards are editable. You can't delete any of the base system labor rate cards. The following steps are to create a labor rate card.

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Admin center > TCO configuration > Labor rate card**.
2. Select **New**.
3. On the form, fill in the fields.

**Create New Labor Rate Card**

Field	Description
Number	A unique number automatically created for each labor rate card.
Name	Name of the labor rate card.
Rate code	Code for each labor rate card.
Rate type	Standard rate type. You can add your own rate types.
Active	Indicates if the labor rate card is being used or not. By default, this check box is selected.

Field	Description
Short description	Short description of the labor rate card.
Hourly rate	The currency code and the cost per hour.
Set conditions	Filter to run on the table selected to determine whether this rate card applies to a given task. This field uses the Condition Count widget to preview what records would be returned by the conditions.
Description	Detailed description of the labor rate card.

#### 4. Select **Save**.

After a labor rate card is created, expense lines are created based on the value in the **Use time worked** field.

## Configuring Enterprise Asset Management by incident managers

Incident managers or users with the itil role can configure the Enterprise Asset Management application by creating, updating, and resolving IT incidents for enterprise assets.

The itil role can perform the following:

- Create Enterprise Asset Management incidents
- Resolve and close Enterprise Asset Management incidents.

### Create an Enterprise Asset Management incident

Create an incident record to document a deviation from an expected Enterprise Asset Management standard of operation.

#### Before you begin

Role required: itil

To create an Enterprise Asset Management incident record, you must install all applicable Incident Management plugins on your ServiceNow instance. See [Incident Management plugins](#) for the complete list of Incident Management plugins.

#### About this task

This procedure describes how an ITIL agent must complete an incident form to document and track an Enterprise Asset Management incident. Refer to [Incident Management](#) for more in-depth information on creating and managing incidents.

#### Procedure

##### 1. [Create an incident](#).



After your incident is created, you are automatically redirected to the Incidents list.

##### 2. From the list of available incidents, select the incident that you created in the previous step.

##### 3. On the form header of your incident record, select the Additional actions menu icon () and then select **View > Enterprise Asset**.

This option sets your incident record to the Enterprise Asset Management incident form view, which contains additional fields that are specific to Enterprise Asset Management.

##### 4. After the form reloads in the Enterprise Asset Management incident form view, specify the asset that is affected by this incident.

- a. Select the Lookup using list icon () in the **Asset** field.
- b. In the Assets pop-up window, search for and select the asset that is affected by this incident. The pop-up window closes and you automatically return to the Incident form.
- c. On the form header, select the Additional actions menu icon () and then select **Save**.

When the form reloads, the **Configuration item** field and **Affected Assets** related list update automatically based on the asset that you selected.


**Note:** The **Configuration item** field remains empty if you select a consumable asset.

**Important:** If you select a multi-component asset, the **Affected Assets** related list displays only the parent asset. You must manually add each child asset that is affected by this incident. See [step 5](#) for more details.

5. If you selected a multi-component asset in the previous step, specify the child assets that are affected by this incident.

- a. On the **Affected Assets** related list, select **Edit**.
- b. In the Collection list on the Edit Members form, search for and select a child asset that is affected by this incident.

**Note:** By default, the Edit Members form automatically runs a search filter to display only the relevant child assets in the Collection list.

- c. Select the Add icon () to move the selected child asset to the Affected Assets List.
- d. Repeat steps b and c for each child asset that is affected by this incident.
- e. Select **Save**.
- f. After you return to the Incident form, select **Update**.

### What to do next

Resolve and close your incident.

### Resolve and close an Enterprise Asset Management incident

Take action on the assets that are affected by an Enterprise Asset Management incident so that you can resolve and close the incident.

### Before you begin

Role required: itil

### Procedure

1. Navigate to **All > Incident > All**.
2. From the list of available incidents, select the Enterprise Asset Management incident that you want to resolve and close.
3. Specify what actions you want to take on the assets that are affected by the incident.

- a. On the Incident form, select the **Affected Assets** related list.
- b. From the list of affected assets, double-click the **Asset action** field for the asset that you want to take action on.
- c. When prompted, select the action that you want to take on the asset.
- d. Select the Save icon (✔).
- e. If you choose to swap the asset, specify the asset that you are swapping the existing asset with.
  - i. Double-click the corresponding **Swapped Asset** field.
  - ii. When prompted, select the Lookup using list icon (🔍) to search for and select the asset that you want to swap the existing asset with.
  - iii. Select the Save icon (✔).
- f. If you are taking action on a consumable asset, specify the number of available assets that you want to take action on.  
You can take action on all available assets or only a portion of the available assets.
  - i. Double-click the corresponding **Consumable Quantity** field.
  - ii. When prompted, enter the number of available assets that you want to take action on.
  - iii. Select the Save icon (✔).

**i** **Important:** The **Consumable Quantity** field does not display the updated value automatically. To view the updated value, **Refresh** the **Affected Assets** related list.

- 4. Based on the actions that you specified in the previous step, update/repair, swap, retire, or take no action on the affected assets.
- 5. After you have completed taking all necessary actions on the affected assets, provide details about how the incident has been resolved.
  - a. Return to your Incident form.
  - b. On the **Resolution Information** tab, fill in the fields.

**Resolution Information tab**

Field	Description
Knowledge	Option to automatically create a knowledge article upon incident closure.
Resolution code	Resolution category that specifies how the incident was resolved.
Resolution notes	Description of how the incident was resolved.
Resolved by	User who resolved the incident.
Resolved	Date and time at which the incident was resolved.

**6. On the form header, select **Resolve**.**

The incident is moved to the Resolved state, and you are automatically redirected to the Incidents list. If the asset has any child assets and was in a retired status as indicated in the **Asset action** box, the child assets will be released depending on the kind of asset.

**Release of child assets based on type of asset in retired state**

Type of asset	Action
Simple	No action
Simple with add-on	All child assets are released to the pending disposal state.
User-assembled	All child assets are released to the pending disposal state.
User-assembled with add-on	All child assets are released to the pending disposal state.
Pre-assembled	No action
Pre-assembled with add-on	All add-on assets are released to the pending disposal state.

The incident is moved to the Resolved state, and you are automatically redirected to the Incidents list.

**7. From the list of available incidents, select the incident that you just resolved.**

**8. On the form header, select **Close Incident**.**

The incident is closed.

## Managing enterprise assets and models

Create and manage your enterprise assets and models throughout their life cycle.

### Create and manage enterprise assets

Create and manage enterprise assets throughout their life cycle.

#### Create enterprise assets

Create assets for specific model categories in the Enterprise Asset Management application.

#### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

#### About this task

Enterprise asset classes have a one to one mapping to product model classes and model categories. Enterprise asset classes are mapped to existing CI classes where applicable.

There are two kinds of assets: consumable assets and serialized assets. Consumable assets don't have an asset tag or a serial number.

**Note:** This topic provides details on how to create enterprise, construction, facility, industrial, medical, retail, tactical equipment, transportation, and wearable assets. For details on how to create pallet assets, see [Create pallet assets in the Enterprise Asset Workspace](#).

**Procedure**

1. Navigate to **All > Enterprise Asset Workspace > Enterprise asset estate.**
2. Select the **All enterprise** tab to select from all the Enterprise Asset Management models or select a specific asset tab such as **Facility, Industrial, Medical, Retail, Transportation,** and **Consumable.**
3. Select **New.**
4. In the dialog box, fill in the fields.

Field	Description
Type	<p>The type of asset you want to create. Choose from the following options:</p> <ul style="list-style-type: none"> <li>○ Enterprise Asset</li> <li>○ Construction Asset</li> <li>○ Facilities Asset</li> </ul> <p><b>i Note:</b> The Enterprise Asset Management application supports only facilities assets that fall under the Facility asset [sn_ent_facility_asset] child class of the Enterprise asset [sn_ent_asset] class. The application does not support facilities assets that are listed in the Facility [alm_facility] table.</p> <ul style="list-style-type: none"> <li>○ Industrial Asset</li> <li>○ Medical Asset</li> <li>○ Retail Asset</li> <li>○ Transportation Asset</li> <li>○ Tactical Equipment Asset</li> <li>○ Wearable Asset</li> </ul> <p><b>i Note:</b> This field only appears if you selected <b>New</b> from the <b>All enterprise</b> tab.</p>
Model category	<p>The model category that the asset belongs to. Based on the model category selected, the asset can be linked to a configuration item.</p>

5. Select **Create.**  
The Create new asset page appears. By default, the asset is in **Build** state. You can change the status only after you've saved the asset record.
6. In the Create New asset page, fill in the details.  
For a detailed description of the fields, see [Asset fields for enterprise assets.](#)
7. Select **Save.**

The asset is created along with a Configuration Item (CI) for this asset. Child assets are automatically created for the newly created asset. You can perform additional configuration on the asset by entering details in the other tabs such as **Child Assets**, **Contracts**, **Expense Lines**, and **All Related Tasks**.

**Note:** The All Related Tasks tab shows a list of the related tasks such as Disposal task, Resale task, Recall task, Work order task, and Move task associated with the asset. The Recall task and the Work order task associated with the child assets are also shown in the All Related Tasks tab.

8. After you're done performing the additional configuration on the asset, you can change the status of the asset to **In Use**.

The asset can be deleted only by the sn\_eam.enterprise\_admin role.

### Asset fields for enterprise assets

A detailed description of all asset fields in the Enterprise Asset Management application.

#### Asset Details

Field	Description
Display name	Name of the asset as it appears in record lists. Automatically set when asset is created, based on <b>Asset Tag</b> and <b>Model</b> fields.
Model	Specific product model of the asset.  <b>Note:</b> If you are creating a consumable asset, you can select any product model that meets the following criteria: <ul style="list-style-type: none"> <li>• The Model type is set to Consumable.</li> <li>• The product model falls under the Enterprise good model [sn_ent_model] class or any of its child classes.</li> </ul>
Model category	Model grouping of the asset. Based on the model category selected, the asset can be linked to a configuration item.
Parent	Parent asset of the asset. When a parent link is defined, the fields related to assignment and state of the child assets is set to read-only and are populated based on the parent assignment and state fields.
Asset type	Type of multi-component asset. The following are the types of multi-component assets: <ul style="list-style-type: none"> <li>• Pre-assembled</li> <li>• User-assembled</li> <li>• Simple</li> <li>• Simple with add-on</li> </ul>

**Asset Details (continued)**

Field	Description
	<ul style="list-style-type: none"> <li>• Pre-assembled with add-on</li> <li>• User-assembled with add-on</li> </ul>
Asset tag	Alphanumeric information assigned by your organization to help track the asset.
Configuration item	CI automatically created when this asset is created. The name that appears in this field is based on <b>Serial number</b> and <b>Model</b> . Point to the reference icon to see the configuration item details inherited from the asset record.
Serial number	Serial number of this asset.
State	<p>The current state of the asset. By default, the newly created asset is in <b>Build</b> state. Once you configure the asset and its components, you can change the status of the model.</p> <p>The other state options are:</p> <ul style="list-style-type: none"> <li>• <b>On order</b></li> <li>• <b>In stock</b></li> <li>• <b>In transit</b></li> <li>• <b>In use</b></li> <li>• <b>In maintenance</b></li> <li>• <b>Retired</b></li> <li>• <b>Missing</b></li> </ul>
Substate	Current substate of the asset, such as <b>Available</b> or <b>Reserved</b> . The values in the Substate list change based what you select from the <b>State</b> list.
Asset function	Function as which the asset is used such as Primary, Secondary, Shared, or Loaner.
Stockroom  <b>i Note:</b> This field appears only if you set the <b>State</b> field to <b>In stock</b> .	Stockroom that the asset is located in.
Aisle and space	Aisle and space details of the asset within the stockroom. This field appears only when the state of the asset is <b>In stock</b> or <b>Build</b> .
Reserved for  <b>i Note:</b> This field appears only if you set the <b>State</b> field to <b>In stock</b> or <b>In transit</b> .	User who the asset is reserved for.

Asset Details (continued)

Field	Description
Quantity	<p>Number of items this asset represents. An asset always has a quantity of one unless one or more of these points are true.</p> <ul style="list-style-type: none"> <li>• It is a consumable. Quantity is unrestricted because consumables are tracked in groups.</li> <li>• It is pre-allocated. Quantity is unrestricted when <b>Model category</b> and <b>Model</b> are defined and <b>Substate</b> is set to <b>Pre-allocated</b>.</li> </ul>
Eligible for refresh	<p>Indicates whether or not the asset is eligible for a refresh. If the date in the <b>Installed</b> field is in the past, this check box is shown. This check box is selected automatically two months before the number specified in the model's <b>Useful life (months)</b> field.</p> <p>When the EAM- Calculate Asset Refresh Eligibility weekly scheduled job runs, it calculates all of the assets that are eligible for refresh.</p>
Location	<p>Current physical location of the asset.</p> <p><b>Note:</b></p> <p>If you set the location to a specific building, floor, or place, and then set the <code>sn_itam_common.sn_enable_indoormap_for_a</code> system parameter to <b>true</b> on your ServiceNow instance, the Enterprise Asset Management application automatically populates a corresponding location hierarchy of up to three levels, including the campus, building or structure, and floor that the asset is currently located in. The location hierarchy depicts the hierarchical relationship between the specified location and the corresponding parent locations. You can view the location hierarchy in the Location Hierarchy section of the asset record, which is generated after you fill in all fields and save the form.</p>

Asset Details (continued)

Field	Description
	<p><b>Note:</b></p> <p>If you set the location to a specific place and then set the <code>sn_itam_common.sn_enable_indoormap_for_a</code> system parameter to <b>true</b> on your ServiceNow instance, the asset record, which is generated after you fill in all fields and save the form, includes an interactive map that shows the real-time location of the asset. This map is still included in the asset record when you open the record from an associated work order task or stockroom record.</p> <p>The map does not display by default. To display the map, select the Location map icon (📍) on the sidebar of the asset record.</p>
Assigned to	Person using or primarily responsible for this item. This field is visible when the asset state is <b>In Use</b> .
Assigned	Date on which the asset was assigned to a user.
Managed by	Person who maintains the asset. This can be different from the person in the <b>Owned by</b> field.
Installed	Date on which the asset was assigned to the person mentioned in the <b>Assigned to</b> field.
Owned by	Person who has financial ownership of the asset. This can be different from the person in the <b>Managed by</b> field.
Warranty expiration	The date the warranty expires.
Company	Company or organization to which this asset belongs.
Department	Department to which the asset belongs.
RFID tag	Real-time radio-frequency identification (RFID) tag that is associated with the asset. See <a href="#">Zebra MotionWorks RFID integration for Enterprise Asset Management</a> for more information on RFID tags.

**Asset Details (continued)**

Field	Description
	<p><b>i Note:</b> If this asset is a child of another asset and does not contain its own RFID tag, the <b>RFID tag</b> field populates with the RFID tag of the parent asset. If you remove the parent asset, the <b>RFID tag</b> field is cleared for this asset.</p>
Support group	<p>Group responsible for maintaining and managing the asset.</p> <p>The support group can belong to any of the following group types:</p> <ul style="list-style-type: none"> <li>• Asset managers</li> <li>• Asset techs</li> </ul>
Supported by	Specific individual from the support group who is assigned to support the asset.
Comments	Message to add if any.


**Financial form**

Field	Description
Vendor	Vendor from which the asset was purchased. For assets automatically created from purchase orders in Procurement, the default value of the <b>Vendor</b> field is the vendor specified on the purchase order.
Opened	Date on which the requested item record was opened. The system automatically populates the field when a request line is specified.
Invoice number	Number of the invoice.
GL account	General ledger account number with which the asset is associated.
Request line	Requested item to which the asset is linked.
Cost	Price at which the asset was purchased.
Cost center	Cost center under which the asset was billed.
Acquisition method	<p>How the asset was acquired. Base system choices are <b>Purchase, Lease, Rental, Loan,</b> and <b>RMA Replacement.</b></p> <p>For assets automatically created from purchase orders in Procurement, the default value is <b>Purchase</b></p>
PO number	Purchase Order under which the asset was billed.

### Depreciation form

Field	Description
Depreciation	Depreciation method that is applied. Base system choices are <b>Declining Balance</b> and <b>Straight Line</b> . The depreciation value is defaulted from the associated Model.
Residual date	Number of days that have passed since the <b>Depreciation effective date</b> .
Depreciation effective date	Date on which the specified depreciation method begins.
Residual value	Value in the Cost field with the depreciation method applied.
Salvage value	Estimated value of an asset at the end of its useful life. This value must be less than or equal to the Cost of the asset.
Depreciated amount	Amount the asset has depreciated.

### Lease Contract

Field	Description
Lease contract	Name of the lease contract that applies to the asset.
Lease expiration date	Date on which the lease contract expires
Lease term (months)	Length of the lease contract, in months.
Monthly lease payment	Amount that you must pay monthly for the lease contract.   <b>Note:</b> You can set this field to any currency of your choice.

### Disposal form

Field	Description
Disposal order number	A unique number assigned to the asset disposal order.
Disposal vendor	The vendor assigned to carry out the asset disposal order.
Scheduled retirement	Scheduled date on which the asset is retired.
Retired date	Actual date on which the asset was retired.
Vendor disposal order ID	Order number assigned by the vendor assigned to carry out the asset disposal order.

**Disposal form (continued)**

Field	Description
Resale price	Value of the asset when it is retired. For example, if the asset is donated, the value used when reporting taxes.
Disposal date	The date when the asset disposal order process is completed.
Beneficiary	Organization that receives the asset when it is retired.

**Asset Audit**

Field	Description
Audit number	Audit number of the asset.
Audit type	Type of audit that was carried out on the asset.
Last audit date	Date on which the last audit was done.
Last audit state	State of the last audit.
Audited by	Person who performed the last audit.

**RFID**

**i Note:** If this asset is a child of another asset, the RFID location data that is mapped to and populated in these RFID form section fields is based on the RFID tag to which the asset is associated.

- If this asset contains its own RFID tag, all RFID location data is based on that RFID tag.
- If this asset does not contain its own RFID tag, all RFID location data is based on the RFID tag of the parent asset. If you remove the parent asset, all RFID location data is cleared from the RFID form section fields for this asset.

Field	Description
RFID tag	Real-time radio-frequency identification (RFID) tag that is associated with the asset. For more information on RFID tags, see <a href="#">Zebra MotionWorks RFID integration for Enterprise Asset Management</a> .
Type	Type of RFID tag that is associated with the asset.
Tag source	Source of the asset's RFID location data that is stored and transferred through the RFID tag.
Serial number	Serial number of the asset.

**RFID**

**i Note:** If this asset is a child of another asset, the RFID location data that is mapped to and populated in these RFID form section fields is based on the RFID tag to which the asset is associated.

- If this asset contains its own RFID tag, all RFID location data is based on that RFID tag.
- If this asset does not contain its own RFID tag, all RFID location data is based on the RFID tag of the parent asset. If you remove the parent asset, all RFID location data is cleared from the RFID form section fields for this asset.

(continued)

Field	Description
Last blink time	Time at which the RFID tag was last scanned.
Last blink elapsed time	Amount of time that has passed since the RFID tag was last scanned.
Latitude	Latitudinal value of the asset.
Longitude	Longitudinal value of the asset.
Active	Option that indicates if the RFID tag is active. RFID location data can be mapped to the asset only if you select this option.
Site name	Name of the site that the asset is located in.
Zone group	Interrogation zone group that the asset belongs to.
Zone group dwell	Amount of time for which the asset belongs to the specified interrogation zone group.
Zone	Interrogation zone that the asset is located in.
Zone dwell	Amount of time for which the asset is located in the specified interrogation zone.
Grid-x	X coordinate of the asset within the designated RFID grid. The RFID system uses the XYZ coordinates to pinpoint the location of the asset.
Grid-y	Y coordinate of the asset within the designated RFID grid. The RFID system uses the XYZ coordinates to pinpoint the location of the asset.
Grid-z	Z coordinate of the asset within the designated RFID grid. The RFID system uses the XYZ coordinates to pinpoint the location of the asset.
Status	Status of mapping RFID location data to the asset. If the data is successfully mapped to the asset, this field is set to <b>Matched</b> . If the data is not mapped to the asset, this field is set to <b>Unmatched</b> .
<p><b>i Important:</b> RFID location data can be mapped to the asset only if you select the <b>Active</b> option in the RFID form section.</p>	

## RFID

- i **Note:** If this asset is a child of another asset, the RFID location data that is mapped to and populated in these RFID form section fields is based on the RFID tag to which the asset is associated.
  - If this asset contains its own RFID tag, all RFID location data is based on that RFID tag.
  - If this asset does not contain its own RFID tag, all RFID location data is based on the RFID tag of the parent asset. If you remove the parent asset, all RFID location data is cleared from the RFID form section fields for this asset.

(continued)

Field	Description
	<span style="font-size: 1.2em; font-weight: bold;">💡</span> <b>Tip:</b> You can view and take action on the asset records that have an RFID Status of <b>Unmatched</b> by using the <b>Unmatched RFID tags</b> important action that appears on the <b>Overview</b> tab of the Enterprise asset estate view. For more information on the Enterprise asset estate view, see <a href="#">Enterprise asset estate overview for Enterprise Asset Workspace</a> .

## Activities

Field	Description
Work notes	Work notes are updated for the following cases: <ul style="list-style-type: none"> <li>• Updates to <b>Assigned To, Managed To State, Substate,</b> and <b>Reserved</b> fields of asset. The columns for these fields are audited by default and any update is recorded in the work notes.</li> <li>• Work notes are updated when asset is received by a purchase order and transfer order. These work notes help in tracking life cycle of the asset.</li> </ul>

### Create linear assets

Create linear assets to diversify your Enterprise Asset Management portfolio.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

### Procedure

1. Navigate to **Enterprise asset estate > Linear assets**.
2. Select **New**.
3. On the form, fill in the fields.

Field	Description
<b>Name</b>	Unique name of the linear asset.
<b>Linear asset type</b>	Type of the linear asset. Select from the list or you can create your own asset type.
<b>Description</b>	Description of the linear asset.
<b>Location</b>	<p>Vicinity of your linear asset. To draw a linear asset, select the Geomap icon to display the map. After you enter the location, the map will properly focus and zoom to that vicinity.</p> <p>For more information on using the Geomap icon to connect geo coordinate points on a map, watch this short video</p>
<b>Boundary width</b>	<p>Boundary width of the linear asset.</p> <p>The boundary width helps in associating discrete assets with linear assets. The discrete asset's location must fall within the linear asset's boundary widths. For example, if the boundary width of a linear asset is 500 feet, a discrete asset can be associated to it only if the discrete asset is within 250 feet of that linear asset.</p>
<b>Width unit</b>	The width of the linear asset in units.
<b>Length unit</b>	The unit the length of the linear asset is measured in.
<b>Length</b>	The length of the linear asset. This input field is optional. If it isn't filled out, it's calculated using the coordinates.
<b>Start marker</b>	The start point of the linear asset.
<b>End marker</b>	The end point of the linear asset.
<b>Coordinates</b>	<p>A list of two or more geographical (geo) points. Each geo point has a latitude and longitude. For example, [[37.377323, -121.961947], [37.380582, -121.976565]].</p> <p>If you already have the linear asset's coordinates, you can paste them into this field. Otherwise, you can use the Geomap icon in the <b>Attachments</b> section to draw the geo points on a map.</p> <p>The start marker and the end marker are created based on the first and the last coordinates. Markers are common location</p>

Field	Description
	records associated with the Geolocation type. In the common location hierarchy, all markers of a linear asset are placed under Vicinity Geolocation, which is under Vicinity. Vicinity refers to the location of the linear asset.

**4. Select Save.**

The linear asset is created and appears in the Linear assets list. You can perform additional configuration on the linear asset by entering details in the other related lists such as **Linear segments, Discreet assets, Related linear assets, Contracts, and Expense lines.**

**Create segments for linear assets**

Create segments for linear assets to assign work orders to the segments. You can also create maintenance plans for the segments.

**Before you begin**

Linear segments are parts of a linear asset. When creating a linear segment, you must enter values for any two of the following fields and the value for the third field is populated automatically. For example, when you enter the start and end markers, the **Length** field is automatically filled in. Similarly, entering the start marker and length populates the **End marker** field.

- Start marker
- End marker
- Length

If you enter start marker or end marker on the map, markers must be within 10 feet from the linear asset line. This value can be customized by changing the value of the asset\_property *com.eam.linear\_segment\_marker\_boundary*.

For details on creating work orders and maintenance plans, see [Create a work order for an enterprise asset](#) and [Create a maintenance plan for your enterprise assets](#).

Role required: sn\_eam.enterprise\_asset\_manager

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Enterprise asset estate > Linear assets.**
2. Open the linear asset record on which you want to add segments.
3. Select the Linear segments related list.
4. Select **New**.
5. On the form, fill in the details.

Field	Description
<b>Name</b>	Name of the linear segment.
<b>Linear asset type</b>	The linear asset type of the linear asset
<b>Linear asset</b>	The linear asset that the segment belongs to.

Field	Description
<b>State</b>	The current state of the linear asset.
<b>Description</b>	A brief description of the linear segment.
<b>Location</b>	Location of the linear asset.
<b>Start marker</b>	Start point of the linear segment.
<b>End marker</b>	End point of the linear segment.
<b>Length</b>	The length of the linear segment.
<b>Length unit</b>	The unit the length of the linear segment is measured in.

**6. Select Save.**

The linear segments appear in the Linear segments related list.

**Associate a discrete asset to a linear asset**

Associate a discrete asset to a linear asset in order to query and find these assets from the linear asset at a later point of time.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Enterprise asset estate > Linear assets.**
2. Open the linear asset record with which you want to associate a discrete asset.
3. Select the Discrete assets related list.
4. Select **New.**
5. On the form, fill in the fields.

Field	Description
<b>Discrete asset</b>	Name of the discrete asset.
<b>Linear asset</b>	Name of the linear asset that the discrete asset is associated to.
<b>Marker</b>	Marker of the discrete asset. You can either select an existing marker or select the location picker to create a marker.  Marker must be within the linear asset boundary, which is defined by the boundary width of the linear asset.
<b>Description</b>	Description of the discrete asset.

**6. Select Save.**

### Find linear asset relationships

You can find relationships between linear assets such as overlapping, continuing, or intersecting assets.

#### Before you begin

You may want to find a relationship between linear assets to associate them with each other. For example, you want to associate a linear asset with another linear asset such as an intersecting asset, in order to find all intersecting linear assets for the given linear asset. Similarly, you want to associate a linear asset with another linear asset such as an overlapping asset, in order to find all overlapping linear assets for that given linear asset. Once relationships are found between linear assets, records are created for the related linear assets.

Role required: sn\_eam.enterprise\_asset\_manager

#### Procedure

1. Navigate to **Enterprise Asset Workspace > Enterprise asset estate > Linear assets.**
2. Open a linear asset record for which you want to find relationships with other linear assets.
3. Select **Find relationships.**  
A confirmation message box appears.
4. Select **Find relationships** in the confirmation message box.  
A search is performed for relationships between this linear asset and other linear assets. A message appears if any relationships have been identified, and for any relationship found, records are created in the Related linear assets related list.
5. Select **Save.**
6. Select the Related linear asset related list to view the identified relationships.  
For each record, the kind of relationship it has with the linear asset is mentioned such as continuing, overlapping, or intersecting.

### Create pallet assets in the Enterprise Asset Workspace

Create pallet assets to track and manage the pallets that can transport and store your enterprise, hardware, base, bundle, and consumable assets.

#### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager or sn\_eam.enterprise\_asset\_technician

#### Procedure

1. From the Enterprise Asset Workspace, open the Enterprise asset estate view.
2. On the **All assets** tab, select **New pallet asset.**
3. On the form, fill in the fields.

#### Create New Pallet form

Field	Description
Pallet Details	
Vendor	Vendor that the pallet was purchased from. If the pallet was automatically created from a procurement purchase order, the <b>Vendor</b> field is automatically set to the same vendor that was specified on the purchase order.
Model	Pallet model that the pallet is associated with.

Field	Description
Asset tag	Alphanumeric value that your organization assigns to the pallet for tracking purposes.
State	<p>Current state of the pallet.</p> <p>This field is automatically set to <b>In stock</b>. However, you can also set this field to one of the following options:</p> <ul style="list-style-type: none"> <li>○ <b>In transit</b></li> <li>○ <b>Retired</b></li> <li>○ <b>Missing</b></li> </ul>
Stockroom	Stockroom that the pallet is located in.
Aisle and space	Stockroom aisle and space that the pallet is located in.
Parent	Parent asset of the pallet.
Comments	Message that you want to apply to the pallet.
Pallet type	<p>Type of pallet. Select one of the following options:</p> <ul style="list-style-type: none"> <li>○ <b>Pallet</b></li> <li>○ <b>Bin</b></li> <li>○ <b>Box</b></li> <li>○ <b>Container</b></li> <li>○ <b>Other</b></li> </ul>
Substate	Current substate of the pallet, such as <b>Available</b> or <b>Reserved</b> . The options that are available in the <b>Substate</b> field change based the option that you select in the <b>State</b> field.
Reserved for	User who the pallet is reserved for.
Location	<p>Physical location of the pallet.</p> <p><b>Note:</b></p> <p>If you set the location to a specific place and then set the <code>sn_itam_common.sn_enable_indoormap_for_assets</code> system parameter to <b>true</b> on your ServiceNow instance, the pallet asset record, which is generated after you fill in all fields and save this form, includes an interactive map that shows the real-time location of the asset.</p> <p>This map is still included in the pallet asset record when you open the record from an associated work order task or stockroom record.</p> <p>The map does not display by default. To display the map, select the Location map icon (📍) on the sidebar of the pallet asset record.</p>
Disposal	
Disposal vendor	Vendor that is assigned to carry out the disposal order for the pallet.

Field	Description
Vendor disposal order ID	ID number that is assigned to the disposal order by the disposal vendor.
Disposal date	Date on which the disposal order is completed.
Resold value	Estimated price that the pallet can be resold for.
Scheduled retirement	Date on which you want to retire the pallet.
Retired date	Actual date on which you retired the pallet.
Beneficiary	Organization that receives the pallet after it is retired.
Resale price	Value of the pallet when it is retired.
Activities	
Work notes	Work notes related to the pallet.

**4. Select Save.**

**Add assets to a pallet in the Enterprise Asset Workspace**

Add enterprise, hardware, base, bundle, or consumable assets to a pallet so that you can track and manage them as a group.

**Before you begin**

To add hardware, base, or bundle assets to a pallet, install and activate the Hardware Asset Management application on your ServiceNow® instance. To install and activate the application, request it from the [ServiceNow Store](#).

Role required: sn\_eam.enterprise\_asset\_manager or sn\_eam.enterprise\_asset\_technician

**About this task**

You can add an asset to a pallet only under the following conditions:

- The **State** field on the pallet asset record is set to **In stock**.
- The **State** field on the asset record is set to one of the following options:
  - **On order**
  - **In stock**
  - **In transit**
- The **Stockroom** field on the asset record is either empty or set to the same stockroom as the pallet.
- The asset isn't associated with another parent asset.

**Procedure**

- 1.** From the Enterprise Asset Workspace, open the Enterprise asset estate view.
- 2.** On the **All assets** tab, select the pallet that you want to add assets to.

The pallet asset record opens.

**3.** Select the **Assets** tab.

**4.** Add assets to the pallet.

- To add enterprise, hardware, base, or bundle assets to the pallet, use the following steps:

**a.** Select **Add assets**.

The Add assets dialog box opens.

**b.** In the dialog box, select the check box for every asset that you want to add to the pallet.

**c.** Select **Add**.

- To add consumable assets to the pallet, use the following steps:

**a.** Select **Add consumables**.

The Add consumable to pallet dialog box opens.

**b.** In the **Consumable** field, search for and select the consumable asset that you want to add to the pallet.

**c.** In the **Quantity** field, specify the quantity of the consumable asset that you want to add to the pallet.

**d.** Select **Add**.


## Result

The assets are added to the **Assets** tab of the pallet asset record.

## Remove assets from a pallet in the Enterprise Asset Workspace

Remove any enterprise, hardware, base, bundle, or consumable assets that you no longer want to track and manage as part of a pallet.

## Before you begin

To remove hardware, base, or bundle assets from a pallet, install and activate the Hardware Asset Management application on your ServiceNow® instance. To install and activate the application, request it from the [ServiceNow Store](#) .

Role required: sn\_eam.enterprise\_asset\_manager or sn\_eam.enterprise\_asset\_technician

## Procedure

**1.** From the Enterprise Asset Workspace, open the Enterprise asset estate view.

**2.** On the **All assets** tab, select the pallet that you want to remove assets from.  
The pallet asset record opens.

**3.** Select the **Assets** tab.

**4.** From the list of available assets, select the check box for each asset that you want to remove from the pallet.

**5.** Select **Remove**.

## Result

The assets no longer appear on the **Assets** tab.

## Using pallet assets to manage your asset inventory in the Enterprise Asset Workspace

You can manage your asset inventory by using pallets and the assets contained within those pallets in your transfer orders, disposal orders, resale orders, and various consumption workflows.

### Moving pallets between stockrooms

You can use transfer orders to move in-stock pallets from one stockroom to another. If you're moving a pallet that contains assets, those assets are also moved as part of the same transfer order. If you move only the assets that are contained within a pallet, those assets are automatically removed from the corresponding pallet asset record after the Ready for fulfillment task is closed.

For more information about transfer orders, see [Create a transfer order in Enterprise Asset Workspace](#).

### Disposing of pallets

When a pallet is nearing the end of its life cycle or is no longer functional, you can dispose of it using a disposal order. If the pallet contains any assets, you can choose to dispose of the pallet and its assets using any of the following options:

**Note:** You can dispose of only the enterprise assets and enterprise-based consumable assets that are contained within your pallets. If a pallet contains any hardware, bundle, or hardware-based consumable assets, those assets are automatically updated with a State of Invalid and can't be processed as part of a disposal order.

- Dispose of both the pallet and all assets that are contained within that pallet.
- Dispose of both the pallet and only certain assets that are contained within that pallet. Any assets that you choose to retain are automatically removed from the corresponding pallet asset record.
- Dispose of the pallet but retain all assets that are contained within that pallet. If you select this option, all assets are automatically removed from the corresponding pallet asset record.
- Retain the pallet but dispose of all assets that are contained within that pallet. If you select this option, all assets are automatically removed from the corresponding pallet asset record.
- Retain the pallet but dispose of only certain assets that are contained within that pallet. Any assets that you dispose of are automatically removed from the corresponding pallet asset record.

For more information about disposal orders, see [Create a disposal order in the Enterprise Asset Workspace](#).

### Reselling pallets

To help reduce waste and save costs, you can use resale orders to resell any pallets that you're no longer using. If a pallet contains any assets, you can choose to resell the pallet and its assets using any of the following options:

**Note:** You can't resell any hardware assets, asset bundles, and non-enterprise consumable assets that are contained within your pallets.

- Resell both the pallet and all assets that are contained within that pallet.
- Resell both the pallet and only certain assets that are contained within that pallet. Any assets that you choose to retain are automatically removed from the corresponding pallet asset record.
- Resell the pallet but retain all assets that are contained within that pallet. If you select this option, all assets are automatically removed from the corresponding pallet asset record.
- Retain the pallet but resell all assets that are contained within that pallet. If you select this option, all assets are automatically removed from the corresponding pallet asset record.
- Retain the pallet but resell only certain assets that are contained within that pallet. Any assets that you resell are automatically removed from the corresponding pallet asset record.

For more information on resale orders, see [Create an asset resale flow](#).

## Consuming assets within a pallet

Assets that are contained within a pallet can be consumed through various asset workflows.

### Return Merchandise Authorization (RMA) flow

A Return Merchandise Authorization (RMA) is an agreement between a buyer and seller that allows the buyer to return, replace, or request the repair of a defective product within the specified warranty period. When an asset within a pallet becomes defective, you can initiate its replacement or repair by using an RMA order. Any assets that you include in an RMA order are automatically removed from the corresponding pallet asset record.

For more information about RMA orders, see [Requesting a Return Merchandise Authorization \(RMA\) for defective enterprise assets](#).

### Local Order subflow

You can source and fulfill asset requests using assets that are available in the requester's local stockroom. When an asset within a pallet is sourced and consumed locally as part of an asset request, it's automatically removed from the corresponding pallet asset record after the Enterprise Confirm asset task is closed.

For more information on sourcing assets from local stockrooms, see [Source requests from Enterprise Asset workspace](#).

### Loaner Request flow

If you need to use an asset for only a short period of time, you can request to loan that asset by using a loaner request. When an asset within a pallet is loaned out, it's removed from the corresponding pallet asset record after the Prepare task for the loaner request is closed.

For more information on loaning assets, see [Request a loaner asset in Enterprise Asset Workspace](#).

### Leased Asset Return flow

If a contract for a leased asset is nearing its expiration, you can return the leased asset to the asset vendor before incurring any penalty fees. When a leased asset within a pallet is returned to the asset vendor, it is automatically removed from the corresponding pallet asset record after the Shipment task for the asset is closed.

For more information about returning leased assets, see [Return a leased enterprise asset](#).

## Swap tasks from the IT Service Management Asset Management application

The ServiceNow® Asset Management application enables you to track and manage your assets. If you use the application to swap an asset within a pallet, that asset is automatically removed from the corresponding pallet asset record after it's swapped.

For more information on the Asset Management application, see [Asset Management](#).

## Update enterprise assets that have unknown enterprise models

If an enterprise asset is associated with an unknown enterprise model, update it with a known enterprise model so that you can accurately categorize and track it.

### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

### About this task

**Note:** You can update the enterprise model only for serialized and multi-component enterprise assets.

### Procedure

1. From the Enterprise Asset Workspace, open the Enterprise asset estate view.
2. Select either the **All enterprise** tab or the tab for a specific enterprise asset type, such as **Medical**.
3. From the list of available enterprise assets, select an enterprise asset for which the **Model** field is set to **Unknown Model**.  
The asset record opens. All asset record fields are read-only.
4. On the asset record, select **Update**.  
The To what type of enterprise asset would you like to change? dialog box opens.
5. In the dialog box, fill in the fields.

#### To what type of enterprise asset would you like to change? dialog box

Field	Description
Type	Enterprise asset type that you want to categorize the enterprise asset under.
Model category	Enterprise model category that you want the enterprise asset to belong to. The enterprise asset can be linked to a corresponding configuration item (CI) based on the enterprise model category that you select.
Model	Enterprise model that you want to associate the enterprise asset with.

6. Select **Update**.

The dialog box closes and you automatically return to the asset record. If the update is successful, the asset record fields become editable.

**Note:** If the selected enterprise asset type, enterprise model category, and enterprise model update the enterprise asset to a user-assembled multi-component asset, the **State** field on the asset record automatically changes to **Build**. The **Assemble** and **Auto assemble** buttons also appear on the asset record. You can use these buttons to initiate the assembly process for the enterprise asset. For more information on user-assembled multi-component assets, see [Select assets for user-assembled asset](#).

## Swap assets for parent multi-component asset

Swap child assets that are part of a multi-component asset. You can swap out only one child asset at a time.

### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

### About this task

You can swap assets that are in the following states:

- In use, only if the child asset is hot swappable
- In maintenance
- In stock (Substate Defective or Pending repair)

The swap functionality is available only for the parent asset of a multicomponent asset.

### Procedure

1. Navigate to **All > Enterprise Asset Workspace > Enterprise model management**.
2. Select a multi-component record.
3. Select the **Assets** tab and select a parent asset.
4. Select **Swap**.
5. In the **Swap asset** dialog box, fill in the details.
  - a. In the **Asset to swap out** field, select the child asset that you want to swap. The **Asset Tag** and the **Serial Number** fields are displayed. These fields are automatically populated only if the details are available in the Asset [alm\_asset] table. Otherwise, you must manually enter the details in these fields to proceed with the Swap action.

**Note:** The **Asset Tag** and the **Serial Number** fields aren't displayed for consumables.
  - b. In the **Choose stockroom for asset swap** field, select the stockroom from which you want to choose an asset to swap with your asset.
  - c. To display assets that are based on substitute models, select the **Include assets based on substitute models** check box.

Assets of a substitute model are shown in the **Replacement asset** field only if they meet the following criteria:

- The asset function isn't a loaner or the asset function is empty.
- The **State** or **Substate** is **In Stock** or **Available**.
- The potential replacement asset's **Parent** field is empty.
- Stockroom is the same as the value entered in the stockroom field.

When the assets that meet the substitute model criteria aren't shown in the **Replacement asset** field, search for the model name because the search query refreshes with each keystroke.

- d. In the **Replacement asset** field, select the asset that you want to swap with. You can only choose from the similar assets that are available in the stockroom that you selected.

- e. In the **Quantity** field, enter the quantity of assets that you want to swap.  
 This field is automatically populated with the quantity of the asset that you want to swap. However, you can change the value in this field only if the asset is a consumable. For all the other assets, this field is a read-only field. You can't swap more than the actual quantity of the consumable. For example, if you have five consumables, you can either swap less than 5 or swap all the five consumables.
- f. Select **OK**.

**Result**

- The asset is successfully swapped and the new asset inherit the State and Status of the parent asset.
- The state of the swapped-out asset changes to In stock and the substate changes to Pending repair. If the asset is a consumable, the state changes to In stock and the and substate changes to Pending disposal.
- The stockroom of the swapped out asset changes to the stockroom that you selected in the **Choose stockroom for asset swap** field.

**Select assets for user-assembled asset**

Create a user-assembled asset by selecting assets from the parent asset's stockroom.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

**Procedure**

1. Open the user assembled model and open an asset record from the **Assets** tab.
2. Select **Assemble** to open the Select assets dialog box.
3. Fill in the form details.

Field	Description
Model component	The model components associated with the multi-component model.
Quantity	Quantity of the model component.
Asset	Assets from the parent stockroom. For consumable assets, the quantity of the asset in the stockroom is also mentioned.
Action	Indicates if the corresponding model component is required or not. A enabled cross indicates that you can remove the model component. A disabled cross indicates that this is a required model component. If you remove a model component, the Select more model components drop-down box appears allowing you to restore the model components that you removed.

#### 4. Select **Assemble**.

The assets you selected are added to the parent asset. You can view these assets in the **Child Assets** tab. All consumable assets are displayed as a single record, instead of individual records.

#### Release assets from the parent asset

Release a child asset that is no longer required to be associated with its parent asset.

#### Before you begin

Role required: sn\_eam.enterprise\_admin

#### About this task

You can release only one child asset at a time from a user-assembled, pre-assembled, or a single asset.

You can release an asset that isn't required or an add-on asset that's in one of the following states:

- In use
- In maintenance
- In stock (Substate as Pending disposal)
- In stock (Substate as Pending repair)

#### Procedure

1. Navigate to **All > Enterprise Asset Workspace > Enterprise asset estate**.
2. Select the parent asset record from which you want to release assets.
3. Select **Release assets**.
4. In the **Release asset** dialog box, fill in the details.
  - a. In the **Asset to release** field, select the child asset that you want to release.  
The **Asset Tag** and the **Serial Number** fields are displayed. These fields are automatically populated only if the details are available in the Asset [alm\_asset] table. Otherwise, you must manually enter the details in these fields to proceed with the Release action.  
  
**Note:** The **Asset Tag** and the **Serial Number** fields aren't displayed for consumables.
  - b. In the **Select stockroom for released assets** field, select the stockroom to which the child asset should be released.
  - c. In the **Quantity** field, enter the quantity of assets that you want to swap.  
This field is automatically populated with the quantity of the asset that you want to swap. However, you can change the value in this field only if the asset is a consumable. For all the other assets, this field is a read-only field. You can't swap more than the actual quantity of the consumable. For example, if you have five consumables, you can either swap less than 5 or swap all the five consumables.

#### Result

- The asset that you released isn't listed in the **Child assets** tab.
- The state of the released asset changes to In stock and the substate changes to Pending disposal.

### Create additional child assets

Create additional child assets for the model even if the assets are not defined in the model component.

#### Before you begin

Role required: sn\_eam.enterprise\_admin

#### Procedure

1. Navigate to **Enterprise Asset Workspace** and select either **Enterprise asset estate** or **Enterprise model management** to access the **Child Assets** related list tab.
2. Select **Add** to select assets from a stockroom.  
**Add** is visible only if the asset is in one of the following states:
  - In Build
  - In Use
  - In Maintenance
  - In Stock Defective
  - In Stock Pending Repair
3. Select a stockroom and assets in the *Select child asset to add* dialog box.
4. Select **Add**.

#### Add calibration attributes to an enterprise asset

Add calibration attributes to an enterprise asset to specify and manage the calibrations that are required for the asset throughout its life cycle.

#### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

#### About this task

You can add calibration attributes at the individual enterprise asset level or at the enterprise model level. Alternatively, you can create common calibration attributes that are not associated with any enterprise assets or enterprise models. For details on how to add calibration attributes to an enterprise model, see [Add calibration attributes to an enterprise model](#). For details on how to create common calibration attributes, see [Create a calibration attribute library](#).

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace**.
2. From the Enterprise Asset Workspace, open the Enterprise asset estate view.
3. Select either the **All enterprise** tab or the tab for a specific enterprise asset category, such as **Facility assets**.
4. From the list of available enterprise assets, select the enterprise asset that you want to add calibration attributes to.
5. On the **Calibration attributes** tab of the enterprise asset record, select **New**.
6. On the form, fill in the fields.

#### Create New Calibration Attribute form

Field	Description
Attribute details	

Field	Description
Name	Name of the calibration attribute.
Short description	Brief description of the calibration attribute.
Criticality	Criticality level that indicates how important the calibration attribute is.
Service frequency	Frequency at which you must perform the calibration.
Category	Type of calibration.  <b>Note:</b> The Enterprise Asset Management application includes default calibration categories such as Electrical, Flow, Humidity, and Pressure. You can create additional calibration categories for any calibrations that do not fall under the default categories. For detailed instructions, see <a href="#">Create a calibration category for your enterprise asset calibrations</a> .
Active	Option that indicates if the calibration attribute is active.
Order	Order in which the calibration attribute applies to the enterprise asset. If your enterprise asset contains more than one calibration attribute, the attribute with the lowest numerical value applies to the asset first.  <b>Important:</b> You must use a unique numerical value for each calibration attribute.
Calibration properties	
Value type	Method by which you want to measure tolerance conformance. Select one of the following options: <ul style="list-style-type: none"> <li>○ <b>Accuracy % full scale:</b> Fixed percentage of accuracy that your calibration measurements must fall within at any point within the enterprise asset's full measurement range. The corresponding tolerance limits remain the same at every point within the measurement range. For example, if a measurement range is 100 units and the accuracy percentage is set to <math>\pm 1\%</math>, the tolerance limits are <math>\pm 1</math> unit at every point within the measurement range.</li> <li>○ <b>Accuracy % point:</b> Fixed percentage of accuracy that your calibration measurements must fall within at a specific point within the enterprise asset's full measurement range. The corresponding tolerance limits increase or decrease proportionally based on the value of the point that you are comparing your calibration measurement against. For example, if your accuracy percentage is set to <math>\pm 1\%</math> and you want to compare your calibration measurement against a point that has a value of 50 units, the tolerance limits for this specific point are <math>\pm 0.5</math> units. If you want to compare your calibration measurement against a point that has a value of 60 units, the tolerance limits increase to <math>\pm 0.6</math> units.</li> <li>○ <b>Range:</b> Measurement range that your calibration measurements must fall within. The corresponding tolerance limits are based on the lowest and highest acceptable point values within the range.</li> <li>○ <b>Less than:</b> Value within the enterprise asset's full measurement range that your calibration measurements must fall below. The corresponding tolerance limit is based on the highest acceptable point value within the range.</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>○ <b>Greater than:</b> Value within the enterprise asset's full measurement range that your calibration measurements must lie above. The corresponding tolerance limit is based on the lowest acceptable point value within the range.</li> <li>○ <b>True/false:</b> Option to assess any qualitative elements of the calibration.</li> </ul>
Scale	<p>Full measurement range that you're measuring tolerance conformance against.</p> <p><b>Note:</b> This field appears only if you set the <b>Value type</b> field to <b>Accuracy % full scale</b>.</p>
Unit	<p>Unit of measurement that you're using to measure tolerance conformance.</p> <p><b>Note:</b> This field appears only if you set the <b>Value type</b> field to one of the following options:</p> <ul style="list-style-type: none"> <li>○ <b>Accuracy % full scale</b></li> <li>○ <b>Accuracy % point</b></li> <li>○ <b>Range</b></li> <li>○ <b>Less than</b></li> <li>○ <b>Greater than</b></li> </ul>
Accuracy (%)	<p>Percentage of accuracy that your calibration measurements must fall within.</p> <p><b>Note:</b> This field appears only if you set the <b>Value type</b> field to either <b>Accuracy % full scale</b> or <b>Accuracy % point</b>.</p>
Resolution	<p>Smallest distinguishable change in value that you can detect and measure. The higher the resolution is, the more specific the change in value is.</p> <p><b>Note:</b> This field appears only if you set the <b>Value type</b> field to one of the following options:</p> <ul style="list-style-type: none"> <li>○ <b>Accuracy % full scale</b></li> <li>○ <b>Accuracy % point</b></li> </ul>
Quality standard	
Quality standard	<p>Set of requirements and guidelines that you must follow when performing the calibrations.</p> <p><b>Note:</b> You can create quality standards manually in the Admin center view of the Enterprise Asset Workspace. See <a href="#">Create a quality standard for your enterprise asset calibrations</a> for detailed instructions.</p>
Instrument	
Instrument model	<p>Model of the instrument that you must use to perform the calibrations.</p>
Instruction	<p>General instructions or instrument settings that you must follow when performing the calibrations.</p>

7. Select **Save**.

The form closes and you are automatically redirected to the new calibration attribute record.

8. Specify the points at which you can measure tolerance conformance.

**i Important:** You must specify one or more points within the enterprise asset's measurement range. If you do not specify at least one point, the calibration attribute cannot be set to Active.

a. On the calibration attribute record, select **Add calibration points**.


The Calibration points dialog box opens.

b. In the dialog box, fill in the fields.

**Calibration points dialog box**

Field	Description
Point name	Name of the point.
Expected value	Value that you want to measure tolerance conformance against. If you set the <b>Value type</b> field to either <b>Accuracy % full scale</b> or <b>Accuracy % point</b> in the Create New Calibration Attribute form, enter the value of the point that you want to measure against. If you set the <b>Value type</b> field to <b>True/false</b> , select a Boolean value of either <b>true</b> or <b>false</b> .  <b>i Note:</b> This field appears only if you set the <b>Value type</b> field to one of the following options in the Create New Calibration Attribute form. <ul style="list-style-type: none"> <li>▪ <b>Accuracy % full scale</b></li> <li>▪ <b>Accuracy % point</b></li> <li>▪ <b>True/false</b></li> </ul>
Order	Order in which you want to use the point to measure tolerance conformance. If your calibration attribute contains more than one point, the point with the lowest numerical value is calibrated first.  <b>i Important:</b> You must use a unique numerical value for each point.
Lower tolerance	Lowest acceptable value that the calibration measurement can reach to stay in conformance.  <b>i Note:</b> This field appears only if you set the <b>Value type</b> field to one of the following options in the Create New Calibration Attribute form: <ul style="list-style-type: none"> <li>▪ <b>Accuracy % full scale</b></li> <li>▪ <b>Accuracy % point</b></li> <li>▪ <b>Range</b></li> <li>▪ <b>Greater than</b></li> </ul> If you set the <b>Value type</b> field to either <b>Accuracy % full scale</b> or <b>Accuracy % point</b> , this field is read-only.
Upper tolerance	Highest acceptable value that the calibration measurement can reach to stay in conformance.

Field	Description
	<p><b>Note:</b> This field appears only if you set the <b>Value type</b> field to one of the following options in the Create New Calibration Attribute form:</p> <ul style="list-style-type: none"> <li>▪ <b>Accuracy % full scale</b></li> <li>▪ <b>Accuracy % point</b></li> <li>▪ <b>Range</b></li> <li>▪ <b>Less than</b></li> </ul> <p>If you set the <b>Value type</b> field to either <b>Accuracy % full scale</b> or <b>Accuracy % point</b>, this field is read-only.</p>


c. To add an additional point to the calibration attribute, select the Add Content icon (  ) and then fill in the fields.  
Repeat this step for each point that you want to add.

d. Select **OK**.

The dialog box closes and the points appear on the **Calibration points** tab of the calibration attribute record.

**9. Optional:** If your enterprise asset also contains calibration attributes at the enterprise model level, enable this enterprise asset level attribute to override an existing enterprise model level attribute.

a. On the calibration attribute record, select the **Details** tab.

b. In the Identification section of the **Details** tab, select the Search for Record icon (  ) next to the **Override** field.  
The Override dialog box opens.

c. In the dialog box, select the enterprise model level attribute that you want to override.  
The dialog box closes and you automatically return to the calibration attribute record.

d. Select **Save**.

The enterprise model level attribute is removed from the **Calibration attributes** tab of the enterprise asset record.

### What to do next

Create work orders to track the calibrations that are made to your enterprise asset. These work orders must use a work order template with tasks that have a Work type of Calibration. For more information on work orders, see [Managing work orders for your enterprise assets](#).

### Clone a calibration attribute to an enterprise asset

Clone an existing calibration attribute to an enterprise asset to add a calibration attribute with similar settings.

### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

## Procedure

1. From the Enterprise Asset Workspace, open the Enterprise asset estate view.
2. Select either the **All enterprise** tab or the tab for a specific enterprise asset category, such as **Facility assets**.
3. From the list of available enterprise assets, select the enterprise asset that you want to clone a calibration attribute to or from.
4. On the **Calibration attributes** tab of the enterprise asset record, use one of the following options to clone a calibration attribute:
  - To clone a calibration attribute from this enterprise asset to another enterprise asset, use the following steps:
    - a. From the list of available calibration attributes, select the check box for the calibration attribute that you want to clone.
    - b. Select **Clone to assets**.
    - c. In the Select assets dialog box, select the **Clone as active** check box to automatically set the cloned calibration attribute to active.
    - d. Select the check box for the enterprise asset that you want to clone the calibration attribute to.
    - e. Select **Clone**.
 

The calibration attribute is cloned to the selected enterprise asset.
  - To clone a calibration attribute from another enterprise asset to this enterprise asset, use the following steps:
    - a. Select **Clone from**.
    - b. In the Select attribute to clone dialog box, select the **Clone as active** check box to automatically set the cloned calibration attribute to active.
    - c. Select the check box for the calibration attribute that you want to clone.
    - d. Select **Clone**.
 

The calibration attribute is cloned to the enterprise asset and appears in the list of available calibration attributes.

## Create condition templates for condition attributes

Create a condition template and associate the template to condition attributes for enterprise models and assets.

### Before you begin

Role required: Asset technician (sn\_smart\_asmt.actor) and Asset manager (sn\_smart\_asmt.template\_manager)

### About this task

Create condition templates before defining condition attributes on enterprise models and assets.

## Procedure

1. From the Enterprise Asset Workspace, navigate to either of the views:

- Admin center
- Enterprise asset estate
- Enterprise model management

2. Depending on the view you are in, do one of the following:

- Admin center: Select **New** in the Asset condition templates page.
- Enterprise asset estate or Enterprise model management: Select the **All enterprise** tab or the tab for a specific model or asset category, such as Construction. Open an enterprise model or asset, select the Condition attributes related list, select **New**, and then select **Create condition template**.

3. In the **Create new condition template** dialog box, enter a name for the template.

4. Select **Create**.

The fields in the **General** tab are automatically populated.


The template opens in the Assessment Workspace that belongs to the Governance, Risk, and Compliance application.

The fields in the **General** tab are automatically populated.

5. Select the **Scoring** tab to add scores to the overall template.


Scoring helps to evaluate the condition of assets and indicates whether the condition evaluation passed or failed. Scoring can be also added for each section in the **Questions** tab and also for each question.

6. Select **Enable scoring**

You must enable scoring to make results available for the condition attributes. For more details on scoring, see [Create Smart Assessment templates for BIA](#) .

7. After entering the details in the **Scoring** tab, select **Save**.

8. Select the **Questions** tab to create sections and questions.

You can create sections and questions in this tab and enable scoring for any specific section and for individual questions. For more details on creating questions, sections, and scoring, see [Create Smart Assessment templates for BIA](#) .

**Note:** To use the template in the Mobile Agent<sup>®</sup> application for Enterprise Asset Management, do not configure any of the following settings in the **Questions** tab:

- Option to **Add instructions** to the template.
- Option to **Add additional content** to a question, including question descriptions and guidance.
- Attribute to **Make conditionally visible**, which makes a question visible only when specified response-based conditions are met.

9. After entering all the details in the **Questions** tab, select **Save**.

10. Select **Publish**

The questions and scores are published. Publishing finalizes the template and makes the template ready to be used for evaluation.

If you don't publish the template, the template won't be available in the condition template picker when creating condition attributes.

### Define condition attributes on enterprise models and assets

Define the conditions to be inspected on enterprise models and assets throughout their life cycle.

#### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

#### About this task

Once condition attributes are defined on an enterprise model, all the assets for that models inherit the condition attributes.

Before defining condition attributes, create a condition template from the Admin center view. You can also create condition templates while defining condition attributes from the enterprise asset or enterprise model page.

#### Procedure

1. Navigate to **All > Enterprise Asset Workspace**.
2. Navigate to either of the two views.
  - Enterprise asset estate: For adding condition attributes to an asset.
  - Enterprise model management: For adding condition attributes to a model.
3. Select either the **All enterprise** tab or the tab for a specific model or asset category, such as Construction.
4. From the list of available enterprise models or assets, open the enterprise model or asset that you want to define the condition attributes on.
5. Select **New** on the Condition attributes related list.
6. On the form, fill in the fields.

#### Create New Condition Attribute form

Field	Description
Attribute details	
Name	Name of the condition attribute.
Model or Asset  The Model field appears in the Enterprise model management view. The Asset field appears in the Enterprise asset estate view.	The model or asset the condition attribute is being added to.
Short description	Brief description of the condition attribute.
Weight	Desired weight for each line. The total sum of weights for all lines of an asset should equal one.
Attribute type  This field appears only in the Enterprise asset estate view.	Type of attribute.
Category	Type of condition.

Field	Description
	<p><b>Note:</b> The Enterprise Asset Management application includes many default condition categories such as Area, Concentration, Density, and Electrical.</p>
Condition template	<p>The template that the condition is associated with.</p> <p>You can select an existing template or select <b>Create condition template</b> to create a template.</p>
Criticality	<p>Criticality level that indicates how important the condition attribute is.</p>
Service frequency	<p>Frequency at which you must perform the condition.</p>
Pass condition minimum	<p>Enter a minimum numerical value for the condition to pass. The value can't be less than zero.</p>
Pass condition maximum	<p>Enter a maximum numerical value for the condition to pass. The value can't be more than 100.</p> <p>For example, if you enter the value 100 in this field and the value 0 in the <b>Pass condition minimum</b> field, then if the overall score is between this range of 0-100, the result indicates that the condition passed.</p>
Order	<p>Order in which the condition attribute applies to the enterprise model or the asset. If your enterprise model or asset contains more than one condition attribute, the attribute with the lowest numerical value applies to the model or the asset first.</p>
Active	<p>Option that indicates if the condition attribute is active. Select this check box.</p>

**7. Select Save.**

The form closes and you're automatically redirected to the new condition attribute record.

**Create an asset group in Enterprise Asset Management**

Create asset groups to create a logical group of entities that includes assets, locations, and users.

**Before you begin**

Role required:

- sn\_eam.enterprise\_admin
- sn\_eam.enterprise\_asset\_manager
- sn\_eamfam.facility\_asset\_manager
- sn\_eamhc.medical\_asset\_manager
- sn\_otam.ot\_asset\_manager

### About this task

Asset groups can be used and created in the Enterprise Asset Workspace, Facility Asset Workspace, Medical Asset Workspace, and the Operational Technology (OT) Asset Workspace. This task specifically describes how to create an asset group in the Enterprise Asset Workspace.

After you create an asset group, you can create subgroups and add assets to the subgroups.

### Procedure

1. Navigate to **All > Enterprise Asset Workspace > Enterprise asset estate > Asset groups**.

The Asset groups tab contains two subtabs:

- Asset groups: all the asset groups in your organization.
- Sites: equipment model entities that are picked up from the Equipment model [cmdb\_ci\_ot\_isa\_entity] table. The Equipment model table is a descendant of the Application Service CI [cmdb\_ci\_service\_auto] table.

The Asset groups subtab is further classified into the following sites:

- Unassigned sites: sites not assigned to any asset group.
- Assigned sites: sites assigned to an asset group.

2. Select **New** to open the Create New Asset group page.


3. On the form, fill in the fields.

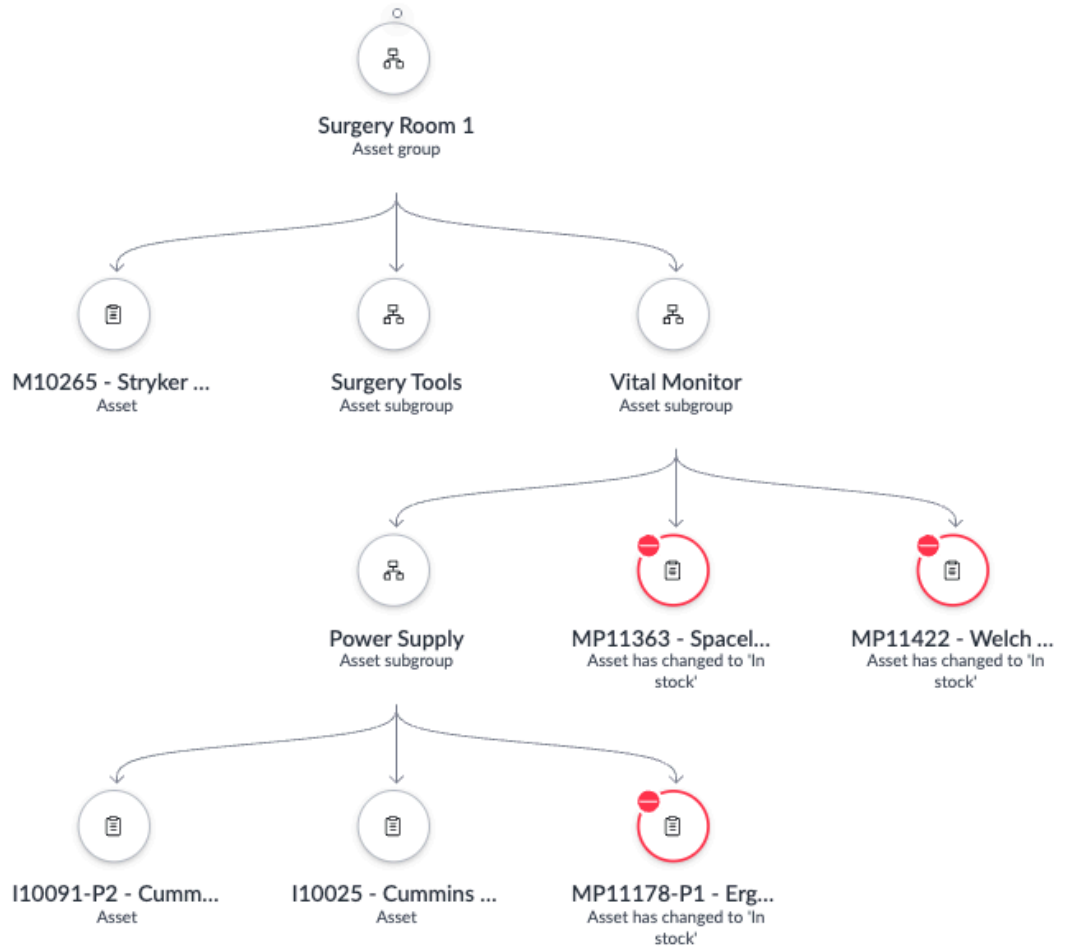
Field	Description
Name	
Service instance	Reference that you can assign to the asset group. This creates a bridge between the CI and the assets.  If you assign a reference to the asset group, then the asset group is bound by the reference to the selected Service instance.
Description	Brief description of the asset group.
Parent	Parent group of the asset group.
Location	Specific geographical location of the asset group.
Site	Equipment model entities that are picked up from the Equipment model [cmdb_ci_ot_isa_entity] table.
State	The current state of the asset group. By default, a newly created asset group is in the <b>Build</b> state.
Substate	The substate of the asset group.
Support group	The group to contact if you encounter any issues with the asset group.
Supported by	The person who can be contacted within the support group for any issues that you may encounter with the asset group.

Field	Description
Department	Department to which the asset group belongs.
Company	Company or organization to which the asset group belongs.
Owned by	Person who has financial ownership of the asset group. This can be different from the person in the <b>Managed by</b> field.
Managed by	Person who maintains the asset group. This can be different from the person in the <b>Owned by</b> field.
Assigned to	Person using or primarily responsible for this asset group. This field is visible when the asset state is <b>In Use</b> .
Assigned	Date on which the asset group was assigned to a user.
Installed	Date on which the asset group was assigned to the person mentioned in the <b>Assigned to</b> field.
Retired date	The date this asset group is retired.
Comments	Any comments to add.

**4. Select Save.**

The asset group record opens with related lists for adding subgroups and assets.

**5. Optional:** Select the View dependency map icon, , next to an asset group, in the Asset groups page, to view the relationship between an asset group, subgroups, and assets.



(Optional)

If you have the `sn_cmdb_user` role, you can further drill down by selecting the dependency map icon. For example, in the screenshot, select the dependency map icon on the Surgery Room 1 node to further drill down. Additionally, if you have the `app_service_admin` role, you can view the **Related items** contextual panel on the right side of the Dependency map page.

## Create an asset subgroup in Enterprise Asset Management

Create a subgroup to add child asset groups to an asset group.

### Before you begin

Role required:

- `sn_eam.enterprise_admin`
- `sn_eam.enterprise_asset_manager`
- `sn_eamfam.facility_asset_manager`
- `sn_eamhc.medical_asset_manager`
- `sn_otam.ot_asset_manager`

Asset subgroups can be used and created in the Enterprise Asset Workspace, Facility Asset Workspace, Medical Asset Workspace, and the Operational Technology (OT) Asset Workspace. This task specifically describes how to create an asset subgroup in the Enterprise Asset Workspace.

**About this task**

You can add or remove a subgroup from an asset group.

**Procedure**

1. Navigate to **All > Enterprise Asset Workspace > Enterprise asset estate > Asset groups**.
2. Open the asset group record for which you want to create a subgroup.
3. Select the Subgroups related list.
4. Select **New** on the Create New Asset group page.  
The **Parent** field is automatically filled with the parent asset group.
5. On the form, fill in the required details.  
For more details on the fields, see [Create an asset group in Enterprise Asset Management](#).
6. Select **Save**.  
The subgroup is created and is listed in the Subgroups related list.

**Add assets to an asset group or subgroup**

Add existing assets to an asset group or a subgroup.

**Before you begin**

Role required:

- sn\_eam.enterprise\_admin
- sn\_eam.enterprise\_asset\_manager
- sn\_eamfam.facility\_asset\_manager
- sn\_eamhc.medical\_asset\_manager
- sn\_otam.ot\_asset\_manager

Assets can be added to an asset group or subgroups in the Enterprise Asset Workspace, Facility Asset Workspace, Medical Asset Workspace, and the Operational Technology (OT) Asset Workspace.

**Procedure**

1. Navigate to **All > Enterprise Asset Workspace > Enterprise asset estate > Asset groups**.
2. Open the asset group record to which you want to add assets.
3. Select the Assets related list.
4. Select **Add** to open the Add asset dialog box.  
For details on the type of assets that appear, see the section titled [Considerations for adding assets to asset groups](#).
5. Select the assets that you want to add.  
You can also use the condition builder to search for specific assets.
6. Select **Add**.  
The selected assets are added to the asset group and are listed in the Assets related list.

**Use consumable assets in Enterprise Asset Workspace**

To use consumable assets, ensure that they are in the **In stock** state and **Available** substate.

## Before you begin

- Note:** Only consumables created from models in the Enterprise Asset Management application can be used if the **Asset strategy tracking** for the model is set to **create consumable asset**.

Role required: asset

## Procedure

1. Navigate to **Enterprise Asset Workspace > Enterprise asset estate > Consumable assets**.
2. Select a consumable asset with a state of **In Stock** and a substate of **Available**.
3. Select **Consume**.  
The Consume dialog box appears.
4. Enter the quantity to consume in the **Quantity** field.
5. In **Asset** list, select the lookup icon and select the asset associated with the consumable.

### Example

For example, a mouse tracked as a consumable asset can be associated with a non-consumable asset such as a computer.

6. In **User** list, select the lookup icon and select a user associated with the consumable.
7. Select **OK**.

On the **Consumable** form, the **Quantity** field shows the reduced number. The Consumables list contains two records for the consumable in the specific stockroom: one with a state and substate of **In Stock** and **Available** (if you did not consume the entire quantity), and one with a state of **Consumed**. If a consumable is not in the process of being transferred to a different stockroom and information in the data record is the same, similar records merge automatically. After a consumable is consumed, the record remains in the system for reporting purposes.

## Dispose consumable assets in Enterprise Asset Workspace

Dispose of those consumable assets that are no longer required in your stockrooms.

## Before you begin

Role required: asset, itil, itil\_admin

Know that the Planned for disposal column in the Consumable [alm\_consumable] table indicates if the consumable asset is marked for disposal or not.

## Procedure

1. Navigate to **Enterprise Asset Workspace > Enterprise asset estate > Consumable assets**.
2. Open a consumable asset record and select **Mark for disposal**.  
**Mark for disposal** appears only for consumable assets that are in the in-stock state and not marked for disposal.
3. In the Mark for disposal dialog box, enter the total quantity or partial quantity of the consumable asset.  
If you enter a partial quantity, a new consumable record is created with the substate as pending disposal. If you enter a total quantity, the consumable's record substatus changes to "pending disposal" and you return to the same consumable record.  
After you mark the consumable asset for disposal, **Mark for disposal** no longer appears.

- Note:** Only a consumable marked for disposal is included in a disposal order. After you mark a consumable for disposal, it does not get merged with another consumable record.

## Create an asset onboarding process

Create an asset onboarding process to walk you through the process of entering important information for assets.

### Before you begin

The asset onboarding process is a playbook experience that provides an interactive user interface to complete a process. The asset onboarding process is triggered after an onboarding task is created. An onboarding task can be automatically created from the asset request flow or manually created from an asset record. For an overview of the asset onboarding playbook, see [Playbooks for Enterprise Asset Management](#).

Onboarding is available only for preassembled and simple assets. Also, only the parent preassembled asset can be onboarded; not the child preassembled assets.

The asset onboarding process is organized into lanes. The lanes appear in the left pane of the page. Each lane includes a few activities that you're asked to complete. Use the following buttons to skip, save, or complete a task:

- **Skip:** takes you to the next activity.
- **Save:** saves the information but doesn't complete the activity.
- **Mark as complete:** saves the information and completes the activity, and takes you to the next lane.

**Note:** You can close an onboarding task only after you've skipped all the activities or marked all them as complete.

While you're performing a particular activity, a status of **In progress** appears for that activity. As you mark an activity complete, the status of that activity changes to complete. After you complete all the activities in a lane, you move to the next lane.

The **Onboard asset** button that triggers an onboarding task only appears when the asset is in any one of the following states or substates as listed in the following table.

State	Substates
<ul style="list-style-type: none"> <li>• Build</li> <li>• In use</li> <li>• In stock</li> <li>• In maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Available</li> <li>• Reserved</li> <li>• Pending Install</li> <li>• Pending transfer</li> </ul>

Role required: sn\_eam.enterprise\_asset\_manager

### Procedure

1. Navigate to **Enterprise Asset Workspace > Enterprise asset estate**.
2. Open the asset record for which you want to create an onboarding process.
3. Select **Onboard asset**.  
The asset onboarding task opens.
4. Select the **Playbook** related list tab.  
The asset onboarding page opens.
5. Review or enter details in the Asset details lane.

6. Select **Skip**, **Save**, or **Mark as complete** to proceed to the next lane.
7. Continue to review or enter details in the lanes until you reach the last lane.
8. After all the lanes show a status of skipped or complete, select **Close Task** to complete the asset onboarding process.  
Your asset is successfully onboarded.

### View an automatically created onboarding task

View an automatically created asset onboarding task.

### Before you begin

Onboarding tasks for assets are automatically created after the asset is received in the Asset Request flow. The onboarding task in turn triggers the asset onboarding process. For each sourced asset, a separate onboarding task is created.

Role required: `sn_eam.enterprise_asset_manager`

### Procedure

1. Navigate to **Enterprise Asset Workspace > Asset operations > Procurement > Requests**.
2. Open a request.
3. Select the **Requested items** tab and open a requested item.
4. Select the **Asset tasks** tab.  
An onboarding and a deploy asset task are listed.
5. Open the onboarding task.

### Track assets using indoor maps in the Enterprise Asset Workspace

Use indoor maps to locate and track the enterprise assets, consumable assets, and pallets that are deployed across your organization. Each indoor map consists of an interactive interface that enables you to visualize where your assets are located within your campuses, buildings, floors, and places.

### Before you begin

To use indoor maps in the Enterprise Asset Workspace, fulfill the following requirements:

- Explicitly install the Indoor Mapping for Assets (`com.sn_ima`) application from the ServiceNow® Store. When you install this application, Indoor Mapping (`sn_map_core`) and Indoor Mapping component (`sn_map_component`) are also installed.

If you purchased an Enterprise Asset Management license after November 3, 2023 using the updated Enterprise Asset Management SKU (PROD21613), you can install the Indoor Mapping for Assets (`com.sn_ima`) application.

**Note:** To be able to view demo data for indoor maps, you must reinstall demo data after you install the Indoor Mapping for Assets application. For more information, see [Add or repair demo data for applications and plugins](#).

- Set the `com.sn_eam.indoormap.enabled` asset parameter to **true** on your ServiceNow instance.
- Set up your indoor maps: You can design indoor maps using Map Studio. For more information, see [Configure Indoor Mapping](#).

**Note:** When you install indoor maps using the entitlement to the Enterprise Asset Management license, you can use only the PNG floor map files in the Map Studio. You can't import the files that are in AutoCAD or Raster file format. To use AutoCAD or Raster files, you should have entitlement to the Workplace Service Delivery application.

- Configure the option to display the **Asset indoor map** tab in the Enterprise asset estate view of the Enterprise Asset Workspace. For detailed instructions, see [Configure tabs in the Enterprise Asset Workspace](#).

**Note:** This tab appears only if the **Include in tab** option is enabled in the Asset indoor map tab configuration.

- Synchronize location data: The Enterprise Asset Management application supports the following indoor mapping location types:
  - Campus: Represents a set of buildings within the same geographic location.
  - Building: Represents a multi-floor building within a specific campus.
  - Floor: Represents a floor within a specific building.
  - Place: Represents either a polygon or point of interest within a specific floor. Places can represent areas, rooms, desks, printers, assets, and more.


**Note:** For indoor maps to show assets in the Enterprise Asset Workspace, assets should be assigned to a location of the type **place** or **room** in the Location [cmn\_location] table.

To view the newly created locations within the Enterprise Asset Management application, make sure to synchronize the newly created locations from Map Studio to the Location [cmn\_location] table. You can associate the locations created in Map Studio with pre-existing records or new records in the Location [cmn\_location] table. For more information, see [Synchronize Indoor Mapping map data with CMN location](#).

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

## Procedure

1. From the Enterprise Asset Workspace, open the Enterprise asset estate view.
2. Select the **Asset indoor map** tab.  
This tab contains an interactive map that enables you to view the real-time location of each enterprise asset, consumable asset, and pallet within a specific floor or place.
3. Set the map to a specific floor by using the Campuses, Buildings, and Floors filters.  
By default, the map provides a high-level view of all campuses that are available across your organization. This default map view doesn't display the locations of your assets. To view the locations of your assets, you must set the map to the floor that those assets are located in. To set the map to a specific floor, select the appropriate values in the Campuses, Buildings, and Floors filters.
4. **Optional:** Specify the assets that you want the map to display the locations of.  
By default, the map displays the locations of all enterprise assets, consumable assets, and pallets that are deployed across your organization. If you want the map to display the locations of only certain assets, use the following steps:

- a. Select the Filters Tab icon () on the sidebar of the map.
  - b. In the Filter by window, use any of the following filters to narrow down the assets that you want to display the location of:
    - **Department:** Department that the asset belongs to.
    - **User:** User who the asset belongs to.
    - **Model category:** Model category of the asset.
    - **Classification:** Classification code that is assigned to the asset model.
- 5. Optional:** Change the format through which you view your asset locations by selecting a display option at the bottom-right corner of the **Asset indoor map** tab. The **Asset indoor map** tab supports the following display options:
- **Show map only** (default display option): Displays an interactive map that shows the locations of the assets within the specified floor.
  - **Show list only:** Displays the list of assets that are located within the specified floor.
  - **Show map and list:** Displays both the interactive map and the list of assets.
- 6.** Use the interactive map or the list of assets to view the real-time locations of assets within the specified floor or place in that floor. Select an asset from the map or list to view additional details about that asset.

### View the asset hierarchy in the Enterprise Asset Workspace

View the hierarchy details of a multi-component asset in a tree-like format in the Enterprise Asset Workspace.

#### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

#### About this task

The Asset hierarchy option is shown only for an asset associated with a parent asset or that has child assets.

The asset hierarchy shows consumable assets associated with a parent asset.

**Note:** Asset hierarchy is not applicable to Linear assets and Pallets.

#### Procedure

1. Navigate to **All > Enterprise Asset Workspace > Enterprise Asset Estate**.
2. Select the asset record.
3. Select the Asset hierarchy icon () on the contextual sidebar.

- The asset hierarchy is shown in a tree-like format.

The default view shows up to three child assets. A number at the right of the asset shows the total number of child assets. If that number is higher than three, view all of them by selecting **Expand all** or **Show More**.

- The asset for which the hierarchy is shown is highlighted in the asset hierarchy tree.

## View the total time worked on all tasks related to an enterprise asset

Use the Asset task time summary report to see the details of the time spent on all tasks for an asset and its child assets, grouped by task category.

### Before you begin

**i Important:** The Asset task summary report is available with Enterprise Asset Management version 9.0 and later.

Role required: sn\_eam.enterprise\_asset\_manager or enterprise\_asset\_technician

### About this task

Asset task time refers to the total time spent on all tasks related to an asset. The total time spent includes the sum of time worked on all related tasks for the asset and its child assets.

#### **i Note:**

Time spent on tasks related to child assets is rolled up to the parent asset only if the tasks were created and closed after the **last\_used** date on the child assets. The total time from these tasks is then aggregated and added to the parent asset's time spent.

When a child asset is removed from a parent asset, the total time spent on the parent asset remains the same. Therefore, the time spent lines associated with the parent asset will be available even after the child asset is removed.

The time worked on a task is tracked after you start working on it and select **Start Timer** until you close the task. The timer automatically stops when you close the task, and the total duration is updated. You can also pause the timer when you aren't working on the task by selecting **Pause**, and then select **Resume** when you continue to work on the task. You can also add time worked details to the task manually by selecting **Record Time**. The time worked on a task is stored in the Time worked [task\_time\_worked] table.

After a task is closed on a parent or child asset, a time spent line is generated and stored in the Time spent line [sn\_itam\_common\_time\_spent\_line] table. Each time spent line includes the time worked on the asset task. The sum of the time spent values in these time spent lines gives the total asset task time. If a task involves multiple assets, the total time spent is equally divided among them. This equally distributed time is then aggregated to the parent asset if there are any child assets involved.

**i Note:** When you upgrade to Enterprise Asset Management version 9.0.0, the *Calculate asset time spent* fix script creates time spent lines for asset tasks that have already been completed and closed.

The total time spent is grouped by the following task categories:


- **Purchase - Asset:** Includes the following tasks
  - All tasks in the Refresh flow except the Reclaim aged asset task.
  - Replacement task in the Return Merchandise Authorization (RMA) flow
  - Replacement task in the Recall flow
- **Labor - Maintenance:** Includes Calibration and Planned maintenance in the Work order workflow.
- **Labor - Repair:** Includes tasks in the following workflows:
  - Work order (Breakfix work type)
  - Repair order
  - RMA order

- Recall order (only the Repair task)
- Incident
- **Labor - General:** Includes tasks in the following workflows:
  - Asset reclamation
  - Resale
  - Disposal
  - Lease return
  - Transfer order
  - Recall order (except the Repair task)
  - Move order
  - Loaner
  - Asset onboarding
  - Work order (Install task)
  - Asset refresh flow (only the Reclaim aged asset task)
  - Asset request (Pick task)
  - Drop off and Receive task

**i Note:** Total time spent on an asset task isn't calculated for pallets, consumables, and bundle assets. Therefore, the Asset task time summary report isn't available for these assets.

## About this task

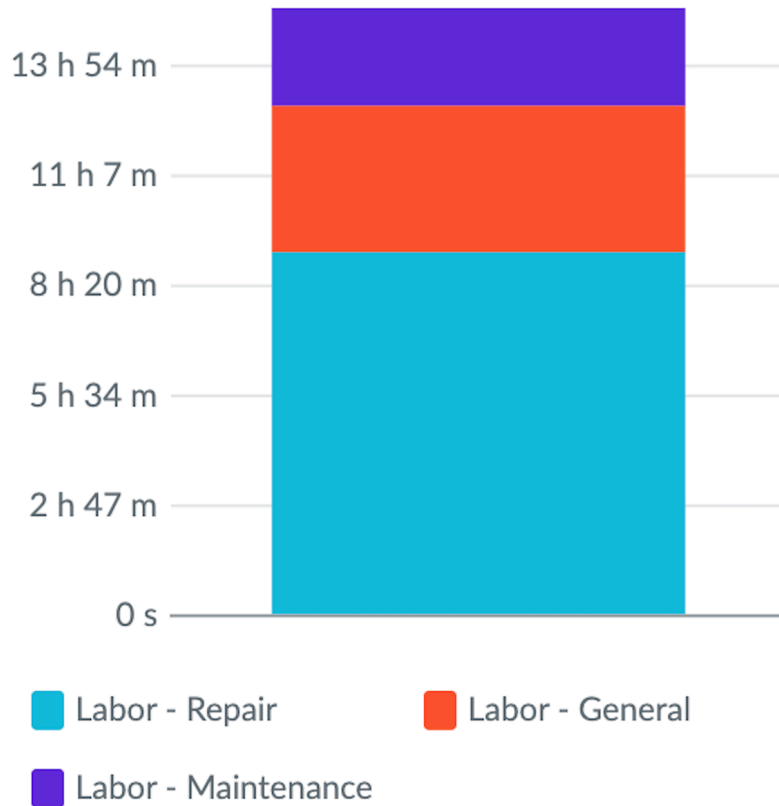
### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Enterprise asset estate**.
2. Select the **All assets** tab.
3. Select the asset record for which you want to view the details of the total time spent on the tasks.
4. On the contextual sidebar, select the Asset task time summary icon [  ].  
**Total time spent by task category** report is displayed.

## Asset task time summary

### Total time spent by task category

Total time spent: **15 Hours 19 Minutes**



The Asset task time summary report includes the following details:

- **Total time spent:** Total time worked on all related tasks for the asset, including tasks on child assets.
- **Breakdown of total time spent:** Total time worked on all related tasks, divided and shown separately for each task category. This visualization helps you to see how much time was spent on tasks within each task category.
- **Legends for the task categories:** Legends shown are based on the actual asset tasks and their task categories. The legends include the following:
  - **Purchase - Asset**
  - **Labor - Maintenance**

- **Labor - Repair**
- **Labor - General**

5. To view the details of the time spent on all tasks within a specific task category, select the corresponding task category section in the report.

The list of time spent lines is displayed, with each line showing the following details:

- **Source asset:** Display name of the asset, including both parent and child assets, for which time was spent on the task.
- **Task:** Task number
- **Task type:** Type of the task, such as the Enterprise RMA Order Line task.
- **Task name:** Name of the task, such as Prepare or On-site repair.
- **Time spent:** Time worked on the asset task.
- **Short description:** A brief description of the task.
- **Closed:** The date and time when the asset task was closed.
- **Task category:** Category to which the task belongs.

### Monitor enterprise asset performance with Asset KPIs report

Track the asset availability and related KPI values in the report to see how well an enterprise asset is performing.

#### Before you begin

**i Important:** The Asset KPIs report is available with Enterprise Asset Management version 9.0 and later.

Role required: sn\_eam.enterprise\_asset\_manager or enterprise\_asset\_technician


#### About this task

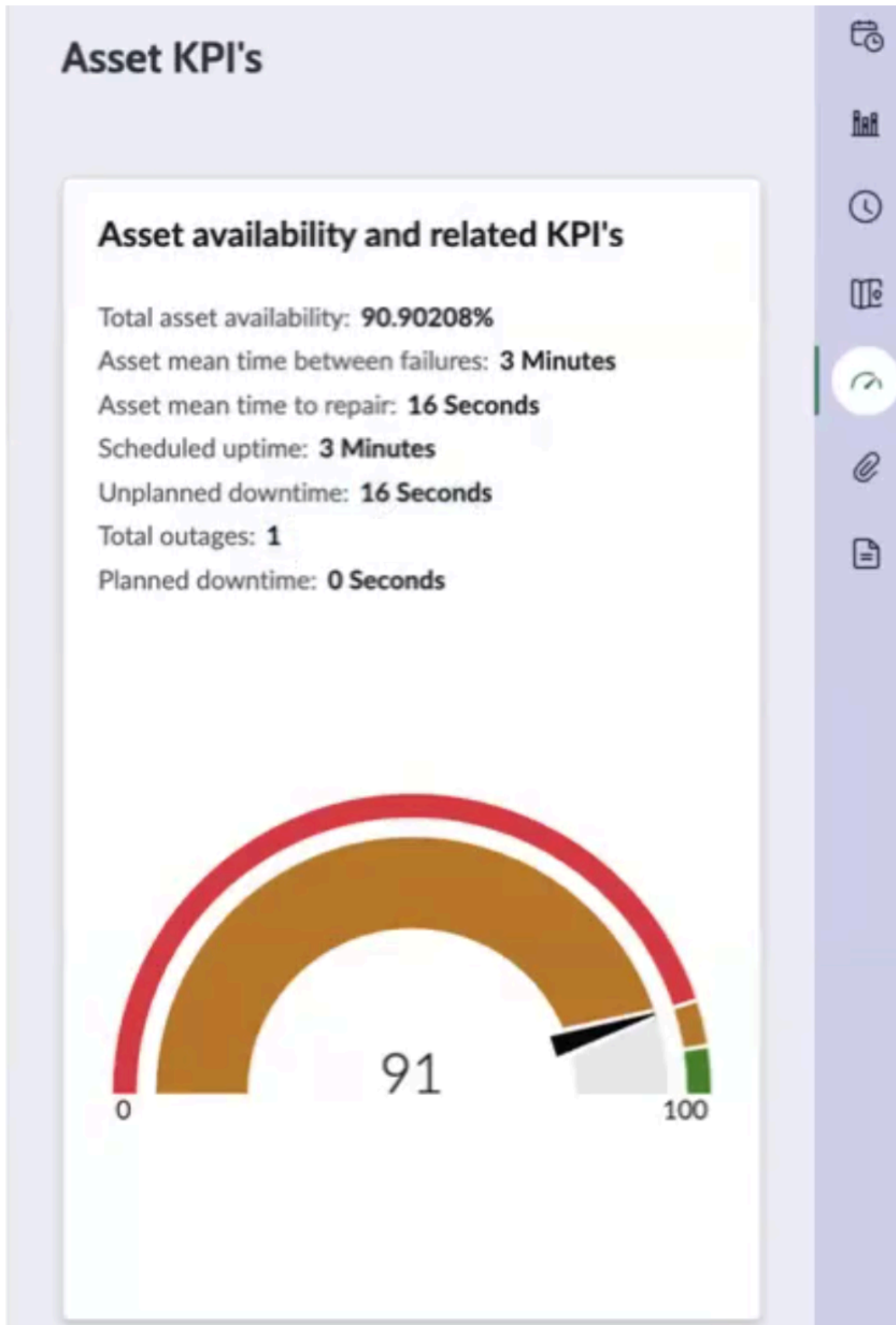
The Asset KPIs report is available for an enterprise asset under the following conditions:

- The asset belongs to a model category for which the performance tracking is enabled. For details, see [Opt in to model categories to track performance KPIs for enterprise assets](#).
- The asset has moved to the In use state, and its KPIs have been calculated and are available in the Asset Availability [sn\_ent\_asset\_availability] table.

**i Note:** The *Calculate asset performance KPIs* scheduled job runs every week on Saturday to calculate the KPIs for the assets. These KPIs are then reflected in the Asset availability and related KPIs report, which displays the most recent KPI values.

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Enterprise asset estate**.
2. Select the **All assets** tab.
3. Select the asset record for which you want to view the details of the asset key performance indicators (KPIs).
4. On the contextual sidebar, select the Asset availability and related KPIs icon [  ].  
The Asset KPIs report is displayed.



5. To view the details of the report, select any section on the report.

A form view of the availability record for the asset is shown with additional details such as the following:

- **Current asset schedule:** The asset schedule linked to the asset currently and used for KPI calculations. If no schedule is linked, the Default asset schedule is used.
- **Start:** The date and time when the asset KPI values were first calculated.
- **End:** The date and time when the asset KPI values were last calculated.
- **Outages During Interval** tab: A list of outages with details like start and end time of the outage and the duration of the outage. For more details on outage record creation and handling, see [Asset performance reports in the Enterprise Asset Workspace](#).

## Create and manage enterprise models

Create and manage your enterprise models to keep track of your enterprise assets.

### Create enterprise models

Create a model based on a top tier Enterprise Asset Management model category. Use models to manage and keep track of your assets.

### Before you begin

You can create a model based on any of the following Enterprise Asset Management model categories:

- Construction
- Medical
- Transportation
- Industrial
- Facility
- Retail
- Tactical equipment
- Wearable
- Pallet

**i Note:** Only consumables created from models in the Enterprise Asset Management application can be used if the **Asset strategy tracking** for the model is set to **create consumable asset**.

**i Note:** The Enterprise Asset Management application supports only facilities models that fall under the Facility model [sn\_ent\_facility\_model] child class of the Enterprise good model [sn\_ent\_model] class. The application does not support facilities models that are listed in the Facility Models [cmdb\_facility\_product\_model] table.

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

### Procedure

1. Navigate to **Enterprise Asset Workspace > Enterprise model management**
2. Select the tab for the model type that you want to create.
  - Select the **All enterprise** tab for all available enterprise model types.
  - Select the tab for a specific enterprise model type, such as **Facility, Industrial, Medical, Retail, or Transportation**.
  - Select the **All models** tab for pallet models.
3. Select **New**.

If you are creating a pallet model, select **New pallet model**.

If you select **New** on any tab other than the **All models** tab, a dialog box opens, prompting you to specify the type and category of the new model that you are creating. Proceed to [step 4](#) to fill in the fields in the dialog box.

If you select **New pallet model** on the **All models** tab, you are automatically redirected to the Create New Product Model page. Proceed to [step 6](#) to fill in the fields on the page.

**4.** In the dialog box, fill in the fields.

Field	Description
Type	The type of model you want to create. Choose from the following options: <ul style="list-style-type: none"> <li><input type="radio"/> Enterprise Good Model</li> <li><input type="radio"/> Construction Model</li> <li><input type="radio"/> Facilities Model</li> <li><input type="radio"/> Industrial Model</li> <li><input type="radio"/> Medical Model</li> <li><input type="radio"/> Retail Model</li> <li><input type="radio"/> Transportation Model</li> <li><input type="radio"/> Tactical Equipment Model</li> <li><input type="radio"/> Wearable Model</li> </ul>
Model category	The category that the model belongs to.

**Note:** This field appears only if you selected **New** on the **All enterprise** tab.

**5.** Select **Create**.

The Create New Product Model page appears. The model is in **Build** status by default and the model category is a read-only field set to the category that you chose. You can change the status only after you have saved the model record.

**6.** On the form, fill in the details.

For a detailed description of the fields, see [Model fields for Enterprise Asset Management](#).

**7.** Select **Save**.

The model is created along with the related tabs such as **Model Components**, **Assets**, **Enterprise Model Lifecycles**, **Compatibles**, **Substitutes**, and **Vendor Catalog Items**. You can perform additional configuration on the model by entering details in the related tabs.

**8.** Change the status of the model to **In Production** once you are done configuring the model.

**9.** Select **Publish to Enterprise Asset Catalog** to publish your model to the Service Catalog. **Publish to Enterprise Asset Catalog** appears only when you change the status of the model to **In Production**.

Enterprise models can be deleted only by the `sn_eam.enterprise_admin` role.

**10.** You may select **Update risk** if you updated the model's risk scores and want to propagate the updated scores to the associated assets too.

After the *EAM - Update model risk values to assets* scheduled job is completed, the risk values for all the assets associated with this model is updated.

**Create enterprise model components**

Create model components and add them to a model. A model comprising of one or more model components is a multi-component model.

**Before you begin**

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**About this task**

The model category for the component can differ from that of the model. You can choose a different model category for the model component. You can add model components to a model only when the model is in **Build** status.

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Enterprise model management**.
2. Select the **All enterprise** tab or the specific model tab for which you want to create model components.
3. Select a model to open the model record.  
The Create New Model Component page opens.
4. Select the **Model Components** tab and select **New**.
5. On the form, fill in the details.  
For detailed description of the fields, see Model fields for Enterprise Asset Management.
6. Select **Save**.  
The newly created model component appears in the Model Components tab and by default, is in the **In production** status even though the model is in **Build** status.

**Create model categories**

You can create model categories for the Enterprise Asset Management application.

**Before you begin**

Various base model categories are already available for you to choose from.

Keep the following in mind while creating model categories:

- When you create a configuration item (CI) class in the Configuration Management Database (CMDB), you can also create a corresponding model category to associate that CI class with. By associating a CI class with a model category, you can then associate that CI class with the corresponding asset and product model classes.
- If you associate a CI class with a model category that is already associated with an asset class, the asset and CI synchronization capability automatically triggers, creating assets for all CIs under the given CI class. If an asset is not created automatically, you can create it manually.
- The **Allow pre-allocated**, **Allow in bundle**, and **Allow as main** options are available only if the model category is associated with an asset class.

**Note:** These options are not applicable to enterprise model categories.

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Admin center > Model categories**.
2. Select **New**.  
The Create New Model Category page appears.
3. On the form, fill in the fields.

### Create New Model Category form

Field	Description
Name	Display name of the model category in the Service Catalog.
Parent category	Parent model category that this model category falls under.
UNSPSC code	United Nations Standard Products and Services Code (UNSPSC) for all products under the model category.
Picture or icon	Visual representation of the model category in the Service Catalog.
CI class	<p>CMDB CI class that you want to associate with the model category.</p> <p><b>Important:</b> You can select a CI class only when you are creating the model category. You can't select one after you have created the model category.</p>
Product model class	Product model class that you want to associate the model category with.
Asset class	<p>Asset class that you want to associate the model category with. You can select a default asset class, such as <b>Enterprise Asset</b>, or any new asset class that you have created. If you select <b>Consumable</b> or <b>Software License</b>, the <b>CI class</b> field becomes read-only since consumables and software licenses do not create CIs. If you specify a CI class and then select <b>Consumable</b> or <b>Software License</b>, the <b>CI class</b> field automatically changes to <b>None</b>.</p> <p><b>Important:</b> You can select an asset class after you have created the model category, but you can't change it after it has been selected.</p> <p>After you associate the model category with an asset class, the Enterprise Asset Management application can automatically create assets based on the given model category.</p>
Allow pre-allocation	Option to allow items under this model category to be added and tracked as pre-allocated assets.
Allow in bundle	Option to allow items under this model category to be used in bundles.
Allow as main	Option to allow items under this model category to be used as the main component in a bundle.
Is product instance	Option that indicates if you are using a product instance to identify and synchronize the assets, CIs, and install base items (IBIs) under this model category.
Enforce CI verification	Option to prevent the Enterprise Asset Management application from automatically creating assets for a specific model category when CIs are added manually or found through Discovery. This option enables you to review and verify new CIs before adding them as assets.

#### 4. Select **Save**.

**Result**

The model category is created. You can perform additional configurations on the model category by entering details in the **Product Models** tab.

**Add a substitute model for an enterprise model**


On an enterprise model record, specify the related models that you can substitute the enterprise model with.

**Before you begin**

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**Procedure**

1. From the Enterprise Asset Workspace, open the Enterprise model management view.
2. Select either the **All enterprise** tab or the tab for a specific model category, such as **Construction**.
3. From the list of available enterprise models, select the enterprise model that you want to add substitute models for.
4. On the **Substitutes** tab of the enterprise model record, add substitute models for the given enterprise model.
  - a. On the **Substitutes** tab, select **Add**.
  - b. In the Add model substitute dialog box, select the check box for each model that you want to add as a substitute model.
 

**Note:** The dialog box displays only the enterprise models that have the same **Asset tracking strategy** as the given enterprise model and do not have a **State of Build**.
  - c. Select **Add**.  
The dialog box closes and you return to the **Substitutes** tab.
  - d. On the **Substitutes** tab, select the Refresh list icon () to populate the list of newly added substitute models.

**Add calibration attributes to an enterprise model**

Add calibration attributes to an enterprise model to specify and manage the calibrations that are required for the associated enterprise assets throughout their life cycles.

**Before you begin**

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**About this task**

You can add calibration attributes at the enterprise model level or at the individual enterprise asset level. Alternatively, you can create common calibration attributes that are not associated with any enterprise models or enterprise assets. For details on how to add calibration attributes to an individual enterprise asset, see [Add calibration attributes to an enterprise asset](#). For details on how to create common calibration attributes, see [Create a calibration attribute library](#).

**Procedure**

1. Navigate to **Workspaces > Enterprise Asset Workspace**.
2. From the Enterprise Asset Workspace, open the Enterprise model management view.

3. Select either the **All enterprise** tab or the tab for a specific model category, such as **Construction**.
4. From the list of available enterprise models, select the enterprise model that you want to add calibration attributes to.
5. On the **Calibration attributes** tab of the enterprise model record, select **New**.
6. On the form, fill in the fields.

**Create New Calibration Attribute form**

Field	Description
Attribute details	
Name	Name of the calibration attribute.
Short description	Brief description of the calibration attribute.
Criticality	Criticality level that indicates how important the calibration attribute is.
Service frequency	Frequency at which you must perform the calibration.
Category	Type of calibration.  <div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Note:</b> The Enterprise Asset Management application includes default calibration categories such as Electrical, Flow, Humidity, and Pressure. You can create additional calibration categories for any calibrations that do not fall under the default categories. For detailed instructions, see <a href="#">Create a calibration category for your enterprise asset calibrations</a>.</p> </div>
Active	Option that indicates if the calibration attribute is active.
Order	Order in which the calibration attribute applies to the enterprise model. If your enterprise model contains more than one calibration attribute, the attribute with the lowest numerical value applies to the model first.  <div style="background-color: #e0f2f1; padding: 5px;"> <p><b>Important:</b> You must use a unique numerical value for each calibration attribute.</p> </div>
Calibration properties	
Value type	Method by which you want to measure tolerance conformance. Select one of the following options: <ul style="list-style-type: none"> <li>○ <b>Accuracy % full scale:</b> Fixed percentage of accuracy that your calibration measurements must fall within at any point within the enterprise asset's full measurement range. The corresponding tolerance limits remain the same at every point within the measurement range. For example, if a measurement range is 100 units and the accuracy percentage is set to <math>\pm 1\%</math>, the tolerance limits are <math>\pm 1</math> unit at every point within the measurement range.</li> <li>○ <b>Accuracy % point:</b> Fixed percentage of accuracy that your calibration measurements must fall within at a specific point within the enterprise asset's full measurement range. The corresponding tolerance limits increase or decrease proportionally based on the value of the point that you are comparing your calibration measurement against. For example, if your accuracy percentage is set to <math>\pm 1\%</math> and you want to compare your calibration measurement against a point that has a value of 50 units, the tolerance limits</li> </ul>

Field	Description
	<p>for this specific point are <math>\pm 0.5</math> units. If you want to compare your calibration measurement against a point that has a value of 60 units, the tolerance limits increase to <math>\pm 0.6</math> units.</p> <ul style="list-style-type: none"> <li>○ <b>Range:</b> Measurement range that your calibration measurements must fall within. The corresponding tolerance limits are based on the lowest and highest acceptable point values within the range.</li> <li>○ <b>Less than:</b> Value within the enterprise asset's full measurement range that your calibration measurements must fall below. The corresponding tolerance limit is based on the highest acceptable point value within the range.</li> <li>○ <b>Greater than:</b> Value within the enterprise asset's full measurement range that your calibration measurements must lie above. The corresponding tolerance limit is based on the lowest acceptable point value within the range.</li> <li>○ <b>True/false:</b> Option to assess any qualitative elements of the calibration.</li> </ul>
Scale	<p>Full measurement range that you're measuring tolerance conformance against.</p> <p><b>Note:</b> This field appears only if you set the <b>Value type</b> field to <b>Accuracy % full scale</b>.</p>
Unit	<p>Unit of measurement that you're using to measure tolerance conformance.</p> <p><b>Note:</b> This field appears only if you set the <b>Value type</b> field to one of the following options:</p> <ul style="list-style-type: none"> <li>○ <b>Accuracy % full scale</b></li> <li>○ <b>Accuracy % point</b></li> <li>○ <b>Range</b></li> <li>○ <b>Less than</b></li> <li>○ <b>Greater than</b></li> </ul>
Accuracy (%)	<p>Percentage of accuracy that your calibration measurements must fall within.</p> <p><b>Note:</b> This field appears only if you set the <b>Value type</b> field to either <b>Accuracy % full scale</b> or <b>Accuracy % point</b>.</p>
Resolution	<p>Smallest distinguishable change in value that you can detect and measure. The higher the resolution is, the more specific the change in value is.</p> <p><b>Note:</b> This field appears only if you set the <b>Value type</b> field to one of the following options:</p> <ul style="list-style-type: none"> <li>○ <b>Accuracy % full scale</b></li> <li>○ <b>Accuracy % point</b></li> </ul>
Quality standard	
Quality standard	<p>Set of requirements and guidelines that you must follow when performing the calibrations.</p>

Field	Description
	<p><b>i Note:</b> You can create quality standards manually in the Admin center view of the Enterprise Asset Workspace. See <a href="#">Create a quality standard for your enterprise asset calibrations</a> for detailed instructions.</p>
Instrument	
Instrument model	Model of the instrument that you must use to perform the calibrations.
Instruction	General instructions or instrument settings that you must follow when performing the calibrations.

**7. Select Save.**

The form closes and you are automatically redirected to the new calibration attribute record.

**8. Specify the points at which you can measure tolerance conformance.**

**i Important:** You must specify one or more points within each enterprise asset's measurement range. If you do not specify at least one point, the calibration attribute cannot be set to Active.

**a. On the calibration attribute record, select Add calibration points.**


The Calibration points dialog box opens.

**b. In the dialog box, fill in the fields.**

**Calibration points dialog box**

Field	Description
Point name	Name of the point.
Expected value	<p>Value that you want to measure tolerance conformance against. If you set the <b>Value type</b> field to either <b>Accuracy % full scale</b> or <b>Accuracy % point</b> in the Create New Calibration Attribute form, enter the value of the point that you want to measure against. If you set the <b>Value type</b> field to <b>True/false</b>, select a Boolean value of either <b>true</b> or <b>false</b>.</p> <p><b>i Note:</b> This field appears only if you set the <b>Value type</b> field to one of the following options in the Create New Calibration Attribute form.</p> <ul style="list-style-type: none"> <li>▪ <b>Accuracy % full scale</b></li> <li>▪ <b>Accuracy % point</b></li> <li>▪ <b>True/false</b></li> </ul>
Order	<p>Order in which you want to use the point to measure tolerance conformance. If your calibration attribute contains more than one point, the point with the lowest numerical value is calibrated first.</p> <p><b>i Important:</b> You must use a unique numerical value for each point.</p>
Lower tolerance	Lowest acceptable value that the calibration measurement can reach to stay in conformance.

Field	Description
	<p><b>i Note:</b> This field appears only if you set the <b>Value type</b> field to one of the following options in the Create New Calibration Attribute form:</p> <ul style="list-style-type: none"> <li>▪ <b>Accuracy % full scale</b></li> <li>▪ <b>Accuracy % point</b></li> <li>▪ <b>Range</b></li> <li>▪ <b>Greater than</b></li> </ul> <p>If you set the <b>Value type</b> field to either <b>Accuracy % full scale</b> or <b>Accuracy % point</b>, this field is read-only.</p>
Upper tolerance	<p>Highest acceptable value that the calibration measurement can reach to stay in conformance.</p> <p><b>i Note:</b> This field appears only if you set the <b>Value type</b> field to one of the following options in the Create New Calibration Attribute form:</p> <ul style="list-style-type: none"> <li>▪ <b>Accuracy % full scale</b></li> <li>▪ <b>Accuracy % point</b></li> <li>▪ <b>Range</b></li> <li>▪ <b>Less than</b></li> </ul> <p>If you set the <b>Value type</b> field to either <b>Accuracy % full scale</b> or <b>Accuracy % point</b>, this field is read-only.</p>

c. To add an additional point to the calibration attribute, select the Add Content icon (  ) and then fill in the fields.  
Repeat this step for each point that you want to add.

d. Select **OK**.

The dialog box closes and the points appear on the **Calibration points** tab of the calibration attribute record.

**What to do next**

Create work orders to track the calibrations that are made to the associated enterprise assets. These work orders must use a work order template with tasks that have a Work type of Calibration. For more information on work orders, see [Managing work orders for your enterprise assets](#).

**Clone calibration attributes to an enterprise model**

Clone an existing calibration attribute to an enterprise model to add a calibration attribute with similar settings.

**Before you begin**

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**Procedure**

1. From the Enterprise Asset Workspace, open the Enterprise model management view.
2. Select either the **All enterprise** tab or the tab for a specific model category, such as **Construction**.

3. From the list of available enterprise models, select the enterprise model that you want to clone a calibration attribute to or from.
4. On the **Calibration attributes** tab of the enterprise model record, use one of the following options to clone a calibration attribute:
  - To clone a calibration attribute from this enterprise model to another enterprise model, use the following steps:
    - a. From the list of available calibration attributes, select the check box for the calibration attribute that you want to clone.
    - b. Select **Clone to models**.
    - c. In the Select models dialog box, select the **Clone as active** check box to automatically set the cloned calibration attribute to active.
    - d. Select the check box for the enterprise model that you want to clone the calibration attribute to.

e. Select **Clone**.

The calibration attribute is cloned to the selected enterprise model.

**i Note:** If the selected enterprise model already contains another calibration attribute with the same name, this attribute is cloned with a numeric suffix appended to the name.

- To clone a calibration attribute from another enterprise model to this enterprise model, or to clone a common calibration attribute from your calibration attribute library to this enterprise model, use the following steps:
  - a. Select **Clone from**.
  - b. In the Select attribute to clone dialog box, select the **Clone as active** check box to automatically set the cloned calibration attribute to active.
  - c. Select the check box for the calibration attribute that you want to clone.
  - d. Select **Clone**.

The calibration attribute is cloned to the enterprise model and appears in the list of available calibration attributes.

**i Note:** If the enterprise model already contains another calibration attribute with the same name, this attribute is cloned with a numeric suffix appended to the name.

### View the enterprise model hierarchy in the Enterprise Asset Workspace

View the hierarchy details of pre-assembled and user-assembled enterprise models in a tree-like format in the Enterprise Asset Workspace.


### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

### About this task

The Model hierarchy option is shown only for a model that's associated with a parent or that has model components. Model hierarchy isn't shown for simple, consumable, and hardware models. The parent hierarchy details of a model aren't displayed.

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Model management**.
2. Select the pre-assembled or user-assembled model.
3. Select the Hierarchy icon (  ) on the contextual sidebar.  
The model hierarchy is shown in a tree-like format. All the model components of the model that you selected are displayed.

On the model hierarchy, the following details are displayed:

- A number at the right of the model shows the total number of model components associated with that model.
- Quantity is displayed only for consumable models.
- The component number is added as a prefix to the model component.

## Manage the lifecycle of enterprise models with calculated lifecycle templates

Manage the complete lifecycle of enterprise models by creating calculated lifecycle templates and associating these templates with the models.

### Create Calculated model lifecycle templates in the Enterprise Asset Workspace

Create Calculated model lifecycle templates to manage the complete lifecycle of the models efficiently.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Asset Operations**.
2. From the **Calculated model lifecycle** list, select **Calculated model lifecycle templates**.  
The list of existing Calculated model lifecycle templates is displayed.
3. Select **New**.
4. On the form, fill in the fields.

### Create New Calculated Lifecycle Template form

Field	Description
Name	Name of the Calculated lifecycle template.
Description	Brief information about the template.
Active	Option to indicate that the Calculated lifecycle template is available for use.

5. Select **Save**.  
The **Calculated Lifecycle formulas** tab is displayed with the list of calculated lifecycle formulas for the following lifecycle phases:
  - **End of Extended Support**
  - **End of Life**
  - **End of Sale**
  - **End of Support**
  - **End of General Availability**

6. Define the calculated lifecycle formula for a lifecycle phase.
  - a. Select the calculated lifecycle formula.
  - b. In the **Phase start** and **Phase end** fields, enter the number of months for calculating the start date and end date of the lifecycle phase.
  - c. Select **Save**.  
The calculated lifecycle formula is updated with the values that you entered in the **Phase start** and **Phase end** fields.

### What to do next

Associate the Calculated model lifecycle template with an enterprise model. For details, see [Associate an enterprise model with a Calculated model lifecycle template](#).

### Associate an enterprise model with a Calculated model lifecycle template

Associate an enterprise model with a Calculated model lifecycle template to populate the lifecycle details of the model automatically.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

### Procedure

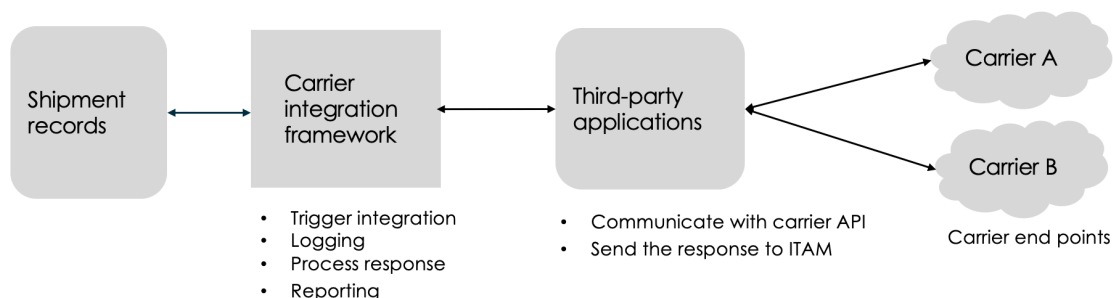
1. Navigate to **Workspaces > Enterprise Asset Workspace > Enterprise model management**.
2. Select the **All enterprise** tab.
3. Select the model that you want to associate with a Calculated model lifecycle template.
4. In the **Model Details** section of the Model form, enter the template details.
  - a. In the **Calculated lifecycle template** field, select the calculated model lifecycle template that you want to apply to the model.
  - b. In the **Calculated lifecycle start date**, select the date from which the Phase start date and Phase end date are calculated for each lifecycle phase defined in the Calculated lifecycle template that you selected.
5. Select **Save**.

### Result

The list of lifecycle phases with details such as Phase start date, Phase end date, and Source is displayed in the **Enterprise Model Lifecycles** tab.

## Managing enterprise asset shipments

Track and manage your enterprise asset shipments in real-time by integrating the Enterprise Asset Management application with third-party shipping carriers using the IT Asset Management integration framework.



## Prerequisites

Before you can integrate the Enterprise Asset Management application with a third-party shipping carrier, the shipping carrier must complete the following prerequisites:

- Enable cross scope access on their third-party application.
- Create a script include that extends the base ITAMShipmentIntegration script so that you can connect to their third-party application and retrieve shipment details in real-time.
  - The script include must be available in the IT Asset Management application scope. However, the Caller access isn't restricted and Accessible from fields must be available in All application scopes.
  - Business logic must be implemented within the fetchShipmentinfo function to enable communication with the carrier API based on tracking numbers. The carrier API is required for connecting to the third-party application and for retrieving shipment details.
  - The fetchShipmentinfo function must return a JSON object with the following HTTP response code and message:

```
{
  httpResponseCode: 200, httpResponseMessage: 'SUCCESS'
}
```

- When the script include is in test mode, the shipping carrier invokes the carrier API to validate your connection to their third-party application. The shipping carrier can then either verify and return the response or query the shipments and invoke the processResponse function using the following response format:

```
[
  {
    trackingNumber: '',
    deliveryDate: '',
    pickupDate: '',
    packageStatus: '',
    statusDetail: '',
    trackingURL: '',
    parcelWeight: '',
    deliveryServicesCost: '',
    currency: ''
  }
]
```

If the shipping carrier invokes the processResponse function, they must return the response after the function completes.

- Create an integration profile with the appropriate name, carrier API details, and connection details. This integration profile enables you to connect to the third-party application so that you can retrieve shipment details.
- If the third-party application uses the ServiceNow Credentials [discovery\_credentials] table or any other ServiceNow table with Password2 fields, provide a KMF access map policy to enable access to those tables. For more information on KMF access map policies, see [Password2 encryption with the Key Management Framework \(KMF\)](#).

After the shipping carrier completes these prerequisites, you must complete these additional prerequisites:

- If the integration profile contains connection details through a connection and credentials alias, update those details as needed so that you can successfully authenticate and connect to the carrier API.
- Associate the shipping carrier with the integration profile.

### Script include for third-party shipping carrier integrations

Before you can integrate the Enterprise Asset Management application with a third-party shipping carrier, that shipping carrier must create a script include that extends the base ITAMShipmentIntegration script. By extending this script, you can connect to the third-party shipping carrier application and retrieve shipment details in real-time.

### Example: Structure of the ITAMShipmentIntegration script include

```

var ITAMShipmentIntegration = Class.create();
ITAMShipmentIntegration.prototype = {
  initialize: function() {
  },

  /**
   * Encapsulates communication with end point and fetching tracking info
   * If used in test mode, only response details would be returned
   * Else this API should invoke processResponse with the shipment details and return response code, message
   *
   * @param {array of string} trackingNumbers Shipment tracking numbers
   * @param {string} mode Can be 'test' or empty string
   */
  fetchShipmentInfo: function (trackingNumbers, mode) {
    // Communicate with API
    // Process the response
    // If mode === 'test' return response
    // Else Invoke post processing function and then return response
    /**
     * Expected response format to be passed to processResponse: array of objects
     * where each object corresponds to a single shipment
     *
     * Expected response format to be returned: JSON object with keys - httpResponseCode, httpResponseMessage
     * httpResponseCode - response code
     * httpResponseMessage - detailed message
     */
  },

  /**
   * Encapsulates to update shipment records with the response received
   *
   * @param {array of objects} response Response from API
   * Expected response format: array of JSON, where each JSON would have values with below keys
   * trackingNumber, deliveryDate, pickupDate, packageStatus, statusDetail, trackingURL
   */
  processResponse: function (response) {
    // Update shipment records
    if (!gs.nil(response)) {
      var mappingObj = sn_itam_common.ITAMIntegrationUtil.SHIPMENT_RESPONSE_COL_MAPPING;
      response.forEach(function(recordObj) {
        var shipmentRecord = new global.GlideQuery(sn_itam_common.ITAMIntegrationUtil.SHIPMENT_TABLE)
          .where('tracking_number', recordObj.trackingNumber)
          .where('stage', '!=', 'cancelled')
          .toGlideRecord();
        shipmentRecord.query();
        while (shipmentRecord.next()) {
          for (col in mappingObj) {
            var value = recordObj[mappingObj[col]];
            if (gs.nil(value)) {
              shipmentRecord.setValue(col, null);
            } else {
              shipmentRecord.setValue(col, value);
            }
          }
          shipmentRecord.update();
        }
      });
    }
  },
};

type: 'ITAMShipmentIntegration'

```

## fetchShipmentInfo function

The fetchShipmentInfo function within the ITAMShipmentIntegration script include retrieves tracking numbers from your ServiceNow instance and then invokes the carrier API to fetch shipment details for those tracking numbers. To enable communication with the carrier API based on tracking numbers, the shipping carrier must define the corresponding business logic within the fetchShipmentInfo function. This function processes responses from the carrier API and then initiates the processResponse function.

## processResponse function

The processResponse function within the ITAMShipmentIntegration script include retrieves responses from the carrier API and then updates your shipment records with the following shipping carrier details:

- Carrier link
- Carrier status
- Carrier status detail
- Carrier pick-up date
- Carrier delivered date
- Currency
- Delivery services cost
- Parcel weight

**i Important:** The IT Asset Management application automatically defines the business logic within this function. The business logic should not be modified.

### Integrate with a third-party shipping carrier in the Enterprise Asset Workspace

Integrate the Enterprise Asset Management application with a third-party shipping carrier so that you can track the real-time status of your enterprise asset shipments.

#### Before you begin

Role required: sn\_eam.enterprise\_admin

#### Procedure

1. From the Enterprise Asset Workspace, open the Asset operations view.
2. From the left navigation menu of the Asset operations view, navigate to **Shipment > Shipping carriers**.
3. Select **New**.
4. On the form, fill in the fields.

#### Create New Shipping Carrier form

Field	Description
Name	Name of the shipping carrier.
Email	Email address of the shipping carrier.
Integration profile	Integration profile that you are using to connect to the third-party shipping carrier application.

Field	Description
	<b>Note:</b> Integration profiles are automatically created by each shipping carrier.
Status	Status of the shipping carrier.
Phone	Phone number of the shipping carrier.
Website	Third-party website of the shipping carrier.
Company	Company name of the shipping carrier, such as FedEx or UPS.
Notes	Additional notes about the shipping carrier.

**5. Select Save.**

**Associate a third-party shipping carrier with an integration profile in the Enterprise Asset Workspace**

Associate a third-party shipping carrier with an integration profile so that you can successfully connect to that shipping carrier.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

**About this task**

Each shipping carrier can be associated with only one active integration profile at a time. If any of your integration profiles are not already associated with a shipping carrier, you can view and take action on those integration profiles by using the Unmapped carrier profiles important action in the Inventory view of the Enterprise Asset Workspace.

**Procedure**

1. From the Enterprise Asset Workspace, open the Asset operations view.
2. From the left navigation menu of the Asset operations view, navigate to **Shipment > Carrier integration profiles**.
3. Select the integration profile that you want to associate a shipping carrier with.
4. On the integration profile record, select the **Shipping Carriers** tab.
5. Associate a shipping carrier with the integration profile.
  - o To associate an existing shipping carrier with the integration profile, use the following steps:
    - a. Select **Add**.  
The Add carriers dialog box opens.
    - b. In the dialog box, search for and select the shipping carrier that you want to associate with the integration profile.  
  
**Note:** The dialog box displays only the shipping carriers that aren't already associated with an integration profile.
    - c. Select **Add**.
  - o To associate a new shipping carrier with the integration profile, use the following steps:

- a. Select **New**.
- b. On the form, fill in the fields.

#### Create New Shipping Carrier form

Field	Description
Name	Name of the shipping carrier.
Email	Email address of the shipping carrier.
Integration profile	Integration profile that you are using to connect to the shipping carrier. This field populates automatically.
Status	Status of the shipping carrier.
Phone	Phone number of the shipping carrier.
Website	Third-party website of the shipping carrier.
Company	Company name of the shipping carrier, such as FedEx or UPS.
Notes	Additional notes about the shipping carrier.

- c. Select **Save**.

#### Result

The shipping carrier is associated with the integration profile.

#### Remove a third-party shipping carrier from an integration profile in the Enterprise Asset Workspace

Remove a third-party shipping carrier that you no longer want to associate with an integration profile.

#### Before you begin

Role required: sn\_eam.enterprise\_admin

#### Procedure

1. From the Enterprise Asset Workspace, open the Asset operations view.
2. From the left navigation menu of the Asset operations view, navigate to **Shipment > Carrier integration profiles**.
3. Select the integration profile that you want to remove a shipping carrier from.
4. On the integration profile record, select the **Shipping Carriers** tab.
5. Select the check box for the shipping carrier that you want to remove.
6. Select **Remove**.

#### Result

The shipping carrier is no longer associated with the integration profile.

#### Test the integration profile for a third-party shipping carrier in the Enterprise Asset Workspace

Test the integration profile for a third-party shipping carrier so that you can mitigate any connection issues that arise.

### Before you begin

Role required: sn\_eam.enterprise\_admin

### Procedure

1. From the Enterprise Asset Workspace, open the Asset operations view.
2. From the left navigation menu of the Asset operations view, navigate to **Shipment > Carrier integration profiles**.
3. Select the integration profile that you want to test.
4. Select **Test connection**.  
A message appears, indicating whether the connection was successful or not.

**Note:** If the integration profile fails to connect three or more consecutive times, you can view and take action on the corresponding connection issues by using the Carrier integration failures important action in the Inventory view of the Enterprise Asset Workspace.

### View and add enterprise asset shipments

Use the Shipments list to view all active enterprise asset shipments from a central location. If an existing shipment doesn't appear on the list, you can add it manually.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_technician, sn\_eam.enterprise\_asset\_manager, or sn\_eam.enterprise\_admin

**Note:** Only the sn\_eam.enterprise\_admin role can add shipments manually.

### About this task


You can view and add shipments for your transfer orders, purchase orders, move orders, Return Merchandise Authorization (RMA) orders, disposal orders, resale orders, recall orders, reclamation requests, Advanced Shipment Notifications (ASNs), and lease contracts.

### Procedure

1. From the Enterprise Asset Workspace, open the Asset operations view.
2. From the left navigation menu of the Asset operations view, navigate to **Shipment > Shipments**.
3. View the complete list of active enterprise asset shipments.  
Select a shipment to view additional shipment details, including the shipment source and associated enterprise assets.
4. If an existing enterprise asset shipment doesn't appear on the list, add it manually.
  - a. Select **New**.
  - b. On the form, fill in the fields.

### Create New Shipment form

Field	Description
Shipping carrier	Shipping carrier through which the enterprise assets were shipped.
Ship date	Date and time at which the enterprise assets were shipped.

Field	Description
Shipped from	Geographic location that the enterprise assets were shipped from.
Receive date	Date and time at which the shipment was received.
Tracking number	Tracking number that enables you to track the status and location of the shipment.
Shipped by	User who shipped the enterprise assets.
Shipped to	Geographic location that the enterprise assets were shipped to.
Shipment quantity	<p>Quantity of assets shipped for the shipment record.</p> <p>This field value is automatically populated when the assets are shipped to the destination.</p> <p>The shipment quantity is the sum of the asset quantities shipped for each shipment line.</p> <div style="background-color: #e0f2f1; padding: 5px; border: 1px solid #ccc;"> <p> <b>Important:</b> The <b>Shipment quantity</b> field is available with Enterprise Asset Management version 9.1.0 onwards.</p> </div>
Received by	User who received the shipment.
Ignore stale check	Option to ignore stale checks for the shipment.

c. Select **Save**.

## Create a multi-asset onboarding process

Onboard multiple assets at one go by creating a multi-asset onboarding playbook.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

### About this task

An enterprise asset technician submits an onboarding order. As an enterprise asset manager, you can work on the Multi-asset onboarding task associated with the onboarding order using the Onboarding playbook.

You can perform inline editing directly in the playbook. This capability enables you to change a value in a record directly instead of opening the record and updating the values on the form.

To close an onboarding task, you should either complete or skip all the activities in the playbook.

### Procedure

1. Navigate to **All > Enterprise Asset Workspace > Asset operations**.
2. From the **Onboarding** list, select **Onboarding tasks**.
3. Select the onboarding task record for which you want to create a multi-asset onboarding process.
4. Select the **Onboarding playbook** tab.  
The Multi-asset onboarding playbook is displayed.

5. Review or enter details in the **Review model details** lane.
6. Select **Mark as complete** to proceed to the next lane.  
After you complete entering details in the Review model lane, all other review assets activities are unlocked.
7. Continue to review or enter details in all the lanes until you reach the last lane (Deployment).
8. Review and then complete or skip the **Deployment** activity.

- Create a deploy task.

a. In the **Location** field, select the location where you want to deploy the asset.

**i Note:** This field is required to deploy the asset.

b. In the **Assigned to** field, select the person to whom the asset should be assigned.

**i Note:** By default, this field is auto-populated with the value that you selected in the **Reserved for** field when you performed the **Review assets assignment** activity.

c. In the **Create deploy task** field, select **true**.

d. Select **Mark as complete**.

Based on the value of the `com.sn_eam.default_deployment_task` asset property set by your enterprise administrator, either of the following deploy tasks are created:

- If the value is set to **sn\_eam\_deploy\_asset\_task**, an Enterprise Deploy Asset task is created for each asset that should be deployed. The deploy tasks are listed in the **Deploy Asset task** tab.
- If the value is set to **wm\_task**, a Work order task is created for each asset that should be deployed. The deploy tasks are listed in the **Work Order Task** tab.

In the deploy task that's created, the **Assignment group** and the **Assigned to** fields are auto-populated with the values that you selected in the **Support group** and **Supported by** fields when you performed the **Review assets management** activity.

**i Note:** You can assign a work order task only to the Enterprise Field Technicians support group.

- Skip the Deployment activity by selecting **Skip**.

The asset technicians complete the deploy tasks assigned to them. For more information, see [Complete and close the Pick Up task for an enterprise asset](#) and [Complete and close a work order for an enterprise asset](#).

9. After all the lanes show a status of skipped or complete, select **Close Task** to complete the multi-asset onboarding process.  
Your assets are successfully onboarded. The onboarding task is completed and the request and requested item's state changes to **Closed Complete**.

## Managing enterprise asset move orders

You can use move orders to move in-use or consumed enterprise assets from one location to another.

When you submit a move order, the Enterprise Asset Management application automatically generates an enterprise move line record for each enterprise asset that you include in the order. These records enable you to individually track and manage the movement of each enterprise asset in your move order.

For each enterprise move line record within a move order, you must indicate how you are going to move the given enterprise asset. You can choose to ship the enterprise asset through a third-party shipping carrier or move the enterprise asset locally without shipping it. Based on the option that you choose, you must complete all subsequent tasks to move the enterprise asset and update the enterprise move line record with a status of Completed. After every enterprise move line record within a move order reaches a status of Completed, the move order is marked as complete.

### Submitting an enterprise asset move order

You can submit an enterprise asset move order through either the ServiceNow® Service Catalog or the Inventory view of the Enterprise Asset Workspace.

### Submit an enterprise asset move order through the Service Catalog

Use the ServiceNow® Service Catalog to submit a move order so that you can move in-use or consumed enterprise assets between locations.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager or end user

**Note:** The sn\_eam.enterprise\_asset\_manager role can submit move orders for any enterprise assets within a deployment. The end user role can submit move orders for only assigned enterprise assets.

### Procedure

1. Navigate to **All > Service Catalog > Enterprise Asset Lifecycle**.
2. From the list of available Enterprise Asset Lifecycle catalog items, select **Asset Move Order**.
3. On the Catalog item to initiate an asset move order form, fill in the fields.

#### Catalog item to initiate an asset move order form

Field	Description
Requested for	User who the move order is being submitted for. If you specify a user in this field, the move order can include enterprise assets that are assigned only to that user.
Assignment group	Group that you want to assign the move order to.
Assigned to	User who you want to assign the move order to.
Move date	Date on which you want to move the enterprise assets.
From location	Location that you want to move the enterprise assets from.
To location	Location that you want to move the enterprise assets to.
Asset(s)	Enterprise assets that you want to include in the move order. You can select from any of the enterprise assets that reside in the location specified in the <b>From location</b> field.  <b>Note:</b> If you select an enterprise asset that contains any child assets, all child assets are also included in the move order.

Field	Description
Notes/ Special Instructions	Additional notes or instructions for the move order.

**4. Select **Submit**.**

**Submit an enterprise asset move order through the Asset operations view**

Use the Asset operations view of the Enterprise Asset Workspace to submit a move order so that you can move in-use or consumed enterprise assets between locations.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**Procedure**

1. From the Enterprise Asset Workspace, navigate to **Asset operations > Moves > Move orders**.
2. Select **New**.
3. On the Create new move order form, fill in the fields.

**Create new move order form**

Field	Description
Requested for	User who the move order is being submitted for. If you specify a user in this field, the move order can include enterprise assets that are assigned only to that user.
Move date	Date on which you want to move the enterprise assets.
Assignment group	Group that you want to assign the move order to.
Assigned to	User who you want to assign the move order to.
From location	Location that you want to move the enterprise assets from.
To location	Location that you want to move the enterprise assets to.
Additional information	Additional information about the move order.

**4. Select **Save**.**

The form closes and you are automatically redirected to the new move order record.

**What to do next**

Add enterprise assets to the move order. See [Add enterprise assets to a move order](#) for detailed instructions.

**Add enterprise assets to a move order**

Add the enterprise assets that you want to include in a move order.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

## Procedure

1. From the Enterprise Asset Workspace, navigate to **Asset operations > Moves > Move orders**.
2. From the list of available move orders, select the move order that you want to add enterprise assets to.  
The move order record opens.
3. On the move order record, select the **Enterprise move lines** tab.
4. Select **Add**.  
The Add assets dialog box opens.
5. In the dialog box, select the check box for every enterprise asset that you want to include in the move order.

You can select from any of the enterprise assets that reside in the location specified in the **From location** field of the move order.

**Note:** If you select an enterprise asset that contains any child assets, all child assets are also included in the move order.

6. Select **Add**.

## Result

The selected enterprise assets are added to the move order.

## Remove enterprise assets from a move order

Remove any enterprise assets that you no longer want to include in a move order.

## Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

## Procedure

1. From the Enterprise Asset Workspace, navigate to **Asset operations > Moves > Move orders**.
2. From the list of available move orders, select the move order that you want to remove enterprise assets from.  
The move order record opens.
3. On the move order record, select the **Enterprise move lines** tab.
4. From the list of enterprise move lines, select the check box for every enterprise asset that you want to remove.

**Note:** Each enterprise move line corresponds with a specific enterprise asset.

**Note:** If you select an enterprise asset that contains any child assets, all child assets are also removed from the move order.

5. Select **Remove**.

## Result

The selected enterprise assets are automatically updated with a status of Cancelled. All enterprise move tasks that are associated with the corresponding enterprise move lines are also updated with a state of Closed Incomplete.

### Completing an enterprise asset move order

After you submit a move order for the in-use or consumed enterprise assets that you want to move, you must perform various tasks to complete the order.

You must complete the required set of tasks for each enterprise asset that is included in the move order. After you complete all required tasks for an enterprise asset, the corresponding enterprise move line updates with a status of Completed. Once all enterprise move lines reach a status of Completed, the move order is complete.

### Complete the Prepare task for a moving enterprise asset

Complete the Prepare task for an enterprise asset so that you can proceed with moving the asset between locations.

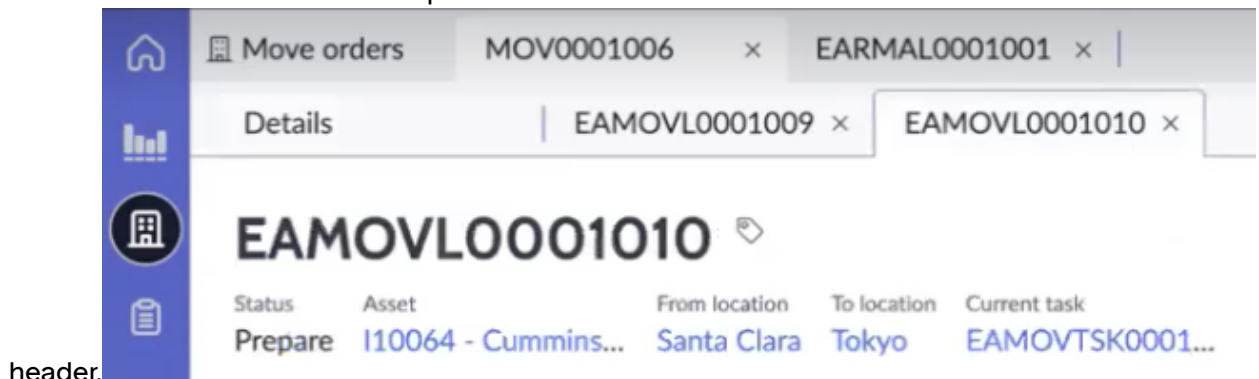
### Before you begin

Role required: `sn_eam.enterprise_asset_manager`, `sn_eam.enterprise_admin`, or `enterprise_asset_technician`

### Procedure

1. From the Enterprise Asset Workspace, navigate to **Asset operations > Moves > Move orders**.
2. From the list of available move orders, select the move order that you want to complete. The move order record opens.
3. On the move order record, select the **Enterprise move lines** tab.
4. From the list of available enterprise move lines, select the enterprise move line for the enterprise asset that you want to move. The enterprise move line record opens.
5. On the **Enterprise move tasks** tab, select the task number for the **Prepare** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise move line record



header.

The Prepare task opens.

6. On the **Details** tab of the Prepare task, fill in the fields.

### Details tab

Field	Description
Enterprise move task	
Assignment group	Group that the task is assigned to. This field populates automatically based on the group that the entire move order is assigned to.
Assigned to	User who the task is assigned to. This field populates automatically based on the user who the entire move order is assigned to.

Field	Description
Scheduled date	Date and time at which the task is scheduled to be completed.
Priority	Priority of the task.
Move type	Type of enterprise asset move. Select one of the following options: <ul style="list-style-type: none"> <li>○ <b>Local Move</b>: Option to move the enterprise asset to a different location without shipping it.</li> <li>○ <b>Ship</b>: Option to ship the enterprise asset to a different location.</li> </ul>
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

**7. Select Close Task.**

**Result**

The Prepare task is automatically updated with a state of Closed Complete.

If you set the **Move type** field to **Local Move**, the Enterprise Asset Management application automatically generates a corresponding Local move task for the enterprise move line. If you set the **Move type** field to **Ship**, the Enterprise Asset Management application automatically generates a corresponding Ship task for the enterprise move line.

**What to do next**

If you set the **Move type** field to **Local Move**, proceed to [Complete the local move for an enterprise asset](#) to complete the move.

If you set the **Move type** field to **Ship**, proceed to [Complete the shipment for a moving enterprise asset](#) to complete the shipment.

**Complete the local move for an enterprise asset**

Perform all tasks that are required to move an enterprise asset without shipping it. You must perform these tasks if you set the **Move type** field to **Local Move** in an enterprise move line.

**Before you begin**

Before you can proceed with the local move, you must complete the Prepare task for the enterprise asset. See [Complete the Prepare task for a moving enterprise asset](#) for detailed instructions.

Role required: sn\_eam.enterprise\_asset\_manager, sn\_eam.enterprise\_admin, or enterprise\_asset\_technician

**Procedure**

- 1.** From the Enterprise Asset Workspace, navigate to **Asset operations > Moves > Move orders**.
- 2.** From the list of available move orders, select the move order that you want to complete. The move order record opens.
- 3.** On the move order record, select the **Enterprise move lines** tab.

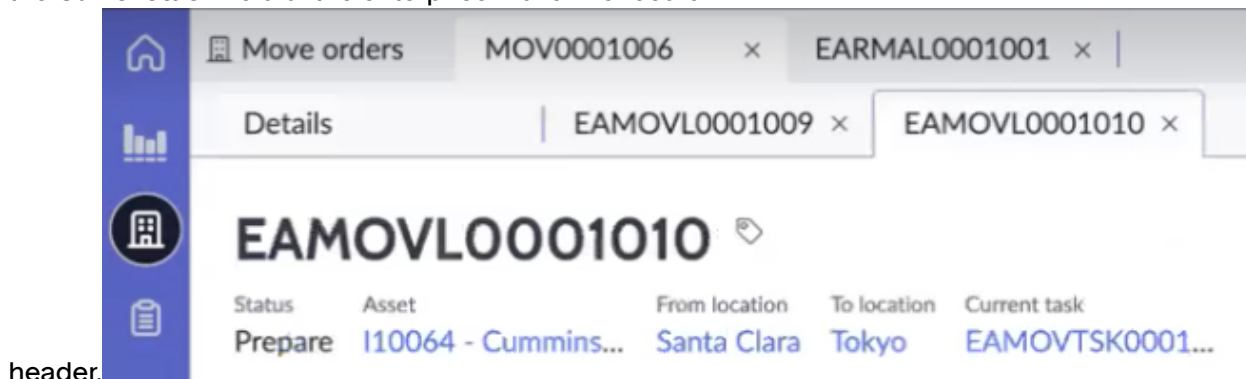
4. From the list of available enterprise move lines, select the enterprise move line for the enterprise asset that you want to move.  
The enterprise move line record opens.
5. Complete and close the Local move task for the enterprise move line.

By default, this Local move task applies only to the enterprise asset that is associated with the given enterprise move line. If you want to apply the same Local move task to additional enterprise assets within your move order, you can include those assets in the task.

To successfully complete and close this task, the enterprise asset must be moved to the target location without being shipped.

- a. On the **Enterprise move tasks** tab, select the task number for the **Local move** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise move line record



The Local move task opens.

- b. On the **Details** tab of the Local move task, fill in the fields.

**Details tab**

Field	Description
Enterprise move task	
Assignment group	Group that the task is assigned to. This field populates automatically based on the group that the entire move order is assigned to.
Assigned to	User who the task is assigned to. This field populates automatically based on the user who the entire move order is assigned to.
Scheduled date	Date and time at which the task is scheduled to be completed.
Priority	Priority of the task.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

- c. Close the task.

- To close the task without including additional enterprise assets from your move order, select **Close Task**.
- To close the task after including additional enterprise assets from your move order, use the following steps:

**i. Select **Include more assets**.**

The Select assets dialog box opens.

- ii.** In the dialog box, select the check box for each additional enterprise asset that you want to include.

**iii. Select **Close Task**.**

The Local move task is automatically updated with a state of Closed Complete.

## Result

The enterprise move line is automatically updated with a status of Completed.

## What to do next

Move all remaining enterprise assets that are included in the move order. After all corresponding enterprise move lines reach a status of Completed, the move order is complete.

## Complete the shipment for a moving enterprise asset

Perform all tasks that are required to ship an enterprise asset. You must perform these tasks if you set the **Move type** field to **Ship** in an enterprise move line.

## Before you begin

Before you can proceed with the shipment, you must complete the Prepare task for the enterprise asset. See [Complete the Prepare task for a moving enterprise asset](#) for detailed instructions.

Role required: sn\_eam.enterprise\_asset\_manager, sn\_eam.enterprise\_admin, or enterprise\_asset\_technician

## Procedure

- 1.** From the Enterprise Asset Workspace, navigate to **Asset operations > Moves > Move orders**.
- 2.** From the list of available move orders, select the move order that you want to complete.  
The move order record opens.
- 3.** On the move order record, select the **Enterprise move lines** tab.
- 4.** From the list of available enterprise move lines, select the enterprise move line for the enterprise asset that you want to move.  
The enterprise move line record opens.
- 5.** Complete and close the Ship task for the enterprise move line.  
To successfully complete and close this task, the enterprise asset must be shipped to the target location.

- a.** On the **Enterprise move tasks** tab, select the task number for the **Ship** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise move line record header.

The Ship task opens.

b. On the **Details** tab of the Ship task, fill in the fields.

**Details tab**

Field	Description
Enterprise move task	
Assignment group	Group that the task is assigned to. This field populates automatically based on the group that the entire move order is assigned to.
Assigned to	User who the task is assigned to. This field populates automatically based on the user who the entire move order is assigned to.
Scheduled date	Date and time at which the task is scheduled to be completed.
Priority	Priority of the task.
Shipment details	
Shipping carrier	Shipping carrier through which the enterprise asset was shipped.
Ship date	Date on which the enterprise asset was shipped.
Tracking number	Tracking number that enables you to track the status and location of the shipment.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

c. Select **Close Task**.

The Ship task is automatically updated with a state of Closed Complete. The Enterprise Asset Management application then automatically generates a corresponding Receive task for the enterprise move line.

6. Complete and close the Receive task for the enterprise move line.

To successfully complete and close this task, the enterprise asset must be received at the target location.

a. On the **Enterprise move tasks** tab, select the task number for the **Receive** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise move line record header.

The Receive task opens.

b. On the **Details** tab of the Receive task, fill in the fields.

**Details tab**

Field	Description
Enterprise move task	

Field	Description
Assignment group	Group that the task is assigned to. This field populates automatically based on the group that the entire move order is assigned to.
Assigned to	User who the task is assigned to. This field populates automatically based on the user who the entire move order is assigned to.
Scheduled date	Date and time at which the task is scheduled to be completed.
Priority	Priority of the task.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

### c. Select **Close Task**.

The Receive task is automatically updated with a state of Closed Complete.

### Result

The enterprise move line is automatically updated with a status of Completed.

### What to do next

Move all remaining enterprise assets that are included in the move order. After all corresponding enterprise move lines reach a status of Completed, the move order is complete.

## Onboarding multiple enterprise assets in the Enterprise Asset Workspace

Onboard multiple enterprise assets at one go by creating onboarding orders in the Asset operations view.

As an enterprise asset technician, you should perform the following actions to initiate the onboarding of enterprise assets:

1. Create an onboarding order.
2. Add details of the assets that you want to onboard and submit the onboarding order.

The enterprise asset manager reviews and completes the activities listed in the Onboarding playbook to onboard the requested assets. For details, see [Create a multi-asset onboarding process](#).

### Create an onboarding order for enterprise assets in the Enterprise Asset Workspace

Create an onboarding order in the Asset operations view to initiate the onboarding of multiple enterprise assets.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_technician

### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Asset operations**.
2. From the **Onboarding** list, select **Onboarding order**.

3. Select **New**.

4. On the form, fill in the fields.

**Create New Asset Onboarding form**

Field	Description
Requested for	Person for whom the asset is requested. This field is optional.
Stockroom	Stockroom where onboarded asset will be stored. This field is required. <b>Note:</b> When you select the stockroom, the <b>Location</b> field is automatically populated with the stockroom location.
Due date	Date by when the asset onboarding should be complete. This field is optional.

5. Determine whether you want to onboard assets of an existing model or a new model.

Type of asset model	Action
<b>Existing model</b>	In the <b>Model</b> field, select the asset model.
<b>New model</b>	<p>a. Select the <b>Is new model</b> check box.</p> <p>b. Enter the values in the following fields:</p> <ul style="list-style-type: none"> <li>▪ <b>Manufacturer name</b></li> <li>▪ <b>Model name</b></li> <li>▪ <b>Model number</b></li> <li>▪ <b>Short description</b></li> </ul>

6. Select **Save**.

**Result**

- An onboarding order in the Draft stage is created and displayed in the Onboarding order list.
- The **Add asset details** option is displayed on the onboarding order.

**What to do next**

Add asset details to the onboarding order. For details, see [Add details of the enterprise assets to an onboarding order](#).

**Add details of the enterprise assets to an onboarding order**

Specify the details of the enterprise assets that you want to onboard through an onboarding order.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_technician

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Asset operations**.
2. From the **Onboarding** list, select **Onboarding order**.
3. Select the onboarding order for which you want to add asset details.
4. Select **Add asset details**.
5. In the **Add assets** dialog box, enter the asset details.  
The **Serial number** field is required. You can also enter the values for the following fields:
  - **Asset tag**
  - **RFID tag**
  - **Additional info**
6. For each asset that you want to onboard, select the Add Row icon ( **+** ) and enter the asset details.
7. Select **OK**.
8. Select **Save**.  
The assets that you added to the onboarding order are displayed in the **Onboarding Assets** tab.
9. Select **Submit**.

## Result

- The stage of the onboarding order changes to Review.
- A Multi-asset onboarding task is created and displayed in the **Onboard Asset Tasks** tab.

## Normalizing enterprise models

To standardize enterprise models, the data must be normalized. The normalization process enables you to normalize your manufacturer, model name, model number, and model type data of your enterprise models.

If a specific model type, library, or product model is not available in the Enterprise Asset Management Content Service, you have the option to create a custom enterprise model type, custom enterprise model library, and a custom enterprise product model.

### Create custom enterprise model type

If you have an enterprise model type that isn't represented in the Enterprise Asset Management Content Service yet, you can create a custom model type.

### Before you begin

Role required: sn\_eam.enterprise\_admin

## Procedure

1. Navigate to **All > Enterprise Asset Workspace > Normalization**.
2. Select the **Custom enterprise model type** tab.
3. Select **New**.
4. Fill in the form details.

Field	Description
Name	Display name of the enterprise model type.
UNSPSC commodity ID	United Nations Standard Products and Services Code of the model type.
Description	A detailed description of the enterprise model type.
Active	Indicates that the model is active.

**5. Select Save.**

After the model type is created, normalize the model type.

**Create custom enterprise model library**

If you have an enterprise model library that isn't represented in the Enterprise Asset Management Content Service yet, you can create a custom model library.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

**Procedure**

1. Navigate to **All > Enterprise Asset Workspace > Normalization.**
2. Select the **Custom enterprise model libraries** tab.
3. Select **New.**
4. Fill in the form details.

Field	Description
Model number	Assign a number to the model.
Model name	Name of the model.
Description	A detailed description of the model.
Active	Indicates that the model is active.
Exclude from content service	Option that excludes the model library details from being transferred to the Enterprise Asset Management Content Service even though you opted-in.

**5. Select Save.**

After the model library is created, normalize the model library.

**Create custom enterprise product models**

If you have a product model that is not represented in the Enterprise Asset Management Content Service yet, you can create a custom product model.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

**Procedure**

1. Navigate to **All > Enterprise Asset Workspace > Normalization**.
2. Select the **Custom enterprise product models** tab.
3. Select **New**.
4. Fill in the form details.

Field	Description
Model Name	Name of the enterprise product model.
Manufacturer	Name of the manufacturer of the enterprise product model.
Model type	The model type.
Description	A detailed description of the product model.
Active	Indicates that the model is active.
Exclude from content service	Option that excludes the product model details from being transferred to the Enterprise Asset Management Content Service even though you opted-in.

5. Select **Save**.  
After the product model is created, normalize the product model.

## Managing enterprise asset inventory and contracts

Create and manage your enterprise asset inventory and contracts.

### Create and manage enterprise asset inventory

Keep track of your enterprise assets by efficiently managing inventory.

### Overview of managing your enterprise asset inventory

Manage your asset inventory through the following tasks:

- [Create stockroom for enterprise assets](#)
- [View stockroom details in the Enterprise Asset Workspace](#)
- [Create a stock rule for enterprise assets](#)
- [Create a stockroom type for enterprise assets](#)
- [Create a disposal order in the Enterprise Asset Workspace](#)
- [Create a transfer order in Enterprise Asset Workspace](#)
- [Request a loaner asset in Enterprise Asset Workspace](#)
- [Requesting a Return Merchandise Authorization \(RMA\) for defective enterprise assets](#)
- [Managing recalled enterprise assets](#)
- [Manage repair of defective assets in your stockroom in the Enterprise Asset Workspace](#)
- [Manage picking enterprise assets within your stockroom for Enterprise Asset Management workflows](#)

- [Audit enterprise asset inventory](#)
- [Close an enterprise asset reclamation request](#)

### Create stockroom for enterprise assets

Create a stockroom in the Enterprise Asset Management application and assign assets to it.

#### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

#### Procedure

1. Navigate to **Enterprise Asset Workspace > Inventory > All stockrooms**.
2. Select **New**.  
The Create New Stockroom page opens.
3. On the form, fill in the fields.

Field	Description
Name	Display name and identifier of the stockroom.
Assignment group	Group that primarily uses the stockroom.
Manager	Person in charge of the stockroom. Receives restocking notifications and requests for the stockroom's stock rules.
Location	Physical location of the stockroom.
Type	Type of stockroom. Choose from the following options: <ul style="list-style-type: none"> <li>○ Central Warehouse</li> <li>○ Field Agent</li> <li>○ FSL</li> <li>○ On site</li> <li>○ PUDO</li> <li>○ Warehouse</li> </ul>
Hours of operation	Hours during which the stockroom operates.
Description	Description of the stockroom.
Exclude from distribution channels	Option to exclude the stockroom from all stockroom distribution channels, which link stockrooms together for more efficient asset sourcing and transfers.
Exclude from service locations	Option to exclude the stockroom from all service locations in which you are completing work orders or work order tasks.
External	Indicates if this stockroom is managed internally (check box is cleared) or is managed externally by a third party (check box is selected).

**4. Select Save.**

The newly created stockroom appears in the **All stockrooms** tab.

**Add a distribution channel to a stockroom in the Enterprise Asset Workspace**

Add a distribution channel to a stockroom so that you can link that stockroom with other geographically-related stockrooms. By linking your stockrooms, you can efficiently source and transfer assets between those stockrooms. You can also assign a rank to each linked stockroom to specify the order of stockrooms that you can source and transfer assets between.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

**Procedure**

1. From the Enterprise Asset Workspace, open the Inventory view.
2. On the **All stockrooms** tab, select the stockroom that you want to add a distribution channel to. The stockroom record opens.
3. On the **Distribution Channel** tab of the stockroom record, select **New**.
4. On the form, fill in the fields.

**Create New Stockroom Distribution Channel form**

Field	Description
Channel Stockroom	Stockroom that you want to link as part of the distribution channel.
Rank	Rank of the stockroom that you want to link. If the distribution channel contains more than one linked stockroom, this rank corresponds directly with the order of linked stockrooms that you can source and transfer assets between. Enter a numerical value, such as 1 or 5. The lower the numerical value is, the higher the stockroom is within the order of linked stockrooms.
Active	Option that indicates if the linked stockroom is active within the distribution channel.

**5. Select Save.**

6. Repeat steps 3 to 5 for each stockroom that you want to link as part of the distribution channel.

**Add service locations to a stockroom in the Enterprise Asset Workspace**

Add service locations to a stockroom so that you can source, deploy, and retire its assets across multiple geographic locations.

**Before you begin**

Role required: sn\_eam.enterprise\_admin

**About this task**

By default, you can source, deploy, and retire the assets of a stockroom only within the specified stockroom location. By adding additional service locations to a stockroom, you can source, deploy, and retire its assets across various locations.

**Procedure**

1. From the Enterprise Asset Workspace, open the Inventory view.
2. On the **All stockrooms** tab, select the stockroom that you want to add service locations to. The stockroom record opens.
3. On the **Service locations** tab of the stockroom record, select **Add**. The Add service locations dialog box opens.
4. In the dialog box, select the check box for every service location that you want to add to the stockroom.
5. Select **Add**.

**View stockroom details in the Enterprise Asset Workspace**

Use stockroom records to view detailed information about the stockrooms that your enterprise, hardware, consumable, bundle, loaner, and other assets reside in.

**Before you begin**

The following stockroom record tabs are available only if you've installed and activated the Hardware Asset Management application on your ServiceNow® instance:

- **Hardware**
- **Bundles**
- **Software Licenses**
- **Other Assets**
- **Hardware Loaner Pool**
- **Hardware Asset Audits**

To install and activate the application, request it from the [ServiceNow Store](#) .

Role required: sn\_eam.enterprise\_admin, sn\_eam.enterprise\_asset\_manager, or enterprise\_asset\_technician

**Procedure**

1. From the Enterprise Asset Workspace, open the Inventory view.
2. Select the **All stockrooms** tab.
3. From the list of available stockrooms, select the stockroom for which you want to view additional details. The stockroom record opens.
4. Use the stockroom record tabs to view additional details about the stockroom.

**Stockroom record tabs**

Tab	Description
Details	<p>Get a detailed overview of the stockroom, including open stockroom tasks and general stockroom details.</p> <p>The Open stockroom tasks cards show all open orders, audits, and requests that are associated with the stockroom. Select a card to view the list of corresponding order, audit, or request records. If you</p>

Tab	Description
	<p>select a card for any open Hardware Asset Management orders, audits, or requests, the list opens in the Hardware Asset Workspace.</p> <p>In addition, use the interactive map to view the location of the stockroom based on the specified stockroom address. Expand the map to view all supported service locations and all stockrooms that are linked as part of the stockroom distribution channel.</p>
Task Timeline	<p>View the timeline of all stockroom tasks. Each stockroom task is added to the timeline based on either the creation date, the scheduled date, the start or return date, or the shipping date. Select a task to open the corresponding task record. If you select a Hardware Asset Management task, the record opens in the Hardware Asset Workspace.</p> <p>Use the timeline format filter at the top-right corner of the tab to change the format and duration in which you view the timeline. You can choose to view the timeline in a calendar format or timeline format. The calendar format supports the following timeline durations:</p> <ul style="list-style-type: none"> <li>○ <b>Day</b></li> <li>○ <b>Work Week</b></li> <li>○ <b>Week</b></li> <li>○ <b>Month</b></li> </ul> <p>The timeline format supports the following timeline durations:</p> <ul style="list-style-type: none"> <li>○ <b>Day</b></li> <li>○ <b>Week</b></li> <li>○ <b>4 Weeks</b></li> </ul>
<p>Hardware</p> <p><b>i Note:</b> This tab appears only if you have installed and activated the Hardware Asset Management application.</p>	<p>Create and view the hardware assets that reside in the stockroom.</p> <p>If you are creating a hardware asset, you are automatically redirected to the corresponding form in the Hardware Asset Workspace.</p>
Enterprise Assets	Create and view the enterprise assets that reside in the stockroom.
Consumables	Create and view the consumable assets that reside in the stockroom.
Bundles	Create and view the asset bundles that reside in the stockroom.

Tab	Description
<p><b>Note:</b> This tab appears only if you have installed and activated the Hardware Asset Management application.</p>	<p>If you are creating an asset bundle or selecting an existing asset bundle, you are automatically redirected to the corresponding form or record in the Hardware Asset Workspace.</p>
<p>Pallets</p>	<p>Create and view the pallet assets that reside in the stockroom.</p>
<p><b>Note:</b> This tab appears only if you have installed and activated the Hardware Asset Management application.</p>	<p>Create and view the software licenses that reside in the stockroom.</p> <p>If you are creating a software license or selecting an existing software license, you are automatically redirected to the corresponding form or record in the Hardware Asset Workspace.</p>
<p><b>Note:</b> This tab appears only if you have installed and activated the Hardware Asset Management application.</p>	<p>Create and view all other types of assets that reside in the stockroom.</p> <p>If you are creating an asset, you are automatically redirected to the corresponding form in the Hardware Asset Workspace.</p>
<p><b>Note:</b> This tab appears only if you have installed and activated the Hardware Asset Management application.</p>	<p>View all hardware loaner assets that reside in the stockroom.</p> <p>If you select a loaner asset, you are automatically redirected to the corresponding record in the Hardware Asset Workspace.</p>
<p>Enterprise Loaner Pool</p>	<p>View all enterprise loaner assets that reside in the stockroom.</p>
<p>Service Locations</p>	<p>View all service locations that are supported by the stockroom.</p>
<p>Distribution Channel</p>	<p>Create and view the list and ranking of all linked stockrooms that you can source and transfer enterprise assets between. For more information on distribution channels, see <a href="#">Add a distribution channel to a stockroom in the Enterprise Asset Workspace</a>.</p>

Tab	Description
Hardware Asset Audits  <b>Note:</b> This tab appears only if you have installed and activated the Hardware Asset Management application.	Create and view audits for your hardware asset inventory.  If you are creating an audit or selecting an existing audit, you are automatically redirected to the corresponding form or record in the Hardware Asset Workspace.
Enterprise Asset Audits	Create and view audits for your enterprise asset inventory.

5. View all active stock rules that are configured for the stockroom.

- a. From the sidebar of the stockroom record, select the Stock rules icon (📌).
- b. View each stock rule to determine if your available stock is within the specified threshold. You can also determine if the corresponding model has reached the end of sale.

**Create a stock rule for enterprise assets**

Create a stock rule to automatically resupply a stockroom based on vendor purchase orders or transfer orders.

**Before you begin**

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**About this task**

Stock rules control what happens when the inventory of a particular asset in a particular stockroom reaches a specified threshold. When available asset quantity drops below a specified quantity, the stock rule automatically creates an enterprise stock order request. Once the enterprise stock order request is created, the enterprise manager goes through the process of sourcing and receiving that order.

If a stock rule is created for an enterprise model that reaches the threshold limit, a notification is sent to the stockroom manager and a stock order request is automatically created.

**Procedure**

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory > Stock rules**.
2. Select **New**.  
The Create New Stock Rule page opens.
3. On the form, fill in the details.

Model	Product model to which the rule applies.
Threshold	Quantity that the stock must reach to trigger restocking. For example, enter a threshold of 10 for a laptop computer that should be

	<p>restocked when inventory drops below 10 in the specified stockroom.</p> <p><b>Note:</b> If a stock rule is created for an enterprise model that reaches the threshold limit, a notification is sent to the stockroom manager and a stock order request is automatically created.</p>
Restocking option	<p>Location where additional supplies should come from.</p> <p>If Procurement is not active, then restocking option is Stockroom only. Otherwise, select one of the following:</p> <ul style="list-style-type: none"> <li>○ Stockroom: creates a transfer order to obtain the asset from another stockroom.</li> <li>○ Vendor: sends an email to the stockroom manager to order from a vendor. In addition to the email notification, a purchase order and purchase order line item are created.</li> </ul>
Stockroom	Current physical location of the asset.
Order size	<p>Minimum order quantity for stockroom transfers or vendor purchases. ServiceNow calculates the smallest multiple of the order size needed to restock the item above the threshold. For example, there are 3 laptops in stock with a threshold of 10 and the Stockroom option selected. If the order size is set to 4, the system creates a transfer order for 8 laptops to exceed the threshold and satisfy the rule (3 in stock + 8 ordered = 11). When restocking from a vendor, ServiceNow sends an email to the stockroom manager showing the total number of items to order, as multiples of the order size.</p>
Active	Indicates whether this stock rule active (check box is selected). Clearing this check box prevents the stock rule from restocking automatically.
OT stock rule	<p><b>Important:</b> This option is available with Enterprise Asset Management version 9.0 and later.</p> <p>Indicates whether the stock rule was created in the OT Asset Workspace.</p> <p>This check box appears on the stock rule form only for hardware models in both the OT Asset Workspace and Enterprise Asset Workspace. However, only the OT asset</p>

	manager can select or deselect this check box in the OT Asset Workspace.
--	--

**4. Select Save.**

**Result**

- The stock rule that you created appears in the **Stock rules** tab.
- If the restocking option was set to **Vendor**, the **Stock orders** tab will be displayed. All the stock orders that are created using this stock rule are listed under the Stock orders tab.

**i Important:** The Stock orders tab is available with Enterprise Asset Management version 9.0 and later.

- If the restocking option was set to **Stockroom**, the **Transfer orders** tab will be displayed. All the transfers orders created using this stock rule are listed under the **Transfer orders** tab.

**i Important:** The Transfer orders tab is available with Enterprise Asset Management version 9.0 and later.

For stock orders created through the restocking by a vendor, the stock order tab shows all stock orders generated by that stock rule. But for transfer orders, the tab only displays transfer orders after the upgrade.

**Create a stockroom type for enterprise assets**

If the base system stockroom types don't meet your needs, you can create a custom stockroom type in the Enterprise Asset Workspace.

**Before you begin**

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**About this task**

Stockroom types are categories of stockrooms. For detailed information on stockroom types, see [Stockroom Types](#) 

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Inventory > Stockroom types**.
2. Select **New**.
3. On the form, fill in the details.

Field	Description
Name	Display name of the stockroom type.
Description	General information about the stockroom type.
Priority	Level of precedence for this type of stockroom.
Value	Internal identifier of the stockroom type.
Shipment required	Option that determines if stockrooms of this type require shipment by default.

Field	Description
External stockroom	Indicates if stockrooms of this type are managed internally (check box cleared) or managed externally by a third party (check box selected).

**4. Select Save.**

The newly created stockroom type appears in the **Stockroom types** tab.

**Audit enterprise asset inventory**

Audit your enterprise asset inventory to learn where your assets are and what their current status is.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**About this task**

You can use the [Mobile Agent application for Enterprise Asset Management](#) to scan asset tags or enter them manually. If an asset is scanned but its asset tag does not exist in our database, then by default, that asset is mapped to an unknown model record. The unknown model record appears on the **All enterprise models** tab of the **Model Management** view in the Enterprise Asset Workspace. The asset manager manually associates this asset to the appropriate model. You can't change, update or delete an unknown model.

**Note:** Starting with Enterprise Asset Management version 9.0, you can also audit the licensed hardware assets in the Enterprise Asset Workspace only if the Hardware Asset Management application is activated.

**Procedure**

1. Navigate to **All > Enterprise Asset Workspace > Inventory > Asset audits**.
2. Select **New**.  
The Create New Enterprise Asset Audit page opens.
3. On the form, fill in the fields.

**Enterprise Asset Audit**

Field	Description
Audit number	Audit reference number.
Assignment group	Group to which you want to assign the audit.
Assigned to	Person responsible for the audit.
Type	Type of the audit. The available values are <ul style="list-style-type: none"> <li>○ Location</li> <li>○ Stockroom</li> </ul>
Status	Current status of the audit.
Location	Location in which you want to perform the audit.
<p><b>Note:</b> This field appears only if you set the <b>Type</b> field to <b>Location</b>.</p>	

Field	Description
Include child locations  <i><b>Note:</b></i> This field appears only if you set the <b>Type</b> field to <b>Location</b> .	Option to include child locations in the audit.
Stockroom  <i><b>Note:</b></i> This field appears only if you set the <b>Type</b> field to <b>Stockroom</b> .	Stockroom in which you want to perform the audit.
Model category	Model category that you want to audit.  This field is available with Enterprise Asset Management version 9.0 and later.
Aisle and space  <i><b>Note:</b></i> This field appears only if you set the <b>Type</b> field to <b>Stockroom</b> .	Aisle and space within the stockroom where you want to perform the audit.  This field is available with Enterprise Asset Management version 9.0 and later.
Scheduled date	Date on which you want to perform the audit.
Scan date	Date on which you want to scan the assets.

The asset audit records are stored in the Asset Audits [sn\_itam\_common\_asset\_audit] table.

**4. Select Save.**

The asset audit inventory record is created and appears with **Expected Assets** and **Scanned Assets** tabs. The Audit Results section is activated and shows the details of the audit result when the audit is complete.

**Audit results**

Expected	Number of expected assets that were scanned.
Not expected and location corrected	Number of assets that were scanned but were not expected.
Missing	Number of expected assets that were not scanned.
New	Number of assets that were scanned but do not have a record in your ServiceNow instance.

**Create a disposal order in the Enterprise Asset Workspace**

Create a disposal order for an asset that has reached the end of its life cycle or is no longer functional.

**Before you begin**

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**About this task**

Only assets that are associated with enterprise or pallet models can be disposed of using an enterprise disposal order. You can add simple assets; multi-component assets, which include pre-assembled and user-assembled assets; and pallet assets with children to an enterprise disposal order.

**Note:** If you are adding a multi-component asset or a pallet asset with children to a disposal order, any changes that you make to the parent asset are automatically applied to all child assets.

Use the Flow Designer application to create the disposal flow to take you through the entire asset disposal order process.

The disposal order goes through various stages before it's completed. Each stage is associated with a disposal task. To move through the various stages, close each task until you reach the last stage. After you complete the last task, the disposal order is complete. For more information about the disposal order stages, see disposal order stages.

**Note:** You can cancel a disposal order until it reaches the transit stage of the workflow. Once your disposal order is in the confirmation stage, you can't cancel that order. You can cancel a task that is in a draft, scheduling, or transit stage by selecting **Closed Incomplete** from the State list and closing the task.

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Inventory > Disposal orders.**
2. Select **New.**  
The Create New Enterprise Disposal Order page opens.
3. On the form, fill in the details.

Field	Description
Number	Reference number of the disposal order.
Stockroom	Stockroom where the asset is disposed from.
Location	Location of the stockroom where the asset gets disposed from. The location automatically appears after you select a stockroom.  If you change the location and no location is associated with the selected stockroom, the stockroom field becomes empty. In this scenario, you can select a stockroom from the stockroom list for a specified location.
Assigned to	Person responsible for disposing of the asset.
Stage	Current stage of the disposal order.
Vendor	Vendor that you want to dispose the asset to.

4. Select **Save.**  
The new disposal order is created and the disposal order workflow is triggered.

5. On the Pickup Details form, fill in the fields.

**Pickup Details form**

Field	Description
Scheduled date	Date when you want to dispose of the asset.
Pickup contact name	Name of the person from the vendor who will pick up the asset to dispose of.
Pickup details	Details of the pickup.
Additional info	Any message you want to add.

6. Open the **Disposable Assets** tab.

7. Select **Add** to select the assets that you want to dispose of.

8. Select the assets that you want to dispose of and select **Add**.

Only assets that are in a non-terminal state appear in the list. A non-terminal state is any state in which the asset can transition into a different state.

Under the **Enterprise Disposal Tasks** tab, a Verify Assets task is created.

9. Open the **Enterprise Disposal Tasks** tab and select the Verify Assets task.

10. In the Enterprise Disposal Tasks page, select the assets that you want to dispose of and select **Verify**.

The state of the asset changes to In stock and the substate changes to Pending disposal.

11. Select **Close task**.

**Note:** You cannot add additional assets to the disposal order after you complete and close the Verify Assets task.

The draft stage is completed and the scheduling stage is in progress. The next task in the workflow, Schedule pickup, is automatically created and appears in the **Enterprise Disposal Tasks** tab.

12. Select the Schedule pickup task and in the **Vendor** and **Scheduled date** fields, enter the values that you want.

13. Select **Close Task**.

The stage changes to transit and the Asset departure task is created.

14. Select the Asset departure task and in the **Vendor order ID** and **Pickup contact name** fields, enter the value that you want.

15. Select the assets that you want to dispose of and in the **Actions on selected rows** picker, select **Depart**.

The state of the asset changes to in transit and the substate changes to pending disposal.

16. Select **Close Task**.

The stage changes to confirmation and the Vendor confirmation task is created.

17. Select the Vendor confirmation task and then select **Close Task**.

The stage changes to documentation and a Disposal Documentation task is created.

18. Select the Disposal Documentation task and do the following:

a. Select the Attach File icon to attach disposal documentation for the planned assets.

b. Select the assets that you want to dispose of.

**Note:** If your disposal order contains any multi-component assets or pallet assets with children, the parent-child relationships within those assets are no longer applicable when you reach this task. Any changes that you make to a parent asset are no longer automatically applied to its child assets. You must individually select each asset that you want to dispose of, regardless of whether it is a parent or child asset.

**c. Select **Dispose**.**

The state of the asset changes to retired and the sub state changes to disposed.

**d. In the **Certificate of disposal** list, select **Yes**.**

**19. Select **Close Task**.**

All the enterprise disposal tasks are complete and the enterprise disposal order stage changes to completed.

**Create a transfer order in Enterprise Asset Workspace**

Create a transfer order in Enterprise Asset Management to transfer assets from one location to the other.

**Before you begin**

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**Procedure**

- 1. Navigate to **Enterprise Asset Workspace > Inventory > Transfer orders**.**
- 2. Select **New**.**  
The Create New Transfer Order page opens.
- 3. On the form, fill in the details.**

Field	Description
Number	Number of the transfer order.
Stage	Current stage of the transfer order.
From stockroom	The stockroom from which the asset is to be shipped.
To stockroom	The stockroom where the asset is to be shipped.
From location	The location of the stockroom from where the asset is to be shipped.
To location	The location of the stockroom where the asset is to be shipped.
Requested date	The date the transfer order is created.
Delivery by date	
Drop Off	

**4. Select **Save**.**

The transfer order is created and displays the **Transfer Order Lines** tab. You can now create transfer order lines to specify the items that the transfer order comprises of.

## Create transfer order lines in Enterprise Asset Workspace

Create transfer order lines in Enterprise Asset Management to specify the items that comprise a transfer order.

### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

### About this task

A transfer order can contain one or more transfer order lines. Under a single transfer order, all transfer order lines have the same **From location** and **To location**. Each line contains an asset to transfer and the quantity to transfer. The item to transfer is identified by the asset name and the model name. A transfer order line can involve one quantity of a non-consumable asset or multiple quantities of a consumable asset.

### Procedure

1. Navigate to the transfer order in the Enterprise Asset Workspace.
2. In the transfer order, select the **Transfer Order Lines** tab  
The Transfer Order Lines page appears.
3. Select **New**.
4. On the form, fill in the details

Field	Description
Number	Internal unique number identifying the transfer order line.
Transfer Order	The transfer order to which the transfer order line belongs.
Model	Model of the items requested by the transfer order line. For example, a printer. If the Asset field is filled out first, the Model field is automatically filled in with the model corresponding to the asset.
Quantity requested	Number of items requested by the transfer order line. For example, 3 computers are requested to be transferred.
Quantity received	Number of items already received. For example, 3 keyboards are transferred, 2 are received.
Stage	Current stage of the transfer order. Transfer order lines can only be created when a transfer order is in <b>Draft</b> stage.
Request line	Requested item to associate with the transfer order line.
Asset	Asset requested by the transfer order line. For example, a specific printer. The asset can filter on stockrooms.
Quantity remaining	Number of items yet to be received. For example, 3 keyboards had been requested, 2 are received, 1 is remaining.
Quantity returned	Number of items that already needed to be returned.

5. Select **Save**.

The Transfer Order Line is created and displays the **Transfer Order Line Tasks** tab. Transfer order line tasks are created to move transfer order lines from one stage to the other.

## Close transfer order line tasks in Enterprise Asset Workspace

Close transfer order line tasks to move transfer order lines from one stage to the other.

### Before you begin

Role required: admin

### About this task

When you create a transfer order line, based on the model category specified in the asset, a transfer order line task is automatically created. Default template tasks are available with the Enterprise Asset Management application. The template tasks are based on model categories. Default template tasks cannot be deleted or modified.

When you create a transfer order line and select an asset, that asset corresponds to a model category. If a template task exists for that model category then that template task is added to the transfer order line as a transfer order line task.

Closing a transfer order line task completes the task and creates the next task in the process. For example, once you close the **Requested** task, the state for this task appears as Closed Complete and a new task is opened for the next stage, **Shipment Preparation**. This process continues till you close all the tasks required for completing the transfer order line. As you close a task and as a task moves from one stage to the next, the asset gets automatically updated too. For example, when the transfer order line moves from **Requested** to **Shipment Preparation**, the asset's status also moves from available to reserved.

### Procedure

1. Navigate to a transfer order line record in the Enterprise Asset Workspace.
2. Select the **Transfer Order Line Tasks** tab.  
The following are the transfer order line tasks:
  - Requested:
  - Shipment Preparation
  - In Transit
  - Received
  - Delivered
3. Open the Requested task.
4. Select **Close Task** to close this task.  
As you close the Requested task, the **Shipment Preparation** task which is the next task in the process is created.
5. Continue to open the next task in the process, till you close the **Delivered** task.  
Once you close the Delivered task, the transfer order line is completed.

## Request a loaner asset in Enterprise Asset Workspace

Request a temporary or loaner asset or a consumable and use it for a specified period of time.

### Before you begin

Role required: sys\_admin

### About this task

You can request a loner asset for yourself, for another employee of your organization, or for a third-party vendor. Before the asset is installed, you can cancel the loaner asset request at any time. You can submit a loaner order even if the product is not available at the moment in the location you want to select. In this case, your order is placed in queue.

While requesting a loaner asset, ensure that the start date is within three months from the date of submission and the end date is within six months from the start date.

**Procedure**

1. Navigate to **Service Catalog**.
2. Select the **Enterprise Asset Lifecycle** catalog.  
The sys\_admin role needs to add the Enterprise Asset Lifecycle catalog. For more details, see Service Catalog documentation.
3. Select **Enterprise Asset Loaner Request**.  
The Enterprise Asset Loaner Request page opens.
4. On the form, fill in the fields.

**Loaner Asset Request form**

Field	Description
Requested for	Person for who you are requesting the asset. You can make a request for yourself, for another employee of your organization, or for a third-party vendor.
Requested for user	User for who you requested the asset. This field appears only when <b>For company user</b> is selected in the <b>Requested for</b> field.
Location	Location where the requested asset needs to be provided.
Model	Model of the asset that you are requesting.
Start date	Date when you want to start using the asset.
Return date	Date when you want to return the asset.
Justification	Reason why you need the asset.

After entering the **Start date** and **Return date**, if there are no loaner assets available in the selected location and for the selected time period, a warning appears. If you still submit the loaner order, your loaner order will be in a waitlist. For more information on waitlisted loaner orders, see [Loaner asset reservation](#).

5. Select **Submit**.  
A message appears and shows whether your loaner order was placed successfully or the order was placed in a waitlist.

**What to do next**

To view your request, navigate to **Self-Service > My Requests**.

Before you receive your loaner asset, you can cancel the loaner asset request by selecting **Cancel**. After you receive your loaner asset, the **Cancel** button doesn't appear anymore. You can also return your loaner asset before the specified **Return date**.

**Prepare, deploy, and reclaim loaner assets in Enterprise Asset Workspace**

Select and prepare the loaner asset or consumable for deployment and reclamation by using loaner asset tasks. Deploy the loaner asset or consumable for a specific period of time, and reclaim it on the return date.

### Before you begin

To use an asset as a loaner asset or consumable, go to the asset record and set the **Asset function** field to **Loaner**. These assets are reserved for use as loaner assets. You cannot use an asset that has the Asset function field set to anything other than **Loaner**.

The Loaner asset orders tab in the **Inventory** view shows all the loaner orders the asset has served in the past and at present. In case of consumables, if the consumable is not in a stockroom, it shows only the current loaner asset order that it's serving at present.

Role required: inventory\_user

### Procedure

1. Navigate to **Enterprise Asset Workspace > Inventory > Loaner Asset Orders**.
2. Open an enterprise loaner asset order.
3. Select the **Loaner Asset tasks** tab.
4. Select the **Prepare** task and fill in the details.

#### Prepare task form

Fields	Descriptions
Asset	Asset that is used to fulfill the loaner asset request.
State	State of the task.
Assigned to	Person who is assigned the task of fulfilling the Deploy task.

5. After entering the necessary details, select **Close Task** to close the Prepare task. After the Prepare task is completed, a Deploy task is created under the Loaner Asset Tasks related list. On the Asset record [alm\_asset] table, the following changes occur:
  - The state of the loaner asset changes to In stock.
  - The **Reserved for** field is automatically set to the name of the user who the loaner asset was requested for.
  - The substate changes to Pending install.
6. Open the Deploy task and fill in the details in the form.

#### Deploy task form

Fields	Descriptions
State	State of the task.
Assigned to	Person who is assigned the task of fulfilling the Deploy task.

7. Select **Close Task** to close the Deploy task.

On the Asset record [alm\_asset] table, the following changes occur:

- The state of the loaner asset changes to In use.
- The **Stock room** field changes to Null.

- The **Assigned to** field is automatically set to the name of the user who the asset was requested for.
- If you requested the loaner asset for a third-party vendor, then the **Managed by** field is automatically set to the name of the user who the asset was requested for.

In case of consumable, state changes to Consumed.

Two days before the return date, the users who opened or requested the asset will receive an email notification about the reclaim. One day before the return date, a Reclaim task is created under the Loaner Asset Tasks tab.

8. Open the Reclaim task.
9. On the form, fill in the details.

**Reclaim task form**

Field	Description
Stockroom	Stockroom where the returned asset will be stored. If you entered a stockroom different from where you received the loaner asset, then a warning message appears which says that the existing loaner orders from the initial stockroom might be affected.
Returned on	Actual date when the asset was returned.
State	State of the task.
Assigned to	Person who is assigned the task of fulfilling the Reclaim task.
Asset returned	Option to mark the asset as returned. The Reclaim task cannot be closed if the asset is not returned.
Asset functional	Functional status of the loaner asset after it's reclaimed.

If the asset is not functional, the state of the asset changes to In stock and substate changes to Pending repair.

10. To close the Reclaim task, select **Close Task**.
11. If a user returns the asset before the return date, do the following:
  - a. Select **Reclaim**.
  - b. On the Reclaim Asset form, update the fields.
  - c. Close the Reclaim task.

On the Asset record [alm\_asset] table, the following changes occur:

  - The state of the loaner asset changes to In stock.
  - The substate changes to Available.
  - The **Stockroom** field is automatically set to the value that was selected on the Reclaim task form.
  - If the asset is assigned to a future loaner order, the substate changes to Reserved and reflects the details of the loaner order.

## Requesting a Return Merchandise Authorization (RMA) for defective enterprise assets

A Return Merchandise Authorization (RMA) is an agreement between a buyer and a seller that allows the buyer to return, replace, or request the repair of a defective product within the specified warranty period. With the Enterprise Asset Management application, you can submit RMA orders to either replace or repair your defective enterprise assets.

### Return Merchandise Authorization flow

When you submit an RMA order for your defective enterprise assets, the Enterprise Asset Management application automatically generates an RMA order line for each defective enterprise asset that was added to the order. You can then use these RMA order lines to track and manage the RMA process for each of those enterprise assets separately.

**Note:** You can submit RMA orders for serialized enterprise assets only.

For every RMA order line within an RMA order, you must complete a Prepare task to indicate how you want to proceed with the RMA process for the given enterprise asset. Based on the terms that you agreed upon with the asset vendor, you can choose to

- complete the RMA process on-site,
- complete the RMA process off-site with the asset vendor,
- or reject the RMA for the given enterprise asset.

If you choose to complete the RMA process on-site, the defective enterprise asset can only be repaired. You must complete all necessary on-site repair tasks to move the corresponding RMA order line to the Completed stage. If you choose to complete the RMA process off-site with the asset vendor, the defective enterprise asset can either be replaced or repaired. You must work with the asset vendor to complete all necessary off-site replacement or repair tasks so that you can move the corresponding RMA order line to the Completed stage. If you choose to reject the RMA, the RMA order line automatically moves to the Completed stage without requiring any further action. After every RMA order line within an RMA order reaches the Completed stage, the order is closed.

### Return Merchandise Authorization cancellations

If you have not completed the Prepare task for any of the RMA order lines within an RMA order, you can cancel the entire RMA order. After the order is canceled, all associated RMA order lines and tasks are also canceled.

### Submit a Return Merchandise Authorization (RMA) order for your defective enterprise assets

Submit a Return Merchandise Authorization (RMA) order to initiate the replacement or repair of your defective enterprise assets.

#### Before you begin

Role required: asset or inventory\_user

#### About this task

**Note:** You can submit RMA orders for serialized enterprise assets only.

#### Procedure

1. Navigate to **All > Service Catalog > Enterprise Asset Lifecycle**.
2. From the list of available Enterprise Asset Lifecycle catalog items, select **Enterprise RMA Order**.

3. In the Enterprise RMA Assets list on the Enterprise RMA Order form, select **Add**.  
The Add Row dialog box opens.
4. **Optional:** In the **Stockroom** field, search for and select the stockroom that the defective enterprise asset is located in.  
  
(Optional) By selecting a stockroom, you can narrow down the list of enterprise assets that you can search and select from in the **Enterprise asset** field (step 5).  
  
If you do not select a stockroom, this field populates automatically based on the enterprise asset that you select in the **Enterprise asset** field (step 5).
5. In the **Enterprise asset** field, search for and select the defective enterprise asset that you want to replace or repair through this RMA order.
6. Select **Add**.  
The dialog box closes and the defective enterprise asset is added to the list of Enterprise RMA Assets.
7. Repeat steps 3 to 6 for each defective enterprise asset that you want to replace or repair through this RMA order.  
  
**Note:** You can add up to 50 enterprise assets to a single RMA order.
8. Select **Submit**.

### Result

After the RMA order is submitted successfully, you are automatically redirected to the Service Catalog home page. A confirmation message then appears with the RMA order number, which you can use to track and manage your RMA order.

### Closing a Return Merchandise Authorization (RMA) order for your defective enterprise assets

After you submit a Return Merchandise Authorization (RMA) order for your defective enterprise assets, you must complete various tasks to close the order.

You must complete the necessary set of tasks separately for each RMA order line within an RMA order. After you complete all necessary tasks for an RMA order line, it moves to the Completed stage. Once all RMA order lines within an RMA order reach the Completed stage, the RMA order is closed.

#### Complete the Prepare task for an RMA order line

Complete the Prepare task for an RMA order line so that you can proceed with replacing or repairing the given enterprise asset. Alternatively, you can reject the RMA to avoid taking any action on the given enterprise asset.

#### Before you begin

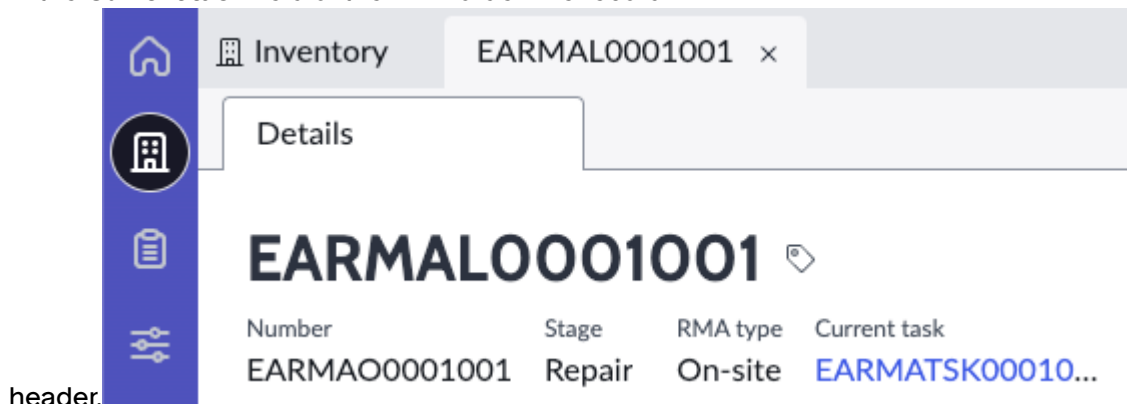
Role required: sn\_eam.enterprise\_asset\_manager

#### Procedure

1. From the Enterprise Asset Workspace, navigate to the Inventory view.
2. Select the **RMA orders** tab.
3. From the list of available RMA orders, select the RMA order that you want to close.  
The RMA order record opens.
4. On the **RMA Order Lines** tab of the RMA order record, select the RMA order line of the enterprise asset that you want to replace, repair, or take no action on.  
The RMA order line record opens.

5. On the **RMA Line Tasks** tab of the RMA order line record, select the task number for the **Prepare** task.

Alternatively, select the task number that is displayed in the **Current task** field of the RMA order line record



header.

The Prepare task opens.

6. On the **Details** tab of the Prepare task, fill in the fields.

**Details tab**

Field	Description
<b>RMA Line Task Details</b>	
Stockroom	Stockroom that the defective enterprise asset is located in. This field populates automatically.
Vendor	Vendor of the defective enterprise asset. This field populates automatically.
Vendor RMA number	RMA reference number provided by the asset vendor.
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
RMA type	Option that indicates how you want to proceed with the RMA process for the defective enterprise asset. Select one of the following options: <ul style="list-style-type: none"> <li>○ <b>On-site:</b> Option to complete the RMA process on-site. With this option, you can repair the defective enterprise asset on-site.</li> <li>○ <b>Off-site:</b> Option to complete the RMA process off-site with the asset vendor. With this option, the defective enterprise asset can be replaced or repaired off-site by the asset vendor.</li> <li>○ <b>Reject:</b> Option to reject the RMA for the defective enterprise asset. With this option, you can avoid taking any action on the defective enterprise asset.</li> </ul>
Short description	Brief description of the task.
Description	Detailed description of the task.

Field	Description
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

## 7. Select **Close Task**.

### Result

The Prepare task automatically closes with an updated state of Closed Complete.

### What to do next

If you set the **RMA type** field to **On-site** or **Off-site**, complete all subsequent replacement or repair tasks to move the RMA order line to the **Completed** stage. If you set the **RMA type** field to **Reject**, the RMA order line automatically moves to the Completed stage, and no further action is required.

### Complete the RMA process for a defective enterprise asset through an on-site repair

Perform all tasks that are required for an on-site repair so that you can complete the RMA process for a defective enterprise asset. You must perform this set of tasks separately for each defective enterprise asset that requires an on-site repair.

### Before you begin

Before you can proceed with the RMA process for a defective enterprise asset on-site, you must complete the Prepare task for the associated RMA order line. See [Complete the Prepare task for an RMA order line](#) for detailed instructions.

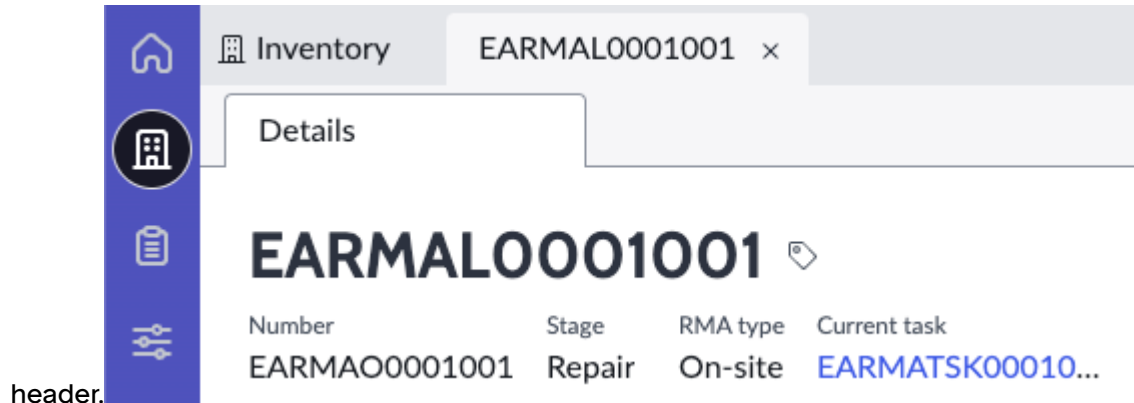
Role required: sn\_eam.enterprise\_asset\_manager or enterprise\_asset\_technician

### Procedure

1. From the Enterprise Asset Workspace, open the Inventory view.
2. Select the **RMA orders** tab.
3. From the list of available RMA orders, select the RMA order that you want to close.  
The RMA order record opens.
4. On the **RMA Order Lines** tab of the RMA order record, select the RMA order line for the enterprise asset that you want to repair.  
The RMA order line record opens.
5. Complete and close the On-site repair task for the RMA order line.  
To successfully complete and close this task, you must either repair the defective enterprise asset on-site, move the RMA process off-site with the asset vendor, or reject the on-site repair request.

- a. On the **RMA Line Tasks** tab of the RMA order line record, select the task number for the **On-site repair** task.

Alternatively, select the task number that is displayed in the **Current task** field of the RMA order line record



header.

The On-site repair task opens.

- b. On the **Details** tab of the On-site repair task, fill in the fields.

**Details tab**

Field	Description
RMA Line Task Details	
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
RMA decision	<p>Action that you performed on the defective enterprise asset. Select one of the following options:</p> <ul style="list-style-type: none"> <li>▪ <b>Repair:</b> Option indicating that you successfully repaired the defective enterprise asset on-site.</li> <li>▪ <b>Off-site:</b> Option indicating that you are moving the RMA process off-site with the asset vendor. Select this option if you are unable to repair the defective enterprise asset on-site.</li> <li>▪ <b>Reject:</b> Option indicating that you rejected the on-site repair request.</li> </ul>
Short description	Brief description of the task.
Description	Detailed description of the task.
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

- c. Select **Close Task**.

The On-site repair task automatically closes with an updated state of Closed Complete.

If you set the **RMA decision** field to **Off-site**, proceed to [Complete the RMA process for a defective enterprise asset through an off-site replacement or repair](#) to continue with the RMA process off-site.

## Result

If you successfully repaired the defective enterprise asset, the RMA order line moves to the Completed stage. In the corresponding asset record, the **State** field changes to **In stock** and the **Substate** field changes to **Available**.

If you moved the RMA process off-site, a Shipment task automatically populates on the **RMA Line Tasks** tab of the RMA order line. You must then ship the defective enterprise asset back to the asset vendor so that they can complete the remaining replacement or repair tasks off-site. See [Complete the RMA process for a defective enterprise asset through an off-site replacement or repair](#) for detailed instructions on how to replace or repair a defective enterprise asset off-site.

If you rejected the on-site repair request, the RMA order line moves to the Completed stage. However, the defective enterprise asset remains in the In stock state and Pending repair substate. You must submit a new RMA order to take additional action on the asset.

## What to do next

Complete the RMA process for any remaining RMA order lines within the RMA order. After all RMA order lines reach the Completed stage, the RMA order is closed.

## Complete the RMA process for a defective enterprise asset through an off-site replacement or repair

Work with your asset vendor to perform all tasks that are required for an off-site replacement or repair so that you can complete the RMA process for a defective enterprise asset. You must perform this set of tasks separately for each defective enterprise asset that requires an off-site replacement or repair.

## Before you begin

Before you can proceed with the RMA process for a defective enterprise asset off-site, you must complete the Prepare task for the associated RMA order line. See [Complete the Prepare task for an RMA order line](#) for detailed instructions.

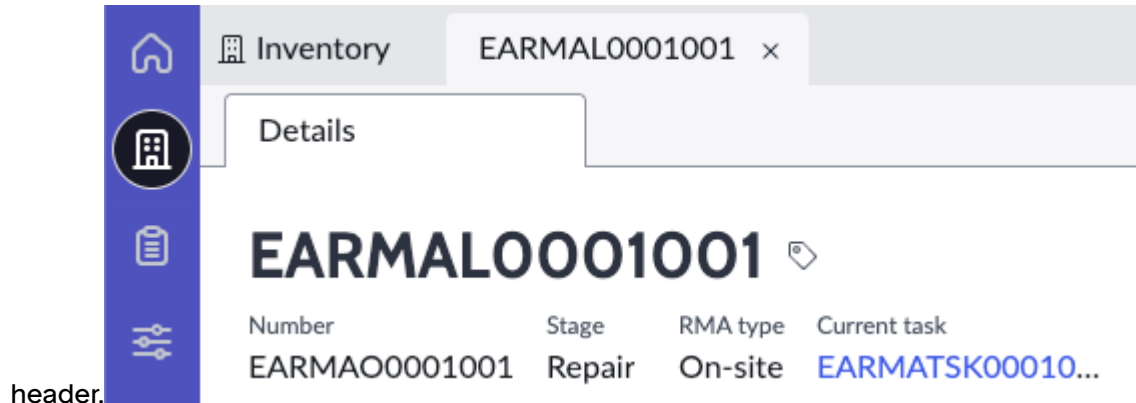
Role required: sn\_eam.enterprise\_asset\_manager or enterprise\_asset\_technician

## Procedure

1. From the Enterprise Asset Workspace, open the Inventory view.
2. Select the **RMA orders** tab.
3. From the list of available RMA orders, select the RMA order that you want to close.  
The RMA order record opens.
4. On the **RMA Order Lines** tab of the RMA order record, select the RMA order line for the enterprise asset that you want to replace or repair.  
The RMA order line record opens.
5. Complete and close the Shipment task for the RMA order line.  
To successfully complete and close this task, you must ship the defective enterprise asset back to the asset vendor.

- a. On the **RMA Line Tasks** tab of the RMA order line record, select the task number for the **Shipment** task.

Alternatively, select the task number that is displayed in the **Current task** field of the RMA order line record



header.

The Shipment task opens.

- b. On the **Details** tab of the Shipment task, fill in the fields.

**Details tab**

Field	Description
<b>RMA Line Task Details</b>	
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
Short description	Brief description of the task.
Description	Detailed description of the task.
<b>Shipment</b>	
Carrier	Shipping carrier through which you shipped the defective enterprise asset.
Ship date	Date on which you shipped the defective enterprise asset.
Tracking number	Tracking number that enables you to track the status and location of the shipment.
<b>Notes</b>	
Work notes	Notes about the task that are visible to all users within your organization.

- c. Select **Close Task**.

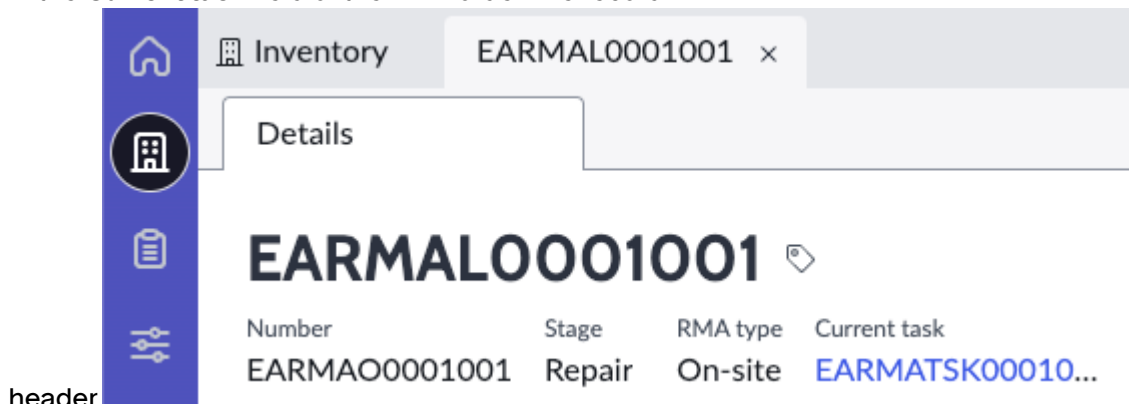
The Shipment task automatically closes with an updated state of Closed Complete.

- 6. Complete and close the Vendor RMA decision task for the RMA order line.

To successfully complete and close this task, the asset vendor must either repair the defective enterprise asset, replace the defective enterprise asset with a new asset, or reject the RMA.

- a. On the **RMA Line Tasks** tab of the RMA order line record, select the task number for the **Vendor RMA decision** task.

Alternatively, select the task number that is displayed in the **Current task** field of the RMA order line record



header.

The Vendor RMA decision task opens.

- b. On the **Details** tab of the Vendor RMA decision task, fill in the fields.

**Details tab**

Field	Description
RMA Line Task Details	
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
RMA decision	<p>Action that the asset vendor performed on the defective enterprise asset. Select one of the following options:</p> <ul style="list-style-type: none"> <li>▪ <b>Repair:</b> Option indicating that the asset vendor successfully repaired the defective enterprise asset.</li> <li>▪ <b>Replace:</b> Option indicating that the asset vendor is replacing the defective enterprise asset with a new functioning asset.</li> <li>▪ <b>Reject:</b> Option indicating that the asset vendor rejected the RMA for the defective enterprise asset.</li> </ul> <p>If you select this option, the <b>Reject reason</b> field appears below the <b>RMA decision</b> field. In the <b>Reject reason</b> field, specify why the asset vendor rejected the RMA.</p>
Short description	Brief description of the task.
Description	Detailed description of the task.

Field	Description
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

**c. Select Close Task.**

The Vendor RMA decision task automatically closes with an updated state of Closed Complete.

**7. Complete and close the Receive task for the RMA order line.**

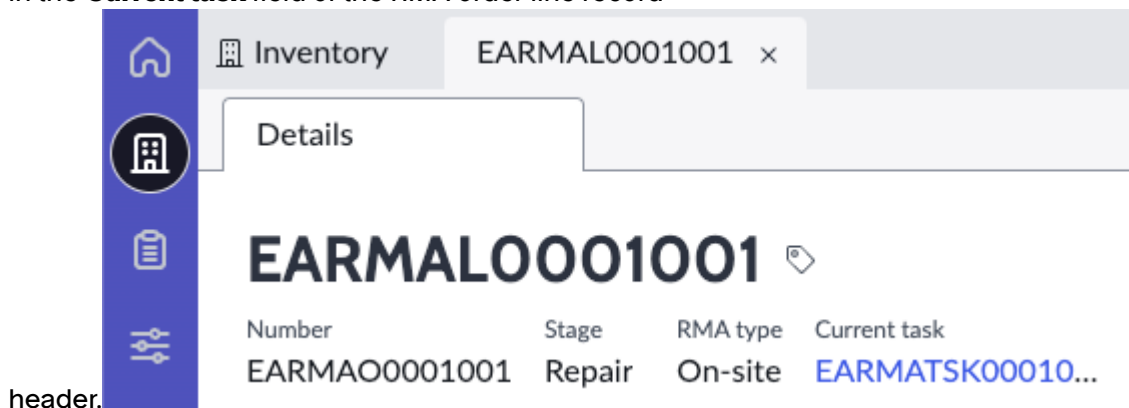
To successfully complete and close this task, you must receive the new, repaired, or rejected enterprise asset from the asset vendor.

If you are receiving a new enterprise asset as a replacement for the defective enterprise asset, you must also create an asset record for the new enterprise asset. See [Create enterprise assets](#) for detailed instructions.

**Note:** When you create the asset record for the new enterprise asset, you must set the **State** field to **In stock**. You must also verify that the **Acquisition method** field is set to **RMA Replacement**.

**a. On the RMA Line Tasks tab of the RMA order line record, select the task number for the Receive task.**

Alternatively, select the task number that is displayed in the **Current task** field of the RMA order line record



header.

The Receive task opens.

**b. On the Details tab of the Receive task, fill in the fields.**

**Details tab**

Field	Description
RMA Line Task Details	
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.

Field	Description
Short description	Brief description of the task.
Description	Detailed description of the task.
Receive	
Asset received	Option that indicates if you received the new, repaired, or rejected enterprise asset from the asset vendor.  To complete and close the Receive task, you must set this field to <b>Yes</b> .
Replacement asset stockroom  <b>i Note:</b> This field appears only if the asset vendor replaced the defective enterprise asset with a new one.	Stockroom that the new enterprise asset is located in.
Replacement asset  <b>i Note:</b> This field appears only if the asset vendor replaced the defective enterprise asset with a new one.	New enterprise asset that has replaced the defective enterprise asset.
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

**c. Select Close Task.**

The Receive task automatically closes with an updated state of Closed Complete.

**Result**

The RMA order line moves to the **Completed** stage.

If the asset vendor successfully replaced the defective enterprise asset with a new one, the **Details** tab of the RMA order line automatically updates with information about the new enterprise asset, including the name, model, and stockroom of the asset. In addition, the Enterprise Asset Management application automatically retires the defective enterprise asset, triggering the **State** and **Substate** fields to change to **Retired** and **Vendor credit** in the corresponding asset record.

If the asset vendor successfully repaired the defective enterprise asset, the **State** and **Substate** fields change to **In stock** and **Available** in the corresponding asset record.

If the asset vendor rejected the RMA, the defective enterprise asset remains in the In stock state and Pending repair substate. You must submit a new RMA order to take additional action on the asset.

**What to do next**

Complete the RMA process for any remaining RMA order lines within the RMA order. After all RMA order lines reach the Completed stage, the RMA order is closed.

## Managing recalled enterprise assets

You can track and take action on enterprise assets that have been recalled by the asset vendor by using recall orders. You can choose to replace, repair, or retire your recalled enterprise assets. Alternatively, you can choose to provide your users with additional instructions on how to operate your recalled enterprise assets.

### Recall flow

When you submit a recall order, the Enterprise Asset Management application automatically generates an enterprise recalled asset record for each enterprise asset that you included in the order. You can then use these records to track and manage the recall process for each of those enterprise assets.

Within each recall order, you must indicate how you are going to proceed with the recall process for the given enterprise asset based on the remediation option that is recommended by the asset vendor in the corresponding recall notification. You can choose to

- repair the enterprise asset either on-site or off-site,
- replace the enterprise asset with a new asset,
- retire the enterprise asset,
- or provide additional instructions on how to operate the enterprise asset.

Based on the option that you choose, you must complete all subsequent tasks to remediate the asset and move the corresponding enterprise recalled asset record to the Completed stage. After every enterprise recalled asset record within a recall order reaches the Completed stage, the recall order is marked as complete.

### Submit a recall order for your enterprise assets

Submit a recall order to initiate the replacement, repair, or retirement of enterprise assets that have been recalled by the asset vendor. You can also choose to provide your users with additional instructions on how to operate your recalled enterprise assets.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

### About this task

- Note:** You can include multiple enterprise assets in a single recall order. However, all enterprise assets must be associated with the same model.

### Procedure

1. From the Enterprise Asset Workspace, open the Inventory view.
2. On the **Recall orders** tab, select **New**.
3. On the Create New Enterprise Recall Order form, fill in the fields.

#### Create New Enterprise Recall Order form

Field	Description
Recall source	Source of the enterprise asset recall.
Remediation	Action that you are going to take on the recalled enterprise assets, based on the remediation option that is recommended by the asset vendor in the corresponding recall notification. Select one of the following options:

Field	Description
	<ul style="list-style-type: none"> <li>○ <b>Repair:</b> Option to repair the recalled enterprise assets.</li> <li>○ <b>Replace:</b> Option to replace the recalled enterprise assets with new assets.</li> <li>○ <b>Retire:</b> Option to retire the recalled enterprise assets.</li> <li>○ <b>Notation:</b> Option to provide users with additional instructions on how to operate the recalled enterprise assets.</li> </ul> <p>If you select this option, the <b>Recall remediation instruction</b> field appears below the <b>Serial numbers</b> field. In the <b>Recall remediation instruction</b> field, enter the additional instructions.</p>
Models	<p>Models that the recalled enterprise assets are associated with.</p> <p>You can select one or more models from the list.</p>
Serial numbers	<p>Serial numbers that identify each recalled enterprise asset. This field is optional.</p> <p>To include multiple enterprise assets in this recall order, enter all associated serial numbers using one of the following options:</p> <ul style="list-style-type: none"> <li>○ Serial number range, such as SN001 - SN010</li> <li>○ Comma-separated list of individual serial numbers, such as SN020 , SN038 , SN054</li> <li>○ Comma-separated list of both serial number ranges and individual serial numbers, such as SN001 - SN010 , SN202 , SN038 , SN100 - SN110</li> </ul> <p>If you do not enter any serial numbers, all enterprise assets that are associated with the model specified in the <b>Model</b> field are included in this recall order.</p> <p><b>Note:</b> If you specify any serial numbers on a recall order, you cannot specify any vehicle identification numbers (VINs) on the same order.</p>
Location	<p>Location in which the recalled enterprise assets reside.</p>
Recall notice number	<p>Identification number of the recall notification that was sent by the asset vendor.</p>
Remediate by	<p>Date by which the action that you selected in the <b>Remediation</b> field must be completed.</p>
VINs	<p>Vehicle identification numbers (VINs) that identify each recalled enterprise asset. This field is optional and applicable only to automotive enterprise assets, such as cars and mopeds.</p> <p>To include multiple automotive enterprise assets in this recall order, enter all associated VINs using one of the following options:</p> <ul style="list-style-type: none"> <li>○ VIN range, such as 3VWSB81H8WM210368 - 3VWSB81H8WM210370</li> <li>○ Comma-separated list of individual VINs, such as 1B7HF13ZX1J572139 , JH4KA8150MC012098</li> <li>○ Comma-separated list of both VIN ranges and individual VINs, such as 4JGAB54E81A277648 - 4JGAB54E81A277650 , 1GNDX03E03D188446 , KM8SC73E94U774838</li> </ul>

Field	Description
	<p>If you do not enter any VINs, all enterprise assets that are associated with the model specified in the <b>Model</b> field are included in this recall order.</p> <p><b>Note:</b> If you specify any VINs on a recall order, you cannot specify any serial numbers on the same order.</p>
Include child locations	Option to include the child locations of the location that you specified in the <b>Location</b> field.
Additional info	Additional information about the recall order.

**4. Select Save.**

**Result**

- The **Acknowledge Recall** button appears.

**Note:** The **Acknowledge Recall** button is available with Enterprise Asset Management version 9.0 and later.

- The **Recalled Assets** and **Recalled Tasks** tabs are shown.

**What to do next**

[Acknowledge enterprise assets in the recall order.](#)

**Acknowledge enterprise assets in the recall order**

Review and confirm the enterprise assets included in the recall order to proceed with the recall process.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**Procedure**

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **Recall orders** tab.
3. Select the recall order that you want to acknowledge.
4. Select **Acknowledge Recall**.  
 The **Acknowledge Recall** button is available with Enterprise Asset Management version 9.0 and later.  
 An Acknowledge task in the Open state is created and listed under the Recall Tasks tab.
5. Select the acknowledge task.
6. Verify the recall order details and assets listed under the **Recall Assets** tab.
7. Select **Close task**.

## Result

- The State of the Acknowledge task changes from **Open** to **Closed Complete**.
- The Stage of the recall order changes to **Acknowledged**.
- The **Begin recall process** button appears.

## What to do next

Select **Begin recall process** to proceed with the recall process for the specified enterprise assets. For details, see [Completing a recall order for your enterprise assets](#).

## Completing a recall order for your enterprise assets

After you submit a recall order for any enterprise assets that have been recalled by the asset vendor, you must perform various tasks to complete the order.

You can either complete the required set of tasks separately for each of your recalled enterprise assets or bulk update and complete the required set of tasks for all recalled enterprise assets that share the same task name, state, assignment group, and assigned user. After you complete all required tasks for a recalled enterprise asset, the corresponding enterprise recalled asset record moves to the Completed stage. Once all enterprise recalled asset records within a recall order reach the Completed stage, the recall order is completed.

## Complete the Prepare task for a recalled enterprise asset

Complete the Prepare task for a recalled enterprise asset so that you can proceed with replacing, repairing, or retiring the given enterprise asset.

## Before you begin

Role required: sn\_eam.enterprise\_asset\_manager or enterprise\_asset\_technician

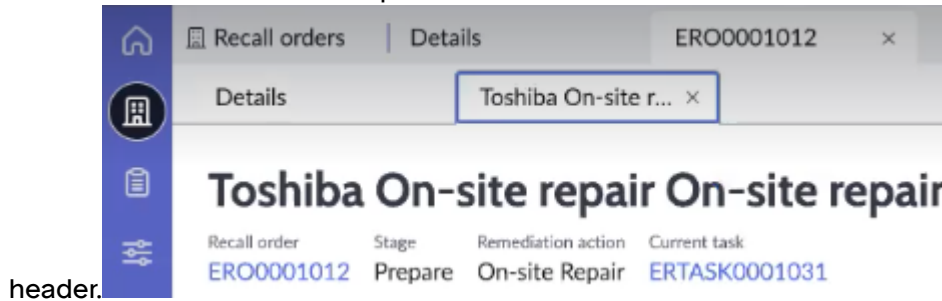
## About this task

**Important:** The Prepare task is applicable only to recall orders in which the **Remediation** field set to **Repair**, **Replace**, or **Retire**. If the **Remediation** field is set to **Notation**, you can proceed directly to the Notation task instead. See [Complete the Notation task for a recalled enterprise asset](#) for more information on the Notation task.

## Procedure

1. From the Enterprise Asset Workspace, open the Inventory view.
2. Select the **Recall orders** tab.
3. From the list of available recall orders, select the recall order that you want to complete.  
The recall order record opens.
4. On the **Enterprise Recalled Assets** tab of the recall order record, select the enterprise asset that you want to replace, repair, or retire.  
The enterprise recalled asset record opens.
5. On the **Enterprise Recall Tasks** tab, select the task number for the **Prepare** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise recalled asset record



header.

The Prepare task opens.

6. On the **Details** tab of the Prepare task, fill in the fields.

**Details tab**

Field	Description
Recall task details	
Stockroom	<p>Stockroom of the recalled enterprise asset.</p> <p><b>Note:</b> This field is editable only under the following conditions:</p> <ul style="list-style-type: none"> <li>The <b>Remediation</b> field in the associated <a href="#">recall order</a> is set to <b>Repair</b>. In addition, the <b>Remediation action</b> field in this Prepare task is set to <b>Off-site Repair</b>.</li> <li>The <b>Remediation</b> field in the associated <a href="#">recall order</a> is set to <b>Retire</b>.</li> </ul> <p><b>Important:</b> If the recalled enterprise asset has not already been moved to a stockroom, you must move it to an available stockroom before you can proceed with the asset retirement or off-site repair.</p>
Remediation action	<p>Option that indicates how you want to proceed with the recall process for the enterprise asset.</p> <p><b>Note:</b> This field is editable only if the <b>Remediation</b> field in the associated <a href="#">recall order</a> is set to <b>Repair</b>.</p>
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Scheduled date	Date and time at which you plan to complete this task.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

7. Close the Prepare task.

You can either close the Prepare task for only the specified enterprise asset or bulk update and close the Prepare task for multiple enterprise assets.

If you want to close the Prepare task for only the specified enterprise asset, select **Close Task**.

If you want to bulk update and close the Prepare task for multiple enterprise assets, select **Include more assets**. When the Select assets for bulk update dialog box opens, select the check box for each enterprise asset that you want to bulk update and close the Prepare task for. Select **Close Task** to close the dialog box and return to the Prepare task.

**i Important:** You can bulk update the Prepare task only for enterprise assets that have the same task name, state, assignment group, and assigned to user.

## Result

The Prepare task automatically reloads with an updated state of Closed Complete.

If you are proceeding with an on-site repair, enterprise assets with a state of In use are updated with a state of In maintenance. In addition, enterprise assets with a state of In Stock are updated with a substate of Pending repair.

If you are proceeding with an off-site repair, enterprise assets with a state of either In use or In maintenance are updated with a state of In stock and a substate of Pending repair.

If you are proceeding with an asset replacement, enterprise assets with a state of In use are updated with a state of In maintenance. In addition, enterprise assets with a state of In stock are updated with a substate of Pending repair.

If you are proceeding with an asset retirement, enterprise assets are updated with a state of In stock and substate of Pending disposal.

## What to do next

Complete all subsequent replacement, repair, or retirement tasks.

## Complete the Notation task for a recalled enterprise asset

Complete the Notation task for a recalled enterprise asset so that you can provide your users with additional instructions on how to operate the asset.

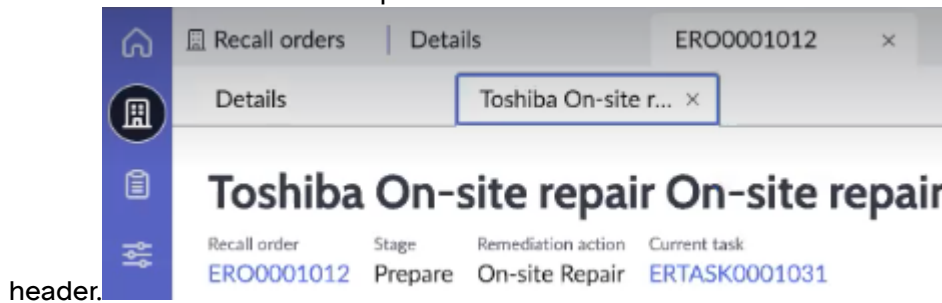
## Before you begin

Role required: sn\_eam.enterprise\_asset\_manager or enterprise\_asset\_technician

## Procedure

1. From the Enterprise Asset Workspace, open the Inventory view.
2. Select the **Recall orders** tab.
3. From the list of available recall orders, select the recall order that you want to complete. The recall order record opens.
4. On the **Enterprise Recalled Assets** tab of the recall order record, select the enterprise asset that you want to provide additional operating instructions for. The enterprise recalled asset record opens.
5. On the **Enterprise Recall Tasks** tab of the enterprise recalled asset record, select the task number for the **Notation** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise recalled asset record



header.

The Notation task opens.

#### 6. Close the Notation task.

You can either close the Notation task for only the specified enterprise asset or bulk update and close the Notation task for multiple enterprise assets.

If you want to close the Notation task for only the specified enterprise asset, select **Close Task**.

If you want to bulk update and close the Notation task for multiple enterprise assets, select **Include more assets**. When the Select assets for bulk update dialog box opens, select the check box for each enterprise asset that you want to bulk update and close the Notation task for. Select **Close Task** to close the dialog box and return to the Notation task.

**Important:** You can bulk update the Notation task only for enterprise assets that have the same task name, state, assignment group, and assigned to user.

### Result

The enterprise recalled asset record moves to the Completed stage.

### What to do next

Complete the recall process for all remaining enterprise assets that are included in the recall order. After all corresponding enterprise recalled asset records reach the Completed stage, the state of the recall order changes to Completed.

### Complete the recall process for an enterprise asset through an on-site repair

Perform all tasks that are required for an on-site repair so that you can complete the recall process for an enterprise asset that has been recalled by the asset vendor.

### Before you begin

Before you can proceed with repairing a recalled enterprise asset on-site, you must complete the Prepare task for that asset. See [Complete the Prepare task for a recalled enterprise asset](#) for detailed instructions.

Role required: sn\_eam.enterprise\_asset\_manager or enterprise\_asset\_technician

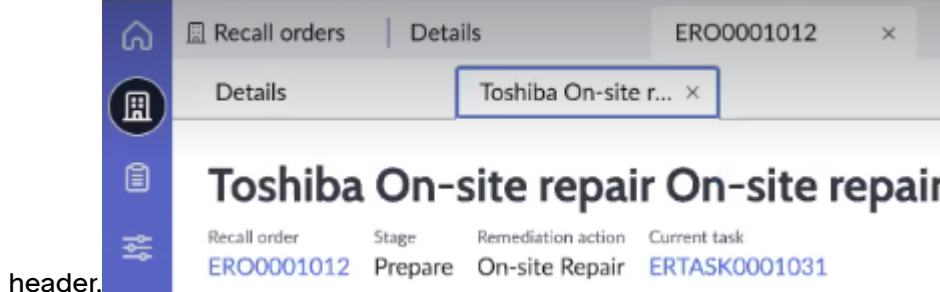
### Procedure

1. From the Enterprise Asset Workspace, open the Inventory view.
2. Select the **Recall orders** tab.
3. From the list of available recall orders, select the recall order that you want to complete.  
The recall order record opens.
4. On the **Enterprise Recalled Assets** tab of the recall order record, select the enterprise asset that you want to repair.  
The enterprise recalled asset record opens.

5. Complete and close the On-site Repair task for the recalled enterprise asset.  
To successfully complete and close this task, you must repair the recalled enterprise asset on-site.

- a. On the **Enterprise Recall Tasks** tab of the enterprise recalled asset record, select the task number for the **On-site Repair** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise recalled asset record



header.

The On-site Repair task opens.

- b. On the **Details** tab of the On-site Repair task, fill in the fields.

**Details tab**

Field	Description
Recall task details	
Remediation action	Option that indicates how you want to proceed with the recall process for the enterprise asset. This field is automatically set to <b>On-site Repair</b> .
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Scheduled date	Date and time at which you plan to perform the on-site repair.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

- c. Close the On-site Repair task.

You can either close the On-site Repair task for only the specified enterprise asset or bulk update and close the On-site Repair task for multiple enterprise assets.

If you want to close the On-site Repair task for only the specified enterprise asset, select **Close Task**.

If you want to bulk update and close the On-site Repair task for multiple enterprise assets, select **Include more assets**. When the Select assets for bulk update dialog box opens, select the check box for each enterprise asset that you want to bulk update and close the

On-site Repair task for. Select **Close Task** to close the dialog box and return to the On-site Repair task.

**Important:** You can bulk update the On-site Repair task only for enterprise assets that have the same task name, state, assignment group, and assigned to user.

The On-site Repair task automatically reloads with an updated state of Closed Complete.

**Result**

The enterprise recalled asset record moves to the Completed stage. In addition, the state and substate fields change to In stock and Available in the corresponding asset record.

**What to do next**

Complete the recall process for all remaining enterprise assets that are included in the recall order. After all corresponding enterprise recalled asset records reach the Completed stage, the state of the recall order changes to Completed.

**Complete the recall process for an enterprise asset through an off-site repair**

Work with your asset vendor to perform all tasks that are required for an off-site repair so that you can complete the recall process for an enterprise asset that has been recalled by the vendor.

**Before you begin**

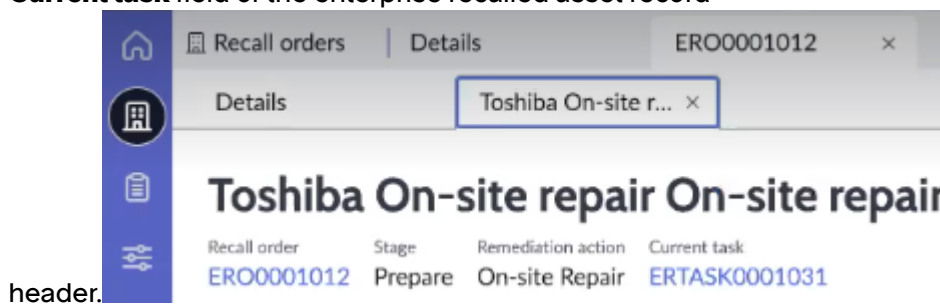
Before you can proceed with repairing a recalled enterprise asset off-site, you must complete the Prepare task for that asset. See [Complete the Prepare task for a recalled enterprise asset](#) for detailed instructions.

Role required: sn\_eam.enterprise\_asset\_manager or enterprise\_asset\_technician

**Procedure**

1. From the Enterprise Asset Workspace, open the Inventory view.
  2. Select the **Recall orders** tab.
  3. From the list of available recall orders, select the recall order that you want to complete. The recall order record opens.
  4. On the **Enterprise Recalled Assets** tab of the recall order record, select the enterprise asset that you want to repair. The enterprise recalled asset record opens.
  5. Complete and close the Shipment task for the recalled enterprise asset. To successfully complete and close this task, you must ship the recalled enterprise asset to the asset vendor.
- a. On the **Enterprise Recall Tasks** tab of the enterprise recalled asset record, select the task number for the **Shipment** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise recalled asset record



The Shipment task opens.

- b. On the **Details** tab of the Shipment task, fill in the fields.

**Details tab**

Field	Description
Recall task details	
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Scheduled date	Date and time at which you plan to ship the recalled enterprise asset to the asset vendor.
Shipment	
Carrier	Shipping carrier through which you shipped the recalled enterprise asset.
Ship date	Date on which you shipped the recalled enterprise asset.
Tracking number	Tracking number that enables you to track the status and location of the shipment.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

- c. Close the Shipment task.

You can either close the Shipment task for only the specified enterprise asset or bulk update and close the Shipment task for multiple enterprise assets.

If you want to close the Shipment task for only the specified enterprise asset, select **Close Task**.

If you want to bulk update and close the Shipment task for multiple enterprise assets, select **Include more assets**. When the Select assets for bulk update dialog box opens, select the check box for each enterprise asset that you want to bulk update and close the Shipment task for. Select **Close Task** to close the dialog box and return to the Off-site Repair task.

**i Important:** You can bulk update the Shipment task only for enterprise assets that have the same task name, state, assignment group, and assigned to user.

The Shipment task automatically reloads with an updated state of Closed Complete.

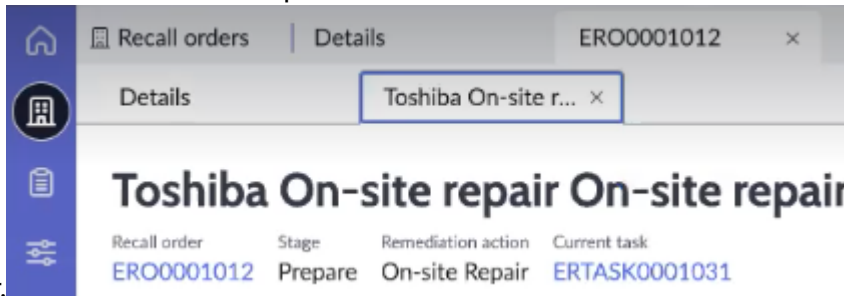
- d. Close the Shipment task to return to the enterprise recalled asset record.

- 6. Complete and close the Off-site Repair task for the recalled enterprise asset.

To successfully complete and close this task, the asset vendor must repair the recalled enterprise asset.

- a. On the **Enterprise Recall Tasks** tab of the enterprise recalled asset record, select the task number for the **Off-site Repair** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise recalled asset record



header.

The Off-site Repair task opens.

- b. On the **Details** tab of the Off-site Repair task, fill in the fields.

**Details tab**

Field	Description
Recall task details	
Remediation action	Option that indicates how you want to proceed with the recall process for the enterprise asset. This field is automatically set to <b>Off-site Repair</b> .
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Scheduled date	Date and time at which the asset vendor plans to perform the off-site repair.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

- c. Close the Off-site Repair task.

You can either close the Off-site Repair task for only the specified enterprise asset or bulk update and close the Off-site Repair task for multiple enterprise assets.

If you want to close the Off-site Repair task for only the specified enterprise asset, select **Close Task**.

If you want to bulk update and close the Off-site Repair task for multiple enterprise assets, select **Include more assets**. When the Select assets for bulk update dialog box opens, select the check box for each enterprise asset that you want to bulk update and close the Off-site Repair task for. Select **Close Task** to close the dialog box and return to the Off-site Repair task.

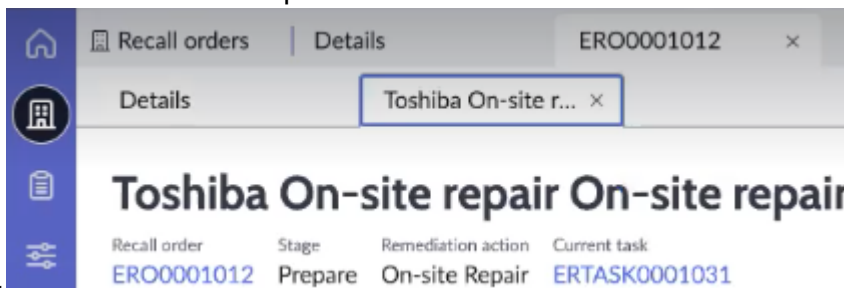
**Important:** You can bulk update the Off-site Repair task only for enterprise assets that have the same task name, state, assignment group, and assigned to user.

The Off-site Repair task automatically reloads with an updated state of Closed Complete.

- d. Close the Off-site Repair task to return to the enterprise recalled asset record.
7. Complete and close the Receive task for the recalled enterprise asset.  
To successfully complete and close this task, you must receive the repaired enterprise asset from the asset vendor.

- a. On the **Enterprise Recall Tasks** tab of the enterprise recalled asset record, select the task number for the **Receive** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise recalled asset record



header.

The Receive task opens.

- b. On the **Details** tab of the Receive task, fill in the fields.

**Details tab**

Field	Description
Recall task details	
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Scheduled date	Date and time at which you plan to receive the repaired enterprise asset.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

- c. Close the Receive task.

You can either close the Receive task for only the specified enterprise asset or bulk update and close the Receive task for multiple enterprise assets.

If you want to close the Receive task for only the specified enterprise asset, select **Close Task**.

If you want to bulk update and close the Receive task for multiple enterprise assets, select **Include more assets**. When the Select assets for bulk update dialog box opens, select the check box for each enterprise asset that you want to bulk update and close the Receive task for. Select **Close Task** to close the dialog box and return to the Receive task.

 **Important:** You can bulk update the Receive task only for enterprise assets that have the same task name, state, assignment group, and assigned to user.

The Receive task automatically reloads with an updated state of Closed Complete.

## Result

The enterprise recalled asset record moves to the Completed stage. In addition, the state and substate fields change to In stock and Available in the corresponding asset record.

## What to do next

Complete the recall process for all remaining enterprise assets that are included in the recall order. After all corresponding enterprise recalled asset records reach the Completed stage, the state of the recall order changes to Completed.

## Complete the recall process for an enterprise asset through an asset replacement

Work with your asset vendor to perform all tasks that are required for an asset replacement so that you can complete the recall process for an enterprise asset that has been recalled by the vendor.


## Before you begin

Before you can proceed with replacing a recalled enterprise asset, you must complete the Prepare task for that asset. See [Complete the Prepare task for a recalled enterprise asset](#) for detailed instructions.

Role required: sn\_eam.enterprise\_asset\_manager or enterprise\_asset\_technician

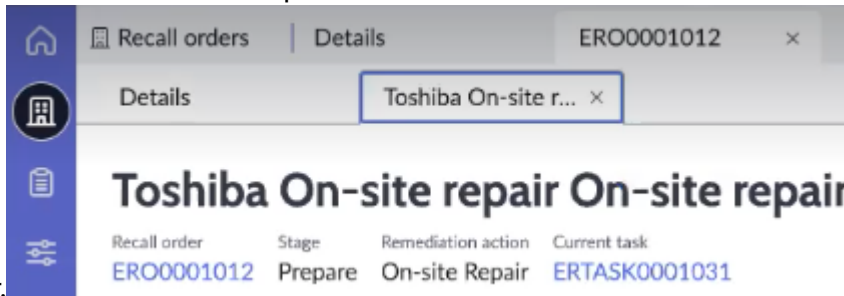
## Procedure

1. From the Enterprise Asset Workspace, open the Inventory view.
2. Select the **Recall orders** tab.
3. From the list of available recall orders, select the recall order that you want to complete. The recall order record opens.
4. On the **Enterprise Recalled Assets** tab of the recall order record, select the enterprise asset that you want to replace. The enterprise recalled asset record opens.
5. Complete and close the Receive New task for the recalled enterprise asset. To successfully complete and close this task, you must receive the new enterprise asset from the asset vendor. In addition, you must create an asset record for the new enterprise asset. See [Create enterprise assets](#) for detailed instructions.

 **Note:** When you create the asset record for the new enterprise asset, you must set the **State** field to **In stock**. You must also verify that the **Acquisition method** field is set to **Recall Replacement**.

- a. On the **Enterprise Recall Tasks** tab of the enterprise recalled asset record, select the task number for the **Receive New** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise recalled asset record



header.

The Receive New task opens.

- b. On the **Details** tab of the Receive New task, fill in the fields.

**Details tab**

Field	Description
Recall task details	
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Scheduled date	Date and time at which you plan to receive the new enterprise asset.
Replacement asset	
Replacement asset	New enterprise asset that is replacing the recalled enterprise asset.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

- c. Select **Close Task**.

The Receive New task automatically reloads with an updated state of Closed Complete.

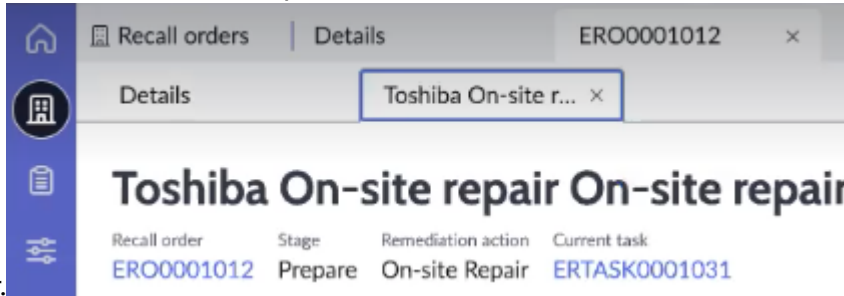
- d. Close the Receive New task to return to the enterprise recalled asset record.

- 6. Complete and close the Replace task for the recalled enterprise asset.

To successfully complete and close this task, you must replace the recalled enterprise asset with the new asset.

- a. On the **Enterprise Recall Tasks** tab of the enterprise recalled asset record, select the task number for the **Replace** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise recalled asset record



header.

The Replace task opens.

- b. On the **Details** tab of the Replace task, fill in the fields.

**Details tab**

Field	Description
Recall task details	
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Scheduled date	Date and time at which you plan to replace the recalled enterprise asset with the new asset.
Replacement asset	
Replacement asset	New asset that has replaced the recalled enterprise asset.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

- c. Close the Replace task.

You can either close the Replace task for only the specified enterprise asset or bulk update and close the Replace task for multiple enterprise assets.

If you want to close the Replace task for only the specified enterprise asset, select **Close Task**.

If you want to bulk update and close the Replace task for multiple enterprise assets, select **Include more assets**. When the Select assets for bulk update dialog box opens, select the check box for each enterprise asset that you want to bulk update and close the Replace task for. Select **Close Task** to close the dialog box and return to the Replace task.

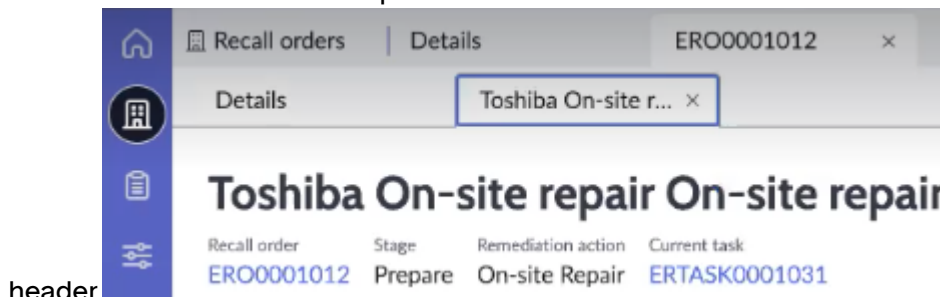
**Important:** You can bulk update the Replace task only for enterprise assets that have the same task name, state, assignment group, and assigned to user.

The Replace task automatically reloads with an updated state of Closed Complete.

- d. Close the Replace task to return to the enterprise recalled asset record.
7. Complete and close the Ship Old task for the recalled enterprise asset.  
To successfully complete and close this task, you must ship the recalled enterprise asset back to the asset vendor.

- a. On the **Enterprise Recall Tasks** tab of the enterprise recalled asset record, select the task number for the **Ship Old** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise recalled asset record



header.

The Ship Old task opens.

- b. On the **Details** tab of the Ship Old task, fill in the fields.

**Details tab**

Field	Description
Recall task details	
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Scheduled date	Date and time at which you plan to ship the recalled enterprise asset back to the asset vendor.
Shipment	
Carrier	Shipping carrier through which you shipped the recalled enterprise asset.
Ship date	Date on which you shipped the recalled enterprise asset.
Tracking number	Tracking number that enables you to track the status and location of the shipment.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

### c. Close the Ship Old task.

You can either close the Ship Old task for only the specified enterprise asset or bulk update and close the Ship Old task for multiple enterprise assets.

If you want to close the Ship Old task for only the specified enterprise asset, select **Close Task**.

If you want to bulk update and close the Ship Old task for multiple enterprise assets, select **Include more assets**. When the Select assets for bulk update dialog box opens, select the check box for each enterprise asset that you want to bulk update and close the Ship Old task for. Select **Close Task** to close the dialog box and return to the Ship Old task.

**Important:** You can bulk update the Ship Old task only for enterprise assets that have the same task name, state, assignment group, and assigned to user.

The Ship Old task automatically reloads with an updated state of Closed Complete.

### Result

The enterprise recalled asset record moves to the Completed stage. The Enterprise Asset Management application then automatically retires the recalled enterprise asset, triggering the state and substate fields to change to Retired and Vendor credit in the corresponding asset record.

### What to do next

Complete the recall process for all remaining enterprise assets that are included in the recall order. After all corresponding enterprise recalled asset records reach the Completed stage, the state of the recall order changes to Completed.

### Complete the recall process for an enterprise asset through an asset retirement

Perform all tasks that are required for an asset retirement so that you can complete the recall process for an enterprise asset that has been recalled by the asset vendor.

### Before you begin

Before you can proceed with retiring a recalled enterprise asset, you must complete the Prepare task for that asset. See [Complete the Prepare task for a recalled enterprise asset](#) for detailed instructions.

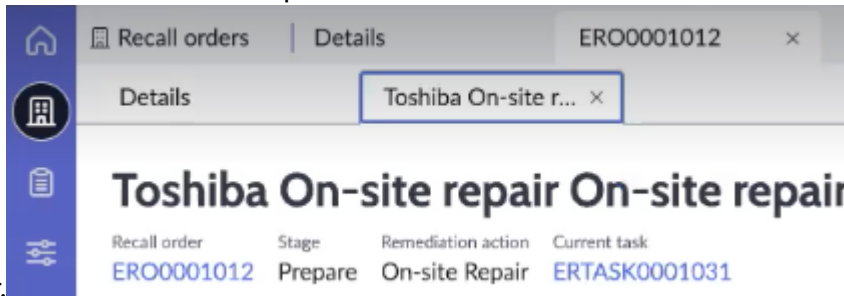
Role required: sn\_eam.enterprise\_asset\_manager or enterprise\_asset\_technician

### Procedure

1. From the Enterprise Asset Workspace, open the Inventory view.
2. Select the **Recall orders** tab.
3. From the list of available recall orders, select the recall order that you want to complete. The recall order record opens.
4. On the **Enterprise Recalled Assets** tab of the recall order record, select the enterprise asset that you want to retire. The enterprise recalled asset record opens.
5. Complete and close the Retire task for the recalled enterprise asset. To successfully complete and close this task, you must retire and move the recalled enterprise asset to an available stockroom.

- a. On the **Enterprise Recall Tasks** tab of the enterprise recalled asset record, select the task number for the **Retire** task.

Alternatively, select the task number that is displayed in the **Current task** field of the enterprise recalled asset record



header.

The Retire task opens.

- b. On the **Details** tab of the Retire task, fill in the fields.

**Details tab**

Field	Description
Recall task details	
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Scheduled date	Date and time at which you plan to retire the enterprise asset.
Notes	
Short description	Brief description of the task.
Description	Detailed description of the task.
Work notes	Notes about the task that are visible to all users within your organization.

- c. Close the Retire task.

You can either close the Retire task for only the specified enterprise asset or bulk update and close the Retire task for multiple enterprise assets.

If you want to close the Retire task for only the specified enterprise asset, select **Close Task**.

If you want to bulk update and close the Retire task for multiple enterprise assets, select **Include more assets**. When the Select assets for bulk update dialog box opens, select the check box for each enterprise asset that you want to bulk update and close the Retire task for. Select **Close Task** to close the dialog box and return to the Retire task.

**i Important:** You can bulk update the Retire task only for enterprise assets that have the same task name, state, assignment group, and assigned to user.

The Retire task automatically reloads with an updated state of Closed Complete.

### Result

The enterprise recalled asset record moves to the Completed stage. In addition, the state and substate fields change to Retired and Pending disposal in the corresponding asset record.

### What to do next

Complete the asset retirement by disposing of the recalled enterprise asset using a disposal order. See [Create a disposal order in the Enterprise Asset Workspace](#) for detailed instructions.

After you successfully dispose of the recalled enterprise asset, you can complete the recall process for all remaining enterprise assets that are included in the recall order. After all corresponding enterprise recalled asset records reach the Completed stage, the state of the recall order changes to Completed.

### Close an enterprise asset reclamation request

Close an asset reclamation request to efficiently reclaim enterprise assets when an employee leaves an organization or moves to a different role.

### Before you begin

For each reclaimed asset, an Enterprise Asset Reclamation Line is created. You must close all the tasks of a Enterprise Asset Reclamation Line to close the Enterprise Asset Reclamation Line. Once all Enterprise Asset Reclamation Lines are closed, the Asset Reclamation Request is closed.

Role required: sn\_eam.enterprise\_asset\_manager or sn\_eam.enterprise\_asset\_technician

### Procedure

1. Navigate to **Enterprise Asset Workspace > Inventory > Reclamation requests**.
2. In the Asset reclamation requests page, open the request that you want to fulfill and select the Enterprise Asset Reclamation Lines related list.

Based on what reclaim method the user selected while submitting the asset reclamation request, a **Schedule drop off**, **Schedule pickup**, or **Schedule shipment** task is created in the Enterprise Asset Reclamation Line.

3. Open the **Schedule drop off**, **Schedule pickup**, or **Schedule shipment** task that is present in the Enterprise Asset Reclamation Line.
4. On the form, fill in the fields.

Field names	Description
Number	Number assigned to the task.
Task Name	Name of the task.
Asset	Asset number and short description of the asset.
State	Current state of the task.
Return stockroom	Location where the reclaimed assets will be stored.
Assignment group	Group to which the Schedule shipment task is assigned.
Assigned to	User from the assignment group to whom the Schedule shipment task is assigned.

Field names	Description
Quantity received	Number of consumables received.
Short description	Short description of the task.
Description	Detailed description of the task.
Carrier	Name of the carrier vendor who ships the asset to the stockroom. This is a mandatory field.
Tracking number	Shipment reference number given by the carrier vendor. This is a mandatory field.
Ship date	Date on which the asset is shipped. This is a mandatory field.
Work notes	Any additional information that you want to mention.

**5. Select Close Task.**

The **Stage** field of the Enterprise Asset Reclamation Line form changes from **Ready** to **Pending received**.

A Receive asset task is created in the Enterprise Asset Reclamation Line.

**6. Open the Receive asset task.**

**7. On the Receive asset task form, fill in the fields.**

**Receive asset task form**

Field names	Description
Number	Number assigned to the task.
Task name	Name of the task.
Asset	Asset number and short description of the asset.
State	Current state of the task.
Return stockroom	
Assignment group	Group to which the Receive asset task is assigned.
Quantity received	Number of consumables received. This field appears only if the Hardware Asset Reclamation Line was created for a consumable, and this is a mandatory field.
Assigned to	User from the assignment group to whom the Receive asset task is assigned.
Short description	Short description of the task.
Description	Detailed description of the task.
Work notes	Any additional information that you want to mention.

**8. Select Close Task.**

The **Stage** field of the Enterprise Asset Reclamation Line form changes from **Pending received** to **Pending evaluation**.

After an asset is received, in the asset form, the following changes occur:

- The **Assigned to** field on the asset record becomes empty.
- State of the asset changes to **In stock** and substate changes to **Pending repair**.

9. Open the Evaluate asset task.

10. On the Evaluate asset task form, fill in the fields.

**Evaluate asset task form**

Field names	Description
Assignment group	Group to which the Evaluate asset task is assigned.
Assigned to	User from the assignment group to whom the Evaluate asset task is assigned.
Evaluation status	Status of the reclaimed asset. This is a mandatory drop-down list and the values are: <ul style="list-style-type: none"> <li>○ Re-deployable</li> <li>○ Needs repair</li> <li>○ To be disposed</li> </ul>
Work notes	Any additional information that you want to mention.

11. Select **Close Task**.

Based on what you selected from the **Evaluation status** drop-down list, the State and Substate of the asset change as follows:

Evaluation status values	Asset state	Asset substate
Re-deployable	In stock	Available
Needs repair	In stock	Pending repair
To be disposed	In stock	Pending dispose

The **Stage** field of the Enterprise Asset Reclamation Line form changes from **Pending evaluation** to **Complete**.

**Note:** When the stage of all Enterprise Asset Reclamation Lines has changed to **Closed Complete**, the state of the Asset Reclamation Request also changes to **Complete**.

**Manage repair of defective assets in your stockroom in the Enterprise Asset Workspace**

Optimize your inventory by getting the defective enterprise assets repaired using the Repair flow.

In the Repair flow, an asset manager requests the repair of defective assets in the stockroom. An asset technician troubleshoots, repairs, and evaluates the asset. The evaluated asset is either put to use or disposed of. For details on stages in the Repair flow, see [Repair flow to fix defective enterprise assets within a stockroom](#).

### Request repair of defective enterprise assets

As an enterprise asset manager, you can get the defective enterprise assets repaired by creating Repair orders.

You can request repair of defective hardware assets through any of the following options:

- [Request repair of enterprise assets using Service Catalog](#)
- [Create repair orders for enterprise assets in the Inventory view](#)
- [Request repair of an enterprise asset using the Repair option](#)

**Note:**

Consider the following points when you create a repair order:

- You can't request repair of the following assets:
  - Consumables
  - Assets that are part of any other workflow
- You can request repair of a child asset only if you have added its parent asset to the repair order. However, assets in the pallets can be repaired.

### Request repair of enterprise assets using Service Catalog

Submit a Service Catalog request to repair enterprise assets that are defective or pending repair in your stockroom.

#### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager or sn\_eam.enterprise\_asset\_technician.

#### About this task


You can request repair of multiple defective enterprise assets in your stockroom using a single catalog request.

#### Procedure

1. Navigate to **All > Service catalog > Enterprise Asset Lifecycle > Asset Repair**.
2. On the form, fill in the fields.

##### Request for stockroom repair of an asset

Field	Description
Due Date	Date by which you want the defective assets to be repaired.
Stockroom	Stockroom that has assets to be repaired.

3. Select assets to be repaired.
  - a. Select the Edit Asset(s) icon (  ).
  - b. Select the assets from the list.

You can add one or more assets to the request.

- c. Select the Lock icon (🔒).

**4. Select Submit.**

**Result**

- Your repair request is submitted successfully.
- A repair order is created in the **Draft** stage.
- Each asset in the repair order is associated with a repair order line that is in the **Troubleshoot** stage.

**Create repair orders for enterprise assets in the Inventory view**

Request repair of enterprise assets that are defective or pending repair by creating a repair order in the Inventory view of Enterprise Asset Workspace.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager or sn\_eam.enterprise\_asset\_technician.

**About this task**

When you create a repair order from the Inventory view, you must explicitly create a repair order line for the asset that you want to get repaired.

**Procedure**

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Create a Repair order.
  - a. Select **New**.
  - b. On the form, fill in the fields.

**Note:** The following fields are optional:

- **Assignment group**
- **Assigned to**
- **Due date**
- **Work note**

**Create New Repair order form**

Field	Description
Stockroom	Stockroom that has assets to be repaired.  This field is required.
Assignment group	Assignment group to which you want to assign the repair order.
Assigned to	Person from the assignment group who is primarily responsible for the Repair order.

Field	Description
Due date	Date by which the defective enterprise assets should be repaired.
Work notes	Notes about the repair order.

c. Select **Save**.

- A repair order that's in the **Draft** stage is created.
- The **Repair order lines** tab is displayed next to the **Details** tab of the repair order.

4. Add repair order lines to the repair order.

a. Select the **Repair order lines** tab.

b. Select **Add**.

c. In the **Add assets** dialog box, select the assets and then select **Add**.

**Note:** You can add child assets of a pallet asset to the repair order. The asset that you added to the repair order is removed from the pallet automatically.

For each asset that you added, a repair order line that's in the **Troubleshoot** stage is created.

5. Select **Save**.

### Request repair of an enterprise asset using the Repair option

Request repair of a defective enterprise asset in your stockroom directly through the asset form.

#### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager or sn\_eam.enterprise\_asset\_technician.

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Asset Estate**.
2. Select the **All assets** tab.
3. Select an asset with state as **In stock** and substate as **Defective** or **Pending repair**.
4. Select the More Options icon ( **⋮** ) on the Asset form.
5. Select **Repair**.

#### Result

A repair order with a repair order line in the **Troubleshoot** stage is created.

#### Fulfill repair orders in the Enterprise Asset Workspace

Fulfill a repair order by completing all the open repair asset tasks associated with its repair order lines.

A repair order can have one or more repair order lines depending on the number of assets to be repaired through that repair order. A repair order is fulfilled only when all its repair order lines are completed.

As a technician, you must complete the following tasks associated with each repair order line to fulfill a repair order:

1. [Troubleshoot asset](#)
2. [Repair asset](#)
3. [Evaluate asset](#)

You can also work on the asset repair tasks assigned to you by using the Mobile Agent application. For details, see [Manage enterprise asset repair tasks using the Mobile Agent application](#).

### View open repair orders for your stockroom in the Enterprise Asset Workspace

View the open repair orders for your stockroom to get the details of the repair order lines and repair tasks that need action.

#### Before you begin

Role required: sn\_eam.enterprise\_asset\_technician and sn\_eamenterprise\_asset\_manager

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom.  
In the Open stockroom tasks section, the **Open repair orders** card displays the number of open repair orders.
4. Select the **Open repair orders** card.

#### Result

The list of open repair orders for the stockroom is displayed.

### Troubleshoot assets requested for repair in the Enterprise Asset Workspace

Complete the troubleshooting task to assess the issues with the defective asset. Based on your observations, you can confirm whether the asset can be repaired, redeployed, or should be disposed of.

#### Before you begin

Role required: sn\_eam.enterprise\_asset\_technician

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select a repair order that's in the Draft or In Progress stage.
4. Select the **Repair order lines** tab.
5. Select a repair order line that's in the Troubleshoot stage and Open state.
6. Select the **Repair asset tasks** tab.
7. Select the **Troubleshoot asset** task that's in the Open state.
8. Indicate that you have started working on the Troubleshoot task by selecting **Start Work**.  
The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
9. **Optional:** Record the time worked on the task.  
You can either use the timer or record the time manually. For more details, see [Record time worked on asset repair tasks in the Enterprise Asset Workspace](#).

An entry for the time you worked is created in the **Time Worked** tab of the Troubleshoot asset task.

**10.** Select the **Details** tab.

**11.** Select the troubleshooting result in the **Troubleshoot result** field.

- If the asset is repairable, select **Repairable**.
- If the asset is unrepairable, select **Unrepairable**.
- If the asset can be redeployed, select **Redeployable**.

**12. Optional:** In the **Failure code** field, select the code that corresponds to the reason for the asset failure.

For more details on codes, see [Failure and resolution codes in Enterprise Asset Management](#).

**i Important:** The failure and resolution codes are available with Enterprise Asset Management version 9.0 and later.

**13. Optional:** Enter the issue identified with the asset during the repair process in the **Issue identified** field.

Once the task is closed, this field can't be modified.

The value in the **Issue identified** field is carried forward to the repair asset task after the troubleshooting task is closed.

**14.** Enter notes related to the task in the **Work notes** field.

**15.** Select **Close task**.

## Result

- If you had set the Troubleshooting result to **Unrepairable**, the following changes happen on closure of the task:
  - 1.** The repair order and the repair order line are in the Completed stage.
  - 2.** The state of the asset changes to In stock and substate changes to Pending disposal.
- If you had set the Troubleshooting result to **Redeployable**, the following changes happen on closure of the task:
  - 1.** The repair order and the repair order line are in the Completed stage.
  - 2.** The state of the asset changes to In stock and the substate changes to Available.
- If you had set the Troubleshooting result to **Repairable**, the following changes happen on closure of the task:
  - 1.** The stage of the repair order line changes to Repair.
  - 2.** The state of the asset changes to In stock and the substate changes to Pending repair.
  - 3.** Repair asset task is created.

## What to do next

[Complete the repair asset task in the Enterprise Asset Workspace.](#)

## Complete the repair asset task in the Enterprise Asset Workspace

Complete the repair of the asset and confirm if the asset is repaired, unrepairable, or redeployable.

## Before you begin

Role required: sn\_eam.enterprise\_asset\_technician

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select the repair order for which you want to complete the Repair asset task.
4. Select the **Repair order lines** tab.
5. Select the repair order line that's in the **Repair** stage.
6. Select the **Repair asset tasks** tab.
7. Select the **Repair asset** task that's in the Open state.
8. Indicate that you have started working on the Repair asset task by selecting **Start Work**.  
The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
9. **Optional:** Record the time worked on the task.  
You can either use the timer or record the time manually. For more details, see [Record time worked on asset repair tasks in the Enterprise Asset Workspace](#).  
An entry for the time you worked is created in the **Time Worked** tab of the Repair asset task.
10. Select the **Details** tab.
11. Select the repair result in the **Repair result** field.
  - If the asset is repaired, select **Repaired**.
  - If the asset couldn't be repaired, select **Unrepairable**.
  - If the asset can be redeployed, select **Redeployable**.
12. **Optional:** In the **Failure code** field, select the code that corresponds to the reason for the asset failure.

**i Important:** The failure and resolution codes are available with Enterprise Asset Management version 9.0 and later.

This field shows the failure code that you selected in the Troubleshoot task. However, you can update this field if the reason for the asset failure differs from what was identified in the Troubleshoot task. For more details on codes, see [Failure and resolution codes in Enterprise Asset Management](#).

**i Note:** The Failure code field value that you selected is also displayed in the Evaluate Asset task and the repair order line.

13. **Optional:** In the **Resolution code** field, select the code that matches the solution that you applied to fix the asset failure.

**i Note:** The Resolution code field value that you selected is also displayed in the Evaluate Asset task and the repair order line.

14. **Optional:** Enter the issue identified with the asset during the repair process in the **Issue identified** field.

(Optional) This field is automatically populated with the value carried forward from the troubleshoot asset task if the issue is identified and a value is provided in the **Issue identified** field. Once the task is closed, this field can't be modified.

The value in the **Issue identified** field is carried forward to evaluate repaired asset task after the repair task is closed.

15. Enter notes related to the task in the **Work notes** field.

16. Select **Close task**.

## Result

- If you had set the Repair result to **Unrepairable**, the following changes happen on closure of the task:
  1. The repair order and the repair order line are in the Completed stage.
  2. The state of the asset changes to In stock and the substate changes to Pending disposal.
- If you had set the Repair result to **Redeployable**, the following changes happen on closure of the task:
  1. The repair order and the repair order line are in the Completed stage.
  2. The state of the asset changes to In stock and the substate changes to Available.
- If you had set the Repair result to **Repairable**, the following changes happen on closure of the task:
  1. The stage of the repair order line changes to Evaluate.
  2. The state of the asset changes to In stock and the substate changes to Pending evaluation.
  3. Evaluate asset task is created.

## What to do next

[Evaluate the repaired asset in the Enterprise Asset Workspace.](#)

### Evaluate the repaired asset in the Enterprise Asset Workspace

Evaluate the repaired asset and confirm if the asset is redeployable or should be disposed of. The Repair flow completes after the repaired asset is evaluated.

## Before you begin

Role required: sn\_eam.enterprise\_asset\_technician

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select the repair order for which you want to evaluate the repaired asset.
4. Select the **Repair order lines** tab.
5. Select a repair order line that's in the Evaluate stage and Open state.
6. Select the **Repair asset tasks** tab.
7. Select the **Evaluate asset** task that's in the Open state.
8. Indicate that you have started working on the Evaluate asset task by selecting **Start Work**. The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
9. **Optional:** Record the time worked on the task.  
You can either use the timer or record the time manually. For more details, see [Record time worked on asset repair tasks in the Enterprise Asset Workspace](#).  
An entry for the time you worked is created in the **Time Worked** tab of the Evaluate asset task.
10. Select the **Details** tab.
11. Select the evaluation result in the **Evaluation result** field.

- If the asset is repaired and redeployable, select **Redeployable**.
- If the asset can't be used and should be disposed of, select **To be disposed**.

**12. Optional:** Enter the issue identified with the asset during the repair process in the **Issue identified** field.

This field is automatically populated with the value carried forward from the repair asset task if the issue is identified and a value is provided in the **Issue identified** field. Once the task is closed, this field can't be modified.

**13.** Enter notes related to the task in the **Work notes** field.

**14.** Select **Close task**.

## Result

- If you had set the Evaluation result to **To be disposed**, the following changes happen on closure of the task:
  1. The repair order and the repair order line are in the Completed stage.
  2. The state of the asset changes to In stock and the substate changes to Pending disposal.
- If you had set the Evaluation result to **Redeployable**, the following changes happen on closure of the task:
  1. The repair order and the repair order line are in the Completed stage.
  2. The state of the asset changes to In stock and the substate changes to Available.

## Bulk close asset repair tasks in the Enterprise Asset Workspace

Complete and close multiple repair tasks at one go to process a repair order with multiple repair order lines.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_technician

### About this task

You can bulk close only similar asset repair tasks that are in the Open state. However, you can't bulk close similar repair tasks for which the task result isn't the same. For example, you can't bulk close two Troubleshoot assets tasks, when one task has a repairable asset and the other has an unrepairable asset.

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select a repair order with multiple open repair order lines for which you want to complete the asset repair tasks.
4. Select the **Repair order lines** tab.
5. Select the repair order line that you want to complete.
6. Select the repair task that you want to close.
7. On the Details form, select the task result.

- If you're completing a Troubleshoot asset task, then select any of the following results in the **Troubleshoot result** field:
    - **Repairable**
    - **Unrepairable**
    - **Redeployable**
  - If you're completing a Repair asset task, then select any of the following results in the **Repair result** field:
    - **Repaired**
    - **Unrepairable**
    - **Redeployable**
  - If you're completing an Evaluate asset task, then select any of the following results in the **Evaluation result** field:
    - **Redeployable**
    - **To be disposed**
8. Enter notes related to the task in the **Work notes** field.
  9. Select **Save**.
  10. Select **Bulk Close**.  
The **Select Assets** dialog box with similar repair tasks is displayed.
  11. Select the tasks that you want to close and select **Close Task**.

### Result

All the selected repair tasks are closed with the same task result and Work notes.

### Cancel a repair order in the Enterprise Asset Workspace

Cancel a repair order that no longer needs to be fulfilled.

### Before you begin

Role required: enterprise\_asset

### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select a repair order that's in the Draft or In Progress stage.
4. Select **Cancel**.

### Result

- The stage of the repair order changes to Cancelled and the state changes to Closed Incomplete.
- The stage and state of the repair order lines that weren't completed change to Cancelled and Closed Incomplete.

### Cancel a repair order line in the Enterprise Asset Workspace

Cancel a repair order line that no longer needs to be fulfilled.

### Before you begin

Role required: enterprise\_asset

## Procedure

1. Navigate to **All > Enterprise Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select a repair order that's in the **Draft** or **In progress** stage.
4. Select the **Repair order lines** tab.
5. Select the repair order line that you want to cancel.  
You can cancel a repair order line that is not in the Completed stage.
6. Select **Cancel**.

## Result

- The stage of the repair order line changes to Cancelled and the state changes to Closed Incomplete.
- The state of the associated repair asset tasks that were open changes to Closed Incomplete.
- The stage of the repair order changes to Cancelled only if there aren't any other repair order lines that are in the Troubleshoot, Repair, Evaluate, or Completed stage.

## Record time worked on asset repair tasks in the Enterprise Asset Workspace

Manage and record time worked on Troubleshoot asset, Repair asset, and Evaluate asset tasks in the Enterprise Asset Workspace. After you start work on a repair asset task, you can pause and resume work. You can also record the time worked manually.

## Record time worked on a repair task automatically in the Enterprise Asset Workspace

Record the time that you took to complete a repair task without taking any break until you completed the task.

## Before you begin

Role required: enterprise\_asset\_technician

## About this task

You can record the time worked for Troubleshoot asset, Repair asset, and Evaluate asset tasks that are in the Open state.

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select the repair order that you're working on.
4. Select the **Repair order lines** tab.
5. Select the repair order line that you're working on.
6. Select the **Repair asset tasks** tab.
7. Select the asset repair task for which you want to record the time worked.
8. Indicate that you started work on the task by selecting **Start Work**.  
The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
9. Select **Start Timer**.
10. After you have completed working on the task, on the **Details** form, select the task result.

- If you have completed a Troubleshoot asset task, then select any of the following results in the **Troubleshoot result** field:
  - **Repairable**
  - **Unrepairable**
  - **Redeployable**
- If you have completed a Repair asset task, then select any of the following results in the **Repair result** field:
  - **Repaired**
  - **Unrepairable**
  - **Redeployable**
- If you have completed an Evaluate asset task, then select any of the following results in the **Evaluation result** field:
  - **Redeployable**
  - **To be disposed**

**11.** Enter notes related to the task in the **Work notes** field.

**12.** Select **Close Task**.

### Result

The actual time you worked on the task completion is automatically calculated. An entry for the time worked is created in the Time Worked tab of the asset repair task.

### Record time worked on a repair task manually in the Enterprise Asset Workspace

Create an entry for the time worked on a repair task manually in the Enterprise Asset Workspace.

### Before you begin

Role required: enterprise\_asset\_technician

### Procedure

- 1.** Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
- 2.** Select the **Repair orders** tab.
- 3.** Select the repair order that you're working on.
- 4.** Select the **Repair order lines** tab.
- 5.** Select the repair order line that you're working on.
- 6.** Select the **Repair asset tasks** tab.
- 7.** Select the task for which you want to record time manually.
- 8.** Indicate that you started work on the task by selecting **Start Work**.  
The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
- 9.** Select **Record Time**.
- 10.** In the **Record Time** dialog box, enter the details of the time worked.
  - a.** Enter the time duration that you worked on the task in the **Days**, **Hours**, and **Minutes** fields.
  - b. Optional:** Provide any additional information in the **Comments** field.
- 11.** Select **Save**.

**Result**

The Time Worked form is saved and the time card is added to the Time Worked tab of the asset repair task.

**Pause a repair task in the Enterprise Asset Workspace**

Record a break from a repair task in the Enterprise Asset Workspace if you're not continuing to work on it. Resume the task when you start working on it again. The system automatically tracks and calculates the actual time taken to complete the task even though the work was interrupted.

**Before you begin**

You can pause an asset repair task that is in the Work in Progress state. The option to pause the task is available only after you perform the following actions for the asset repair task:

1. Indicate that you have started working on the task by selecting **Start Work**.
2. Start recording the time by selecting **Start Timer**.

Role required: asset\_technician

**Before you begin**

Role required: enterprise\_asset\_technician

**Procedure**

1. Navigate to **Workspaces > Hardware Asset Workspace > Inventory**.
2. Select the **Repair orders** tab.
3. Select the repair order that you're working on.
4. Select the **Repair order lines** tab.
5. Select the repair order line that you're working on.
6. Select the **Repair asset tasks** tab.
7. Select the task that you want to pause.
8. Select **Pause Work**.  
The **Pause Work** changes to **Resume Work**.
9. Select **Resume Work** when you're ready to work on the activity again.

**Result**

Each time you pause or resume work on the task, the actual time you worked on the task is automatically calculated. An entry for the time worked is created in the Time Worked tab.

**Manage picking enterprise assets within your stockroom for Enterprise Asset Management workflows**

Enable the Asset pick task explicitly for your stockroom and provide granular location details of the asset to facilitate asset picking within your stockroom.

**Enable the Asset pick task for your stockroom in the Enterprise Asset Workspace**

Enable the Asset pick task for your stockroom so that the task is automatically added to Standard Enterprise Asset requests, Enterprise Asset Refresh requests, and Sourcing workflow.

**Before you begin**

Role required: inventory\_user

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. From the list of available stockrooms, select the stockroom for which you want to enable the Asset pick task.
4. On the Stockroom Details form, select the **Warehouse tasks required** check box.
5. Select **Save**.

## Add aisles and spaces to a stockroom in the Enterprise Asset Workspace

Add details of aisles and spaces in a stockroom to provide granular location details of an asset in that stockroom. The aisle and space details enable you to locate and pick an asset in the stockroom.

### Before you begin

Role required: inventory\_user

### About this task

A space is associated with an aisle in the stockroom. You can add a space only after you have added a minimum of one aisle to the stockroom.

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select a stockroom.
4. Select the **Aisle and spaces** tab.  
The list of existing aisles and spaces in that stockroom is displayed.
5. Add aisles to the selected stockroom.
  - a. Select **Add aisle**.  
The **Add aisle** dialog box is displayed.
  - b. In the **Aisle** field, enter a unique identifier for the aisle.  
You can enter any string value in this field. For example, aisle\_0001.
  - c. **Optional:** To add more aisles, select the Add icon ( **+** ) and enter a unique identifier for the aisle in the **Aisle** field.
  - d. Select **OK**.  
The aisle is added to the list in the Aisle and spaces tab.
6. Add a space to an aisle in the stockroom.
  - a. Select **Add space**.  
The **Add space** dialog box is displayed.
  - b. In the **Aisle** field, select the aisle for which you want to add a space.

c. In the **Space** field, enter a unique identifier for the space.

You can enter any string value in this field. For example, `space_0001`.

d. **Optional:** To add more spaces, select the Add icon ( **+** ) and enter a unique identifier for the space in the **Space** field.

e. Select **OK**.

- The space is added to the list in the Aisle and spaces tab.
- The display name of the space is automatically set based on the **Aisle** and **Space** fields. For example, the display name of the space whose aisle is `aisle_001` and space is `space_001` is **aisle\_001 - space\_001**.

### View the open enterprise asset pick tasks for your stockroom

View the open asset pick tasks for your stockroom to get the details of the tasks that need action.

#### Before you begin

Role required: `inventory_user`

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom.  
In the Open stockroom tasks section, the **Open pick tasks** card displays the number of open pick tasks.
4. Select the **Open pick tasks** card.

#### Result

The list of open asset pick tasks for the stockroom is displayed.

#### What to do next

Manage all the enterprise asset pick tasks assigned to you by using the Mobile Agent application. For details, see [Manage enterprise asset pick tasks using the Mobile Agent application](#).

#### Manage asset put away using the Enterprise Asset Workspace

Enable the Asset put away task explicitly for your stockroom to put away the assets from the receiving bay in the designated aisle-space. View the open Asset put away task and close it after specifying the aisle-space value to move the asset in the stockroom.

**i Important:** The Asset put away feature is available with Enterprise Asset Management version 9.0 onwards.

#### Enable the asset put away task for your stockroom in the Enterprise Asset Workspace

Enable the Asset put away feature for your stockroom so that the Asset put away task is automatically created to track asset movement.

#### Before you begin

Role required: `inventory_user`

## Procedure

1. Navigate to **Workspaces** > *Enterprise Asset Workspace* > **Inventory**.
2. Select the **All stockrooms** tab.
3. From the list of available stockrooms, select the stockroom for which you want to enable the Asset put away task.
4. On the Stockroom Details form, select the **Warehouse tasks required** check box.
5. Select **Save**.

## Result

The inventory user can perform asset put away for in stock assets in the stockroom.

### View open put away tasks for your stockroom in the Enterprise Asset Workspace

View the open put away tasks for your stockroom in the Enterprise Asset Workspace to get the details of the tasks that need action.

## Before you begin

Role required: inventory\_user

## Procedure

1. Navigate to **Workspaces** > *Enterprise Asset Workspace* > **Inventory**.
2. View the open put away task either from the Inventory overview section or the All Stockrooms tab.
  - In the Inventory overview section, select the **Open put away tasks** number.
  - In the **Stockrooms** tab, select a stockroom. In the Open stockroom tasks section, select the **Open put away tasks** number.

## Result

The list of open Asset put away tasks are displayed.

## What to do next

Put away the asset in the desired drop-off location in the stock room and close the Asset put away task after adding the **Drop off location** field value in the Asset put away task form. For more information about closing Asset put away task, see [Close an Asset put away task in the Enterprise Asset Workspace](#).

### Create an Asset put away task in the Enterprise Asset Workspace

Create an Asset put away task manually for the In stock assets in the Enterprise Asset Workspace to track the movement of assets within the stockroom.

## Before you begin

Role required: inventory\_user

## About this task

You can create an asset put away task in the Enterprise Asset Workspace for the In stock assets for which the **Aisle and Space** field value isn't already specified. When you create a put away task, you can either directly close the task or save it. To close the task, the **Drop off location** field value is required.

## Procedure

1. Navigate to **Workspaces** > *Enterprise Asset Workspace* > **Inventory**.
2. Open the Create New Asset put away task form either from the Inventory overview section or the All Stockrooms tab.
  - In the Inventory overview section, select the **Open put away tasks** card and select **New**.
  - In the Stockrooms tab, select a Stockroom and then in the Open stockroom tasks section, select the **Open put away tasks** card. Select **New**.
3. On the form, fill in the fields.  
For a description of the field values, see [Asset put away task fields](#).
4. Save your modifications.
  - To save your changes and create the Asset put away task, select **Save**.
  - To save your changes and close the Asset put away task, select **Close task**.

**Note:** **Drop off location** field value is required to close the Asset put away task.

## Close an Asset put away task in the Enterprise Asset Workspace

Add the asset drop-off location for an open Asset put away task and close it in the *Enterprise Asset Workspace*.

### Before you begin

Role required: inventory\_user

### About this task

You can bulk close selected Asset put away tasks that are open and assigned to you by specifying a drop-off location, which moves all associated assets to that location. You can also close individual tasks by specifying a drop-off location.

**Note:** When you make the following changes to an enterprise asset, the associated Asset put away task is closed:

- When the asset's **Aisle and Space** value is filled, the associated Asset put away task for the asset is closed, and the **State** field is updated to **Closed Complete**.
- When the asset's **State** is updated from In stock to some other value without adding the **Aisle and Space** field value, the associated Asset put away task is closed and its **State** field is updated to **Closed Incomplete**.

## Procedure

1. Navigate to **Workspaces** > *Enterprise Asset Workspace* > **Inventory**.
2. Open the put away task either from the Inventory overview section or the **All Stockrooms** tab.
  - In the Inventory overview section, select the **Open put away tasks** card and select the **Number** link to open the Asset put away task.
  - In the **All Stockrooms** tab, select a stockroom. In the Open stockroom tasks section, select the **Open put away tasks** card and then select the **Number** link to open the Asset put away task.
3. In the Put away task form, select the **Drop off location** value.
4. Save your modifications or close the put away task.
  - To close the put away task, select **Close task**.
  - To save your changes and stay on the same page, select **Save**.

- To close multiple put away tasks, select **Bulk close**.

The **Select Assets** dialog box is displayed listing the Asset put away tasks assigned to you. Select the tasks that you want to close and select **Close Task**.

## Result

- Closed tasks aren't displayed in the Open put away tasks list.
- The task closure is captured in the **Activity** tab. The name of the user who closed the task is shown in the work notes.

## Manage the receiving of assets at stockrooms in the Enterprise Asset Workspace

Receive enterprise and consumable assets at stockrooms from any workflow at a centralized location on the stockroom form in the Enterprise Asset Workspace.

**i Important:** The options to receive assets at your stockroom through the standardized asset receiving mechanism is available with Enterprise Asset Management version 9.0 and later.

Depending on the number and type of assets that you want to receive, you can select from the following options to receive assets at your stockroom:

- [Receive a single enterprise asset at your stockroom.](#)
- [Receive one or more enterprise and consumable assets from the list of shipment assets.](#)
- [Import and receive enterprise and consumable assets in bulk through an Excel template.](#)

**i Note:** You should have the `sn_eam.enterprise_admin` role to import asset records using the Excel template.

For more details, see [Receiving enterprise and consumable assets at stockrooms](#).

## Receive an enterprise asset at a stockroom in the Enterprise Asset Workspace

Receive a single enterprise asset that has arrived at your stockroom, whether it's part of a workflow or not, in the Enterprise Asset Workspace.

### Before you begin

**i Important:** The option to receive an enterprise asset at your stockroom through the standardized asset receiving mechanism is available in Enterprise Asset Management version 9.0 and later.

Role required: `sn_eam.asset_technician` or `sn_eam.enterprise_asset_manager`

### About this task

This task enables you to receive assets in the following scenarios:

#### Receiving an enterprise asset with an existing record

When you're receiving an enterprise asset from workflows such as a transfer order or Return Merchandise Authorization (RMA), where a repaired asset has arrived at your stockroom, the asset record exists in your ServiceNow instance. You can search for the existing asset record using the Asset tag or Serial number and then receive the asset, which automatically closes the receive task of the source workflow.

#### Receiving a new enterprise asset at your stockroom

When you're physically receiving a new enterprise asset at your stockroom, it's likely that the asset record isn't present in your ServiceNow instance. You can receive new assets through workflows like a purchase order, asset refresh, or RMA with a replacement asset. Through this task, you can create an asset record and associate it with the source workflow, which automatically closes the receive task linked to the source workflow.

### Receiving an independent enterprise asset

You can receive an enterprise asset that isn't part of any workflow and has arrived at your stockroom.

**i Important:** You can also receive a hardware asset only if the Hardware Asset Management application is activated.

### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom for which you want to receive the hardware asset.
4. Select **Receive assets**.
5. Find the enterprise asset that you want to receive.
  - a. In the Receive assets dialog box, enter the Asset tag or Serial number of the asset that you want to receive in the search field.
  - b. Select **Search**.
    - If the asset record is found, it appears in the Assets list.

#### **i Note:**

The following asset details are displayed:

- **Display name**
  - **Model category**
  - **Asset tag**
  - **Quantity**
  - **State**
  - **Stockroom**
  - **Location**
- If the asset record isn't found, a message appears indicating that the asset isn't found, along with an option to create the asset record.
6. Receive the enterprise asset in your stockroom.
    - If the asset record is found in the Assets list, select the asset record and then select **Receive**.

### Result

- The State of the asset changes from **In transit** to **In stock**.
  - The **Stockroom** field on the asset form is automatically updated with the stockroom at which you received the asset.
  - The receive task in the source workflow associated with the asset that you received are automatically closed.
- If the asset record isn't found, create one to receive.
- a. Select **Create asset**.
  - b. In the Create asset dialog box, enter the details.

**Create asset dialog box**

Field	Description
Model	Specific product model of the asset.  This field is required.
Model Category	Model grouping of the asset.  This field is required.
Serial Number	Serial number of the asset.  <b>Note:</b> Depending on the Model Category that you selected, this field is either required or optional. For instance, Serial number is required for Computer model category.
Asset Tag	Tag to help track the asset.
Mac Address	MAC address of the asset.
Stockroom name	Name of the stockroom that you selected to receive the asset.  This field is automatically populated and is read only.
Source type	Source workflow to which the asset that you're receiving belongs. <ul style="list-style-type: none"> <li>▪ To receive the asset from a purchase order, select <b>PO</b>.</li> <li>▪ To receive the asset from the RMA flow, select <b>Asset RMA</b>.</li> <li>▪ To receive the asset through asset refresh workflow, select <b>Refresh</b>.</li> </ul>
Source ticket	Request number of the source workflow that's associated with the asset that you want to receive. <ul style="list-style-type: none"> <li>▪ To receive an asset from a purchase order or asset refresh order, select the associated PO line number.</li> <li>▪ To receive an asset from an RMA order, select the associated RMA line number.</li> </ul> <b>Note:</b> Source tickets are displayed based on the model and source type that you selected.

**i Important:**

Providing the Source type and Source ticket details is optional when creating an asset record. However, including these details links the enterprise asset to the source workflow. This link results in the automatic closure of the Receive task in the source workflow when the asset is created. If you don't include these details, the asset record is still created, but you should close the Receive task manually in the source workflow.

Note the following points before you consider creating an asset record:

- If you're receiving an asset from an RMA workflow, you can create an asset record first. Later, you can manually add the details of this asset in the Asset RMA receive task, and then close the task.
- If you're receiving an asset from a purchase order, you can create an asset record for the asset you physically received. However, you can't receive the same asset later through the Receive task on the purchase order.

**c. Select **Create**.****Result**

- An asset record is created with State as **In stock** and Substate as **Available**.
- The **Stockroom** field on the asset form is automatically updated with the stockroom at which you received the asset.
- The receive task in the source workflow is automatically closed only if you provided the Source type and Source ticket details.

**Receive assets from inbound shipments at your stockroom in the Enterprise Asset Workspace**

Receive enterprise and consumable assets from one or more shipments that are in transit to your stockroom in the Enterprise Asset Workspace. You can receive assets from shipments originating from any workflow.

**Before you begin**

**i Important:** The option to receive assets from inbound shipments at your stockroom through the standardized asset receiving mechanism is available in Enterprise Asset Management version 9.0 and later.

Role required: sn\_eam.asset\_technician or sn\_eam.enterprise\_asset\_manager

**About this task**

If you don't have the details of the assets you want to receive at your stockroom, you can view the list of assets that are on their way and then receive them. You can receive the complete quantity of consumables in the shipments, not a partial quantity.

Assets from an inbound shipment can be received under the following conditions:

- The assets must have a serial number and an asset tag.
- The assets must be in the In-transit state and linked to a shipment record.
- Hardware assets can be received only if the Hardware Asset Management application is activated.

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom for which you want to receive hardware or consumable assets.
4. Select **Receive assets**.
5. In the Receive assets dialog box, select **View all inbound assets**.  
A list of all shipment assets currently on their way to the stockroom is displayed.

The following details of a shipment are displayed:

- **Asset:** Display name of the asset.
- **Stage:** Stage of the shipment.

**Note:** Only shipments that are In transit are displayed.

- **Model categories:** Model grouping of the asset.
  - **Quantity:** Number of assets to be received.
  - **Asset tag:** Tag to track the asset.
  - **Serial number:** Serial number of the asset.
  - **Tracking number:** Identifier to track the shipment.
  - **Source:** Details of the source workflow including the request number through which you're receiving the asset. The source could be a transfer order line, a purchase order line, an RMA order line, or any other workflow through which the asset is received.
6. Select the shipment asset that you want to receive and then select **Receive**.

## Result

If the asset details are valid, the following changes occur:

- The assets are received successfully.
- The State of the assets changes from **In transit** to **In stock**, and the Substate of the assets changes from **Reserved** to **Available**.
- The stockroom field on the asset form is automatically updated with the stockroom at which you received the assets.
- The Status of the shipment tasks associated with the assets changes to **Delivered**.
- The receive tasks in the source workflows are automatically closed.

If any of the asset details are invalid, an error message is shown in the **Alert** column for the corresponding asset record. You should resolve the error before receiving the assets.

## Import and receive assets in bulk at your stockroom in the Enterprise Asset Workspace

Receive multiple enterprise and consumable assets at your stockroom by importing the asset records using an Excel template in the Enterprise Asset Workspace.

## Before you begin

- Important:** The option to import and receive assets in bulk through the standardized asset receiving mechanism is available in Enterprise Asset Management version 9.0 and later.

Role required: sn\_eam.enterprise\_admin

## About this task

This task enables you to receive assets with existing records, and also new assets, only if you have provided valid asset details in the template.

When you import a template with asset details, extensive validation is performed on each row. The records from the template and the validation results are stored in the Import asset row [sn\_itam\_cmn\_import\_asset\_row] table.

**Note:** The *sn\_itam\_common.receive\_assets\_batch\_size* system property determines how many asset records are processed at once when logging imports and receiving jobs. By default, the system handles 1,000 asset records per batch. With the admin role, you can adjust this number to optimize the system performance and handle large volume of assets. This system property supports domain separation by using the application property.

The asset data validation takes care of the following points:

- Child assets can't be received.
- Hardware assets can only be received if the Hardware Asset Management application is activated.
- Operational Technology (OT) assets can only be received if the OT Asset Management application is activated.
- Assets can be received only if the following conditions are fulfilled:
  - The required fields are provided.
  - The asset quantity is valid.
  - The Source type and Source ticket details are valid.
- Asset from purchase order lines can be received only in Zurich and later releases.
- Asset bundles can't be received.

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. Select the stockroom for which you want to receive hardware or consumable assets.
4. Select **Import assets**.
5. Prepare the asset data for import, and then proceed with the import.
  - a. Download, update, and save the asset import template.
    - i. Select **Download Template**.
    - ii. Fill in the template with the details of the assets that you want to import and receive.

The template has the following columns:

- **Asset tag** and **Serial number**: These fields are used to determine whether the asset record exists in your ServiceNow instance or not.
- **Model category**, **Model name**, and **Model number**: The fields required to validate an asset record depend on the model category. For example, a serial number is required for the Computer model category, and you can receive assets of that model category only if the serial number is provided. Additionally, if an asset record isn't found, fields related to the model are required to create one using the Asset tag and Serial number values provided in the template.

- **Quantity:** This field should have a value of 1 for enterprise assets, and for consumables, it should reflect the number of assets you're receiving. You can't receive a partial quantity of consumables.
- **Manufacturer:** Asset manufacturer.
- **Source type:** The source type is the workflow through which you're receiving the asset. You should enter values that correspond to the workflows, such as the following:
  - TOL for transfer order line
  - POL for purchase order line
  - RMAL for Return Merchandise Authorization (RMA)

**i Note:** This field is required for a consumable asset so that the correct asset is identified and received.

- **Source ticket:** The request number of the source workflow that's associated with the asset that you want to receive, such as TO line number, PO line number, or RMA line number.

**i Note:** This field is required for a consumable asset so that the correct asset is identified and received.

- **Reserved for**
- **Parent asset**
- **MAC address** and **OT entity:** These fields are required to identify and receive OT assets.

iii. Save the template.

b. On the Create New Import asset form, fill in the details.

i. In the **Name** field, provide a name for the asset import record.

ii. Select **Attach file** and then select the asset import template that you created in step a.

c. Select **Import**.

- The **Import asset data rows** tab is displayed, showing all the asset record rows that were imported through the Excel template.

**i Note:** Depending on the number of records being processed, it might take some time for the asset records to appear in the Import Asset Data Rows tab.

- The **Status** column indicates whether the asset is ready to be received. Here are the possible values:

- **Ready to receive:** This status indicates that the asset data is valid and ready to be received at your stockroom.
  - **Receive error (Asset not found):** This error indicates that no asset records match the details you provided in the template. However, since the details are valid, asset records will be created when you proceed with the Receive action.
  - **Import error:** This error is because of the invalid asset data provided in the asset import template, such as duplicate serial numbers or invalid quantity for hardware assets.
  - The **Alert** column provides details about any errors and the steps that you should take to resolve them and successfully receive the asset.
- Note:** You can proceed to receive assets with a status of Ready to receive or Receive error.

For assets with a status of Import error, correct the data issues in your template and create a new import record to import the corrected template. You can then receive the assets.

## 6. Receive assets at your stockroom.

- a. Select the import data rows corresponding to the assets that you want to receive.
- b. Select **Receive**.

If you received the assets with Status Ready to receive, the following changes happen:

- The State of the assets changes from **In transit** to **In stock**, and the Substate of the assets changes from **Reserved** to **Available**.
- The **Stockroom** field on the asset form is automatically updated with the stockroom at which you received the assets.
- The receive tasks in the source workflows associated with the assets that you received are automatically closed.

If you received the assets with Status Receive error, the following changes happen:

- Asset records are created with State as **In stock** and Substate as **Available**.
- The **Stockroom** field on the asset form is automatically updated with the stockroom at which you received the assets.
- The receive task in the source workflow is automatically closed only if you provided the Source type and Source ticket details.

## Manage stockrooms with inventory reports in the Enterprise Asset Workspace

Track and manage stockrooms efficiently by evaluating the inventory reports in the Enterprise Asset Workspace.

**Important:** The inventory reports are available with Enterprise Asset Management version 9.0 and later.

The inventory reports help you:

- Find replacement options or spare part availability for assets.
- Quickly identify shortages and align current demand in your stockroom with both current and incoming supply.
- Analyze the supply to meet open demand across all stockrooms or locations.

## Identify suitable replacement options for assets in the Enterprise Asset Workspace

Use the Inventory availability report to determine suitable replacement options for your assets and their child components that are in use, in maintenance, pending repair, or defective. The report also helps you to determine the quantity of available substitute models that can be used locally, moved through the distribution channels, and estimate the lead time for new purchases.

### Before you begin

**i Important:** The Inventory availability report is available with Enterprise Asset Management version 9.0 and later.

The Inventory availability report is available only for enterprise, consumable, and bundle assets that are in use, in maintenance, pending repair, or defective.

Service locations and distribution channels should be configured for the stockroom. If the asset's location is a service location of a stockroom, it automatically becomes the local stockroom. A location can have multiple local stockrooms if it is serviced by more than one stockroom. For more details, see [Add a distribution channel to a stockroom in the Enterprise Asset Workspace](#) and [Add service locations to a stockroom in the Enterprise Asset Workspace](#).

Role required: sn\_eam.enterprise\_asset\_technician or sn\_eam.enterprise\_asset\_manager

### About this task

The Inventory availability report helps you to identify the best sourcing option when sourcing parts for assets or its components that are in use and nearing the end of their life, defective, or pending repair. Additionally, you can check how much stock is currently available at a stockroom.

### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Enterprise asset estate**.
2. Select the asset for which you want to view the replacement assets available in the local and remote stockrooms.
3. Select the **Inventory availability** tab.

The list displays the asset and any of its child assets, along with their linked models and any substitute models. The list includes the following details:

#### Inventory availability report

Field	Description
Asset	Display name of the asset.
Model	Model of the asset.  <b>i Note:</b> If there are any substitute models for the asset model, they're also displayed.
Asset type	Indicates whether the asset is the original asset or a substitute model asset.  This field can have any of the following values: <ul style="list-style-type: none"> <li>○ <b>Original parent</b> for the actual parent asset.</li> <li>○ <b>Original child</b> for the child of the original parent asset.</li> <li>○ <b>Substitute parent</b> for the asset of the substitute model.</li> <li>○ <b>Substitute child</b> for the child asset of the substitute model.</li> </ul>

Field	Description
Local stockroom quantity	<p>Quantity of assets that are in stock and available in the stockrooms that service the asset location.</p> <p><b>Note:</b></p> <p>If you select the quantity shown, you can view the full list of assets in your local stockroom that can be used as replacements. There can be multiple local stockrooms if more than one stockroom serves the same location.</p>
Remote stockroom quantity	<p>Quantity of assets that are in stock and available in the distribution channel stockrooms that are marked as inbound stockrooms to the current local stockroom.</p> <p><b>Note:</b></p> <p>If you select the quantity shown, you can view the full list of assets in your distribution channel stockrooms that can be used as replacements.</p>
Purchase lead time	<p>Average time in days it has taken from ordering to receiving replacement assets through new purchase orders.</p>

### Identify the supply and demand for models within a stockroom in the Enterprise Asset Workspace

Use the Supply vs Demand report to evaluate the available and incoming quantity of models in your stockroom and the requests for these models from different service locations. This report helps you determine if you have enough assets to meet the demand.

#### Before you begin

**Important:** The Supply vs Demand report is available with Enterprise Asset Management version 9.0 and later.

Role required: sn\_eam.enterprise\_asset\_technician or sn\_eam.enterprise\_asset\_manager

#### About this task

Supply refers to the assets that are currently in stock and those that are incoming at your stockroom. Demand refers to the requests for assets from different service locations that your stockroom services.

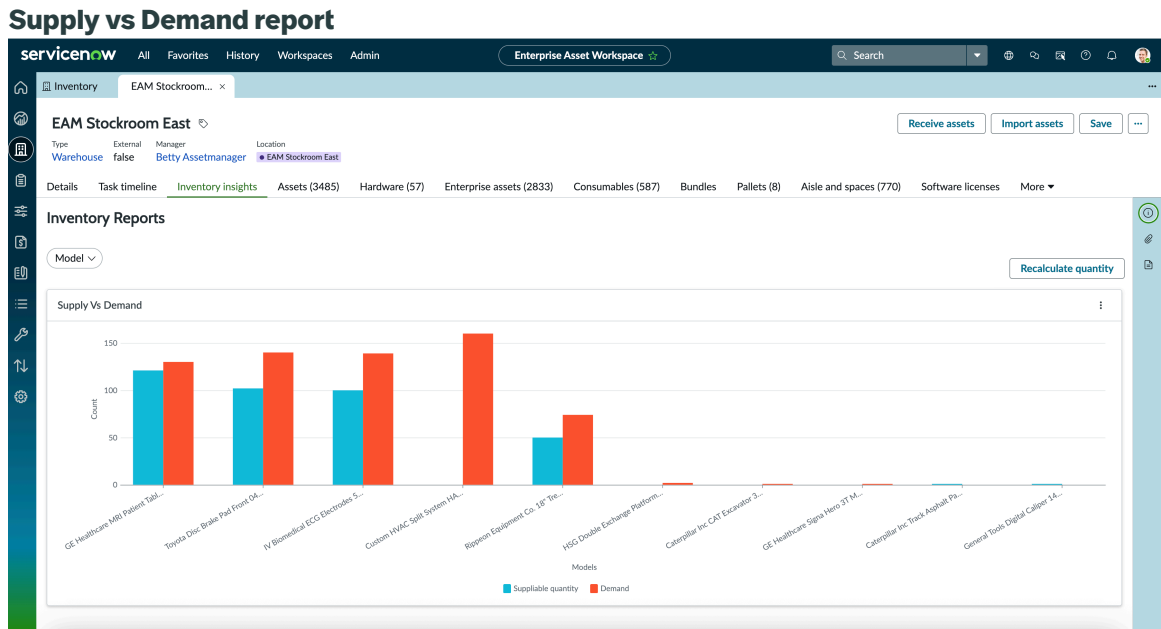
Note the following points about the Supply vs Demand report:

- Supply of an asset model to your stockroom includes:
  - In stock assets that are in the Available, Reserved, Pending transfer, and Pending install stage
  - Incoming transfer orders that are partially shipped, fully shipped, in transit, received, and delivered
  - Incoming purchase orders that are ordered
- Demand for an asset model includes:
  - Outgoing transfer orders that are in the Draft, Requested, and Shipment preparation stage
  - Asset requests
  - Refresh requests
  - Work order parts requests

The supply and demand details are stored in the Model and stockrooms [sn\_asset\_model\_and\_stockroom] table. The *Populate model and stockroom data* scheduled job runs daily to populate this table.

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Inventory**.
2. Select the **All stockrooms** tab.
3. From the list of stockrooms, select the one for which you want to view the supply and demand details.
4. Select the **Inventory insights** tab.



The Supply vs Demand report shows the count on the y-axis and the model on the x-axis, with separate bars for supply and demand for each model. This visual representation helps you to compare the available quantity of each model in the stockroom with the number of requests from different service locations. By looking at the graph, you can determine which models have enough supply to meet demand and which ones need more stock.

**Note:** By default, the graph shows details for only 10 models.

5. View the details of the model that isn't shown on the report.
  - a. Select the **Model** filter.
  - b. Enter the model in the search field or select the model from the **Available** list.
  - c. Move the selected model to the **Applied** list.
  - d. Select **Apply**.
6. To further drill down into the supply or demand for a model and view its component-level details, select the corresponding bar.
  - The supply graph shows the count of the following:
    - **In stock assets**
    - **Incoming transfer order**
    - **Incoming purchase order**

- The demand graph shows the count of the following:
  - **Outgoing transfer order**
  - **Asset requests**
  - **Refresh requests**
  - **Work order parts requests**

By selecting the relevant bars, you can view the list of assets that make up the count.

**7. Optional:** To initiate the calculation of supply and demand for asset models manually, select **Recalculate quantity**.

(Optional) The Supply vs Demand graph updates to show the recently calculated values.

### Identify the supply for open demands in the Enterprise Asset Workspace

Use the Open demands report to determine available stock within local stockrooms and distribution channels to fulfill sourcing requests that are open.

#### Before you begin

**i Important:** The Open demands report is available with Enterprise Asset Management version 9.0 and later.

Role required: sn\_eam.enterprise\_asset\_manager

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Procurement**.
2. In the Procurement overview, select **Open demands**.

The report displays the list of open demands with the following details:

- Requests and Requested items.
- The quantity of the requested model available in local stockrooms that serve the asset location.
- The quantity of the requested model available in distribution channel stockrooms that serve the asset location.
- The purchase lead time, which is the average time in days it has taken from ordering to receiving assets through new purchase orders.

3. To view the current stock availability in the local stockrooms for all open requests for a model and determine if there is sufficient quantity, select the number shown in the **Local stockroom quantity** column.

The available asset quantity is determined by the current state. If two requests from a service location, which is serviced by two or more stockrooms, are for the same model and the available quantity is 100, the report will show 100 available in the local stockroom for both requests. Once one request is fulfilled, the quantity will update to reflect the remaining amount for the other request.

4. To view the current stock availability in the distribution channel stockrooms for all open requests for a model and determine if there is sufficient quantity, select the number shown in the **Remote stockroom quantity** column.

### Create and manage contracts for enterprise assets

Create contracts for your enterprise assets and manage them by taking actions on contracts that are nearing expiration or already expired.

## Overview of creating contracts

You can create various types of contracts for your enterprise assets, including lease, insurance, maintenance, warranty, purchase agreement, non-disclosure, terms & conditions, service, purchase order, software license, and subscription contracts.

Contracts are legally binding agreements that define mutual obligations between two or more parties. These obligations can include the contract start and end dates, terms and conditions, renewal information, financial terms, and covered users or assets.

For details on how to create insurance, maintenance, warranty, purchase agreement, non-disclosure, terms & conditions, and service contracts for your enterprise assets, see [Create a contract](#). For details on how to create contracts for your leased enterprise assets, see [Create a contract for your leased enterprise assets](#).

## Overview of managing contracts

You can take action on certain enterprise asset contracts that are either nearing their expiration or have already expired.

If a maintenance or warranty contract is expiring or has already expired, you can renew the contract by using the contract renewal workflow. For more information on renewing expiring maintenance and warranty contracts, see [Contract renewal workflow](#).

If a lease contract is expiring or has already expired, you can choose to:

- return the associated enterprise assets to the asset vendor,
- buy out the associated enterprise assets so that you can permanently add them to your asset inventory,
- or extend the contract.

For more information on managing expiring lease contracts, see [Managing expiring contracts for leased enterprise assets](#).

## Create a contract for your leased enterprise assets

Create a contract to define the lease details of your enterprise assets.

### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

### About this task

The following steps describe how to create contracts for leased enterprise assets only. For information on how to create other types of contracts, see [Contract Management](#).

### Procedure

1. From the Enterprise Asset Workspace, open the Contract and lease management view.
2. On the **Lease contracts** tab, select **New**.
3. On the Create New Contract form, fill in the fields.  
See [Contract fields for Enterprise Asset Management](#) for a detailed description of each field.
4. Select **Save**.  
A new contract record is created for the lease contract.
5. Build terms and conditions for the lease contract.  
Before you can build terms and conditions for a lease contract, you must create a terms and conditions record and add it to the contract. For detailed instructions on how to create a terms

and conditions record, see [Create a terms and conditions record](#). For detailed instructions on how to add a terms and conditions record to a contract, see [Add terms and conditions to a contract](#).

a. On the lease contract record header, select the More Actions icon (  ).

b. When prompted, select **Build Terms and Conditions**.

The terms and conditions are built for the lease contract and added to the **Contract History** tab of the lease contract record. On the **Contract History** tab, you can select the date in the **Contract Starts** field to view the complete terms and conditions for the lease contract.

6. Add all enterprise assets that are covered by the lease contract.

**Note:** If you created a multi-component asset from a multi-component model, only the parent asset can be added to the lease contract. The associated child assets cannot be added to the lease contract. See [Multi-component models and assets in Enterprise Asset Management](#) for more information on multi-component assets.

a. On the **Assets Covered** tab of the lease contract record, select **Add**.

The Add assets dialog box opens.

b. In the dialog box, select the check box for each enterprise asset that is covered by the lease contract.

**Note:** The dialog box displays only the enterprise assets that are not already covered by another active lease contract.

c. Select **Add**.

The dialog box closes and the **Assets Covered** tab automatically reloads with the list of all enterprise assets that you added.

7. Create expense lines to track the cost of each enterprise asset that is covered by the lease contract.

a. On the **Expense Lines** tab of the lease contract record, select **New**.

b. On the Create New Expense Line form, fill in the fields.

See [Expense line fields for Enterprise Asset Management](#) for a detailed description of each field.

c. Select **Save**.

A new expense line record is created for the selected enterprise asset.

d. Close the expense line record to return to the **Expense Lines** tab of the lease contract record.

e. Repeat steps a to d for each expense line that you want to create.

8. Create child contracts that you want to associate with the lease contract.

a. On the **Child Contracts** tab of the lease contract record, select **New**.

b. In the **Contract model** field of the Create New Contract form, search for and select the type of contract that you want to create.

- c. Configure the child contract by following the same steps that you used to configure the lease contract (steps 3 to 7).
- d. Select **Submit For Review**.  
A review notification is sent to the user that you specified in the **Approver** field of the child contract record. After reviewing the child contract, the user can either approve or reject it.
- e. Repeat steps a to d for every child contract that you want to create.

#### 9. Select **Submit For Review**.

A review notification is sent to the user that you specified in the **Approver** field of the lease contract record. After reviewing the lease contract, the user can either approve or reject it.

### Managing expiring contracts for leased enterprise assets

You can use the Contract and lease management view to track and take action on leased enterprise assets that are nearing the end of their contracts. You can choose to return your leased enterprise assets, buy out your leased enterprise assets, or extend your lease contracts.

### Lease management flow

When a lease contract for a given enterprise asset is nearing its expiration, the Enterprise Asset Management application automatically sends out a notification informing you that the contract will be expiring soon. You can customize the timing, content, and recipients of this expiry notification by navigating to **System Notification > Email > Notifications** and then selecting **Contract Threshold breached** from the list of available email notifications.

After you receive an expiry notification for one of your lease contracts, you can begin the lease-end process for that contract.

- i Note:** You can begin the lease-end process only for active lease contracts that are expiring within 90 days but do not have a **Substate of Expiring**. A **Substate of Expiring** indicates that the lease-end process for that contract has already begun.

When the lease-end process begins, the Enterprise Asset Management application automatically generates a Planning task that you must complete to specify what action you want to take on either the associated enterprise asset or the lease contract itself. You can choose to

- return the enterprise asset to the asset vendor,
- buy out the enterprise asset so that you can permanently add it to your asset inventory,
- or extend the lease contract.

Based on the action that you select, you must then perform all subsequent tasks to complete the lease-end process and move the lease contract out of the expiring substate.

### Begin the lease-end process for an expiring enterprise asset lease contract

Initiate the lease-end process for an expiring enterprise asset lease contract so that you can return the associated enterprise asset, buy out the associated enterprise asset, or extend the lease contract.

### Before you begin

- i Important:** You can begin the lease-end process only for active lease contracts that are expiring within 90 days but do not have a **Substate of Expiring**. A **Substate of Expiring** indicates that the lease-end process for that contract has already begun.

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

## Procedure

1. From the Enterprise Asset Workspace, open the Contract and lease management view.
2. On the **Lease contracts** tab, select the lease contract for the enterprise asset that you want to return, buy out, or extend the contract for.  
The lease contract record opens.
3. On the lease contract record header, select **Begin lease-end process**.
4. When prompted to confirm that you want to begin the lease-end process for the contract, select **OK**.

## Result

The lease-end process for the specified lease contract begins. The Enterprise Asset Management application then automatically generates a Planning task for the lease contract.

## What to do next

Complete the Planning task for the lease contract so that you can specify what action you want to take on either the associated enterprise asset or the lease contract itself. See [Complete the Planning task for an expiring enterprise asset lease contract](#) for detailed instructions.

## Complete the Planning task for an expiring enterprise asset lease contract

Complete the Planning task for an expiring enterprise asset lease contract so that you can proceed with either returning the associated enterprise asset, buying out the associated enterprise asset, or extending the lease contract.

## Before you begin

To generate the Planning task for an expiring lease contract, you must initiate the lease-end process for that contract. See [Begin the lease-end process for an expiring enterprise asset lease contract](#) for detailed instructions.

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

## Procedure

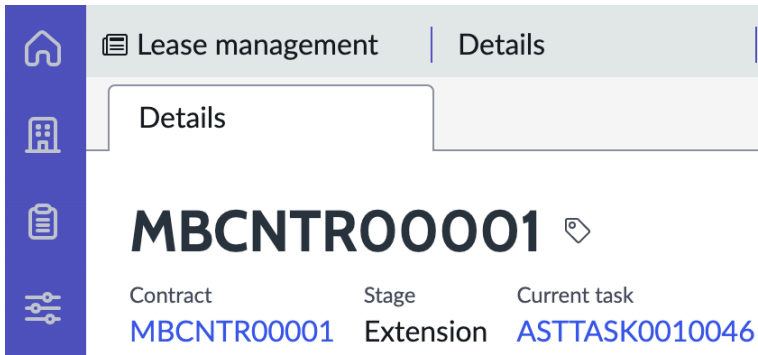
1. From the Enterprise Asset Workspace, open the Contract and lease management view.
2. On the **Lease-end assets** tab, select the lease contract for the enterprise asset that you want to return, buy out, or extend the contract for.

**Note:** You must select a lease contract that is in the **Planning** stage.

The lease contract record opens.

3. On the **Contract Asset Tasks** tab of the lease contract record, select the task number for the **Planning** task.

Alternatively, select the task number that is displayed in the **Current task** field of the lease contract record header.



The Planning task opens.

4. On the **Details** tab of the Planning task, fill in the fields.

**Details tab**

Field	Description
Contract Asset Task	
Number	Task number used to identify and track the Planning task. This field populates automatically.
Contract	Lease contract that the task is associated with. This field populates automatically.
Asset	Enterprise asset that is associated with the lease contract. This field populates automatically.
Location	Current location of the associated enterprise asset. This field populates automatically.
Lease action	<p>Action that you want to take on the associated enterprise asset. Select one of the following options:</p> <ul style="list-style-type: none"> <li>○ <b>Return</b></li> <li>○ <b>Extend</b></li> </ul> <p><b>i Note:</b> If you select this option, the Enterprise Asset Management application automatically creates a purchase order and purchase order line for the lease contract extension.</p> <ul style="list-style-type: none"> <li>○ <b>Buyout</b></li> </ul> <p><b>i Note:</b> If you select this option, the Enterprise Asset Management application automatically creates a purchase order and purchase order line for the enterprise asset buyout.</p>
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
Short description	Brief description of the task.

Field	Description
Description	Detailed description of the task.
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

## 5. Select **Close Task**.

### Result

The Planning task automatically closes with an updated state of Closed Complete.

### What to do next

Based on the action that you selected in the **Lease action** field, complete all necessary tasks to return the associated enterprise asset, buy out the associated enterprise asset, or extend the lease contract.

### Return a leased enterprise asset

Return a leased enterprise asset to the asset vendor before the corresponding lease contract expires.

### Before you begin

Before you can proceed with returning a leased enterprise asset, you must complete the Planning task for the associated lease contract. See [Complete the Planning task for an expiring enterprise asset lease contract](#) for detailed instructions.

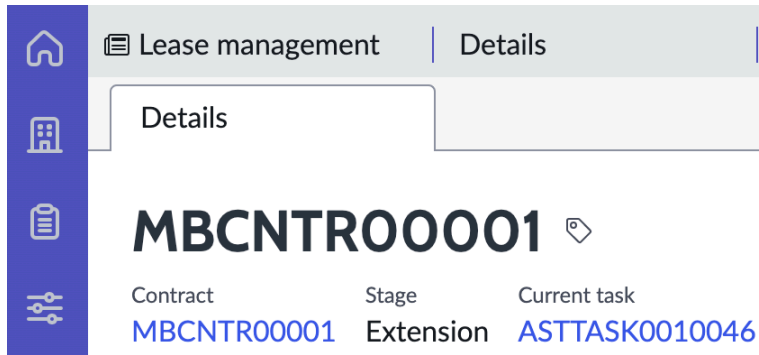
Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**Note:** The sn\_eam.enterprise\_asset\_technician role can also perform the Collection, Preparation, and Shipment tasks. However, this role can perform these tasks only through the **Lease-end tasks** Quick links card that is available on the Enterprise asset overview.

### Procedure

1. From the Enterprise Asset Workspace, open the Contract and lease management view.
2. On the **Lease-end assets** tab, select the lease contract for the enterprise asset that you want to return.  
The lease contract record opens.
3. Complete and close the Collection task for the lease contract.  
To successfully complete and close this task, you must collect the enterprise asset that you want to return.
  - a. On the **Contract Asset Tasks** tab of the lease contract record, select the task number for the **Collection** task.

Alternatively, select the task number that is displayed in the **Current task** field of the lease contract record header.



The Collection task opens.

**b.** On the **Details** tab of the Collection task, fill in the fields.

**Details tab**

Field	Description
<b>Contract Asset Task</b>	
Number	Task number that is used to identify and track the Collection task. This field populates automatically.
Contract	Lease contract that the task is associated with. This field populates automatically.
Asset	Enterprise asset that is associated with the lease contract. This field populates automatically.
Location	Current location of the associated enterprise asset. This field populates automatically.
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
Short description	Brief description of the task.
Description	Detailed description of the task.
<b>Asset collection</b>	
Asset collected	Option that indicates if the associated enterprise asset was collected for return.  If you select <b>Yes</b> , the <b>Stockroom</b> field appears next to the <b>Asset collected</b> field. In the <b>Stockroom</b> field, search for and select the stockroom that the associated enterprise asset was collected from.  If you select <b>No</b> , the <b>Action change</b> field appears next to the <b>Asset collected</b> field. In the <b>Action change</b> field, select an option to change your lease action to either an enterprise asset buyout or lease contract extension.

Field	Description
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

**c. Select Close Task.**

The Collection task automatically closes with an updated state of Closed Complete.

If you set the **Asset collected** field to **Yes**, the **Substate** field changes to **Pending transfer** in the asset record for the associated enterprise asset.

If you set the **Asset collected** field to **No**, proceed with one of the following options:

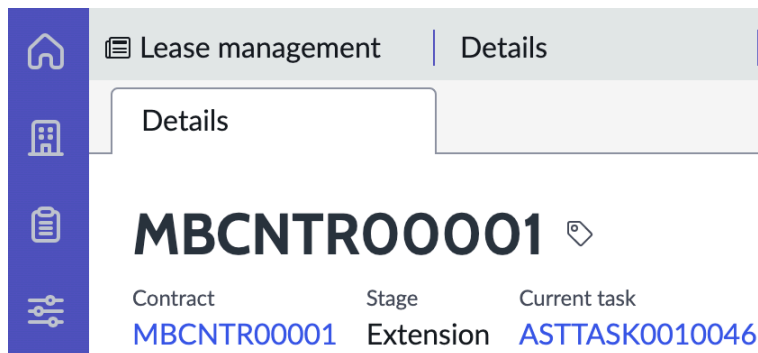
- If you changed your lease action to an enterprise asset buyout, proceed to [Buy out a leased enterprise asset](#).
- If you changed your lease action to a lease contract extension, proceed to [Extend the lease contract for an enterprise asset](#).

**4. Complete and close the Preparation task for the lease contract.**

To successfully complete and close this task, you must prepare the enterprise asset for return.

**a. On the Contract Asset Tasks tab of the lease contract record, select the task number for the Preparation task.**

Alternatively, select the task number that is displayed in the **Current task** field of the lease contract record header.



The Preparation task opens.

**b. On the Details tab of the Preparation task, fill in the fields.**

**Details tab**

Field	Description
Contract Asset Task	
Number	Task number that is used to identify and track the Preparation task. This field populates automatically.
Contract	Lease contract that the task is associated with. This field populates automatically.
Asset	Enterprise asset that is associated with the lease contract. This field populates automatically.

Field	Description
Location	Current location of the associated enterprise asset. This field populates automatically.
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
Short description	Brief description of the task.
Description	Detailed description of the task.
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

**c. Select Close Task.**

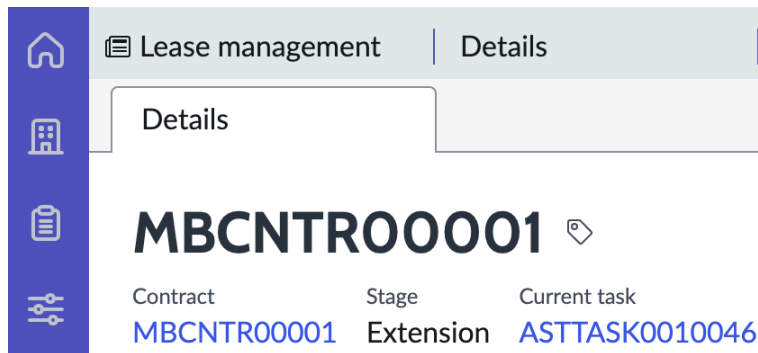
The Preparation task automatically closes with an updated state of Closed Complete.

**5. Complete and close the Shipment task for the lease contract.**

To successfully complete and close this task, you must ship the enterprise asset back to the asset vendor.

**a. On the Contract Asset Tasks tab of the lease contract record, select the task number for the Shipment task.**

Alternatively, select the task number that is displayed in the **Current task** field of the lease contract record header.



The Shipment task opens.

**b. On the Details tab of the Shipment task, fill in the fields.**

**Details tab**

Field	Description
Contract Asset Task	
Number	Task number that is used to identify and track the Shipment task. This field populates automatically.

Field	Description
Contract	Lease contract that the task is associated with. This field populates automatically.
Asset	Enterprise asset that is associated with the lease contract. This field populates automatically.
Location	Current location of the associated enterprise asset. This field populates automatically.
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
Short description	Brief description of the task.
Description	Detailed description of the task.
Shipment	
Carrier	Shipping carrier through which you shipped the associated enterprise asset.
Ship date	Date on which you shipped the associated enterprise asset.
Tracking number	Tracking number that enables you to track the status and location of the shipment.
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

**c. Select Close Task.**

The Shipment task automatically closes with an updated state of Closed Complete.

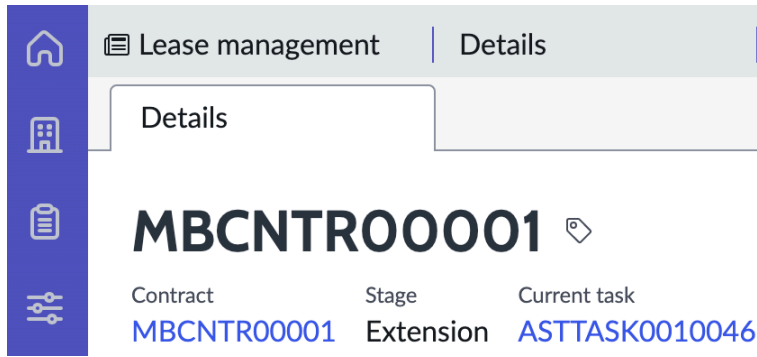
In the asset record for the associated enterprise asset, the **State** field changes to **In transit**.

**6. Complete and close the Return confirmation task for the lease contract.**

To successfully complete and close this task, the asset vendor must confirm if they received the enterprise asset that you returned. The asset vendor must also inform you of any settlement payouts that you are receiving for the returned enterprise asset.

**a. On the Contract Asset Tasks tab of the lease contract record, select the task number for the Return confirmation task.**

Alternatively, select the task number that is displayed in the **Current task** field of the lease contract record header.



The Return confirmation task opens.

**b.** On the **Details** tab of the Return confirmation task, fill in the fields.

**Details tab**

Field	Description
<b>Contract Asset Task</b>	
Number	Task number that is used to identify and track the Return confirmation task. This field populates automatically.
Contract	Lease contract that the task is associated with. This field populates automatically.
Asset	Enterprise asset that is associated with the lease contract. This field populates automatically.
Location	Current location of the associated enterprise asset. This field populates automatically.
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
Short description	Brief description of the task.
Description	Detailed description of the task.
<b>Return details</b>	
Return confirmation	Option that indicates if the associated enterprise asset was returned successfully.  To complete the Return confirmation task, you must set this field to <b>Yes</b> .
Settlement	Option that indicates if you are receiving a settlement payout for the enterprise asset that you returned.  If you select <b>Yes</b> , the <b>Settlement amount</b> field appears below the <b>Settlement</b> field. In the <b>Settlement amount</b> field, enter the total amount of money that you are receiving from the settlement payout. The Enterprise Asset Management application can then use this information

Field	Description
	to automatically create a purchase order and purchase order line for the settlement payout.  <b>Note:</b> You can set the <b>Settlement amount</b> field to any currency of your choice.
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

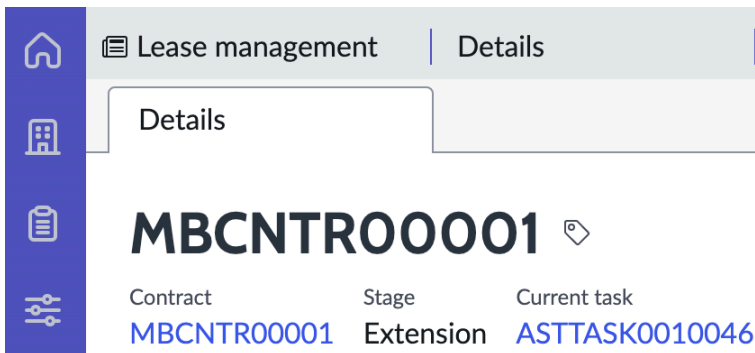
**c. Select Close Task.**

The Return confirmation task automatically closes with an updated state of Closed Complete.

**7.** If you set the **Settlement** field to **Yes** in the Return confirmation task, complete and close the corresponding Return settlement task.  
To successfully complete and close this task, the asset vendor must reimburse you the amount that was specified in the settlement payout.

**a.** On the **Contract Asset Tasks** tab of the lease contract record, select the task number for the **Return settlement** task.

Alternatively, select the task number that is displayed in the **Current task** field of the lease contract record header.



The Return settlement task opens.

**Note:** Aside from the **State** field, all editable fields in the Return settlement task are pre-populated based on the corresponding fields that you filled out in the Return confirmation task. The **Purchase order** and **Purchase order line** fields are pre-populated with the purchase order and purchase order line that the Enterprise Asset Management application automatically created for the settlement payout in [step 7](#).

**b.** In the Return details section of the **Details** tab, select the Open Record icon (🔍) in the **Purchase order** field.

The purchase order record opens.

**c.** Select **Order**.

**d.** After the page reloads, select **Receive**.

The form closes and you automatically return to the purchase order record, which now has a status of Received.

**e.** Close the purchase order record to return to the Return settlement task.

**f. Select Close Task.**

The Return settlement task automatically closes with an updated state of Closed Complete.

**Result**

After you successfully return the leased enterprise asset, the **State** and **Substate** fields change to **Retired** and **Lease Return** in the corresponding asset record.

**Buy out a leased enterprise asset**

Buy out a leased enterprise asset before the corresponding lease contract expires.

**Before you begin**

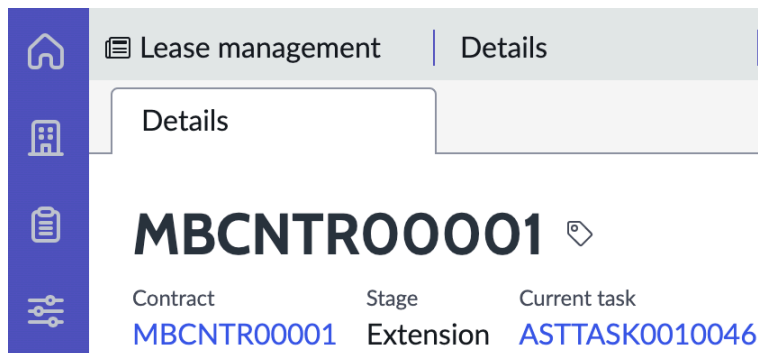
Before you can proceed with buying out a leased enterprise asset, you must complete the Planning task for the associated lease contract. See [Complete the Planning task for an expiring enterprise asset lease contract](#) for detailed instructions.

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

**Procedure**

1. From the Enterprise Asset Workspace, open the Contract and lease management view.
2. On the **Lease-end assets** tab, select the lease contract for the enterprise asset that you want to buy out.  
The lease contract record opens.
3. Complete and close the Buyout task for the lease contract.  
To successfully complete and close this task, you must confirm a buyout date and amount with the asset vendor.
  - a. On the **Contract Asset Tasks** tab of the lease contract record, select the task number for the **Buyout** task.

Alternatively, select the task number that is displayed in the **Current task** field of the lease contract record header.



The Buyout task opens.

- b. On the **Details** tab of the Buyout task, fill in the fields.

**Details tab**

Field	Description
Contract Asset Task	
Number	Task number that is used to identify and track the Buyout task. This field populates automatically.

Field	Description
Contract	Lease contract that the task is associated with. This field populates automatically.
Asset	Enterprise asset that is associated with the lease contract. This field populates automatically.
Location	Current location of the associated enterprise asset. This field populates automatically.
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
Short description	Brief description of the task.
Description	Detailed description of the task.
Buyout details	
Buyout date	Date on which you are buying out the associated enterprise asset.
Buyout amount	Cost to buy out the associated enterprise asset.  <b>Note:</b> You can set this field to any currency of your choice.
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

**c. Select Close Task.**

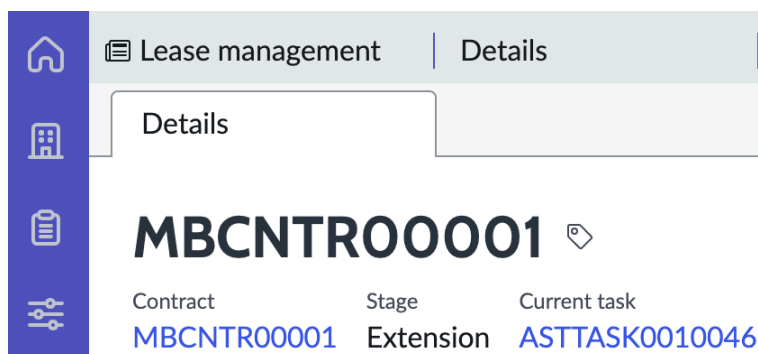
The Buyout task automatically closes with an updated state of Closed Complete.

**4. Complete and close the Buyout confirmation task for the lease contract.**

To successfully complete and close this task, you must pay the asset vendor the confirmed buyout amount on or before the confirmed buyout date.

**a. On the Contract Asset Tasks tab of the lease contract record, select the task number for the Buyout confirmation task.**

Alternatively, select the task number that is displayed in the **Current task** field of the lease contract record header.



The Buyout confirmation task opens.

**Note:** Aside from the **State** field and the additional **Buyout confirmation** field, all editable fields in the Buyout confirmation task are pre-populated based on the corresponding fields that you filled out in the Buyout task. The **Purchase order** and **Purchase order line** fields are pre-populated with the purchase order and purchase order line that the Enterprise Asset Management application automatically created for the enterprise asset buyout in the [Planning task](#).

**b.** In the Buyout details section of the **Details** tab, set the **Buyout confirmation** field to **Yes**. This field indicates if you bought out the enterprise asset successfully.

**c.** In the same section, select the Open Record icon (ⓘ) in the **Purchase order** field. The purchase order record opens.

**d.** Select **Order**.

**e.** After the page reloads, select **Receive**. The form closes and you automatically return to the purchase order record, which now has a status of Received.

**f.** Close the purchase order record to return to the Buyout confirmation task.

**g.** On the Buyout confirmation task, select **Close Task**. The Buyout confirmation task automatically closes with an updated state of Closed Complete.

## Result

After you successfully buy out the enterprise asset, the **Date removed** field on the lease contract record automatically updates with the date on which you completed all buyout tasks. Following this date, you can no longer track the enterprise asset through this lease contract record.

## Extend the lease contract for an enterprise asset

Extend the lease contract for an enterprise asset before it expires.

### Before you begin

Before you can proceed with extending a lease contract, you must complete the associated Planning task. See [Complete the Planning task for an expiring enterprise asset lease contract](#) for detailed instructions.

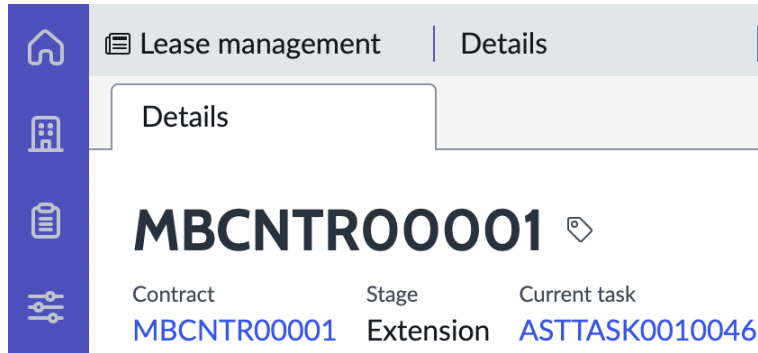
Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

## Procedure

1. From the Enterprise Asset Workspace, open the Contract and lease management view.
2. On the **Lease-end assets** tab, select the lease contract that you want to extend. The lease contract record opens.
3. Complete and close the Extension task for the lease contract. To successfully complete and close this task, you must confirm the lease contract extension details with the asset vendor. These details include the start date, end date, and cost of the lease contract extension.

- a. On the **Contract Asset Tasks** tab of the lease contract record, select the task number for the **Extension** task.

Alternatively, select the task number that is displayed in the **Current task** field of the lease contract record header.



The Extension task opens.

- b. On the **Details** tab of the Extension task, fill in the fields.

**Details tab**

Field	Description
<b>Contract Asset Task</b>	
Number	Task number that is used to identify and track the Extension task. This field populates automatically.
Contract	Lease contract that the task is associated with. This field populates automatically.
Asset	Enterprise asset that is associated with the lease contract. This field populates automatically.
Location	Current location of the associated enterprise asset. This field populates automatically.
State	State of the task.
Assignment group	Group to which the task is assigned.
Assigned to	User to which the task is assigned.
Work notes list	Users who receive notifications when work notes are added to the task.
Short description	Brief description of the task.
Description	Detailed description of the task.
<b>Extension details</b>	
Extension start date	Date on which you want to start the lease contract extension.
Extension end date	Date on which you want to end the lease contract extension.

Field	Description
Extension cost	Cost to extend the lease contract. <b>Note:</b> You can set this field to any currency of your choice.
Notes	
Work notes	Notes about the task that are visible to all users within your organization.

c. Select **Close Task**.

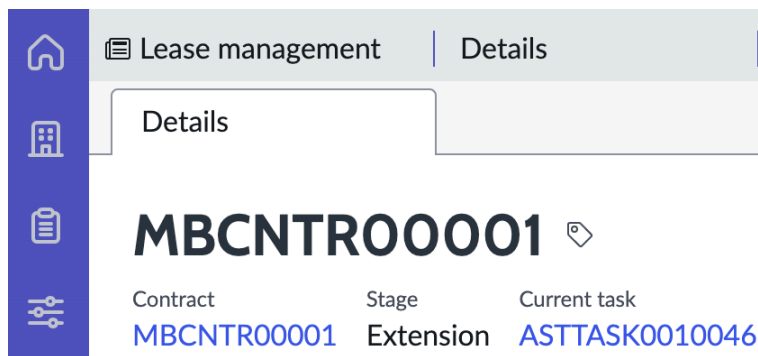
The Extension task automatically closes with an updated state of Closed Complete.

4. Complete and close the Extension confirmation task for the lease contract.

To successfully complete and close this task, you must pay the asset vendor the amount that was specified in the extension cost.

a. On the **Contract Asset Tasks** tab of the lease contract record, select the task number for the **Extension confirmation** task.

Alternatively, select the task number that is displayed in the **Current task** field of the lease contract record header.



The Extension confirmation task opens.

**Note:** Aside from the **State** field and the additional **Extension confirmation** field, all editable fields in the Extension confirmation task are pre-populated based on the corresponding fields that you filled out in the Extension task. The **Purchase order** and **Purchase order line** fields are pre-populated with the purchase order and purchase order line that the Enterprise Asset Management application automatically created for the lease contract extension in the **Planning task**.

b. In the Extension details section of the **Details** tab, set the **Extension confirmation** field to **Yes**.

This field indicates if the lease contract was extended successfully.

c. In the same section, select the Open Record icon (🔗) in the **Purchase order** field. The purchase order record opens.

d. Select **Order**.

e. After the page reloads, select **Receive**.

The form closes and you automatically return to the purchase order record, which now has a status of Received.

- f. Close the purchase order record to return to the Extension confirmation task.
- g. On the Extension confirmation task, select **Close Task**.  
The Extension confirmation task automatically closes with an updated state of Closed Complete.

**Result**

After you successfully extend the lease contract, the **Expiration** field on the lease contract record changes to **Expired**. The Enterprise Asset Management application then creates a new record for the extended lease contract, which is named **EXT\_<expired-lease-contract>**. The new lease contract record covers all of the same enterprise assets that were covered in the original lease contract record.

## Managing work orders for your enterprise assets

Create and manage work orders for your enterprise assets.


### Edit Field Service Management configurations for the Work management view

Edit your Field Service Management configurations as needed so that you can access and use the Work management view in the Enterprise Asset Workspace.

**Before you begin**

Role required: admin

**About this task**

See [Global domain configurations](#)  for more information on Field Service Management configurations.

**Procedure**

1. Navigate to **All > Field Service > Administration > Configuration**.
2. Edit the following configurations on the **Business Process** tab:

**Business Process tab**

Configuration	Setting
Lifecycle	
Process lifecycle	Set this configuration to <b>task-driven (subtasks are required)</b> .
Approval for new request required	Disable this configuration.
Qualification is required for new requests	Disable this configuration.
Agent must accept or reject the assigned task	Disable this configuration.
Track agent travel time	Disable this configuration.
Work notes are required to close or cancel a request or task	Enable this configuration.
Copy task work notes to request	Disable this configuration.
Apply Work Order template in draft status	Enable this configuration.

Configuration	Setting
Catalog and Request Creation	
Create or update requests by inbound email	Disable this configuration.
Create requests using catalog and form or form only	Set this configuration to <b>regular form only</b> .
Templates create a dedicated catalog item	Disable this configuration.

3. Edit the following configurations on the **Assignment** tab:

**Assignment tab**

Configuration	Setting
Assignment Methods	
Assignment method for tasks	Set this configuration to <b>manually</b> .
Dispatch Queue and Group Coverage	
Use dispatch queue	Disable this configuration.
Assign requests or tasks based on assignment group coverage areas	Disable this configuration.
Assign tasks based on assignment group product models	Disable this configuration.
Assign tasks based on assignment group skills	Disable this configuration.
Scheduling	
Use agent or task scheduling	Disable this configuration.
Auto-selection of agents will consider time zone for tasks	Disable this configuration.
Enable priority assignment	Disable this configuration.
Additional Factors	
Auto-selection of agents will consider location of agents	Disable this configuration.
Auto-selection of agents for tasks requires them to have skills	Set this configuration to <b>None</b> .
Auto-selection will attempt to assign the same agent to all tasks in a request	Disable this configuration.

4. Edit the following configurations on the **Add-ons** tab:

**Add-ons tab**

Configuration	Setting
Part Requirements	
Part requirements are needed by agents	Enable this configuration.
Reserve parts in agent stockroom	Disable this configuration.
Cancel open Transfer Orders	Disable this configuration.
Edit associated models	Disable this configuration.

Configuration	Setting
Documentation	
Enable a dedicated knowledge base	Disable this configuration.
Enable managed documents	Disable this configuration.
Enable task activities	Disable this configuration.
Associated Task Tables	
Edit associated task tables	Leave this configuration empty.
Maps	
Enable maps	Disable this configuration.

5. Select **Save**.

## Create a work plan for your enterprise assets

Create and manage work plans to specify how and when the work should be performed for any activity.

### About this task

Use the Planned Work Management application's functionality to create work plans from within the Enterprise Asset Workspace. This enables managers to create work orders for the future and allocate them to technicians so that the technicians can review and plan their work accordingly.

**Note:** Ensure that you have activated the Planned Work Management plugin [sn\_fsm\_planned\_wm] plugin.

A work plan consists of an effective start and end date that determines the period for which the plan can be scheduled for execution. Each work plan must have at least one or more records associated with it for which you want to apply the work plan.

### Before you begin

Role required: sn\_fsm\_planned\_wm.planned\_work\_admin

### Procedure

1. From the Enterprise Asset Workspace, open the Work management view.
2. On the **Maintenance plans** tab, select **New** to open the *Select target asset table* pop-up window.
3. Select **Work plan** from the **Plan type** list.
4. Select a table from the **Asset table** list.  
The Enterprise asset table is selected by default.
5. Select **Create**.
6. On the Create New Work Plan page, fill in the details.  
For a detailed description of all the work plan fields, see [Work plan fields for Enterprise Asset Management](#).
7. Select **Save**.

The page closes and you're automatically redirected to the new work plan record.

You can further configure your work plan by creating [planned work schedules](#), planned work records, and work orders.

You can view all your work plan records in the list view in the **Maintenance plans** tab. Every work plan record is prefixed with **WP**.

### Create a planned work schedule for your work plan

Create a planned work schedule to specify when you want the work plan to run and how frequently the schedule should run. You can apply one or more planned work schedules to a single work plan.

#### Before you begin

Before you create a planned work schedule, ensure that you have [created a work plan](#).

Role required: sn\_fsm\_planned\_wm.planned\_work\_admin

#### Procedure

1. On the **Planned Work Schedules** tab of the work plan record, select **New**.
2. On the Create New Planned Work Schedule form, fill in the fields.

For a detailed description of the planned work schedule fields, see [Work plan schedule fields for Enterprise Asset Management](#).

3. Select **Save**.  
The form closes and you're automatically redirected to the new planned work order schedule record.
4. Select the **More Actions** ellipsis icon and then select **Associate schedule with filtered records** to associate the schedule with the assets that the work plan is applied to.  
A confirmation message appears, indicating that the enterprise assets are now associated with the planned work plan schedule. You can verify that the association is successful using the **Planned Work Records** tab on either the planned work plan schedule record or the work plan record.
5. Apply a planned work schedule template to the work plan schedule.  
Planned work schedule templates enable the Enterprise Asset Management application to automatically populate information, generate appropriate requests and tasks, and create part requirements for your work plans each time the planned work schedule runs.

- a. On the **Planned Work Schedule Templates** tab of the work plan schedule record, select **New**.

The Create New Planned Work Schedule Template form opens.

- b. On the form, fill in the fields.

#### Create New Planned Work Schedule Template form

Field	Description
Model	Model of the work order template.
Schedule	Planned work schedule to which you're applying the work order template. This field populates automatically.

Field	Description
Table	<p>Table that is associated with the corresponding work plan of this planned schedule.</p> <p>This field is automatically set to the table name selected for the work plan.</p>
Conditions	Filter conditions to determine the work order template to be used to create work orders based on the planned schedule.
Notes	Any work notes regarding the template.

c. Select **Save**.

d. Close the form to return to the planned work plan schedule record.

6. On the planned work plan schedule record, select the **More Actions** ellipsis icon and then select **Run on demand** to create work orders for each asset.

Work orders are created for each asset. You can view the work orders in the **Work Orders** tab.

## Create a maintenance plan for your enterprise assets

Create a maintenance plan to manage and schedule routine maintenance for your enterprise assets, linear assets, and linear segments. You can run maintenance on-demand or based on a set of specific criteria.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

### Procedure

1. From the Enterprise Asset Workspace, open the Work management view.
2. On the **Maintenance plans** tab, select **New**.
3. Select **Maintenance plan** from the **Plan type** list.
4. Select a table from the **Asset table** list.  
The Enterprise asset table is selected by default.
5. Select **Create**.
6. On the Create New Maintenance Plan page, fill in the details.  
For a detailed description of all the maintenance plan fields, see [Maintenance plan fields for Enterprise Asset Management](#).
7. Select **Save**.

The page closes and you're automatically redirected to the new maintenance plan record.

You can further configure your maintenance plan by creating [maintenance schedules](#), work orders, and work order tasks. You can view all your maintenance plan records in the list view in the **Maintenance plans** tab. Every maintenance plan record is prefixed with **MP**.

### Create a maintenance schedule

Create a maintenance schedule to specify when you want the maintenance to run using criteria such as time intervals or field values and apply a work order template to the schedule. You can apply one or more maintenance schedules to a single maintenance plan.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

## Procedure

1. On the **Maintenance Schedules** tab of the maintenance plan record, select **New**.
2. On the Create new Maintenance Schedule form, fill in the fields.

See [Maintenance schedule fields for Enterprise Asset Management](#) for a detailed description of each field.

3. Select **Save**.  
The form closes and you're automatically redirected to the new maintenance schedule record.
4. Apply a work order template to the maintenance schedule.  
Work order templates enable the Enterprise Asset Management application to automatically populate information, generate appropriate requests and tasks, and create part requirements for your work orders each time the scheduled maintenance runs.

- a. On the **Schedule Templates** tab of the maintenance schedule record, select **New**.

The Create New Schedule Template form opens.

- b. On the form, fill in the fields.

### Create New Schedule Template form

Field	Description
Model	Model of the work order template.
Schedule	Maintenance schedule to which you're applying the work order template. This field populates automatically.

- c. Select **Save**.
- d. Close the form to return to the maintenance schedule record.
5. On the maintenance schedule record, select the **More Options** ellipsis icon and then select **Associate records** to associate the maintenance schedule with the enterprise assets that the maintenance plan is applied to.  
A confirmation message appears, indicating that the enterprise assets are now associated with the maintenance schedule. You can verify that the association is successful using the **Maintenance Plan Records** tab on either the maintenance schedule record or maintenance plan record.

## Result

Maintenance runs automatically based on the schedule that you set for the maintenance plan. You can also run maintenance on-demand by selecting **Run on demand** on the maintenance schedule record.

Each time maintenance runs, the Enterprise Asset Management application automatically creates a corresponding work order for every enterprise asset that the maintenance plan is applied to, given that the asset isn't already associated with an existing work order. You can use these work orders to track and manage all the work that you need to perform on the specified enterprise assets. See [Managing work for your enterprise assets](#) for more information on work orders.

## Create a work order for an enterprise asset

Create a work order to track and manage work for an enterprise asset, linear asset, or linear segment.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

### Procedure

1. From the Enterprise Asset Workspace, open the Work management view.
2. On the **Work orders** tab, select **New**.





#### **Note:**

If you created a maintenance plan to manage and schedule maintenance for your enterprise assets, the Enterprise Asset Management application automatically creates a corresponding work order for each asset to which the maintenance plan is applied.

See [Create a maintenance plan for your enterprise assets](#) for more information on maintenance plans.

3. On the Create New Work Order form, fill in the fields.

#### Create New Work Order form

Field	Description
Work Order	
Company	Company that you are creating the work order for.
Contract	Contract that defines the lease details of the associated enterprise asset.
Asset	Asset that you want to manage work for through this work order.   <b>Note:</b> You can also select linear assets and linear segments from this field.
Location	Current location of the associated enterprise asset.   <b>Note:</b> If you select a linear asset, a pencil icon  appears to enable you to choose the work order location between the Start marker and End marker. This option is available with Enterprise Asset Management version 9.0 and later. To select a location, follow these steps:  <b>a.</b> Select the Work order linear asset location icon  .  A Map location form appears, showing the start and the end markers on the map.  <b>b.</b> Select a location on the map between the start and end markers.  <b>c.</b> In the <b>Name</b> field, enter the name for the work order location.  <b>d.</b> Select <b>Submit</b> .
Start marker	Start point of the linear asset or the linear segment.

Field	Description
	<p><b>i Note:</b> This field only appears if you select Linear asset or linear segment from the <b>Asset</b> field.</p>
End marker	<p>End point of the linear asset or the linear segment.</p> <p><b>i Note:</b> This field only appears if you select linear asset or linear segment from the <b>Asset</b> field.</p>
Priority	Priority of the work order.
Template	<p>Work order template that you want to apply to this work order. Work order templates enable you to automatically populate information, generate appropriate tasks, and create part requirements for your work orders. See <a href="#">Create a template for your Enterprise Asset Management work orders</a> for more information on work order templates.</p> <p>To apply a template to a work order in the draft state and view the work order tasks and part requirements generated from the template, the <code>sn_eam.enterprise_asset_manager</code> role must ensure that the <b>Apply Work Order template in draft status</b> field in the Field Service Management application is enabled. To accomplish this, navigate to <b>All &gt; Field Service &gt; Administration &gt; Configuration</b> and enable the <b>Apply Work Order template in draft status</b> field in the <b>Business Process</b> tab.</p>
Closed	Date and time at which the work order is closed and complete.
Short description	Brief description of the work order.
Description	Detailed description of the work order.
Work notes	Notes about the work order that are visible to all users within your organization.
Scheduling	
Due date	Date and time at which the work order must be completed.

**4. Select **Save**.**

The work order is created in the draft state. Any work order tasks and parts requirements pertaining to the work order automatically appear in the **Work Order Tasks** and the **Part Requirements** tabs.

**5. To add additional work order tasks, select **New** in the **Work Order Tasks** tab.**

See [Create a work order task for an Enterprise Asset Management work order](#) for detailed instructions.

**6. To track all items that you must complete for your work order or an associated work order task, create a checklist.**

See [Create a checklist for an Enterprise Asset Management work order or work order task](#) for detailed instructions.

**7. If the enterprise asset that is associated with your work order is missing a required asset or part, create a part requirement.**

See [Create a part requirement for an Enterprise Asset Management work order or work order task](#) for detailed instructions.

**8. Specify any upstream or downstream task dependencies for the associated work order tasks.**

See [Create dependencies for an Enterprise Asset Management work order task](#) for detailed instructions.

9. Select **Ready to Work** to initiate work for the given work order

**What to do next**

Work with the assigned agent to complete and close all subsequent tasks for your work order.

**Create a work order task for an Enterprise Asset Management work order**

Create a work order task to track and manage an individual task for your Enterprise Asset Management work order.

**Before you begin**



Role required: wm\_agent

**Procedure**

1. From the Enterprise Asset Workspace, open the Work management view.
2. On the **Work orders** tab, select the work order that you want to add a work order task to. The work order record opens.
3. On the **Work Order Tasks** tab, select **New**.
4. On the Create New Work Order Task form, fill in the fields.

**Create New Work Order Task**

Field	Description
Work Order Task	
Assignment group	Agent group to which the work order task is assigned.
Assigned to	Agent to whom the work order task is assigned.
Work type	Type of work that the assigned agent must perform on the associated enterprise asset. The options are <b>Break Fix</b> , <b>Install</b> , <b>Planned Maintenance</b> , and <b>Calibration</b> .
Asset	Enterprise asset that the assigned agent is performing work on. This field populates automatically.
Location	Current location of the associated enterprise asset. This field populates automatically.

Field	Description
	<p><b>i Note:</b> If you select a linear asset, the Work order linear asset location [  ] appears to enable you to choose the work order location between the Start marker and End marker. This option is available with Enterprise Asset Management version 9.0 and later. To select a location, follow these steps:</p> <p><b>a.</b> Select the pencil icon [  ].</p> <p>A Map location form appears, showing the start and the end markers on the map.</p> <p><b>b.</b> Select a location on the map between the start and end markers.</p> <p><b>c.</b> In the <b>Name</b> field, enter the name for the work order location.</p> <p><b>d.</b> Select <b>Submit</b>.</p>
Start marker	<p>Start point of the linear asset or the linear asset.</p> <p><b>i Note:</b> This field only appears if you select Linear asset or linear segment from the <b>Asset</b> field.</p>
End marker	<p>End point of the linear asset or the linear segment.</p> <p><b>i Note:</b> This field only appears if you select linear asset or linear segment from the <b>Asset</b> field.</p>
Short description	Brief description of the work order task.
Description	Detailed description of the work order task.
Work notes	Notes about the work order task that are visible to all users within your organization.
Scheduling	
Window start	Estimated start date and time of the work order task.
Window end	Estimated completion date and time of the work order task.
Estimated work duration	Amount of time that you estimate it will take to complete the work order task.
Actual work start	Actual start date and time of the work order task.
Actual work end	Actual completion date and time of the work order task.

**5. Select Save.**

**Create a checklist for an Enterprise Asset Management work order or work order task**

Create a checklist of all items that you must complete for your work order or work order task.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager or wm\_agent

### Procedure


1. From the Enterprise Asset Workspace, open the Work management view.
2. Open the record for either the work order or work order task that you want to create a checklist for.
  - To open a work order record, select the **Work orders** tab. From the list of available work orders, select the work order that you want to create a checklist for.
  - To open a work order task record, select the **Work order tasks** tab. From the list of available work order tasks, select the work order task that you want to create a checklist for.
3. On the work order or work order task record, select the **Checklist items** tab.
4. Use one of the following options to create a checklist.
  - Create a checklist by adding individual checklist items:
    - a. Select **New**.
    - b. On the Create New Checklist Item form, fill in the fields.

#### Create New Checklist Item form

Field	Description
Name	Name of the checklist item.
Order	Order in which you must complete the checklist item. For example, a value of 1 indicates that the given checklist item is the first item you must complete within your checklist.
Checklist	Checklist that the checklist item is included in.
Complete	Option that indicates if the checklist item has been completed.

- c. Select **Save**.
- d. Repeat steps a to c for every checklist item that you want to add to your checklist.
- Create a checklist by applying a checklist template:
  - a. Select **Apply template**.
 

The Apply Template dialog box opens.
  - b. In the dialog box, select the checklist template that you want to apply to your work order or work order task.
  - c. Select **OK**.
 

The dialog box closes and you return to the **Checklist items** tab.
  - d. Select the Refresh List icon () to populate the list of checklist items that were added based on the selected checklist template.

### Create a part requirement for an Enterprise Asset Management work order or work order task

If the enterprise asset that is associated with your work order or work order task is missing a required asset or part, create a part requirement to track and verify the missing asset or part.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager or wm\_agent

**Note:** You can use the wm\_agent role to create part requirements only for assigned work order tasks.

**Procedure**

1. From the Enterprise Asset Workspace, open the Work management view.
2. Open the record for either the work order or work order task that you want to create a part requirement for.
  - o To open a work order record, select the **Work orders** tab. From the list of available work orders, select the work order that you want to create a part requirement for.
  - o To open a work order task record, select the **Work order tasks** tab. From the list of available work order tasks, select the work order task that you want to create a part requirement for.
3. On the **Part Requirements** tab of the work order or work order task record, select **New**.
4. On the Create New Part Requirement form, fill in the fields.

**Create New Part Requirement form**

Field	Description
Model	Enterprise model of the missing asset or part.
Service order task	Work order task that the part requirement is associated with.
Required quantity	Quantity of the asset or part that is required. <b>Note:</b> This field is applicable to consumable assets and parts only.
Required by date	Date and time by which the missing asset or part must be sourced and delivered.
Short description	Brief description of the part requirement.
Mandatory	Option that indicates if the missing asset or part is required.

5. Select **Save**.

**Select descendant models of multi-component assets to create part requirements**

For work orders and work order tasks that have multi-component assets, select descendant models to create part requirement records.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager or wm\_agent

**Note:** You can use the wm\_agent role to create part requirements only for assigned work order tasks.

## Procedure

1. Navigate to **Enterprise Asset Workspace > Work management**.
2. Open the record for either the work order or work order task that you want to create a part requirement for.
  - To open a work order record, select the **Work orders** tab. From the list of available work orders, select the work order that you want to create a part requirement for.
  - To open a work order task record, select the **Work order tasks** tab. From the list of available work order tasks, select the work order task that you want to create a part requirement for.
3. On the **Part Requirements** tab of the work order or work order task record, select **Add to Asset**.  
The Add parts requirement dialog box opens.
4. Select a work order task in the **Service order task** field.  
The **Service order task** field is visible only if you access the Add parts requirement dialog box from the work order form.
5. Select the models.
6. Select **OK**.  
The new part requirement records are created and appear in the Part Requirements page.

## Create dependencies for an Enterprise Asset Management work order task

If your work order task requires any upstream or downstream task dependencies, add them to your work order task.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

## Procedure

1. From the Enterprise Asset Workspace, open the Work management view.
2. On the **Work order tasks** tab, select the work order task that you want to create dependencies for.  
The work order task opens.
3. Select one of the following tabs to create either an upstream or downstream task dependency:
  - To create an upstream task dependency, select the **Depends on** tab.
  - To create a downstream task dependency, select the **Dependents** tab.
4. Select **New**.
5. In the **Upstream task** or **Downstream task** field of the Create New Service Order Task Dependency form, search for and select the task that you want to add as a dependency.
6. Select **Save**.

## Managing work for your enterprise assets

You can track and manage work for your enterprise assets and linear assets by using work orders and work order tasks. Supported asset actions for your work orders include asset deployment, swapping, removal, and calibration.

### Source parts for an Enterprise Asset Management work order or work order task

If the enterprise asset that is associated with your work order or work order task is missing any required assets or parts, source them using a catalog request.

## Before you begin

Role required: sn\_eam.enterprise\_asset\_manager or wm\_agent

**i Important:** Although you can use either the sn\_eam.enterprise\_asset\_manager or wm\_agent role to create catalog requests, you can use only the sn\_eam.enterprise\_asset\_manager role to source those requests.

## About this task

You can verify which assets or parts are missing using the **Part Requirements** tab on the work order or work order task. For more information on part requirements, see [Create a part requirement for an Enterprise Asset Management work order or work order task](#).

You can specify parts requirements that you want to source instead of sourcing all parts requirements.

## Procedure

1. From the Enterprise Asset Workspace, open the Work management view.
2. Open the record for either the work order or work order task that you want to source parts for.
  - To open a work order record, select the **Work orders** tab. From the list of available work orders, select the work order that you want to source parts for.
  - To open a work order task record, select the **Work order tasks** tab. From the list of available work order tasks, select the work order task that you want to source parts for.
3. On the work order or work order task record, select **Source Parts Request**.  
The Source parts request dialog box opens. All part requirement models that have still not been requested are listed and selected by default.
4. Enter the quantity that you want to request in the **Request quantity** field.  
The quantity you enter can be greater than the required quantity.
5. Select **OK**.  
A confirmation message appears, indicating that a corresponding catalog request has been created only for the selected parts requirement.
6. From the left navigation menu of the Enterprise Asset Workspace, open the Asset operations view.
7. On the **Lists** tab of the Asset operations view, navigate to **Procurement > Requests**.
8. Select the request for the assets or parts that you need to source.  
The catalog request record opens. You can verify the assets or parts that you need to source by using the **Requested Items** tab of the catalog request record.
9. On the **Catalog Tasks** tab of the catalog request record, select the task number for the Source Request Items catalog task.  
The Source Request Items catalog task opens.
10. Select **Source request**.  
You are automatically redirected to the corresponding source request.
11. Source the required assets or parts using one or more of the following options:

**i Note:** The source request displays all assets and parts that need to be sourced. However, you must source each asset and part separately.

- **Local stock:** Option to consume assets or parts from a local stockroom.

To use this option, click **Consume** on the Local stock widget. When prompted, specify the consumption details for the source request.

- **Transferable stock:** Option to transfer assets or parts between available stockrooms or to a location where the requester can receive those assets or parts.

To use this option, click **Transfer** on the Transferable stock widget. When prompted, specify the transfer details for the source request.

- **Vendor purchase:** Option to purchase additional assets or parts from a supported asset vendor.

To use this option, click **Purchase** on the Vendor purchase widget. When prompted, specify the purchase details for the source request.

**12. Select **Submit**.**

The Source Request dialog box opens.

**13. In the dialog box, select **OK**.**

The dialog box closes and you automatically return to the catalog request record.

**Complete and close the Confirm asset task for a serialized enterprise asset**

If your work order is associated with a serialized enterprise asset, complete and close the Confirm asset task for that asset.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**About this task**

Before an agent can perform work on an enterprise asset, it must be picked up from its designated stockroom. If you want an agent to perform work on a serialized enterprise asset, you must first confirm which asset needs to be picked up by using the Confirm asset task. For all other enterprise asset types, skip the Confirm asset task and proceed directly to the [Pickup task](#).

**Procedure**

1. From the Enterprise Asset Workspace, open the Enterprise asset estate view.
2. On the **Asset tasks** tab, select the **Confirm** task for the serialized enterprise asset that is associated with your work order.  
The Confirm task opens.
3. On the **Details** tab of the Confirm task, modify the fields as needed.

**Details tab**

Field	Description
Asset	Serialized enterprise asset that is associated with your work order.
Model	Model of the serialized enterprise asset.
State	State of the Confirm task.
Stockroom	Stockroom that the serialized enterprise asset is located in.
Short description	Brief description of the Confirm task.
Description	Detailed description of the Confirm task.

**4. Select **Close Task**.**

**Result**

The state of the Confirm task changes from Open to Closed Complete. The Enterprise Asset Management application then generates a subsequent Pick Up task for the enterprise asset.

**What to do next**

The agent who is assigned to the associated work order must complete and close the Pick Up task.

**Complete and close the Pick Up task for an enterprise asset**

Complete and close the Pick Up task for the enterprise asset that is associated with your assigned work order.

**Before you begin**

Role required: wm\_agent

**About this task**

Before you can begin working on an enterprise asset, it must be picked up from its designated stockroom.

**Procedure**

1. From the Enterprise Asset Workspace, open the Work management view.
2. On the **My asset pickup tasks** tab, select the enterprise asset that was picked up. The Pick Up task opens.
3. On the **Details** tab of the Pick Up task, modify the fields as needed.

**Details tab**

Field	Description
Asset	Enterprise asset that was picked up.
Assigned to	Person that the Pick Up task is assigned to.
State	State of the Pick Up task.
Quantity	Quantity of the enterprise asset that was picked up.
 <b>Note:</b> This field is applicable to consumable enterprise assets only.	
Short description	Brief description of the Pick Up task.
Description	Detailed description of the Pick Up task.

4. Select **Close Task**.

**Result**

The state of the Pick Up task changes from Open to Closed Complete.

**What to do next**

Complete all required work for the enterprise asset so that you can close the work order.

### Complete and close a work order for an enterprise asset

Close an assigned work order by completing all work that is required for the associated enterprise asset.

#### Before you begin

Role required: wm\_agent

#### About this task

When working on an enterprise asset, you can choose to deploy, swap, or remove any required assets or parts. Similarly, you can deploy a discreet asset to a linear asset, swap a discreet asset associated to a linear asset, or remove a discreet asset associated to a linear asset. You can also choose to calibrate the enterprise asset. After you complete all work for the asset, you can close the associated work order.

#### Procedure

1. From the Enterprise Asset Workspace, open the Work management view.
2. On the **Work order tasks** tab, select the work order task for the work order that you want to complete and close.  
The work order task opens.
3. Select **Start Work**.  
The work order task reloads with an updated State of Work In Progress.
4. Complete all work that is required for the work order task.
  - o If you want to deploy, swap, or remove any required assets or parts, use the following steps:
    - a. Select the **Asset Usages** tab.
    - b. Select the action that you are taking on an asset or part that is required for the associated enterprise asset.

#### Available actions

Action	Description
<b>Remove Asset</b>	<p>Option to remove an asset or part. You can also remove a discreet asset associated to a linear asset.</p> <p><b>i Note:</b> You can remove assets or parts that have a state of In use, In maintenance, and Consumed only.</p> <p>If you select this option, the Remove asset dialog box opens. In the dialog box, select the asset or part that you want to remove and then select <b>OK</b>. When the dialog box closes, the <b>Asset Usages</b> tab reloads to display the removed asset or part, which is now assigned to your personal stockroom. Execute all subsequent disposal tasks to complete the removal.</p>
<b>Swap Asset</b>	<p>Option to swap an asset or part. You can also swap a discreet asset associated to a linear asset with another discrete asset</p> <p>If you select this option, the Swap asset dialog box opens. In the dialog box, select both the asset or part that you want to swap and the replacement asset or part that you want to swap it with. Select <b>OK</b>. When the dialog box closes, the <b>Asset Usages</b> tab reloads to display both assets or parts.</p>

Action	Description
	<p><b>Note:</b> You can swap an existing asset or part with a replacement asset or part that meets the following criteria:</p> <ul style="list-style-type: none"> <li>▪ The <b>State</b> field in the corresponding asset record is set to <b>In stock</b>. If the asset or part is associated with a multi-component enterprise model that has hot-swappable model components, this field can also be set to <b>In use</b>.</li> <li>▪ The asset or part is either displayed on the <b>Asset Usages</b> tab or located in your personal stockroom.</li> <li>▪ The asset or part is associated with either the same enterprise model as the existing asset or part or a substitute enterprise model that is supported by the existing asset or part. For more information on substitute enterprise models, see <a href="#">Add a substitute model for an enterprise model</a>.</li> </ul>
<b>Deploy Asset</b>	<p>Option to deploy an asset or part. You can also deploy a discreet asset to a linear asset.</p> <p><b>Note:</b> You can deploy assets or parts that are displayed on the <b>Asset Usages</b> tab and have a status of Not Used. You can also deploy assets or parts from your personal stockroom that have a state of In stock and a substate of either Available or Reserved.</p> <p>If you select this option, the Deploy asset dialog box opens. In the dialog box, select the asset or part that you want to deploy. If you select a consumable asset or part, you must also specify the quantity that you want to deploy. You can optionally assign the asset or part to a specific user or add the asset or part as a child of another asset or part. After you fill in all required fields, select <b>OK</b>. When the dialog box closes, the <b>Asset Usages</b> tab reloads to display the deployed asset or part.</p> <p>In the Deploy asset dialog box, if you want to deploy a discrete asset to a linear asset, you need to first select a discrete asset from your stockroom, and then choose one of the following options for where to deploy that asset.</p> <ul style="list-style-type: none"> <li>▪ Add to discreet asset: to add the selected asset as a child asset of the discreet asset. Select the discreet asset you want to add it to.</li> <li>▪ Add to existing location: Select an existing location.</li> <li>▪ Add to new location: Use the location picker to mark the new location on the geo map.</li> </ul>

- c. Repeat step b for every asset or part that you want to deploy, swap, or remove.
- o If you want to calibrate the associated enterprise asset, use the following steps:

**a.** Select the **Calibration** tab.

The Calibration event playbook opens.

**Note:** Each lane in the side panel of the playbook represents an activity that you must complete as part of the calibration event workflow.

b. In the work area of the Details lane, fill in the fields.

**Details lane**

Field	Description
Name	Name of the calibration event.
Temperature	Temperature of the environment in which you are performing the calibration.
Temperature unit	Unit of temperature that you are using to measure the environmental temperature.
Humidity (%)	Relative humidity level of the environment in which you are performing the calibration.

c. Select **Mark as complete**.

The Details lane is marked as Complete and you automatically progress to the Calibration Lines lane.

d. In the work area of the Calibration lines lane, select the calibration line that you want to complete or skip.

Each calibration line corresponds with a calibration attribute on the associated enterprise asset. If any calibration attribute contains multiple points at which you can measure accuracy, the Enterprise Asset Management application creates a separate calibration line for each point. You can choose to complete or skip each calibration line as needed. For more details on calibration attributes, see [Add calibration attributes to an enterprise asset](#) or [Add calibration attributes to an enterprise model](#).

e. On the calibration line record, use one of the following options to complete or skip the calibration line:

- To complete the calibration line, fill in the fields and then select **Submit**.

**Calibration line fields**

Field	Description
Details	
Instrument	Instrument that you are using to perform the calibration. If you specified an instrument model in the <b>Instrument model</b> field of the corresponding calibration attribute, the options in this field are filtered based on the specified instrument model.
Calibration date	Date and time at which you are performing the calibration. This field populates automatically based on the date and time at which the Details lane was marked as complete. You can overwrite this field if needed.
Readings	
Expected value	Value that you are measuring tolerance conformance against. This field populates automatically based on the expected value that you specified in the calibration attribute.

Field	Description
	<b>Note:</b> This field appears only if you set the Value type of the calibration attribute to either Accuracy % full scale, Accuracy % point, or True/false.
As found value	Value that you measure prior to the calibration.
As left value	Value that you measure after the calibration.
Comment	Additional comments about the calibration.

- To skip the calibration line, select **Skip**.

The calibration line record closes and you automatically return to the playbook.

- f. Repeat steps d and e for each calibration line in the Calibration lines lane.

**Note:** If any of your calibration lines have a Result of Failed, you can remediate the entire calibration event by initiating a new work order and corresponding work order tasks. See [Remediate an unsuccessful enterprise asset calibration](#) for detailed instructions.

- g. Select **Mark as complete**.

The lane is marked as Complete.

- 5. After you complete all required work, select **Close Complete** on the work order task. The state of both the work order task and associated work order changes from Work In Progress to Closed Complete.

### Bulk closure of work order tasks

Close multiple work order tasks in one go.

### Before you begin

Role required: enterprise\_asset\_technician

### Procedure

1. Navigate to **Enterprise Asset Workspace > Work Management**.
2. Select the Work order tasks tab.  
All work order tasks, assigned to the assignment group of the logged in technician, are listed.
3. Select **Bulk close tasks**.  
All work order tasks, that can be closed by the logged in technician, are listed.
4. Select the check boxes for the work order tasks that you want to close.
5. Select **Add details and close**.  
The Bulk close tasks dialog box opens.
6. Fill in the details in the Bulk close tasks dialog.

Field	Description
<b>Work notes</b>	Details about the work tasks.
<b>Time worked</b>	The cumulative time (days, hours, and minutes) taken to complete all the tasks.
<b>Comments</b>	Additional comments regarding the work tasks.

**7. Select **Save**.**

The selected work orders tasks are closed.

**Remediate an unsuccessful enterprise asset calibration**

Remediate a failed enterprise asset calibration event by initiating a new work order and corresponding work order tasks for that event.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**Procedure**

1. Navigate to **Workspaces > Enterprise Asset Workspace**.
2. From the Enterprise Asset Workspace, open the Work management view.
3. Select the **Calibrations and conditions** tab.
4. In the Calibration overview section, select either the **All calibration events** widget or the **Calibration pending verification** widget.
5. From the list of available calibration events, select the event that you want to remediate. The corresponding service event record opens.
6. Initiate the creation of a new work order by selecting **Remediate**.
7. In the Select template to begin remediation dialog box, search for and select the template that you want to apply to the new work order.

**Note:** The dialog box lists only the work order templates that have at least one work order task with a Work type of Calibration.

**8. Select **OK**.**

The dialog box closes and you are automatically redirected to the Create New Work Order form. The form is auto-populated with the following information:

- The asset that you want to calibrate
- The location of the asset
- The original work order
- All other mandatory fields

**9. Optional:** Fill out any additional fields in the Create New Work Order form and then select **Save**.

See [Create a work order for an enterprise asset](#) for a detailed description of each field.

**10. Optional:** Add additional work order tasks to the new work order.

See [Create a work order task for an Enterprise Asset Management work order](#) for detailed instructions.

- 11. Optional:** Create a checklist of all items that must be completed for the new work order or the associated work order tasks.  
See [Create a checklist for an Enterprise Asset Management work order or work order task](#) for detailed instructions.
- 12. Optional:** Specify any upstream or downstream dependencies for the associated work order tasks.  
See [Create dependencies for an Enterprise Asset Management work order task](#) for detailed instructions.
- 13.** Select **Ready for Work** to initiate work for the new work order.

### What to do next

Work with the assigned agent to complete and close all subsequent tasks for the new work order. See [Managing work for your enterprise assets](#) for detailed instructions.

## Schedule condition evaluations for enterprise models or assets

Schedule a condition evaluation by creating a work order for it.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

### Procedure

- 1.** Navigate to **All > Enterprise Asset Workspace > Work management**.
- 2.** On the **Work orders** tab, select **New**.
- 3.** Select **Asset condition work order** in the **Template** field.  
For more details on creating a work order, see [Create a work order for an enterprise asset](#).
- 4.** After you have entered the details in the work order, select **Save**.  
The work order is created in the draft state.
- 5.** Select **Ready to Work**.

A work order task gets created for the work order in the **Work Order Tasks** tab.

Additionally, a service event gets created along with condition lines. Depending on the number of templates linked to the asset, an equivalent number of assessment lines are generated. Only a single service event gets created per asset.

- 6.** Open the work order task and assign it to an enterprise technician.  
A service event gets created along with condition lines. Depending on the number of attributes created on the asset, an equivalent number of condition lines are generated. Only a single service event gets created per work order task. The technician must log in to begin work on the work order task.

## Review the asset condition results

After the enterprise technician has completed the condition evaluation, the enterprise asset manager reviews the condition evaluation and views the reports in the Work management dashboard.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

### Procedure

1. Navigate to **All > Enterprise Asset Workspace > Work management > work order tasks**.
2. In the Condition lines tab, select a service event.  
The Service event details page opens.
3. Select **Accept** or **Remediate**.  
If you accept the condition event, the status of the event changes to **Accepted**. If you choose to remediate the event, the status of the service event changes to **Pending remediation**.
4. View the asset condition reports by navigating to the **Work management > Calibrations and conditions**.
5. On the dashboard, scroll down to view the asset condition overview.

### Create a template for your Enterprise Asset Management work orders

Create a work order template to automatically populate information, generate appropriate tasks, and create asset or part requirements for your work orders.

#### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

#### About this task

Work order templates are added to the Field Service Catalog, which is part of the ServiceNow® Field Service Management application. You can access the Field Service Catalog by navigating to **All > Field Service > Catalog and Knowledge**. See [Field Service Management](#) for more information on the Field Service Management application.



**Note:** The Field Service Management application is automatically activated when you request and install the Enterprise Asset Management application from the ServiceNow Store. See [Install Enterprise Asset Management](#) for more details.

### Procedure

1. From the Enterprise Asset Workspace, open the Work management view.
2. On the **Work order templates** tab, select **New**.  
The Work Order Templates form opens in a new browser tab.
3. On the form, fill in the fields.

#### Work Order Templates form

Field	Description
Name	Name of the work order template.
Short Description	Brief description of the work order template.
Description	Detailed description of the work order template.
Checklist template	Checklist template of all items that you must complete as part of a work order.
Workflow	Workflow for work orders that this template is applied to.


Field	Description
<p> <b>Note:</b> This field appears only if you select the Add icon (  ) next to the <b>Name</b> field.</p>	

**4.** Add required tasks to the work order template.

**a.** Select **Add Task**.

**b.** On the Task information form, fill in the fields.

**Task information form**


Field	Description
Task type	Type of task that you want to create. This field is automatically set to <b>Work Order Task</b> .
Name	Name of the task.
Description	Detailed description of the task.
Parts and quantities	Asset or part that is required for completing the task. If you select a consumable asset or part, you must also specify the quantity that is required for completing the task. You can add multiple assets or parts to a single task.  <p> <b>Note:</b> Select the <b>Mandatory</b> check box for every asset or part that is required for completing the task.</p>
Dispatch group	Group of agents to whom the task is assigned.
Depends on	Other tasks that must be completed before this task initiates.
Checklist template	Checklist template of all items that you must complete as part of the task.
Work type	Type of work that an agent must perform to complete the task. The options include <b>Break Fix</b> , <b>Calibration</b> , <b>Install</b> , and <b>Planned Maintenance</b> .

**c.** Repeat steps a and b for each additional task that you want to add to the work order template.

**5.** Attach related knowledge base articles to the work order template.

If your work order template is related to any knowledge base articles with useful reference information, attach the articles to the template.

**a.** In the Model Knowledges related list, select **New**.

**b.** On the Model Knowledge form, select the Lookup using list icon (  ) in the **Knowledge** field to search for and select the knowledge base article that you want to attach to the work order template.

**c.** Select **Submit** in the Model Knowledge form header.

**d.** Repeat steps a to c for each knowledge base article that you want to attach to the work order template.

6. Select **Submit**.  
The Publish Template dialog box opens.
7. In the dialog box, fill in the fields.

**Publish Template dialog box**

Field	Description
Category	Field Service Catalog category to which you want to assign the work order template.
Availability	Supported Field Service Catalog format for the work order template. The options are <b>Desktop Only</b> , <b>Mobile Only</b> , and <b>Desktop and Mobile</b> .

8. Select **Publish**.

**Result**

The work order template is added to the Field Service Catalog.

**Create a checklist template for your Enterprise Asset Management work orders**

Create a checklist template for your work orders that gets added as a work order template.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**About this task**

You can either copy from an existing checklist template and edit and add more checklist items or you can create a template.

**Procedure**

1. Navigate to **Enterprise Asset Workspace > Work Management > Checklist templates**.
2. Select **New**.
3. In the **Create checklist template** dialog box, fill in the fields.

Field	Description
<b>Name</b>	Name of the checklist template.
<b>Copy from template</b>	List of existing templates that you can copy from.
<b>Checklist items</b>	The checklist items for the template. <ul style="list-style-type: none"> <li>○ If you selected a template from the <b>Copy from template</b> list, the checklist items pertaining to that template automatically appear. Each checklist item has a name and order that you can edit. You can add additional checklist items</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>For a new template, specify the name and order of each checklist item in the <b>Name</b> and <b>Order</b> fields. You can add multiple checklist items.</li> </ul>

4. Select **OK**.

**Result**

The checklist template is created and appears in the Checklist templates list. After a checklist template is created, it can't be edited and can be used by other applications too.

**Delivering enterprise assets in your personal stockroom through Drop off tasks**

As an enterprise asset technician, manage the delivery of enterprise assets that you have in your personal stockroom to any other warehouse stockroom by creating Drop off tasks. The asset manager of the destination stockroom receives the assets that you dropped off, verifies the asset, and completes the Receive and Drop off tasks.

You can drop off enterprise assets that aren't reserved and not part of any Enterprise Asset Management workflows.

As an enterprise asset technician, you can create drop off tasks in the Enterprise Asset Workspace or through the Mobile Agent application.

You should perform the following tasks to deliver assets to any stockroom:

**i Important:** The Drop off and Receive tasks in the Mobile Agent application are available with Enterprise Asset Management version 9.0 and later.

**Tasks to deliver assets to any stockroom**

Interface	Tasks
Enterprise Asset Workspace	<ol style="list-style-type: none"> <li>Create a Drop off task.</li> <li>Drop off the assets at the destination stockroom.</li> </ol>
Mobile Agent application	Create a Drop off task for enterprise assets using the Mobile Agent application.

The Drop off task that you submitted completes only when the asset manager of the destination stockroom completes the following tasks in the Enterprise Asset Workspace or through the Mobile Agent application.

**Tasks to receive assets at a stockroom**

Interface	Tasks
Enterprise Asset Workspace	<ol style="list-style-type: none"> <li>Verify the received assets.</li> <li>Close the Receive task.</li> </ol>

### Tasks to receive assets at a stockroom (continued)

Interface	Tasks
Mobile Agent application	Verify the enterprise assets received through a Drop off task using the Mobile Agent application.

### Create a Drop off task for enterprise assets

Create a Drop off task to return the enterprise assets in your personal stockroom to any other stockroom.

#### Before you begin

Role required: sn\_eam.enterprise\_asset\_technician

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Work management**.
2. Select the **My stockroom assets** tab.  
The list of enterprise assets in your personal stockroom is displayed.
3. Select **Schedule drop off**.
4. On the form, fill in the fields.

#### Create New Drop Off task form

Field	Description
Stockroom	Stockroom at which you want to drop off the assets.  This field is required.
Delivery by date	Date by when you want to deliver the assets to the destination stockroom.  This field is required.
Assignment group	Assignment group to which you want to assign the drop off task.
Assigned to	Person from the assignment group who is primarily responsible for the drop off task.

5. Select **Save**.

#### Result

A Drop off task in the Open state is created and listed in the **Asset tasks** tab.

#### What to do next

[Drop off enterprise assets at a stockroom.](#)

#### Drop off enterprise assets at a stockroom

Add enterprise assets to a Drop off task and deliver the assets to the required stockroom.

#### Before you begin

Role required: sn\_eam.enterprise\_asset\_technician

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Work management**.
2. Select the **Asset tasks** tab.
3. From the list of asset tasks, select the drop off task for which you want to add enterprise assets.
4. Select the **Drop off Assets** tab.
5. Select **Add**.
6. In the **Add assets** dialog box, select the assets and select **Add**.  
You can only add enterprise assets that are in your personal stockroom and that aren't reserved and aren't part of any workflows.

The assets added to the drop off task are listed in the Drop off Assets tab.

7. Drop off the assets at the required stockroom.
8. Select **Drop off**.

## Result

- A Receive task is created and assigned to the asset manager of the stockroom where you dropped off the assets.
- The state of the Drop off task changes to Work in Progress.

## Verify the enterprise assets received through a Drop off task

As an asset manager, confirm that you received the enterprise assets that were delivered to your stockroom and complete the Receive task.

## Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Work management**.
2. Select the **Asset tasks** tab.
3. From the list of asset tasks, select the Receive task for which you want to verify the assets received.
4. Select the **Drop off Assets** tab.  
The list of assets that were dropped off at your stockroom is displayed.

**Note:** The **Asset received** flag is set to **false** before an asset is verified.

5. Select an asset.
6. Select **Verify**.
  - The **Asset received** flag changes to **true**.
  - The **Receive date** is updated with the date on which you verified the asset.
7. After you verify all the assets, select **Close task**.

## Result

The state of the Receive task and its Drop off task changes to Closed Complete.

## Record time worked on Drop off and Receive tasks for enterprise assets

Manage and record time worked on Drop off and Receive asset tasks in the Enterprise Asset Workspace. After you start work on a task, you can pause and resume work. You can also record the time worked manually.

### Record time worked on a Drop off task or Receive task manually

Create an entry for the time worked on a Drop off or a Receive task manually in the Enterprise Asset Workspace.

#### Before you begin

Role required:

- To record time worked on a Drop off task: sn\_eam.enterprise\_asset\_technician
- To record time worked on a Receive task: sn\_eam.enterprise\_asset\_manager

#### Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Work management**.
2. Select the **Asset tasks** tab.
3. From the list of asset tasks, select the task for which you want to record time manually.
4. Indicate that you started work on the task by selecting **Start Work**.  
The **Start Work** option changes to **Start Timer** and **Record Time** automatically.
5. Select **Record Time**.
6. In the **Record Time** dialog box, enter the details of the time worked.
  - a. Enter the time duration that you worked on the task in the **Days**, **Hours**, and **Minutes** fields.
  - b. **Optional:** Provide any additional information in the **Comments** field.
7. Select **Save**.

#### Result

The Time Worked form is saved and the time card is added to the Time Worked tab of the task.

## Pause a Drop off task or Receive task for enterprise assets

Record a break from a Drop off or Receive task in the Enterprise Asset Workspace if you're not continuing to work on it.

#### Before you begin

You can pause a Drop off or Receive task that is in the Work in Progress state. The option to pause the task is available only after you perform the following actions:

1. Indicate that you have started working on the task by selecting **Start Work**.
2. Start recording the time by selecting **Start Timer**.

Role required:

- To record time worked on a Drop off task: sn\_eam.enterprise\_asset\_technician
- To record time worked on a Receive task: sn\_eam.enterprise\_asset\_manager

#### About this task

You can resume the task when you start working on it again. The system automatically tracks and calculates the actual time taken to complete the task even though the work was interrupted.

## Procedure

1. Navigate to **Workspaces > Enterprise Asset Workspace > Work management**.
2. Select the **Asset tasks** tab.
3. From the list of asset tasks, select the task that you want to pause.
4. Select **Pause Work**.  
The **Pause Work** changes to **Resume Work**.
5. Select **Resume Work** when you're ready to work on the activity again.

## Result

Each time you pause or resume work on the task, the actual time you worked on the task is automatically calculated. An entry for the time worked is created in the Time Worked tab.

## Perform condition evaluation from the Enterprise Asset Workspace

Perform condition evaluation to calculate the score and result of the condition attributes from the Enterprise Asset Workspace.

### Before you begin

Role required: sn\_eam.asset\_technician

### About this task

These steps detail the process of performing the condition evaluation from the Enterprise Asset Workspace. Condition evaluation can also be performed from the Mobile application. For details, see [Perform condition evaluation from a mobile application](#).

## Procedure

1. Navigate to **All > Enterprise Asset Workspace > Work management > Work order tasks**.
2. Open the condition work task assigned to you.
3. Select **Accept** and then select **Start work**.  
The status of the work order task changes to **Work in Progress**.
4. Select the **Condition lines** tab.  
The Condition lines page opens. Each condition line has a condition evaluation.
5. Select **Condition evaluation** for the condition line that you want to assess.
6. Enter a value for the questions in the sections.
7. Select **Submit**.
8. In the confirmation box, select **Submit**.  
Navigate to the Condition lines page and refresh the page to see that a score and a result are added to the condition line.
9. Select **Close Complete** in the Condition work task page.  
The Enterprise asset manager can review the asset condition results and view the reports in the Work management dashboard. For more details, see [Review the asset condition results](#).

## Perform condition evaluation from a mobile application

Perform condition evaluation to calculate the score and result of the condition attributes from a mobile application.

### Before you begin

Role required: sn\_eam.asset\_technician

### About this task

Before proceeding with this task, ensure that an asset condition work order task for an asset has been created and assigned to the technician.

These steps detail the process of performing the condition evaluation from a mobile application. Condition evaluations can also be performed from the Enterprise Asset Workspace. For details, see [Perform condition evaluation from the Enterprise Asset Workspace](#).

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen opens with the list of tasks assigned to you.
3. Tap the work order task for which you want to take action.
4. Tap the **View asset conditions** tab to see all the condition lines associated with the asset.  
Initially all the condition lines are in an open state and each condition line is associated with a template.
5. Tap a condition line record.  
The mobile UI of the condition evaluation that is associated with the corresponding condition line opens.
6. Tap **Next** and answer the questions.
7. Tap **Submit** once you have answered all the questions.

The score gets calculated and populated on the condition line record that moves to the completed state, and a pass or fail determination is made based on the scores. If the pass and fail criteria wasn't defined on a condition line, then the score displays as NA.

After all the condition lines are completed, the **Close** button appears in the Asset condition work task screen.

8. Tap **Close** to close the work order task.

## Using Service Catalog for Enterprise Asset Management requests and flows

Use the Service Catalog application to create catalog requests for the Enterprise Asset Management application.

### Use an enterprise asset request flow

Use an enterprise asset request flow for requesting, sourcing, and deploying catalog items from the Service Catalog application.

### Before you begin

Before requesting for an enterprise asset, ensure that you have already created a model for that asset in the Enterprise Asset Workspace and published that model to the Service Catalog application.

Role required:


- catalog\_admin
- procurement\_admin
- sn\_eam.enterprise\_asset\_manager
- sys\_admin

## About this task

Create a request for an enterprise catalog item from the Service Catalog application. Associate the catalog item with the Standard Enterprise Asset Request flow to trigger the flow.

The Workflow Studio application is used to create the Standard Enterprise Asset Request flow to take you through the process of sourcing, procuring, and deploying your enterprise catalog items. As the flow takes you through the various stages, the asset details are automatically updated. You can open the Standard Enterprise Asset Request flow to view the status of the stages in the flow.

## Procedure

1. Log in with credentials for the role of catalog\_admin and navigate to **Service Catalog > Maintain Items**.
2. Open the enterprise catalog item and in the **Flow** field, select **Standard Enterprise Asset Request**.  
If the **Flow** field is not visible, add it to the form layout by right-clicking the menu icon and navigating to **Configure > Form layout**.
3. Select **Save**.  
The Standard Enterprise Asset Request flow is now associated with the enterprise catalog item.
4. Navigate to the Service Catalog application.
5. Login with credentials for the role of sys\_admin role and add the **Enterprise Assets** catalog. The **Enterprise Assets** catalog is not on the Service Catalog page by default. To add this catalog, select the Add Content icon (  ) beside the search catalog bar and then select **Enterprise Assets**
6. Login with credentials for the role of sn\_eam.enterprise\_asset\_manager and select the **Enterprise Assets** catalog.  
The Enterprise Assets page opens.
7. Select your catalog item from the list.  
The catalog item page opens.
8. In the **Location** field, select the location in which you want to deploy the catalog item.
9. Select **Order Now**.
10. Log in with credentials for the role of procurement\_admin and open the new request.
11. In the Requested Items related list, select the request item.
12. Select the **Catalog Tasks** related list to view the sourcing task for the request.
13. Open the catalog task and select **Source Request**.
14. In the Source Request form layout, select **Add Transfer Order** or **Add Purchase Order** to source the request via a transfer order or a purchase order.  
After you procure the catalog item, the Asset pick task is created for the Requested item only if the asset is sourced from the stockroom that has the Asset pick task enabled. Otherwise the Deployment task is created for the Requested item without the Asset pick task. For details, see [Enable the Asset pick task for your stockroom in the Hardware Asset Workspace](#).
15. Select the Requested items related list and select the requested item.
16. Select the **Catalog Tasks** related list.
  - If the Pick task is enabled for the source stockroom, complete the Asset pick task first and then complete the Deploy task.
  - If the Pick task isn't enabled, complete the Deploy task.

17. Complete the Asset pick task using the Mobile Agent application.  
For details on completing this step, see [Manage enterprise asset pick tasks using the Mobile Agent application](#).  
The Deployment task is created for the requested item.
18. Enter a value in the **Assigned to** field, and select **Deploy Asset**.  
If it's a serialized asset, it's marked as **In use** state. If it's a consumable asset, it's marked as **Consumed** state. In the Standard Enterprise Asset Request flow, the action that is associated with deploying the assets is now complete.

## Request an enterprise asset refresh

Use the Enterprise Asset Refresh flow to track the assets that are nearing the end of their life cycle and replace them with new assets.

### Before you begin



Role required: inventory\_user

### About this task

When assets get old, their maintenance costs and risks of failure increase, while their performance decreases. You can choose to replace old assets with the same or different models of newer assets. After your Enterprise Asset Refresh request is approved, the Enterprise Asset Refresh flow takes you through sourcing and triggers the Enterprise Asset Refresh Line flow. The Enterprise Asset Refresh Line flow uses Refresh Line tasks to take you through the steps of preparing the new asset, scheduling it for delivery, deploying it, and reclaiming the aged asset.

The Workflow Studio application is used to create the Enterprise Asset Refresh flow and the Enterprise Asset Refresh Line flow.

### Procedure

1. Navigate to the Service Catalog application.
2. Login with credentials for the role of sys\_admin role and add the **Enterprise Asset Lifecycle** catalog.  
The **Enterprise Asset Lifecycle** catalog is not on the Service Catalog page by default. To add this catalog, select the Add Content icon (  ) beside the search catalog bar and then select **Enterprise Asset Lifecycle**.
3. Login with credentials for the role of sn\_eam.enterprise\_asset\_manager and select the **Enterprise Asset Lifecycle** catalog.  
The Enterprise Asset Lifecycle page opens.
4. Navigate to **Service Catalog > Enterprise Asset Lifecycle**.  
The **Enterprise Asset Lifecycle** catalog is not on the Service Catalog page by default. To add this category, select the add content icon (  ) beside the search catalog bar and then select **Enterprise Asset Lifecycle**.
5. Open **Enterprise Asset Refresh Order**.
6. If you want to replace all the aged enterprise assets with the same model of new enterprise assets, do the following:
  - a. Select **Single model** from the **Type of refresh list** field.
  - b. On the form, fill in the fields.

### Enterprise Asset Refresh form

Field	Description
Location	Physical location of the aged enterprise assets.
Replacement model	New enterprise asset model that you want to replace the aged enterprise assets with.
Assets	Aged enterprise assets that you want to replace. You can use a filter to search for enterprise assets that you want to replace.
Available	Displays only those assets for which the <b>Eligible for Refresh</b> check box on the Asset page is selected. To view all assets that are nearing their end of life, execute the condition <code>Eligible for refresh is false</code> .  <b>Note:</b> For details on the <b>Eligible for Refresh</b> check box, see <a href="#">Asset fields for enterprise assets</a> .

7. If you want to replace the aged hardware assets with different models of new hardware assets, do the following:

- a. Select **Multi model** from the **Type of refresh** field.
- b. Select **Add**.
- c. For each new enterprise asset that you want to use, add a row to enter the enterprise model.

**Note:** You can create 50 rows. You cannot create multiple rows for the same aged hardware asset that you want to replace.

8. Select **Order Now**.

An Order status page appears and displays the details of the order. A request is created to source the new enterprise assets and to replace the aged enterprise assets. The Request form shows the total price of all the new enterprise asset models.

### Replace aged enterprise assets

Replace aged enterprise assets by sourcing new enterprise assets.

#### Before you begin

Role required: inventory\_user

#### About this task

When refreshing enterprise assets, you don't have to manually update the asset records. When closing the enterprise asset refresh lines, the asset records and the assets are automatically updated. Close each task to go to the next task, complete the refresh, and reclaim the aged assets.

After sourcing the new assets, asset refresh is completed through the following stages:

- Prepare asset task: Prepare the new asset before you hand it over to the user. For example, install any software that's required.
- Schedule refresh task: Schedule a date to hand over the asset to the requester.
- Deploy new asset: Hand over the asset to the requester or install the asset at the requester's location if necessary.
- Reclaim aged asset: Collect the aged asset.

**Procedure**

**1. Select the hardware asset refresh request.**

Interface	Action
<p><b>Core UI</b></p>	<p><b>a.</b> Navigate to <b>All &gt; Service Catalog &gt; Open Record &gt; Requests.</b></p> <p><b>b.</b> Select the request number of the enterprise asset refresh request that you want to fulfill.</p>
<p><b>Enterprise Asset Workspace</b></p>	<p><b>a.</b> Navigate to <b>All &gt; Enterprise Asset Workspace &gt; Procurement view.</b></p> <p><b>b.</b> Select the <b>Requests</b> tab.</p> <p><b>c.</b> Select the request number of the enterprise asset refresh request that you want to fulfill.</p>

After your enterprise asset refresh request is approved, the following events happen:

- The Source Request flow is triggered to source new assets.
- In the **Catalog Tasks** tab, a catalog task is created for the procurement of the new enterprise asset.

**2. Under the Requested Item related list, open a requested item.**

After your enterprise asset request is approved, the Source Request flow is triggered. Under the Catalog tasks related list, a catalog task is created for the procurement of the new enterprise assets.

**3. Source items in the request.**

You can source items in the request by consuming the local stock, through purchase orders, or through transfer orders.

For more details on sourcing items, see [Sourcing items in a service catalog request.](#)

After the new asset is received, the following events happens:

- The Enterprise Asset Refresh Line flow is triggered for the asset.
- The Enterprise Asset Refresh Line tab is displayed next to the Asset Tasks tab on the requested item form.
- The Asset pick task is created under the Refresh Line Tasks only if the requested item is consumed from the local stockroom for which the Asset pick task is enabled. Otherwise the Prepare asset task is created directly without the Pick task. For details, see [Enable the Asset pick task for your stockroom in the Enterprise Asset Workspace.](#)

**4. Select the Enterprise Asset Refresh Line tab.**

**5. Select the enterprise asset refresh line.**

6. Select the **Refresh line tasks** tab.
7. Complete the Asset pick task by using the Mobile Agent application.  
For details on completing this step, see [Locate and pick the enterprise assets in your stockroom using the Mobile Agent application](#).
8. Prepare the asset.
  - a. Select the **Prepare asset** task.
  - b. In the **Asset** field, select the enterprise asset that you want to replace.
  - c. Select **Save**.
  - d. Select **Close Task**.
    - A Schedule refresh task is created under the Refresh Line Tasks.
    - The state of the Replacement asset changes to In stock.
    - The substate changes to Reserved.
    - The **Reserved for** field is populated with the requester details.
9. Complete the Schedule refresh task.
  - a. Select the **Schedule refresh** task.
  - b. In the **Scheduled deployment date** field, select the date on which the new asset will be deployed.
  - c. Select **Close Task**.
    - The Deploy new asset task is created under the Refresh Line Tasks.
    - The state of the Replacement asset changes to In stock and the substate changes to Pending install.
10. Complete the Deploy new asset task.
  - a. Select the **Deploy new asset** task.
  - b. Confirm if you have reclaimed the old asset in the **Is reclaimed** list.
    - If you've collected the aged asset, select **Yes**.
    - If you didn't collect the aged asset, select **No**.
  - c. Select **Close task**.
    - 🔔 **Note:** If you select **Yes** from the Is reclaimed list, then the Reclaim aged asset task is also closed by default.
      - Reclaim aged asset task is created under the Refresh Line Tasks.
      - The state of the replacement asset changes to In use.
      - The allocations are transferred from the aged asset to the replacement asset.
11. Complete reclaiming the aged assets.
  - a. Select the **Reclaim aged asset** task.
  - b. Confirm if you have reclaimed the old asset in the **Is reclaimed** list.

- If you've collected the aged asset, select **Yes**.
- If you didn't collect the aged asset, select **No**.

**c. Select **Close task**.**

**i Note:** You can cancel the enterprise asset Refresh Line either by selecting **Cancel** or by changing the **State** field to **Closed Incomplete** in the Refresh Line task.

## Result

After the aged enterprise asset is reclaimed, the following changes happen on the asset form:

- The state of the aged asset changes to In stock.
- The substate changes to Pending disposal.

## Create an asset resale flow

Create an asset resale flow for an asset to be resold in order to reduce waste and save cost.

### Before you begin

Role required: sn\_eam.enterprise\_asset\_manager

### About this task

The asset vendor must confirm which assets can be resold and how much they are worth.

Only assets that are in a non-terminal state, which is any state in which the asset can transition into a different state, can be resold through a enterprise resale order. Each asset must also be associated with either an enterprise model or pallet model. You can add simple assets; multi-component assets, which include pre-assembled and user-assembled assets; and pallet assets with children to an enterprise resale order.

**i Note:** If you are adding a pallet asset with children to a resale order, any changes that you make to the pallet asset are automatically applied to all child assets.

## Procedure

1. Navigate to the **Service Catalog > Enterprise Asset Lifecycle**.
2. Select Enterprise Resale Order.
3. On the form, fill in the fields.
4. Add assets and submit the order.  
Once the asset resale request is submitted, you can fulfill the request by navigating to the Enterprise Asset Workspace.
5. Navigate to **Inventory > Resale orders**.
6. Next go through each task.
7. Select Verify Asset to select assets and verify them.  
Before completing the Verify Asset task, you can add or remove assets from the disposal order. You can also edit the quantity of consumables.
8. Select Close task.  
The next task in the workflow, Schedule pickup, is automatically created and appears in the **Enterprise Asset Resale Tasks** tab
9. Select Schedule Pickup to specify when the asset can be picked up from the stockroom as well as the vendor details
10. Select Close task.

The stage changes to in transit and the Asset departure task is created.

11. Select the Asset departure task and select each asset departing for resale as well as pickup contact details,
12. Select Close task.  
The stage changes to confirmation and the Vendor confirmation task is created.
13. Select the Vendor confirmation task once the vendor confirms that the assets were received.
14. Select Close task.  
The stage changes to documentation and a Resale Documentation task is created.

## Create a catalog request for onboarding multiple assets

Create a catalog request for onboarding multiple assets on a single model.

### Before you begin

Role required: enterprise\_asset\_technician

### About this task

A minimum of one asset is required to submit a catalog request. Each catalog request may include a maximum of 50 assets.

### Procedure

1. Navigate to **Service Portal > Request Something > Enterprise Asset Lifecycle**.  
You can also navigate to the **Enterprise Asset Lifecycle** via the Service Catalog.
2. Select **Assets Onboarding**.  
The Asset Onboarding page opens.
3. On the form, fill in the fields.

Field	Description
<b>Due by</b>	Date by when the asset onboarding must be complete.  This field is optional.
<b>Requested for</b>	Person for whom the asset is requested.  This field is optional.
<b>Stockroom</b>	Select a stockroom for the assets.
<b>Is new model?</b>	Select this check box for a new model you want to create. Once selected, enter the following information. <ul style="list-style-type: none"> <li>○ Manufacturer</li> <li>○ Model name</li> <li>○ Model number</li> <li>○ Short description</li> </ul> <p><b>Note:</b> The above information is collected for creating a model record. The model record gets created in the Enterprise Asset Workspace.</p>

Field	Description
<b>Model</b>	Select an existing model record for the as sets.
<b>Add</b>	<p>Select to enter information for creating new assets. In the Add Row dialog box, enter the following information and then select <b>Add</b>:</p> <ul style="list-style-type: none"> <li>○ Serial number</li> <li>○ Asset tag</li> <li>○ RFID tag</li> <li>○ Comments</li> </ul> <p>To enter another asset, select <b>Add</b> again.</p> <p><b>Note:</b> The above information is collected for creating an asset. The asset record gets created Enterprise Asset Workspace by the enterprise asset manager.</p>

**4. Select Submit.**

After the catalog request is submitted, a requested item is created. An asset onboarding task is also created associated to the requested item which triggers the multi-asset playbook.

**What to do next**

The enterprise\_asset\_manager role can launch the multi-asset playbook from the Enterprise Asset Workspace.

**Create a catalog request to reclaim enterprise assets**

Create a catalog request to efficiently reclaim enterprise assets when an employee leaves an organization or moves to a different role.

**Before you begin**

Role required: any employee in your organization.

**Procedure**

1. Navigate to the Service Catalog application.
2. On the Service Catalog page, enter Reclaim asset in the Search catalog field on the right-hand side of the page.
3. Select **Reclaim Asset**.
4. On the form, fill in the fields.

**Reclaim Asset form**

Fields	Description
Requested by	The role of the person who is creating this request. Select from the following options:

Fields	Description
	<ul style="list-style-type: none"> <li>○ <b>HR</b></li> <li>○ <b>Manager</b></li> <li>○ <b>User</b></li> <li>○ <b>Asset Manager</b> (only if the request is being created by the enterprise_asset-manager role or the asset role)</li> </ul>
Requested for	<p>Name of the person for who you are submitting the catalog request.</p> <p><b>Note:</b> This field is not mandatory if the request is being created by the enterprise_asset_manager role.</p>
Employee separation	Whether the person for who you are submitting the asset reclamation is leaving the organization or moving to a different role.
Asset	Assets assigned to the person for who you are submitting the asset reclamation.
Reclaim date	The date by which you want the asset reclaimed by. You can enter today's date or a date in the future.
Reclaim method	The method you intend to use to collect the assets from the departing employee. You can pick up the assets, the employee can drop them off, or ship them to the organization.
Legal hold method	If the assets need to be kept on hold because of any legal reasons.
Notes/Special instructions	Any instructions that you may want to mention.

**5. Select **Submit**.**

The enterprise asset reclamation request is created. Once the request is created, the enterprise\_asset\_technician role navigates to the Enterprise Asset Workspace to view the reclamation line and complete the tasks. For more details, see [Close an enterprise asset reclamation request](#).

## Managing enterprise assets and tasks using the Mobile Agent application

Create and manage enterprise assets, asset tasks, and work order tasks using the intuitive Mobile Agent application.

### Create an enterprise asset in the Mobile Agent application

Use the ServiceNow<sup>®</sup> Mobile Agent application to create a serialized or multi-component enterprise asset.

#### Before you begin

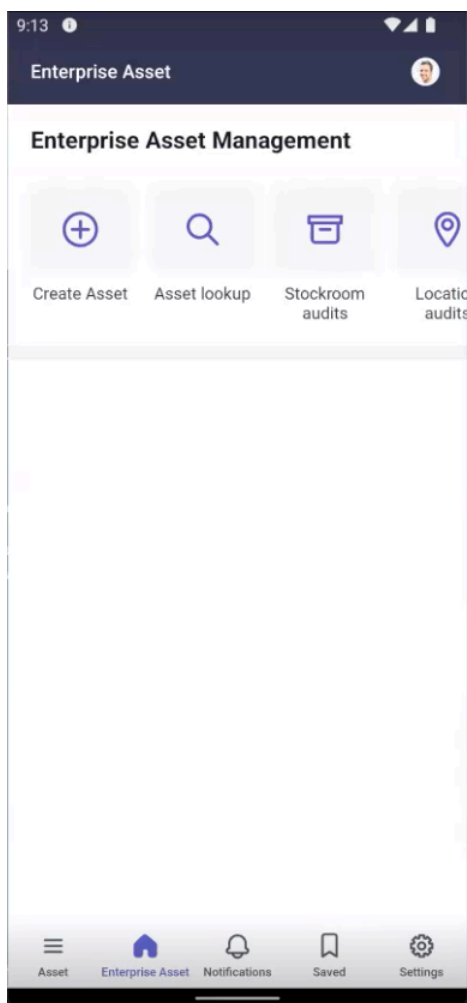
Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

## About this task

**i Important:** The enterprise assets that you create through the Mobile Agent application can be associated only with enterprise models that are classified through the Enterprise good model [sn\_ent\_model] class within the Configuration Management Database (CMDB) class hierarchy. See [Expanded Model and Asset Classes Store application](#) for more information on enterprise model classes.

## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **Enterprise Asset** tab.  
The navigation bar displays tabs for the ServiceNow applications and applets that you have access to through the Mobile Agent application. The navigation bar also displays tabs for your Mobile Agent application settings and notifications.  
The home screen for the Enterprise Asset Management application opens.



3. Tap **Create Asset**.  
The Serial Number screen opens.
4. **Optional:** If your enterprise asset contains a serial number, scan or enter the serial number to verify if the asset already exists.  
If you want to skip this verification, tap the back arrow at the top left corner of the screen to proceed directly to the Create Asset form. You can then proceed either to [step 5](#) to verify the asset existence based on asset tags or to [step 6](#) to skip both verifications and continue with the asset creation process.

- a. Use the camera on your mobile device to scan the serial number.  
You can also enter the serial number manually in the **Serial Number** field.
- b. Depending on whether the enterprise asset exists or not, proceed with one of the following options:
  - If the enterprise asset already exists, verify the asset details in the corresponding asset record:
    - i. Return to the home screen for the Enterprise Asset Management application.
    - ii. (Optional) Tap **Asset lookup**.  
The Asset lookup screen opens.
    - iii. Use the camera on your mobile device to scan the asset tag of the enterprise asset.
    - iv. (Optional) Tap **Submit**.
    - v. (Optional) From the list of corresponding asset records, tap the asset record through which you want to verify the asset details.  
The asset record opens.
    - vi. Verify all asset details for the given enterprise asset.
    - vii. Update any asset details if needed.
  - If the enterprise asset does not already exist, proceed to [step 7](#) to continue with the asset creation process.

**5. Optional:** If your enterprise asset contains an asset tag, scan the asset tag or enter the asset tag value to verify if the asset already exists.  
If you want to skip this verification, proceed directly to [step 6](#) to continue with the asset creation process.

- a. On the Create Asset form, tap the **Asset Tag** field.
- b. Use the camera on your mobile device to scan the asset tag.  
You can also enter the asset tag value manually in the **Asset Tag** field.
- c. Depending on whether the enterprise asset exists or not, proceed with one of the following options:
  - If the enterprise asset already exists, verify the asset details in the corresponding asset record:
    - i. Return to the home screen for the Enterprise Asset Management application.
    - ii. (Optional) Tap **Asset lookup**.  
The Asset lookup screen opens.
    - iii. Use the camera on your mobile device to scan the asset tag of the enterprise asset.
    - iv. (Optional) Tap **Submit**.

The list of corresponding asset records opens.

- v. (Optional) Tap the asset record through which you want to verify the asset details.

The asset record opens.

- vi. Verify all asset details for the given enterprise asset.

- vii. Update any asset details if needed.

- If the enterprise asset does not already exist, proceed to [step 7](#) to continue with the asset creation process.

- 6. On the Create Asset form, tap **Submit**.

The complete list of your enterprise assets opens.

- 7. Tap the more options menu at the top right corner of the screen.

- 8. When the menu opens, tap **Create Asset**.

The Asset Tag screen opens.

- 9. Depending on whether your enterprise asset does or does not contain an asset tag, proceed with one of the following options:

- If your enterprise asset contains an asset tag, use the camera on your mobile device to scan the tag. You can also enter the asset tag value manually in the **Asset Tag** field. After you successfully scan the asset tag or enter the asset tag value, tap the back arrow at the top left corner of the screen to proceed to the Create Asset form. The **Asset Tag** field on the Create Asset form automatically updates with the asset tag value that you scanned or entered.
- If your enterprise asset does not contain an asset tag, tap the back arrow at the top left corner of the screen to skip the asset tag scan and proceed directly to the Create Asset form.

- 10. If your enterprise asset contains a serial number, scan or enter the serial number.

- a. On the Create Asset form, tap the **Serial Number** field.

The Serial Number screen opens.

- b. Use the camera on your mobile device to scan the serial number.

You can also enter the serial number manually in the **Serial Number** field.

- c. Tap the back arrow at the top left corner of the screen to return to the Create Asset form.

The **Serial Number** field on the Create Asset form automatically updates with the serial number that you scanned or entered.

- 11. Associate the enterprise asset with an enterprise model.

- a. On the Create Asset form, tap the **Model** field.

The Model screen opens.

- b. From the list of available enterprise models, select the model that you want to associate the enterprise asset with.

The screen closes and you return to the Create Asset form.

The **Model** field on the Create Asset form automatically updates with the enterprise model that you selected.

- 12. Specify the state of the enterprise asset.

- a. On the Create Asset form, tap the **State** field.  
The State screen opens.
- b. From the list of available states, select the current state of the enterprise asset.  
The screen closes and you return to the Create Asset form.

The **State** field on the Create Asset form automatically updates with the state that you selected. Based on this selected state, additional fields appear on the Create Asset form.

13. Based on the enterprise asset state that you specified in [step 11](#), fill in the additional fields that appear on the Create Asset form.
14. Tap **Submit**.  
The form closes and you automatically return to the home screen for the Enterprise Asset Management application.

### Result

The enterprise asset is created along with a corresponding configuration item (CI).

## Look up enterprise assets using the Mobile Agent application

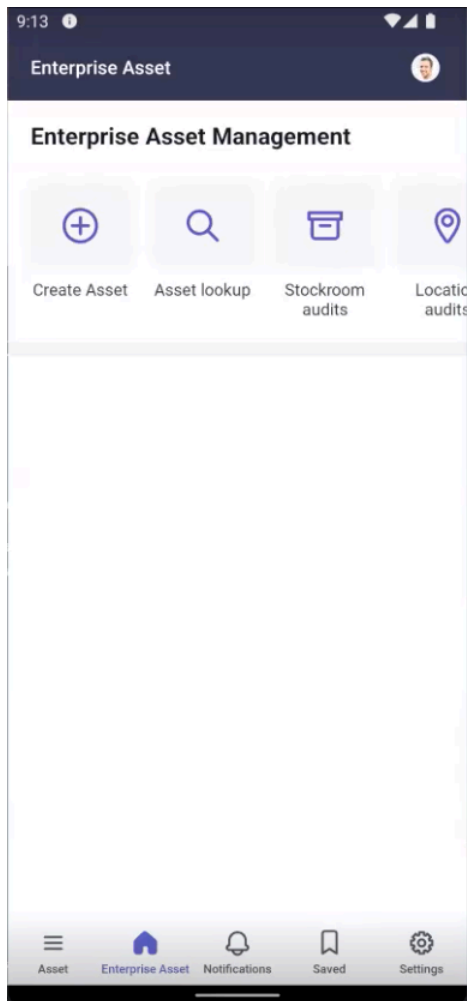
Use the ServiceNow<sup>®</sup> Mobile Agent application to look up asset records so that you can view or update your enterprise asset details.

### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **Enterprise Asset** tab.  
The navigation bar displays tabs for the ServiceNow applications and applets that you have access to through the Mobile Agent application. The navigation bar also displays tabs for your Mobile Agent application settings and notifications.  
The home screen for the Enterprise Asset Management application opens.



**3. Tap **Asset lookup**.**

The Asset lookup screen opens.

**4. Use the camera on your mobile device to scan the asset tag of the enterprise asset that you want to look up.**

You can also enter the asset tag value manually in the **Asset tag** field.

**5. Tap **Submit**.**

The list of corresponding asset records opens.

**6. Tap the asset record that you want view or update.**

The asset record opens.

**7. View or update the asset details as needed.**

## Scan enterprise assets for stockroom inventory audits using the Mobile Agent application

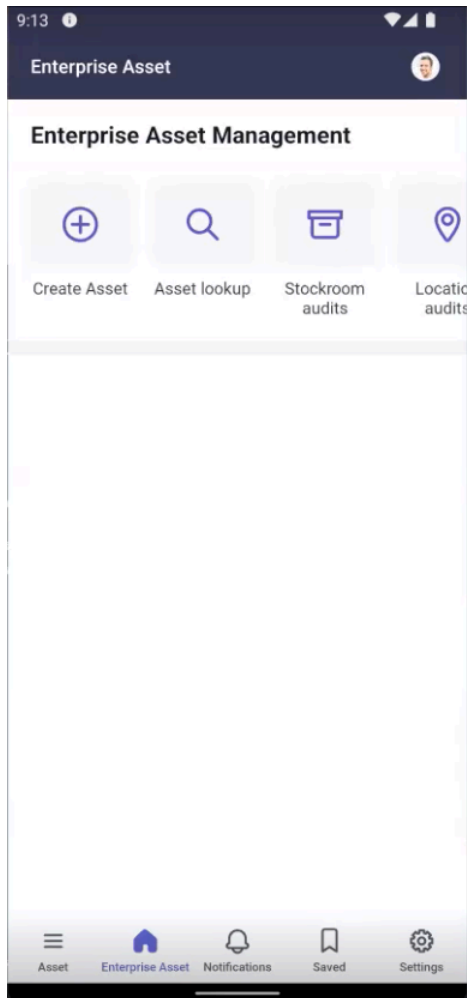
Use the ServiceNow<sup>®</sup> Mobile Agent application to scan the enterprise assets that you want to include in your stockroom inventory audits. After you scan all enterprise assets, you can complete the audit on your ServiceNow instance. Use your audit results to understand where your enterprise assets are located and what their current status is.

### Before you begin


Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **Enterprise Asset** tab.  
The navigation bar displays tabs for the ServiceNow applications and applets that you have access to through the Mobile Agent application. The navigation bar also displays tabs for your Mobile Agent application settings and notifications.  
The home screen for the Enterprise Asset Management application opens.



3. Tap **Stockroom audits**.  
The Stockroom audits screen opens, where you can view all open and completed audits.
4. If the desired stockroom audit does not already exist, open a new stockroom audit.
  - a. Tap the more options menu at the top right corner of the screen.
  - b. When the menu opens, tap **New stockroom audit**.  
The New stockroom audit screen opens.
  - c. Select the stockroom that you want to audit.
  - d. **Optional:** In the **Aisle space** field, select the aisle and space within the stockroom where you want to perform the audit.  
This field is available with Enterprise Asset Management version 9.0 and later.

- e. **Optional:** In the **Model category field**, select the model category that you want to audit. This field is available with Enterprise Asset Management version 9.0 and later.
  - f. Tap **Submit**.  
You automatically return to the Stockroom audits screen, which displays the new stockroom audit on the **Open** tab.
5. On the **Open** tab, tap the stockroom audit that you want to complete.  
The stockroom audit record opens.
  6. On the **Details** tab of the stockroom audit record, tap **Scan**.  
The Asset scan screen opens.
  7. Use the camera on your mobile device to scan the asset tag of the enterprise asset that you want to include in the audit.  
You can also enter the asset tag value manually in the **Asset Tag** field.
  8. Tap the Enter key on the keyboard of your mobile device.  
The enterprise asset is automatically added to the **Review** tab of the Asset scan screen.
  9. Repeat steps 7 and 8 for every enterprise asset that you want to include in the audit.
  10. After you scan or enter the asset tag value for all desired enterprise assets, go to the **Review** tab to verify the complete list.  
  
If you want to remove any enterprise assets from the list, tap the Delete icon () for that enterprise asset.
  11. Tap **Submit**.  
The Asset scan screen closes and you automatically return to the stockroom audit record. On the **Details** tab of the stockroom audit record, the **Expected, Not expected and location corrected, Missing, and New** fields update based on the enterprise assets that you just scanned or entered the asset tag value for.
  12. Tap the more options menu at the top right corner of the screen.
  13. When the menu opens, tap **Complete**.

### What to do next

Complete the inventory audit on your ServiceNow instance. See [Audit enterprise asset inventory](#) for detailed instructions.

## Scan enterprise assets for location inventory audits using the Mobile Agent application

Use the ServiceNow<sup>®</sup> Mobile Agent application to scan the enterprise assets that you want to include in your location inventory audits. After you scan all enterprise assets, you can complete the audit on your ServiceNow instance. Use your audit results to understand where your enterprise assets are located and what their current status is.

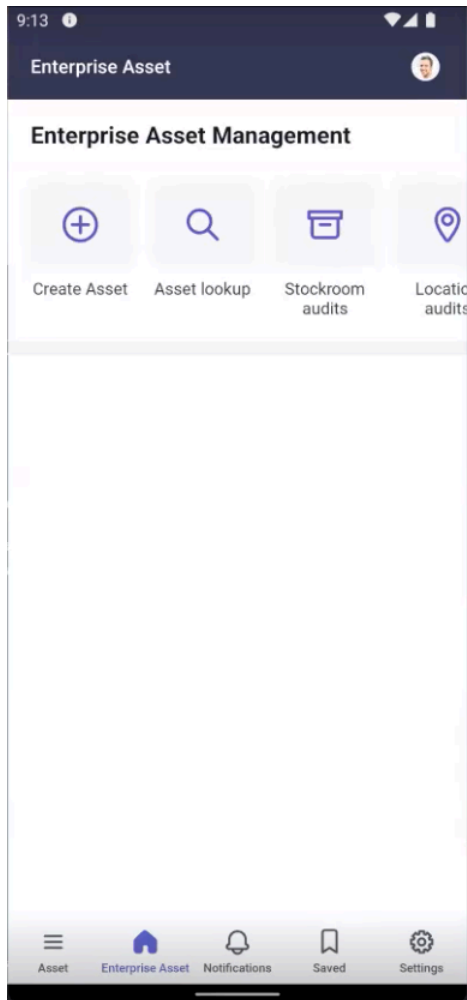
### Before you begin

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **Enterprise Asset** tab.  
The navigation bar displays tabs for the ServiceNow applications and applets that you have access to through the Mobile Agent application. The navigation bar also displays tabs for your Mobile Agent application settings and notifications.

The home screen for the Enterprise Asset Management application opens.



**3. Tap Location audits.**

The Location audits screen opens, where you can view all open and completed audits.

**4. If the desired location audit does not already exist, open a new location audit.**

**a.** Tap the more options menu at the top right corner of the screen.

**b.** When the menu opens, tap **New location audit**.

The New location audit screen opens.

**c.** Select the location that you want to audit in the **Location** field.

**d.** If you also want to audit the child locations of your selected location, enable the **Include child locations** option.

**Note:** When you enable this option, you can also include the following assets in your audit:

- Child assets of user-assembled enterprise assets
- Add-on assets of pre-assembled and simple enterprise assets
- Assets that are stored within pallets

**e. Optional:** In the **Model category** field, select the model category that you want audit. This field is available with Enterprise Asset Management version 9.0 and later.

**f. Tap Submit.**

You automatically return to the Location audits screen, which displays the new location audit on the **Open** tab.

**5.** On the **Open** tab, tap the location audit that you want to complete.

The location audit record opens.

**6.** On the **Details** tab of the location audit record, tap **Start audit**.

**7.** Tap the back arrow at the top left corner of the location audit record to return to the Location audits screen.

**8.** On the **Open** tab of the Location audits screen, tap the location audit that you just started.

The location audit record opens.

**9.** On the **Details** tab of the location audit record, tap **Scan**.

The Asset scan screen opens.

**10.** Use the camera on your mobile device to scan the asset tag of the enterprise asset that you want to include in the audit.

You can also enter the asset tag value manually in the **Asset Tag** field.

**11.** Tap the Enter key on the keyboard of your mobile device.

The enterprise asset is automatically added to the **Review** tab of the Asset scan screen.

**12.** Repeat steps 7 and 8 for every enterprise asset that you want to include in the audit.

**13.** After you scan or enter the asset tag value for all desired enterprise assets, go to the **Review** tab to verify the complete list.

If you want to remove any enterprise assets from the list, tap the Delete icon () for that enterprise asset.

**14.** Tap **Submit**.

The Asset scan screen closes and you automatically return to the location audit record. On the **Details** tab of the location audit record, the **Expected**, **Not expected and location corrected**, **Missing**, and **New** fields update based on the enterprise assets that you just scanned or entered the asset tag value for.

**15.** Tap the more options menu at the top right corner of the screen.

**16.** When the menu opens, tap **Complete**.

### What to do next

Complete the inventory audit on your ServiceNow instance. See [Audit enterprise asset inventory](#) for detailed instructions.

## Verify and depart your enterprise assets for disposal using the Mobile Agent application

Use the ServiceNow<sup>®</sup> Mobile Agent application to complete the verification and departure of any enterprise assets that you want to dispose of.

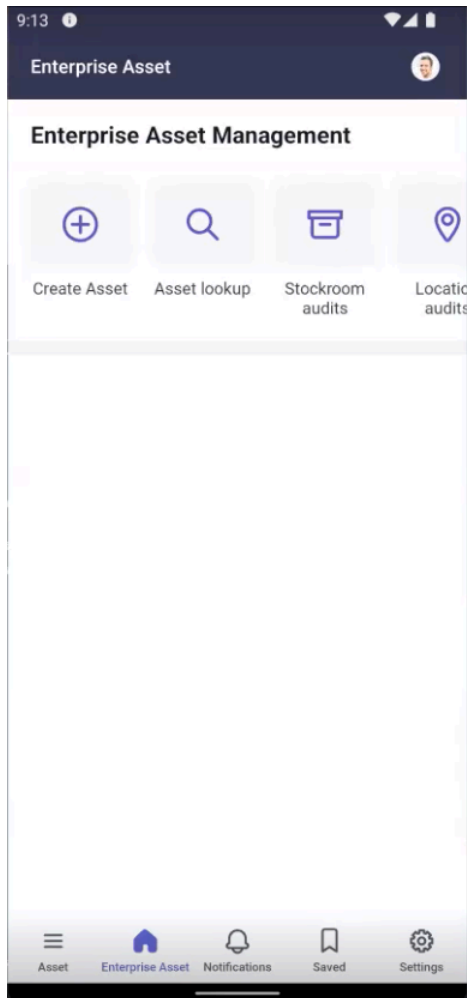
### Before you begin

Before you can complete the verification or departure of an enterprise asset, create a disposal order for that asset. See [Create a disposal order in the Enterprise Asset Workspace](#) for detailed instructions.

Role required: sn\_eam.enterprise\_admin or sn\_eam.enterprise\_asset\_manager

## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **Enterprise Asset** tab.  
The navigation bar displays tabs for the ServiceNow applications and applets that you have access to through the Mobile Agent application. The navigation bar also displays tabs for your Mobile Agent application settings and notifications.  
The home screen for the Enterprise Asset Management application opens.



3. Tap **Asset disposal**.  
The Asset disposal screen opens, where you can view all open verification and departure tasks for your enterprise asset disposal orders.
4. If the enterprise assets that are associated with a disposal order require verification, complete the verification task for that disposal order.
  - a. On the **Verifications** tab, tap the verification task that you want to complete.  
The Verifications screen opens.
  - b. Tap the **Not verified** field to view the complete list of enterprise assets that require verification through this verification task.
  - c. Tap the back arrow at the top left corner of the screen to return to the Verifications screen.
  - d. Tap **Scan**.


The Scan and verify assets screen opens.

- e. Use the camera on your mobile device to scan the asset tag of the enterprise asset that you want to verify.  
You can also enter the asset tag value manually in the **Asset Tag** field.

- f. Tap the Enter key on the keyboard of your mobile device.  
The enterprise asset is automatically added to the **Review** tab of the Scan and verify assets screen.

- g. Repeat steps e and f for every enterprise asset that you want to verify.

- h. After you scan or enter the asset tag value for all desired enterprise assets, go to the **Review** tab to verify the complete list.

If you want to remove any enterprise assets from the list, tap the Delete icon () for that enterprise asset.

- i. Tap **Submit**.

The Scan and verify assets screen closes and you automatically return to the Verifications screen. On the Verifications screen, the **Expected**, **Verified**, and **Not verified** fields update based on the enterprise assets that you just scanned or entered the asset tag value for.

- j. Tap **Complete**.

The Verifications screen closes and you automatically return to the Asset disposal screen.

- 5. If the enterprise assets that are associated with a disposal order require departure, complete the departure task for that disposal order.

- a. On the **Departures** tab, tap the departure task that you want to complete.  
The Departures screen opens.

- b. Tap the **Not departed** field to view the complete list of enterprise assets that require departure through this departure task.

- c. Tap the back arrow at the top left corner of the screen to return to the Departures screen.


- d. Tap **Scan**.  
The Scan and depart assets screen opens.

- e. Use the camera on your mobile device to scan the asset tag of the enterprise asset that you want departed.  
You can also enter the asset tag value manually in the **Asset Tag** field.

- f. Tap the Enter key on the keyboard of your mobile device.  
The enterprise asset is automatically added to the **Review** tab of the Scan and depart assets screen.

- g. Repeat steps e and f for every enterprise asset that you want departed.

- h. After you scan or enter the asset tag value for all desired enterprise assets, go to the **Review** tab to verify the complete list.

If you want to remove any enterprise assets from the list, tap the Delete icon () for that enterprise asset.

**i. Tap **Submit**.**

The Scan and depart assets screen closes and you automatically return to the Departures screen. On the Departures screen, the **Expected**, **Departed**, and **Not departed** fields update based on the enterprise assets that you just scanned or entered the asset tag value for.

**j. Tap the **Pickup contact name** field.**

The Pickup contact name screen opens.

**k. In the **Pickup Contact Name** field, enter the name of the person who is picking up the enterprise assets for departure.**

**l. Tap **Submit**.**

The Pickup contact name screen closes and you automatically return to the Departures screen. On the Departures screen, the **Pickup contact name** field updates with the name that you entered.

**m. Tap **Complete**.**

The Departures screen closes and you automatically return to the Asset disposal screen.

### What to do next

Complete the remaining disposal order tasks on your ServiceNow instance. See [Enterprise asset disposal order stages](#) for more information on enterprise asset disposal order tasks.

## Manage an Enterprise Asset Management task using the Mobile Agent application

Manage all your work order tasks and asset tasks using the intuitive Mobile Agent application.


### View your tasks using the Mobile Agent application


View your work order tasks, asset tasks, and asset repair tasks using the Mobile Agent application.

### Before you begin

Role required: sn\_eam.enterprise\_admin, sn\_eam.enterprise\_asset\_manager, or sn\_eam.enterprise\_asset\_technician

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.
3. View all the tasks assigned to you by selecting **See all**.
4. **Optional:** Filter your tasks by field values.
  - a. Tap the Filter icon ()
  - b. Enter values in the fields by which you want to filter your task: **Due Date**, **Asset**, **Location**, or **Priority**.
5. **Optional:** Sort your tasks.

- a. Tap the Filter icon ().
- b. Tap **Sort by**.
- c. Select the fields by which to sort your tasks.

### Assign a group task to yourself using the Mobile Agent application

Claim tasks to work on from the tasks assigned to your assignment group through the Mobile Agent application.

#### Before you begin

Role required:

- To work on a work order task: `wm_agent` and `sn_eam.enterprise_asset_technician`
- To work on Pick Up Asset task: `sn_eam.enterprise_asset_technician`

#### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with a **My group task** link and the first few tasks in the list of tasks assigned to you displayed.
3. View the list of tasks assigned to your group by tapping **My group task**.
4. Tap the task that you want to assign to yourself and then tap **Assign to me**.

#### Result

The assigned task is shown in your My Tasks list.

### Start working on tasks using the Mobile Agent application



Indicate in the Mobile Agent application when you start work on a task assigned to you. When you start working on the task, the start time is automatically recorded.

#### Before you begin

Role required:


- To work on a work order task: `wm_agent` and `sn_eam.enterprise_asset_technician`
- To work on Pick Up Asset task: `sn_eam.enterprise_asset_technician`

#### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.
3. If the task you want to start isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.

5. Tap the task that you want to start.
6. On the **Details** tab, tap **Start Work**.

## Result

- In the **Details** tab, the **Start Work** link changes to **Complete Work** automatically.
- The more actions icon (  ) with the **Pause work** and **Record time** options is displayed in the top-right corner of the screen.
- The start time is automatically recorded.

## Record time worked on a task using the Mobile Agent application

Manage and record time worked on work order tasks and asset tasks. After you start working on a task, you can pause and resume work. You can also record the time worked manually.

## Pause a task using the Mobile Agent application

Record a break from a work order task or asset task in the Mobile Agent application if you're not continuing to work on it. Resume the task when you start working on it again. The system automatically tracks and calculates the actual time taken to complete the task even though the work was interrupted.




## Before you begin

The `work.management.allow.auto.timecard` system property must be enabled for the time cards to be automatically created when you start working on a task.

Role required:

- To work on a work order task: `wm_agent` and `sn_eam.enterprise_asset_technician`
- To work on Pick Up Asset task: `sn_eam.enterprise_asset_technician`

## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.
3. If the task you want to pause isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon (  ) and enter the values to use as a filter in the **Due Date**, **Asset**, **Location**, or **Priority** fields.
  - To sort your tasks, tap the Filter icon (  ), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the task record that you want to pause.
6. Tap the more actions icon (  ) at the top right corner of the screen and then tap **Pause work**.  
On the **Details** tab, the **Close complete** option changes to **Resume work**.
7. Tap **Resume Work** when you're ready to work on the activity again.

## Result

Each time you pause or resume work on the task, the actual time you worked on the task is automatically calculated. An entry for the time worked is created in the Time worked time card.

## Record time worked for a task manually using the Mobile Agent application

Record time worked on a work order task or asset task manually and provide any additional comments on the task using the Mobile Agent application.





### Before you begin

Role required: wm\_agent or sn\_eam.enterprise\_asset\_manager

### About this task

You can record time for a work order task or an asset task that is in progress.

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.
3. If the task for which you want to record time isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date**, **Asset**, **Location**, or **Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the task record for which you want to record time.
6. Navigate to **Record time** from the more actions icon (  ) or the **Details** tab.
  - Tap the more actions icon (  ) at the top right corner of the screen and then tap **Record time**.
  - On the **Details** tab, tap **Record time**.
7. On the Record time screen, specify the details of the task.
  - a. Specify the date in the **Work Date** field.  
By default, this field is set to the current date.
  - b. Enter the time duration that you worked on the task in the **Time worked (Hours)** and **Time worked (Minutes)** fields.
  - c. **Optional:** Provide any additional information in the **Comments** field.
8. Tap **Done** and then tap **Submit**.

### Result

The Time worked form is saved and the time card is added to the Time worked list.

## Initiate a request to source parts for work order tasks using the Mobile Agent application

Initiate a request to source the missing parts of an enterprise asset associated with a work order task by using the Mobile Agent application.

### Before you begin



Role required: sn\_eam.enterprise\_asset\_manager or wm\_agent

## About this task

You can work on part requirements associated with a work order task in the Mobile Agent application but you can't create a part requirement.

You can only initiate the sourcing workflow using the Mobile Agent application. The sourcing flow can be completed only in the Enterprise Asset Workspace.

## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.
3. If the task for which you want to create a source parts request is not displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the task for which you want to request to source missing parts.
6. Tap the **Parts** tab.  
The Part Requirements section shows a list with the first few part requirement records associated with the work order task.
7. If the part for which you want to create a source parts request isn't displayed, tap **See all**.
8. **Optional:** Update the required quantity of parts that you want to source.
  - a. Tap the part requirement record.
  - b. On the Part requirements form, enter the quantity in the **Required quantity** field.
  - c. Tap **Submit**.
9. Tap **Source Parts Request**.

## Result

- A catalog request is created for sourcing the parts.
- The status of the part requirements record changes from Not requested to Requested.
- In the Requested items list, an open work order parts request is created automatically.

## What to do next

You must complete the sourcing of the requested parts in the Enterprise Asset Workspace. For more information, see [Source parts for an Enterprise Asset Management work order or work order task](#).

## Close a Pick Up Asset task using the Mobile Agent application



Complete and close the Pick Up Asset task for the enterprise asset that you have picked up from the designated stockroom for your assigned work order using the Mobile Agent application.

## Before you begin

The status of the Pick Up Asset task must be Work in progress.

Role required: wm\_agent or sn\_eam.enterprise\_asset\_technician

## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.
3. If the task you want to close isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the work order task for which you want to close the associated Pick Up Asset task.
6. Tap the **Parts** tab.  
The Pick Up Asset Tasks section shows the first few Pick Up Asset tasks in the list of tasks associated with the work order task assigned to you.
7. If the task you want to complete isn't displayed, tap **See All**.
8. Tap the Pick Up Asset task that you want to complete and then tap **Close complete**.

## Result

- The state of the Pick Up Asset task changes from Open to Closed Complete.
- A record is created in the Asset Usages section with the Status of Not Used and State of In stock.

**Note:** For a consumable asset, the State changes to Consumed.

## What to do next

Take necessary asset action on the enterprise asset associated with the work order. For details, see [Take action on an enterprise asset using the Mobile Agent application](#).

## Take action on an enterprise asset using the Mobile Agent application



Deploy, remove, or swap any assets or parts that are required for an enterprise asset by using the Mobile Agent application. You can also use the application to calibrate your enterprise assets.

## Before you begin

Role required: wm\_agent

## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.
3. If the task you want to work on isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.

- To filter your tasks, tap the Filter icon (  ) and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
- To sort your tasks, tap the Filter icon (  ), tap **Sort by**, and select the fields by which to sort your tasks.

5. Tap the work order task for which you want to take action.

6. Complete all work that is required for the work order task.

- If you want to deploy, swap, or remove any required assets or parts, use the following steps:

a. Tap the **Parts** tab of the work order task.

By default, the Asset Usages list displays only the first few assets and parts that are associated with the work order task. If the asset or part that you want to take action on isn't displayed, tap **See all**.

b. On the Asset Usages list, choose the action that you want to take on the asset or part.

**Note:** If you want to filter the displayed assets or parts, tap the Filter icon (  ) and enter the values to use as a filter in the **Quantity, State, Substate, or Display name** fields.

**Available actions**

Action	Description
Deploy an asset or part	<p>The asset or part must have a status of Not Used.</p> <p>You can also deploy assets or parts from your personal stockroom that have a state of In stock and a substate of either Available or Reserved.</p> <ol style="list-style-type: none"> <li>i. Select the asset.</li> <li>ii. Tap <b>Deploy</b>.</li> <li>iii. On the Deploy asset screen, tap the asset that you want to deploy.</li> <li>iv. On the Deploy asset execute screen, in the <b>Quantity</b> field, select the quantity of parts that you want to deploy.</li> <li>v. Add the asset or part as a child of another asset or part by tapping <b>Add to asset</b> and then selecting the required asset from the asset list.</li> <li>vi. Assign the asset or part to a specific user by tapping <b>Assign to user</b> and then selecting the user from the list of users.</li> <li>vii. Tap <b>Deploy</b>.</li> </ol> <p>The Asset Usages list reloads to display the deployed asset or part with a Status of Used and State of In use. The Status of a consumable asset changes to Consumed.</p>
Remove an asset or part	<p>The asset or part must have a state of In use, In maintenance, or Consumed.</p> <ol style="list-style-type: none"> <li>i. Select the asset or part.</li> <li>ii. Tap <b>Remove</b>.</li> </ol>

Action	Description
	<p><b>iii.</b> On the Remove asset screen, tap the asset or part that you want to remove.</p> <p><b>iv.</b> Tap <b>Remove</b>.</p> <p>The Asset Usages section reloads to display the removed asset or part, which now has the Status of Removed and State of In stock.</p>
Swap an asset or part with a replacement part	<p><b>i.</b> Tap <b>Swap</b>.</p> <p><b>ii.</b> On the Select asset to swap screen, tap the asset or part that you want to swap.</p> <p><b>iii.</b> On the Swap assets screen, in the <b>Swap in asset</b> field, select the replacement part that you want to swap in from the asset list.</p> <p><b>i</b> <b>Note:</b> The replacement part must have a State of In stock and a substate of Available.</p> <p>The Asset Usages list reloads and displays the updated asset statuses:</p> <ul style="list-style-type: none"> <li>▪ The Swap out asset has a status of Removed.</li> <li>▪ The Swap in asset has a status of Used.</li> </ul>

- If you want to calibrate the associated enterprise asset, use the following steps:

**a.** Tap **Calibrate** on the work order task.

The Calibration event playbook opens.

**i** **Note:** Each lane in the playbook represents an activity that you must complete as part of the calibration event workflow.

**b.** Expand the Calibration event playbook.

**c.** Expand the Details lane and then tap **Calibration event details**.

**d.** On the Calibration event details screen, fill in the fields.

**Calibration event details screen**

Field	Description
Name	Name of the calibration event.
Environmental conditions	
Temperature	Temperature of the environment in which you are performing the calibration.
Temperature unit	Unit of temperature that you are using to measure the environmental temperature.
Humidity (%)	Relative humidity level of the environment in which you are performing the calibration.

**e. Tap **Mark as complete.****

The Details lane is marked as Complete and you automatically progress to the Calibration Lines lane.

**f. On the Calibration lines screen, select the calibration line that you want to complete or skip.**

Each calibration line corresponds with a calibration attribute on the associated enterprise asset. If any calibration attribute contains multiple points at which you can measure accuracy, the Enterprise Asset Management application creates a separate calibration line for each point. You can choose to complete or skip each calibration line as needed. For more details on calibration attributes, see [Add calibration attributes to an enterprise asset](#) or [Add calibration attributes to an enterprise model](#).

**g. On the Calibration line record, use one of the following options to complete or skip the calibration line:**

- To complete the calibration line, tap **Edit**. On the Edit calibration line screen, fill in the fields and then tap **Submit**.

**Edit calibration line screen**

Field	Description
Instrument	Instrument that you are using to perform the calibration. If you specified an instrument model in the <b>Instrument model</b> field of the corresponding calibration attribute, the options in this field are filtered based on the specified instrument model.
Expected value	Value that you are measuring tolerance conformance against. This field populates automatically based on the expected value that you specified in the calibration attribute.  <b>Note:</b> This field appears only if you set the Value type of the calibration attribute to either Accuracy % full scale, Accuracy % point, or True/false.
As found value	Value that you measure prior to the calibration.
As left value	Value that you measure after the calibration.
Comment	Additional comments about the calibration.

- To skip the calibration line, tap **Skip**.

**h. Return to the Calibration lines screen.**

**i. Repeat steps f to h for each of your calibration lines.**

**Note:** If any of your calibration lines have a Result of Failed, you can remediate the entire calibration event by initiating a new work order and corresponding work order tasks. See [Remediate an unsuccessful enterprise asset calibration](#) for detailed instructions.

**j. Tap Mark as complete.**

The Calibration lines lane is marked as Complete.

**What to do next**

Close the work order associated with the enterprise asset. For details, see [Close a work order for an enterprise asset using the Mobile Agent application](#).



**Close a work order for an enterprise asset using the Mobile Agent application**

Close an assigned work order by marking all the required work for the associated asset as complete using the Mobile Agent application.

**Before you begin**

Role required: wm\_agent

**Procedure**

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.
3. If the task you want to close isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields to sort your tasks.
5. Tap the work order task that you want to close.
6. On the **Details** tab of the work order task, tap **Close Complete**.
7. In the **Work notes** field, enter your closure comments.
8. Tap **Done**.
9. Tap **Submit**.

**Result**

The state of the work order task changes from Work In Progress to Closed Complete.

**Create a checklist for work order tasks using the Mobile Agent application**



Manage your work order tasks by creating a checklist of all items that you must complete for a work order or work order task using the Mobile Agent application.

**Before you begin**

Role required: wm\_agent

**Procedure**

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.

3. If the task for which you want to create a checklist is not displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () , enter the values to use as a filter in the **Due Date**, **Asset**, **Location**, or **Priority** fields.
  - To sort your tasks, tap the Filter icon () , tap **Sort by**, and select the fields to sort your tasks.
5. Tap the work order task for which you want to create a checklist.
6. Tap the **Related** tab.  
The Checklist section of the Related tab shows the existing checklists for the work order task. The checklists marked as complete are displayed at the bottom of the list.
7. In the **Checklist** section, tap **Add item**.
8. On the **Add checklist** screen, in the **Name** field, enter the name of the checklist.
9. In the **Order** field, enter the order in which the checklist item should be completed.  
For example, a value of 1 indicates that the given checklist item is the first item you must complete.
10. Tap **Done** and then tap **Submit**.

### Result

The checklist is displayed in the specified order in the Checklist section.



### View knowledge articles related to work order tasks in the Mobile Agent application

View helpful and relevant knowledge articles attached to work order tasks in the Mobile Agent application.

### Before you begin

Role required: wm\_agent

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.
3. If the task you want is not displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () , enter the values to use as a filter in the **Due Date**, **Asset**, **Location**, or **Priority** fields.
  - To sort your tasks, tap the Filter icon () , tap **Sort by**, and select the fields to sort your tasks.
5. Tap the work order task for which you want to view the knowledge articles.
6. Tap the **Related** tab.
7. View relevant knowledge articles.
  - To view a knowledge article related to the work order task, tap the article link in the **Attached Knowledge** section.
  - To view knowledge articles related to the parts associated with the work order task, tap the article link in the **Parts Knowledge** section.

The selected article is displayed.

**Note:** You can provide feedback on a knowledge article by rating the article, marking the article as helpful or not helpful, or posting comments for the article.



### Create work notes about the work order tasks using the Mobile Agent application

Add notes with details about work order task to the task record using the Mobile Agent application.

#### Before you begin

Role required: wm\_agent

#### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens with the first few tasks in the list of tasks assigned to you displayed.
3. If the task to which you want to add a work note isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields to sort your tasks.
5. Tap the work order task for which you want to add a work note.
6. Tap the **Activity** tab.  
All the work notes related to the work order tasks are listed.
7. Tap **Compose**.
8. On the Compose screen, type your comments related to work order task.
9. Tap **Post**.

#### Result

The posted work note is shown in the **Activity** tab of the work order task record.

### Manage enterprise asset repair tasks using the Mobile Agent application

Manage all the repair tasks associated with the defective enterprise assets in your stockroom using the intuitive Mobile Agent application.

#### Start working on a enterprise asset repair task using the Mobile Agent application

Indicate in the Mobile Agent application when you start work on a repair task assigned to you.

#### Before you begin



Role required: sn\_eam.enterprise\_asset\_technician

#### About this task

You can work on the repair tasks that belong to the following task types:

- Asset troubleshoot task
- Asset repair task
- Asset evaluate task

## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to start isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the repair task that you want to start.
6. On the **Details** tab, tap **Start work**.

## Result

On the **Details** tab, the **Start work** link changes to **Start timer, Record time, and Close** automatically.

### Record time worked on an enterprise asset repair task using the Mobile Agent application

Manage and record time worked on Troubleshoot asset, Repair asset, and Evaluate asset tasks using the Mobile Agent application. After you start working on a task, you can pause and resume work. You can also record the time worked manually.

### Pause an enterprise asset repair task using the Mobile Agent application



Record a break from a repair task for the enterprise assets using the Mobile Agent application if you're not continuing to work on it. Resume the task when you start working on it again. The system automatically tracks and calculates the actual time taken to complete the task even though the work was interrupted.

### Before you begin

After you start work on the repair task, make sure to start recording the time by tapping the **Start Timer** in the **Details** tab.

Role required: asset\_technician

## Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to pause isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the task record that you want to pause.

6. In the **Details** tab, tap **Pause**.

On the **Details** tab, the **Pause** option changes to **Resume**.

7. Tap **Resume** when you're ready to work on the activity again.

### Result

Each time you pause or resume work on the repair task, the actual time you worked on the task is automatically calculated. An entry for the time worked is created in the Time worked section of the Related tab.

### Record time worked on an enterprise asset repair task manually using the Mobile Agent application



Record time worked on an enterprise asset repair task manually and provide any additional comments on the task using the Mobile Agent application.

### Before you begin

Make sure you have indicated that you started working on the repair task by tapping **Start work** in the **Details** tab.

Role required: asset\_technician

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task for which you want to record time isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the repair task record for which you want to record time.
6. On the **Details** tab, tap **Record time**.
7. On the Record time screen, specify the details of the task.
  - a. Enter the time duration that you worked on the task in the **Time worked (Hours)** and **Time worked (Minutes)** fields.
  - b. **Optional:** Provide any additional information in the **Time worked comments** field.
8. Tap **Done** and then tap **Submit**.

### Result

The Record time form is saved and the time card is added to the Time worked section of the Related tab.

### Close an enterprise asset repair task using the Mobile Agent application

Complete an assigned enterprise asset repair task and mark the task as closed using the Mobile Agent application.

### Before you begin



Role required: sn\_eam.enterprise\_asset\_technician

### About this task

You can close any task that belongs to the following task types:

- Troubleshoot asset task
- Repair asset task
- Evaluate asset task

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to close isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon (  ) and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (  ), tap **Sort by**, and select the fields to sort your tasks.
5. Tap the repair task that you want to close.
6. On the **Details** tab of the repair task, tap **Close** .
7. On the Repair task input form screen, enter the result of your task.

Task	Action
<b>Troubleshoot asset</b>	In the <b>Troubleshoot result</b> field, select any of the following: <ul style="list-style-type: none"> <li>○ <b>Repairable</b></li> <li>○ <b>Unrepairable</b></li> <li>○ <b>Redeployable</b></li> </ul>
<b>Repair asset</b>	In the <b>Repair result</b> field, select any of the following: <ul style="list-style-type: none"> <li>○ <b>Repaired</b></li> <li>○ <b>Unrepairable</b></li> <li>○ <b>Redeployable</b></li> </ul>
<b>Evaluate asset</b>	In the <b>Evaluation result</b> field, select any of the following: <ul style="list-style-type: none"> <li>○ <b>Redeployable</b></li> <li>○ <b>To be disposed</b></li> </ul>

8. In the **Work notes** field, enter your closure comments.
9. Tap **Done** and then tap **Submit**.

### Result

The state of the repair task changes to Closed Complete.

## Manage enterprise asset pick tasks using the Mobile Agent application

Work on the Asset pick tasks assigned to you by using the Mobile Agent application.



### Start working on an enterprise asset pick task using the Mobile Agent application

Indicate in the Mobile Agent application when you start work on an asset pick task assigned to you.

#### Before you begin

Role required: inventory\_user

#### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to start isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon () , tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the Asset pick task that you want to start.  
Use the details provided in the following fields on the **Details** tab to start work on the assigned asset pick task:
  - **Asset:** Asset that you should pick.
  - **Stockroom:** Stockroom from which you should pick the asset.
  - **Pick location:** Aisle and space within the stockroom from where you should pick the asset.
6. On the **Details** tab, tap **Start work**.

#### Result

On the **Details** tab, the **Start work** link changes to **Start timer, Locate, and Scan asset** automatically.

#### What to do next

Complete the asset pick task assigned to you. For details, see [Locate and pick the enterprise assets in your stockroom using the Mobile Agent application](#).

### Record time worked on an enterprise asset pick task using the Mobile Agent application

Manage and record time worked on enterprise asset pick tasks by using the Mobile Agent application. After you start working on a task, you can pause and resume work.

#### Pause an enterprise asset pick task using the Mobile Agent application

Record a break from an enterprise asset pick task by using the Mobile Agent application if you're not continuing to work on it.

#### Before you begin



After you start work on the enterprise asset pick task, start recording the time by tapping **Start timer** in the **Details** tab.

Role required: inventory\_user

### About this task

After you pause a task, you can resume when you start working on it again. The system automatically tracks and calculates the actual time taken to complete the task even though the work was interrupted.

### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to pause isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.
  - To filter your tasks, tap the Filter icon () and enter the values to use as a filter in the **Due Date, Asset, Location, or Priority** fields.
  - To sort your tasks, tap the Filter icon (), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the asset pick task record that you want to pause.
6. In the **Details** tab, tap **Pause**.

**Note:** The **Pause** option is displayed only after you tap **Start timer**.

On the **Details** tab, the **Pause** option changes to **Resume**.

7. Tap **Resume** when you're ready to work on the activity again.

### Result

Each time you pause or resume work on the asset pick task, the actual time you worked on the task is automatically calculated. An entry for the time worked is created in the Time worked section of the Related tab.

### Locate and pick the enterprise assets in your stockroom using the Mobile Agent application

Locate an enterprise asset placed in a specific aisle and space in the stockroom by using indoor maps. After locating the asset, pick and drop off the asset to another location within the stockroom using the Mobile Agent application.



### Before you begin

You should explicitly install Indoor Mapping for Assets (com.sn\_ima) application from the ServiceNow Store. When you install this application, Indoor Mapping (sn\_map\_core) and Indoor Mapping component (sn\_map\_component) are also installed.

Role required: inventory\_user


### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying only the first few tasks in the list of tasks assigned to you.
3. If the task you want to start isn't displayed, tap **See all**.
4. **Optional:** Filter or sort the task view.

- To filter your tasks, tap the Filter icon (  ) and enter the values to use as a filter in the **Due Date**, **Asset**, **Location**, or **Priority** fields.
  - To sort your tasks, tap the Filter icon (  ), tap **Sort by**, and select the fields by which to sort your tasks.
5. Tap the Asset pick task for which you have started work.
  6. To locate the enterprise asset in the stockroom, on the **Details** tab, tap **Locate**.
    - The exact location of the enterprise asset in the stockroom is displayed on the map.
    - The **Get directions** option is displayed.
  7. Get directions to the asset location in the stockroom.
    - a. Tap **Get directions**.
    - b. Choose the start location on the map.
    - c. Tap **Save**.
      - The following details are displayed on the map:
        - Path from the start location to the asset location
        - Approximate time required for you to reach the asset location
      - **View steps** and **Scan asset** options are displayed.
  8. **Optional:** To view the route to the asset location, tap **View steps**.
  9. After reaching the asset location, pick the asset.
  10. Complete the Asset pick task.
    - a. Tap **Scan asset**.
    - b. Provide the asset tag information.
      - To provide the information through a scan, scan the asset tag of the asset.
      - To provide the information manually, enter a value in the **Asset tag** field.
    - c. **Optional:** In the **Drop off location** field, select the space within the stockroom where you want to drop off the asset that you picked.
    - d. Select **Close complete**.
      - The state of the Asset pick task changes to Closed complete.
      - The **Location** field of the asset is updated with the drop off location only if you have specified the drop off location.
      - The Enterprise Asset request flow and Enterprise Refresh Request flow proceed to the next stage.

## Manage enterprise asset put away using the ServiceNow Agent application

Scan and put away the assets from the receiving bay in the designated aisle-space using the ServiceNow Agent application.

 **Important:** The Asset put away feature is available with Enterprise Asset Management version 9.0 onwards.

## Put away enterprise assets using the ServiceNow Agent application

Scan available assets in the inventory and perform asset put away in the designated scanned drop-off location.

### Before you begin

Role required: inventory\_user

### About this task





The inventory user can scan the available assets in the inventory and put them away in the scanned aisle-space in the stockroom. The Enterprise Asset Management application checks the existence of an active put away task for the asset and makes the required update in the Enterprise Asset Workspace.

- If an active Asset put away task exists, the task is closed when the asset is placed in the designated stockroom location.
- If an active Asset put away task doesn't exist for the asset, then a task is created and closed when the asset is placed in the designated stockroom location.

### Procedure





1. From your mobile device, launch the Now Mobile Agent application.
2. On the navigation bar, tap the **Asset put away** menu.

### IT Asset Management

ocation audits    Create Asset    Asset disposal    Asset put away

### Customized Old IT Asset Management

ocation audits    Create Asset    Asset lookup    Asset disposal


### Open stockroom audits

[See all](#)

**In Progress** ASTAUD0001022

**San Diego North - Pickup/Dropoff**

Created 2020-04-22 01:14:50

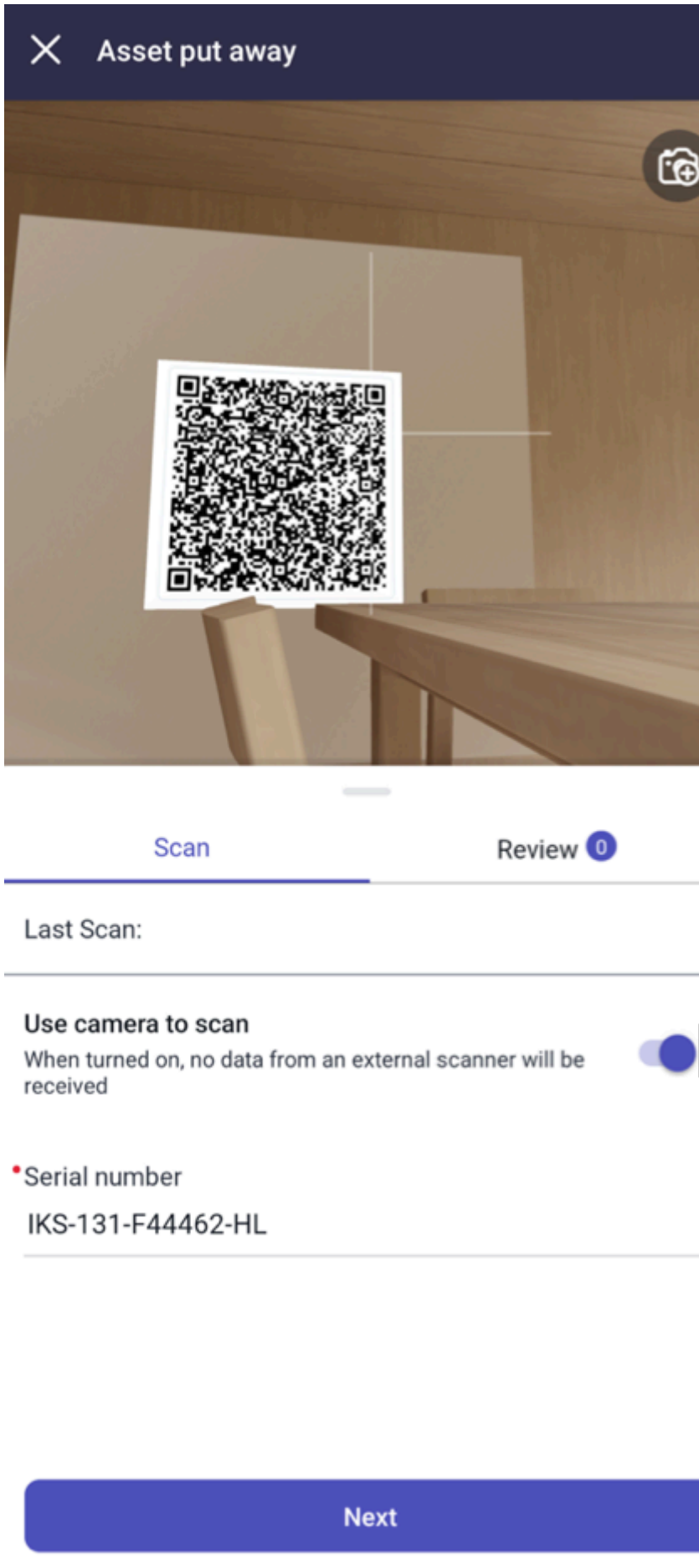
 Assigned to **Beth Anglin**

### Open location audits

[See all](#)

The Asset put away page is displayed.

**3.** Enter or scan the asset serial number and tap **Next**.




You can scan multiple assets at a time. All the scanned asset serial numbers are listed in the **Review** tab.


✕ Scan Assets

Scan      Review <sup>2</sup>

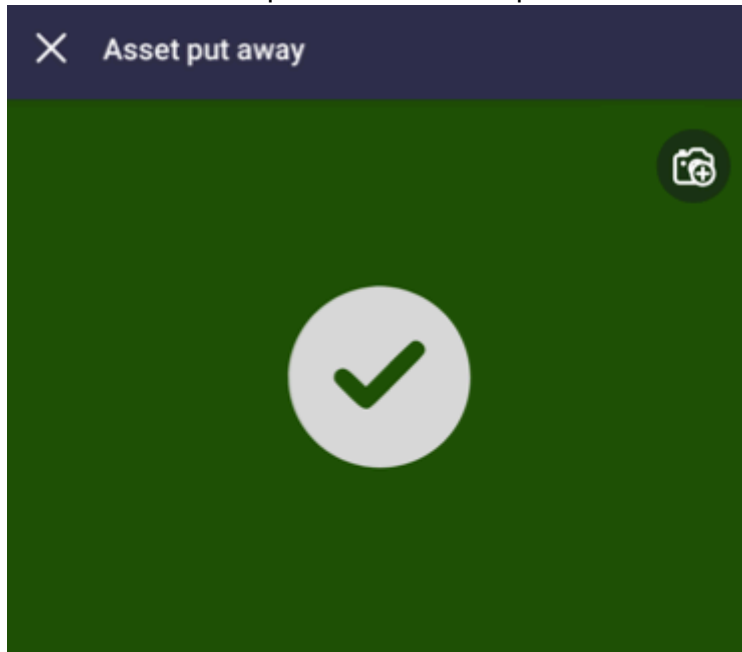
---

• Asset identifier  
IKS-131-F44462-HL 


---

• Asset identifier  
LBT-135-M11956-PU 

Next

**4. Enter or scan the drop-off location and tap **Submit**.**

• Drop-off location

4492 Camino De La Plaza, San Ysidro, CA | San Di 

Previous

Submit

**Result**

A confirmation message appears on the mobile screen showing the number of put away tasks closed.

**Manage Drop off tasks for enterprise assets using the Mobile Agent application**

As an enterprise asset technician, manage the delivery of enterprise assets that you have in your personal stockroom to any other warehouse stockroom by creating Drop off tasks in the Mobile Agent application. The asset manager of the destination stockroom receives the assets that you dropped off, verifies the asset, and completes the Receive and Drop off tasks in the Mobile Agent application.

**i Important:** The Drop off and Receive tasks in the Mobile Agent application are available with Enterprise Asset Management version 9.0 and later.

You can also manage Drop off tasks in the Enterprise Asset Workspace. For details, see [Delivering enterprise assets in your personal stockroom through Drop off tasks](#).


### Create a Drop off task for enterprise assets using the Mobile Agent application

Create a Drop off task using the Mobile Agent to return the enterprise assets in your personal stockroom to any other warehouse stockroom.

#### Before you begin

Role required: sn\_eam.asset\_technician

#### Procedure

1. From your mobile device, launch the Mobile Agent application.
2. On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens displaying the following sections:
  - **My group task**
  - **My Tasks** with the list of tasks assigned to you
3. In the My group task section, tap the **Create Drop Off Task** (  ) icon.
4. On the Get Drop-Off Task Details screen, fill in the schedule details to create the drop off task.
  - a. In the **Delivery by date** field, select the date by when you want to deliver the assets to the destination stockroom.
  - b. In the **Destination stockroom** field, select the stockroom at which you want to drop off the assets.
  - c. Tap **Submit**.  
The drop off task is created in the Open state and listed under My Tasks.
5. From the My Tasks list, tap the drop off task to add the assets.  
You can only add enterprise assets that are in your personal stockroom and that aren't reserved and aren't part of any workflows.

UI option	Action
<b>Add assets button</b>	<ol style="list-style-type: none"> <li>a. Tap <b>Add assets</b>.</li> <li>b. Provide the asset tag information.                             <ul style="list-style-type: none"> <li>▪ To provide the information through a scan, tap <b>Scan</b> and then scan the asset tag of the asset.</li> <li>▪ To provide the information manually, enter a value in the <b>Asset tag</b> field and tap the Enter key on the keyboard of your mobile device.</li> </ul> </li> <li>c. Tap <b>Submit</b>.</li> </ol>
<b>Assets tab</b>	<ol style="list-style-type: none"> <li>a. Tap the <b>Assets</b> tab.</li> <li>b. Provide the asset tag information.</li> </ol>

UI option	Action
	<ul style="list-style-type: none"> <li>▪ To provide the information through a scan, tap <b>Scan</b> and then scan the asset tag of the asset.</li> <li>▪ To provide the information manually, enter a value in the <b>Asset tag</b> field and tap the Enter key on the keyboard of your mobile device.</li> </ul> <p><b>c. Tap <b>Submit</b>.</b></p>

- The asset that you added is listed under the Assets tab of the drop off task.
- The **Start Work** option appears for the drop off task.

**6. After adding the required assets to the drop off task, tap **Start Work**.**

On the **Details** tab, the **Start work** link changes to **Start timer, Record time, and Drop off** automatically.

**7. Drop off the assets at the required stockroom.**

**8. Tap **Drop off**.**

**Result**

- A Receive task is created and assigned to the asset manager of the stockroom where you dropped off the assets.
- The state of the Drop off task changes to Work in Progress.

**Verify the enterprise assets received through a Drop off task using the Mobile Agent application**

As an asset manager, confirm that you received the enterprise assets that were delivered to your stockroom and complete the Receive task using the Mobile Agent application.

**Before you begin**

Role required: sn\_eam.enterprise\_asset\_manager

**Procedure**

- 1.** From your mobile device, launch the Mobile Agent application.
- 2.** On the navigation bar at the bottom of the screen, tap the **My Tasks** tab.  
The home screen of the My Tasks application opens, showing you a list of your assigned tasks.
- 3.** Tap the Receive drop off task that you want to verify and complete.  
The Details tab shows the following fields:
  - **Expected:** The number of assets that are expected to be received.
  - **Received:** The number of assets that have been scanned and received.
  - **Not received:** The number of assets that couldn't be received.

**i Note:** Before you start working on the task, the **Expected** and **Not received** fields will show the same number of assets.

**4. Tap **Start work**.**

On the **Details** tab, the **Start work** link changes to **Start timer, Scan, and Close Task** automatically.

5. Scan the enterprise assets that you physically received at your stockroom.
  - a. Tap **Scan**.
  - b. Provide the asset tag information.

Follow any of these steps for each enterprise asset that you received at your stockroom:

    - Scan the asset tag of the enterprise asset that you received using the camera on your mobile device.
    - Enter a value in the **Asset tag** field and tap the Enter key on the keyboard of your mobile device.

The enterprise assets are automatically added to the **Review** tab.
6. Acknowledge the receipt of the enterprise assets that you scanned.
  - a. Tap **Receive**.

The Receive screen opens and the **Asset tag** field displays the count of assets that you scanned.
  - b. Tap **Submit**.

The **Received** field in the Details tab shows the count of assets that you received.

When you receive all the enterprise assets, the value in the **Expected** field matches the value in the **Received** field.
7. After receiving all the enterprise assets, tap **Close Task**.

### Result

The state of the Receive drop off task and the associated Drop off task changes to **Closed Complete**.

## Procuring enterprise assets

You can use the ServiceNow<sup>®</sup> Procurement application to source and receive requested enterprise assets so that you can fulfill service catalog requests.

### Source requests from Enterprise Asset workspace

You can create a request in the Service Catalog application and source that request from the Enterprise Asset Workspace.

#### Before you begin

You can source a request by using assets from the requester's local stockroom, if stock is available in the local stockroom. If stock is unavailable in the local stockroom, you can get the assets transferred from other stockrooms or create a purchase order.

Role required: proc\_user

#### Procedure

1. Navigate to **Enterprise Asset Workspace > Procurement > Catalog tasks**.
2. Open the sourcing task for the request and select **Source request**.
3. On the Sourcing page, select either of these three options:

- **Consume:** If the stock is available in your local stockroom.

If the Asset pick task is enabled for the source stockroom, the task is added to the Enterprise Asset Refresh Request and Enterprise Asset Request flows.

- **Transfer:** If the stock isn't available in your local stockroom and you want to source the request via a transfer order.

**Note:** If you create a transfer order and want the local stockroom to be included in the list of stockrooms to choose from, the admin must turn on the `glide.asset.procurement.sourcing.local_stock_transfer` property.

- **Purchase:** If the stock isn't available in your local stockroom and you want to source a request via a purchase order.

**4.** Fill in the required fields based on the option that you choose.

**5.** Select **Submit**.

A task for transfer order line or purchase order line is created if you selected **Transfer** or **Purchase**. You can open the request to view the task.

## Enterprise Asset Management reference

Reference topics provide additional information about the lists and forms that you use to configure and administer Enterprise Asset Management.

### Domain separation and Enterprise Asset Management

Domain separation is supported in Enterprise Asset Management. Domain separation enables you to separate data, processes, and administrative tasks into logical groupings called domains. You can control several aspects of this separation, including which users can see and access data.

### Support level: Standard

- Includes all aspects of **Basic** level support.
- Application properties are domain-aware as needed.
- Business logic: The service provider (SP) creates or modifies processes per customer. The use cases reflect proper use of the application by multiple SP customers in a single instance.
- The instance owner must configure the minimum viable product (MVP) business logic and data parameters per tenant as expected for the specific application.

Sample use case: An admin must be able to make comments required when a record closes for one tenant, but not for another.

For more information on support levels, see [Application support for domain separation](#) .

### Overview

Domain separation support in the product enables service providers to offer managed services for enterprise asset management to their customers. This feature also caters to large organizations who manage their subsidiaries as independent domains.

## How domain separation works in Enterprise Asset Management

In Enterprise Asset Management, domain separation occurs in two stages: data separation and process separation. There are two system properties that are used to enable or disable the separation. In the Tokyo release, both data and process are domain-separated.

### Note:

The [Recommended practice](#)  is to avoid customizing the base system domain configuration record.

### Required plugins

- Domain separation extension (com.glide.domain.msp\_extensions.installer)
- Performance Analytics – Domain Support (com.snc.pa.domain\_support)
- Work management (com.snc.work\_management)

### Other supported plugins

- Service Catalog – Domain Separation (com.glideapp.servicecatalog.domain\_separation)
- Procurement (com.snc.procurement)

To learn more, see [Domain separation explained](#) , [Contains queries and domain access](#) , and [Importance of Default domain](#) .

### Related topics

[Domain separation for service providers](#) 

## Enterprise Asset Management roles

The following roles help you to configure and use the Enterprise Asset Management application to manage the life cycle of your assets, parts, and their hierarchical relationships.

After access has been granted to a role, all the groups or users assigned to the role are granted the access. Roles can contain other roles, and any access granted to a role is granted to any role that contains it.

### Enterprise Asset Management roles

Role title	Contains roles	Description
Enterprise asset manager [sn_eam.enterprise_asset_manager]	<ul style="list-style-type: none"> <li>• sn_eam.enterprise_asset_technician</li> <li>• inventory_user</li> <li>• contract_manager</li> <li>• category_manager</li> <li>• procurement_user</li> <li>• wm_initiator</li> <li>• cmdb_query_builder</li> <li>• cmdb_read</li> </ul>	This role has access to all Enterprise Asset Management features except administrative functions.

Role title	Contains roles	Description
	<ul style="list-style-type: none"> <li>• plan_maint_admin</li> <li>• wm_task_initiator</li> </ul>	
<p>Enterprise admin [sn_eam.enterprise_admin]</p>	<ul style="list-style-type: none"> <li>• inventory_admin</li> <li>• catalog_manager</li> <li>• report_user</li> <li>• sn_eam.enterprise_asset_manager</li> <li>• asset</li> <li>• procurement_admin</li> <li>• sn_ent.classification_manager</li> </ul>	<p>This role has full access to the Enterprise Asset Management application.</p>
<p>Enterprise technician [enterprise_asset_technician]</p>	<ul style="list-style-type: none"> <li>• sn_eam.enterprise_mobile_user</li> <li>• sn_eam.enterprise_asset_editor</li> </ul>	<p>This role is for users who perform work tasks and update asset records as part of the asset lifecycle. This role has access to the following enterprise asset tasks:</p> <ul style="list-style-type: none"> <li>• all RMA tasks except the Prepare task</li> <li>• all recall tasks</li> <li>• all disposal tasks</li> <li>• all loaner tasks except the Prepare task</li> <li>• enterprise asset audit</li> <li>• lease-end Collection, Preparation, and Shipment tasks</li> </ul>
<p>Enterprise mobile user [sn_eam.enterprise_mobile_user]</p>	<p>none</p>	<p>This role has access to scan assets from a mobile application as well as dispose assets from a mobile application.</p>
<p>Agent [wm_agent]</p>	<p>none</p>	<p>This role is for users who perform work on enterprise assets and record details in the corresponding work orders and work order tasks.</p> <p><b>Note:</b> The <code>wm_agent</code> role must contain an additional role such as <code>enterprise_asset_manager</code>, <code>enterprise_asset_technician</code>, or any other role to log into the Enterprise Asset Workspace.</p>

## Enterprise model categories and corresponding classes

Enterprise model categories and their corresponding Configuration Management Database (CMDB) configuration item (CI), asset, and model classes.

### Medical model categories

#### Medical Model Categories and Corresponding CMDB CI, Asset, and Model Classes

Model Category	CMDB CI Class	Asset Class	Model Class
Medical General	N/A	sn_ent_medical_asset	sn_ent_medical_device_model
Healthcare Device	cmdb_ci_hc_device	sn_ent_medical_asset	sn_ent_medical_device_model
Medical Device	cmdb_ci_med_device	sn_ent_medical_asset	sn_ent_medical_device_model
Patient Monitoring	cmdb_ci_med_patient_monitoring	sn_ent_medical_asset	sn_ent_medical_device_model
Patient Implants	cmdb_ci_med_patient_implant	sn_ent_medical_asset	sn_ent_medical_device_model
Surgical Instruments	cmdb_ci_med_surgical_instrument	sn_ent_medical_asset	sn_ent_medical_device_model
Clinical Devices	cmdb_ci_med_clinical_device	sn_ent_medical_asset	sn_ent_medical_device_model
Lab Equipment	cmdb_ci_med_lab_equipment	sn_ent_medical_asset	sn_ent_medical_device_model
Diagnostic Imaging	cmdb_ci_med_diagnostic_imaging	sn_ent_medical_asset	sn_ent_medical_device_model
Therapeutic Devices	cmdb_ci_med_therapeutic_device	sn_ent_medical_asset	sn_ent_medical_device_model
Dental Equipment	cmdb_ci_med_dental	sn_ent_medical_asset	sn_ent_medical_device_model

### Facility model categories

#### Facility Model Categories and Corresponding CMDB CI, Asset, and Model Classes

Model Category	CMDB CI Class	Asset Class	Model Class
Facility General	cmdb_ci_facility_hardware	sn_ent_facility_asset	sn_ent_facility_model
Electrical	cmdb_ci_power_eq	sn_ent_facility_asset	sn_ent_facility_model
Automatic Transfer Switch	cmdb_ci_ats_power_eq	sn_ent_facility_asset	sn_ent_facility_model
Power Generator	cmdb_ci_generator_power_eq	sn_ent_facility_asset	sn_ent_facility_model

**Facility Model Categories and Corresponding CMDB CI, Asset, and Model Classes  
(continued)**

Model Category	CMDB CI Class	Asset Class	Model Class
UPS	cmdb_ci_ups_power_eq	sn_ent_facility_asset	sn_ent_facility_model
HVAC	cmdb_ci_hvac	sn_ent_facility_asset	sn_ent_facility_model
Fuel Tank	cmdb_ci_fuel_tank	sn_ent_facility_asset	sn_ent_facility_model
Structure	cmdb_ci_building_facility	sn_ent_facility_asset	sn_ent_facility_model
Plumbing	N/A	sn_ent_facility_asset	sn_ent_facility_model
Security	cmdb_ci_security	sn_ent_facility_asset	sn_ent_facility_model
Cameras	cmdb_ci_ip_camera	sn_ent_facility_asset	sn_ent_facility_model
AV Displays	cmdb_ci_display	sn_ent_facility_asset	sn_ent_facility_model
AV Equipment	cmdb_ci_multimedia	sn_ent_facility_asset	sn_ent_facility_model
Appliances	N/A	sn_ent_facility_asset	sn_ent_facility_model
Furniture and Fixtures	N/A	sn_ent_facility_asset	sn_ent_facility_model

**Transportation model categories**

**Transportation Model Categories and Corresponding CMDB CI, Asset, and Model Classes**

Model Category	CMDB CI Class	Asset Class	Model Class
Transportation General	cmdb_ci_transport	sn_ent_transportation_asset	sn_ent_transportation_model
Aircraft	cmdb_ci_aircraft	sn_ent_transportation_asset	sn_ent_transportation_model
Ship	cmdb_ci_ship	sn_ent_transportation_asset	sn_ent_transportation_model
Train	cmdb_ci_train	sn_ent_transportation_asset	sn_ent_transportation_model
Vehicle	cmdb_ci_vehicle	sn_ent_transportation_asset	sn_ent_transportation_model

**Industrial model categories**

**Industrial Model Categories and Corresponding CMDB CI, Asset, and Model Classes**

Model Category	CMDB CI Class	Asset Class	Model Class
Industrial General	cmdb_ci_ot	sn_ent_industrial_asset	sn_ent_industrial_model
OT Control	cmdb_ci_ot_control	sn_ent_industrial_asset	sn_ent_industrial_model
OT Control CNC	cmdb_ci_ot_cnc	sn_ent_industrial_asset	sn_ent_industrial_model

**Industrial Model Categories and Corresponding CMDB CI, Asset, and Model Classes  
(continued)**

Model Category	CMDB CI Class	Asset Class	Model Class
OT Control DCS	cmdb_ci_ot_dcs	sn_ent_industrial_asset	sn_ent_industrial_model
OT Control DPU	cmdb_ci_ot_dpu	sn_ent_industrial_asset	sn_ent_industrial_model
OT Control IED	cmdb_ci_ot_ied	sn_ent_industrial_asset	sn_ent_industrial_model
OT Control 3D Printer	cmdb_ci_ot_industrial_3d_printer	sn_ent_industrial_asset	sn_ent_industrial_model
OT Control OPC Server	cmdb_ci_ot_opc_server	sn_ent_industrial_asset	sn_ent_industrial_model
OT Control Module	cmdb_ci_ot_control_module	sn_ent_industrial_asset	sn_ent_industrial_model
OT Control PLC	cmdb_ci_ot_plc	sn_ent_industrial_asset	sn_ent_industrial_model
OT Control RTU	cmdb_ci_ot_rtu	sn_ent_industrial_asset	sn_ent_industrial_model
OT Control SCADA	cmdb_ci_ot_scada_server	sn_ent_industrial_asset	sn_ent_industrial_model
OT Field Device	cmdb_ci_ot_field_device	sn_ent_industrial_asset	sn_ent_industrial_model
OT Field Actuator	cmdb_ci_ot_industrial_actuator	sn_ent_industrial_asset	sn_ent_industrial_model
OT Field Drive	cmdb_ci_ot_industrial_drive	sn_ent_industrial_asset	sn_ent_industrial_model
OT Field Robot	cmdb_ci_ot_industrial_robot	sn_ent_industrial_asset	sn_ent_industrial_model
OT Field Sensor	cmdb_ci_ot_industrial_sensor	sn_ent_industrial_asset	sn_ent_industrial_model
OT Quality Inspection Control System	cmdb_ci_ot_qics	sn_ent_industrial_asset	sn_ent_industrial_model
OT Supervisory	cmdb_ci_ot_supervisory	sn_ent_industrial_asset	sn_ent_industrial_model
OT Supervisory EWS	cmdb_ci_ot_ews	sn_ent_industrial_asset	sn_ent_industrial_model
OT Supervisory Historian	cmdb_ci_ot_historian	sn_ent_industrial_asset	sn_ent_industrial_model

**Industrial Model Categories and Corresponding CMDB CI, Asset, and Model Classes  
(continued)**

Model Category	CMDB CI Class	Asset Class	Model Class
OT Supervisory HMI	cmdb_ci_ot_hmi	sn_ent_industrial_asset	sn_ent_industrial_model
OT Supervisory OPC	cmdb_ci_ot_opc_client	sn_ent_industrial_asset	sn_ent_industrial_model
OT Supervisory SCADA	cmdb_ci_ot_scada_client	sn_ent_industrial_asset	sn_ent_industrial_model
OT Supervisory System	cmdb_ci_ot_supervisory	sn_ent_industrial_asset	sn_ent_industrial_model
Operational Equipment	cmdb_ci_oe	sn_ent_industrial_asset	sn_ent_industrial_model

**Retail model categories**

**Retail Model Categories and Corresponding CMDB CI, Asset, and Model Classes**

Model Category	CMDB CI Class	Asset Class	Model Class
Retail General	N/A	sn_ent_retail_asset	sn_ent_retail_model
Payment Device	cmdb_ci_payment	sn_ent_retail_asset	sn_ent_retail_model
POS Device	cmdb_ci_pos	sn_ent_retail_asset	sn_ent_retail_model

**Construction model categories**

**Construction Model Categories and Corresponding CMDB CI, Asset, and Model Classes**

Model Category	CMDB CI Class	Asset Class	Model Class
Construction General	N/A	sn_ent_construction_asset	sn_ent_construction_model
Construction Equipment	N/A	sn_ent_construction_asset	sn_ent_construction_model
Tools	N/A	sn_ent_construction_asset	sn_ent_construction_model
Test Tools	N/A	sn_ent_construction_asset	sn_ent_construction_model

## Tactical equipment model categories

### Tactical Equipment Model Categories and Corresponding CMDB CI, Asset, and Model Classes

Model Category	CMDB CI Class	Asset Class	Model Class
Tactical General	N/A	sn_ent_tactical_asset	sn_ent_tactical_model
Tactical Gear	N/A	sn_ent_tactical_asset	sn_ent_tactical_model
Weapons	N/A	sn_ent_tactical_asset	sn_ent_tactical_model
Forensic Supplies	N/A	sn_ent_tactical_asset	sn_ent_tactical_model
Ammunition	N/A	sn_ent_tactical_asset	sn_ent_tactical_model

## Wearable model categories

### Wearable Model Categories and Corresponding CMDB CI, Asset, and Model Classes

Model Category	CMDB CI Class	Asset Class	Model Class
Wearables General	N/A	sn_ent_wearable_asset	sn_ent_wearable_model
PPE	N/A	sn_ent_wearable_asset	sn_ent_wearable_model
Uniforms	N/A	sn_ent_wearable_asset	sn_ent_wearable_model

## Mandatory fields in the bulk import spreadsheets

A list of the mandatory fields in the model, asset, and model and asset templates for bulk import in the Enterprise Asset Workspace.

### Mandatory fields for model template

Field/column	Mandatory for creating models	Mandatory for updating models
Index  <b>Note:</b> Representing the row number can be used to identify a specific row. However, you need to fill this in manually.	Yes	Yes
Manufacturer	Yes	Yes
Model Name	Yes	Yes
Model Number	Yes	Yes
Model category	Yes	No
Model type	Yes	No
Parent model manufacturer	Yes, only for complex models.	No

Field/column	Mandatory for creating models	Mandatory for updating models
	<p><b>i Note:</b> Not applicable for single models.</p>	
Parent model name	<p>Yes, only for complex models.</p> <p><b>i Note:</b> Not applicable for single models.</p>	No
Parent model number	<p>Yes, only for complex models.</p> <p><b>i Note:</b> Not applicable for single models.</p>	No
Component number	<p>Yes, only for complex models.</p> <p><b>i Note:</b> Not applicable for single models.</p>	No
Component quantity	<p>Yes, only for complex models.</p> <p><b>i Note:</b> Not applicable for single models.</p>	No
Required	<p>Yes, only for complex models.</p> <p><b>i Note:</b> Not applicable for single models.</p>	No
Hot swappable	<p>Yes, only for complex models.</p> <p><b>i Note:</b> Not applicable for single models.</p>	No
Repairable	<p>Yes, only for complex models.</p> <p><b>i Note:</b> Not applicable for single models.</p>	No

### Mandatory fields for asset template

Field/column	Mandatory for creating assets	Mandatory for updating assets
<p>Index</p> <p><b>i Note:</b> Representing the row number can be used to identify a specific row. However, you need to fill this in manually.</p>	Yes	Yes

Field/column	Mandatory for creating assets	Mandatory for updating assets
Manufacturer	Yes	Yes
Model	Yes	Yes
Model Name	Yes	Yes
Model Number	Yes	Yes
Parent model manufacturer	Yes, only for complex assets.  <b>i Note:</b> Not applicable for single assets.	Yes
Parent model name	Yes, only for complex assets.  <b>i Note:</b> Not applicable for single assets.	Yes
Parent model number	Yes, only for complex assets.  <b>i Note:</b> Not applicable for single assets.	Yes
Component number	Yes, only for complex assets.  <b>i Note:</b> Not applicable for single assets.	Yes
Asset Tag	Yes	Yes
Serial Number	Yes	No
MAC Address	Yes	No
Parent asset	Conditional  <b>i Note:</b> Required for child assets when parent model information is provided.	Conditional  <b>i Note:</b> Required for child assets when parent model information is provided.
Quantity	Conditional  <b>i Note:</b> Required for consumable assets (positive number).	No  <b>i Note:</b> Consumable assets cannot be updated.
State	Yes	No
Sub state	Yes	No
Stockroom	Conditional  <b>i Note:</b> Required for In stock and Build states.	Conditional  <b>i Note:</b> Required for In stock and Build states.

Field/column	Mandatory for creating assets	Mandatory for updating assets
Location	Conditional  <b>i Note:</b> Required for In stock, In use, and Build states.	Conditional  <b>i Note:</b> Required for In stock, In use, and Build states.
Install status	Yes	Yes
Substatus	Conditional  <b>i Note:</b> Required for In stock state only.	Conditional  <b>i Note:</b> Required for In stock state only.
Component ID	Conditional  <b>i Note:</b> Required for child assets when applicable.	No
OT entity	Conditional  <b>i Note:</b> Required as <b>true</b> for hardware models when the OT Asset Management application is activated.	Conditional  <b>i Note:</b> Required as <b>true</b> for hardware models when the OT Asset Management application is activated.

### Mandatory fields for model and asset template

Field/column	Mandatory for creating models and assets	Mandatory for updating models and assets
Index  <b>i Note:</b> Representing the row number can be used to identify a specific row. However, you need to fill this in manually.	Yes	Yes
Manufacturer	Yes	Yes
Model Name	Yes	Yes
Model Number	Yes	Yes
Model category	Yes	Yes
Model type	Yes	Yes
Parent model manufacturer	Yes	Yes

Field/column	Mandatory for creating models and assets	Mandatory for updating models and assets
	<p><b>i Note:</b> Not applicable for single models and single assets.</p>	
Parent model name	<p>Yes</p> <p><b>i Note:</b> Not applicable for single models and single assets.</p>	Yes
Parent model number	<p>Yes</p> <p><b>i Note:</b> Not applicable for single models and single assets.</p>	Yes
Component number	<p>Yes</p> <p><b>i Note:</b> Not applicable for single models and single assets.</p>	No
Component quantity	<p>Yes</p> <p><b>i Note:</b> Not applicable for single models and single assets.</p>	No
Required	<p>Yes</p> <p><b>i Note:</b> Not applicable for single models and single assets.</p>	No
Hot swappable	<p>Yes</p> <p><b>i Note:</b> Not applicable for single models and single assets.</p>	No
Repairable	<p>Yes</p> <p><b>i Note:</b> Not applicable for single models and single assets.</p>	No
Asset Tag	Yes	Yes
Serial Number	Yes	No
MAC Address	Yes	No

Field/column	Mandatory for creating models and assets	Mandatory for updating models and assets
Parent asset	Yes <b>i Note:</b> Not applicable for single models and single assets.	No
Quantity	Yes	No
State	Yes	No
Sub state	Yes	No
Stockroom	Conditional <b>i Note:</b> Required for In stock and Build states.	Conditional <b>i Note:</b> Required for In stock and Build states.
Location	Conditional <b>i Note:</b> Required for In stock, In use, and Build states.	Conditional <b>i Note:</b> Required for In stock, In use, and Build states.

### Unit of measurement fields

Field/column	Mandatory for creating models	Mandatory for updating models
Dimensions Unit	Conditional <b>i Note:</b> Required if length, width, height, or depth is provided.	Conditional <b>i Note:</b> Required if length, width, height, or depth is provided.
Weight Unit	Conditional <b>i Note:</b> Required if the weight_decimal value is provided.	Conditional <b>i Note:</b> Required if the weight_decimal value is provided.
Volume Unit	Conditional <b>i Note:</b> Required if the volume is provided.	Conditional <b>i Note:</b> Required if the volume is provided.
Current Unit	Conditional <b>i Note:</b> Required if the value is provided for Current.	Conditional <b>i Note:</b> Required if the value is provided for Current.
Power Unit	Conditional	Conditional

Field/column	Mandatory for creating models	Mandatory for updating models
	<p><b>i Note:</b> Required if the rated_power value is provided.</p>	<p><b>i Note:</b> Required if rated_power is provided.</p>
Voltage Unit	<p>Conditional</p> <p><b>i Note:</b> Required if the voltage value is provided.</p>	<p>Conditional</p> <p><b>i Note:</b> Required if voltage is provided.</p>
Cooling Unit	<p>Conditional</p> <p><b>i Note:</b> Required if the cooling value is provided (Enterprise models only).</p>	<p>Conditional</p> <p><b>i Note:</b> Required if the cooling value is provided (Enterprise models only).</p>
Pressure Unit	<p>Conditional</p> <p><b>i Note:</b> Required if the pressure value is provided (Enterprise models only).</p>	<p>Conditional</p> <p><b>i Note:</b> Required if the pressure value is provided (Enterprise models only).</p>
Temperature Unit	<p>Conditional</p> <p><b>i Note:</b> Required if the temperature value is provided (Enterprise models only).</p>	<p>Conditional</p> <p><b>i Note:</b> Required if the temperature value is provided (Enterprise models only).</p>

### Reference fields validation

The values entered in the following columns should exist in the database:

- PO Number
- Assigned To
- Department
- Company
- Cost Center
- Asset Depreciation
- Aisle Space Location

### Normalization status for enterprise models

Description of the normalization statuses for enterprise models.

Status	Description
New	The model is created and has not yet run through the normalization process.
Normalized	<p>After normalization, values for normalized manufacturer, product, model name, model number and model type are populated.</p> <p>Under specific conditions, certain fields that are typically read-only can be edited.</p>
Partially Normalized	After normalization, values are populated for normalized manufacturer, product, and model type and the model number is blank.
Manufacturer Normalized	After normalization, values for normalized manufacturer is populated and the rest of the columns are blank after normalization.
Match Not Found	<p>The normalization process could not match any of the fields of the model.</p> <p><b>Match Not Found</b> status could occur if a normalization rule for the software does not exist.</p>

## Model fields for Enterprise Asset Management

A detailed description of all model fields in the Enterprise Asset Management application.

### Model Details

Field	Description
Display name	Name of the model. A system property called <i>glide.cmdb_model.display_name.shorten</i> controls how software model display names are generated.
Manufacturer	The company that built the model.
Name	The manufacturer-assigned name of the model or abstract name specified by the model manager, such as <b>Field Agent Laptop</b> .
Short description	A brief description of the model.
Model categories	The category to which the model belongs to. This is a read-only field.
Model type	<p>Type of multi-component model. The following are the options to choose from:</p> <ul style="list-style-type: none"> <li>• Simple</li> <li>• Consumable</li> <li>• Pre-assembled</li> <li>• User-assembled</li> </ul>
Asset tracking strategy	Process that is used to track the asset. Options are <b>Leave to category</b> , <b>Create consumable asset</b> , <b>Don't create assets</b> .

Field	Description
<p><b>i Note:</b> This field doesn't appear if you're creating a pallet model.</p>	
Asset tracking unit	Unit that is used to measure the asset. Options are <b>Individual Unit</b> and <b>Fixed Fee</b> .
Acquisition method	The method for purchasing the model. Options are <b>Both, Buy, or Lease</b> .
Model number	The specific model number assigned to the item by the manufacturer.
Barcode	The barcode number assigned to the model. Barcodes are assigned by the manufacturer.
Owner	The person responsible for the model.
Status	The status of the model. By default, the newly created model is in <b>Build</b> status. Once you define the model and its components, you can change the status of the model. The other status options are <b>In Production, Retired,</b> and <b>Sold</b> .
Picture	An image that represents the model. Select the <b>Attach image</b> link to choose and attach an image. Once you attach the image, the link changes to <b>View image</b> .
Certified	The option that determines whether the model is approved for use.
Comments	Information about the model that would be helpful for others to know.
Calculated lifecycle template	Lifecycle template to calculate lifecycle dates. This template can be assigned to models
Calculated lifecycle start date	Start date from which the Phase start date and Phase end date are calculated for each lifecycle phase defined in the Calculated lifecycle template that you selected.

## Financials

Field	Description
Cost	The cost of a single unit of the model.
TCO benchmark cost	Specify a TCO benchmark cost for the model.
TCO benchmark threshold	<p>The TCO benchmark threshold is a percentage of the TCO benchmark cost where you want to be alerted that the cost is approaching the benchmark. By default the percentage is 75%. For example, if the TCO benchmark cost is \$100 then the TCO benchmark threshold is \$75.</p> <p>If you set the TCO benchmark cost, this field is automatically calculated.</p>

Field	Description
	You can change the percentage in the <i>asset_tco_benchmark_threshold_percentage</i> system property.
Average assets TCO	Indicates the average Asset TCO value for all assets in the report source. For example, if you have 10 assets in a report source, and adding up all of the Asset TCO values for all assets totals 100,000, then the average asset TCO is 10,000.
Expenditure type	The type of expenditure. Choose from the following: <ul style="list-style-type: none"> <li>• <b>Capex:</b> Capital expenditure is a one-time expenditure, where the value is realized over the years. For example, a photocopier.</li> <li>• <b>Opex:</b> Operational expenditure is an ongoing expenditure. For example, toners for the photocopier.</li> </ul>
Useful life (months)	The number of months that the model can be used for.
Depreciation	The depreciation scheme for the model.
Salvage value	The estimated value that an asset realizes upon its sale at the end of its useful life. This value must be less than or equal to the cost of the asset.

## Failure Risk

Values in the **Likelihood** and **Impact** fields appear only if the configuration records for risk likelihood and risk impact are frozen.

Field	Description
Failure likelihood	The likelihood values for the risk score.  The configuration values that you created for risk likelihood appear as options in this field. The options appear in the format of <code>value - label</code> . For example, <code>1 - Low</code> where 1 is the value and Low is the label. For details, see <a href="#">Create configuration values for risk likelihood</a> .
Failure impact	The impact values for the risk score.  The configuration values that you create for risk impact appear as options in this field. The options appear in the format of <code>value - label</code> . For example, <code>2 - Medium</code> where 2 is the value and Medium is the label. For details, see <a href="#">Create configuration values for risk impact</a> .

Field	Description
Failure risk score	The risk score is automatically populated based on the likelihood and impact values.

## Normalization

Field	Description
Normalized manufacturer	Normalized name of the manufacturer.
Normalized model name	Normalized name of the model.
Normalized model number	Normalized number of the model.
Normalization status	Current normalization status of the model.
Normalized model type	Normalized type of the model.
Exclude from sharing with content service	Option that excludes specific content from being shared with the Enterprise Asset Management Content Service. This option is applicable only if you have opted in to the Enterprise Asset Management Content Service.

## Product Catalog

**Note:** The Product Catalog fields only appear for consumable models.

Field	Description
Catalog Item	Name of the catalog item.
Description	Description of the catalog item.
Picture	Picture depicting the product model.

## Model Components tab

Use this tab to create model components. One or more than one model components is required to create a multi-component model.

**Note:** The Model components tab is visible only if the model is a multi-component model. If the **Multi-component** field on the Model page has either of the two values: **Pre-assembled** or **User-assembled**, the Model Components tab is visible. If the **Multi-component** field has the value **Not Applicable**, the Model Components tab is not visible.

Field	Description
Model category of component	Model category of the component.

Field	Description
Component	Component of the model. Only model components that belong to the model category you selected appear in this list.
Required	If the check box is selected, the model component is required for the complex model to work and can't be permanently removed.
Hot swappable	By default, this check box is selected. Indicates that the model component can be swapped while the multi-component model is operational. This check box is selected by default.
Repairable	Indicates that the model component can be repaired. This check box is selected by default.

### Enterprise Model Lifecycles tab

Use this tab to specify life cycle information for the enterprise model.

Field	Description
Model	Name of the model.
Lifecycle type	Type of lifecycle. <ul style="list-style-type: none"> <li>• <b>Internal</b></li> <li>• <b>Publisher</b></li> </ul>
Lifecycle phase	Phase of the lifecycle. <ul style="list-style-type: none"> <li>• <b>General Availability</b></li> <li>• <b>End of Sale</b></li> <li>• <b>End of Support</b></li> <li>• <b>End of Extended support</b></li> <li>• <b>End of Life</b></li> </ul>
Source	Source of the lifecycle of the model.
Description	Description of the lifecycle.
Phase start date	Date the lifecycle phase starts.
Phase end date	Date the lifecycle phase ends.
Risk	Risk associated with the lifecycle. <ul style="list-style-type: none"> <li>• Very High</li> <li>• High</li> <li>• Moderate</li> <li>• Low</li> <li>• None</li> </ul>
Active	Indicates that the lifecycle of the model is active.

## Vendor Catalog Items tab

**Note:** The Vendor Catalog Items tab appears only for consumable models.

Field	Description
Name	Display name of the vendor catalog item.
Vendor	Name of the product vendor.
Product Model	Product model associated with the vendor catalog item.
Out of Stock	Option that indicates if the product is out of stock.
Application	Application that contains the product record.
Product ID	Manufacturer product ID.
List Price	List price of the product before any discounts are applied.
Vendor Price	Vendor price of the product.
Rank tier	Vendor rank tier.
Short Description	Description of the product.
General	
Product Catalog Item	Product catalog item that was created when the item was published.
UPC	Universal Product Code (UPC) of the product.
Description	Description of the product.
Picture	Picture of the product.
Active	Option that indicates if the product is active or not.
Information	
Specifications	Product specifications that come from the vendor.
Features	Product features that come from the vendor.

## Contract fields for Enterprise Asset Management


A detailed description of all contract fields in the Enterprise Asset Management application.

### Contract

Field	Description
Vendor	Vendor that is associated with the lease contract.
Contract number	Unique number that is used to identify and track the lease contract. You can obtain this number from the vendor.
Name	Name of the lease contract.
Parent contract	Parent contract that the lease contract is associated with.
Start date	Date on which the lease contract begins.
End date	Date on which the lease contract ends.

Field	Description
Contract administrator	User who manages the lease contract and communicates with the vendor.
Approver	User who approves or rejects the lease contract.
Business owner	User who manages the lease contract from a business perspective.
Description	Description of the lease contract.

## Financial

Field	Description
Invoice payment terms	Terms that describe how and when you must make payments for the lease contract.
Payment schedule	Frequency at which you must make each lease contract payment.
Payment amount	Amount that you must pay for each lease contract payment.  <b>Note:</b> You can set this field to any currency of your choice.
Applicable taxes	Taxes that are applied to the lease contract. Select one of the following options: <ul style="list-style-type: none"> <li><b>Exempt:</b> The lease contract is exempt from taxes.</li> <li><b>Sales:</b> Sales taxes are applied to the lease contract.</li> </ul>
Lease term (months)	Length of the lease contract, in months.
Vendor account	Vendor account to which you must make each lease contract payment.
Purchase order	Purchase order that is associated with the lease contract.
Cost center	Cost center that is financially responsible for the lease contract.
Has rate card	Option that indicates if the lease contract has an associated contract rate card, which provides detailed cost information for the contract.  See <a href="#">Create a contract rate card</a>  for more information on contract rate cards.

## Maintenance plan fields for Enterprise Asset Management

A detailed description of all maintenance plan fields in the Enterprise Asset Management application.

## Maintenance Plan

Field	Description
Active	Option that indicates if the maintenance plan is active.
Name	Name of the maintenance plan.
Short description	Brief description of the maintenance plan.

## Target Assets

Field	Description
Table	Target Enterprise Asset Management table that lists the enterprise assets that you want to apply the maintenance plan to. The default table is <b>Enterprise asset</b> .
Filter conditions	<p>Filter conditions that enable you to apply the maintenance plan to only specific subsets of enterprise assets.</p> <p>You can add multiple filter conditions to a single maintenance plan using the following options:</p> <ul style="list-style-type: none"> <li>• <b>or</b>: Enables you to specify any of the conditions that an enterprise asset can meet to have the maintenance plan applied to it.</li> <li>• <b>and</b>: Enables you to specify all the conditions that an enterprise asset must meet to have the maintenance plan applied to it.</li> <li>• <b>+ New condition set</b>: Enables you to specify additional sets of conditions that an enterprise asset can meet to have the maintenance plan applied to it.</li> </ul>
Apply to new matching records	Option to apply the maintenance plan to any subsequent enterprise assets that are added to the target Enterprise Asset Management table and meet the specified filter conditions.
Task creation policy	<p>Policy that specifies what action you want to take when the maintenance plan is applied to an enterprise asset that is already under maintenance.</p> <p>Select one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Leave alone</b>: Prevents the creation of tasks for the new maintenance plan and the deletion of tasks that are associated with the existing maintenance plan.</li> <li>• <b>Cancel existing</b>: Deletes all tasks that are associated with the existing maintenance plan.</li> <li>• <b>Add to existing</b>: Adds both new tasks and existing active tasks to the new maintenance plan.</li> </ul>

## Maintenance schedule fields for Enterprise Asset Management

A detailed description of all maintenance schedule fields in the Enterprise Asset Management application.

## Maintenance Schedule

Field	Description
Name	Name of the maintenance schedule.
Short description	Brief description of the maintenance schedule.
Trigger	<p>Trigger that specifies the type of conditions that must be met for the maintenance to run.</p> <p>Select one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Duration:</b> Triggers the maintenance to run based on time. If you select this option, the Duration Details form section appears, where you can specify more details about the trigger.</li> <li>• <b>Meter:</b> Triggers the maintenance to run based on a specific enterprise asset field value. If you select this option, the Meter Details form section appears, where you can specify more details about the trigger.</li> <li>• <b>Condition:</b> Triggers the maintenance to run based on filter conditions. If you select this option, the Condition Details form section appears, where you can specify more details about the trigger.</li> <li>• <b>Script:</b> Triggers the maintenance to run based on advanced script criteria. If you select this option, the Script Details form section appears, where you can specify more details about the trigger.</li> <li>• <b>Duration or Meter:</b> Triggers the maintenance to run based on time or a specific enterprise asset field value, whichever comes first. If you select this option, the Duration Details and Meter Details form sections appear, where you can specify more details about the trigger.</li> </ul>
Active	Option that indicates if the maintenance schedule is active.

### Duration Details

**Note:** This form section appears only if you set the **Trigger** field to **Duration** or **Duration or Meter** in the Maintenance Schedule form section.

Field	Description
Trigger type	<p>Frequency at which you want the maintenance to run.</p> <p>Select one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Interval:</b> Runs the maintenance at a specified time interval. If you select this option, the <b>Days</b>, <b>Hours</b>, <b>Minutes</b>, and <b>Seconds</b> fields appear, where you can specify the amount of time that must pass before the maintenance runs again.</li> <li>• <b>Weekly:</b> Runs the maintenance once a week. If you select this option, the <b>Due day of week</b> and <b>Due time</b> fields appear, where you can specify the day and time at which you want the maintenance to run each week.</li> <li>• <b>Monthly:</b> Runs the maintenance once a month on a specific date. If you select this option, the <b>Due day of month</b> and <b>Due time</b> fields appear, where you can specify the date and time at which you want the maintenance to run each month.</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>• <b>Annually:</b> Runs the maintenance once a year on a specific date and month. If you select this option, the <b>Due month</b>, <b>Due day of month</b>, and <b>Due time</b> fields appear, where you can specify the month, date, and time at which you want the maintenance to run each year.</li> <li>• <b>Week in Month:</b> Runs the maintenance once a month during a specific week of the month. If you select this option, the <b>Due week in month</b> and <b>Due time</b> fields appear, where you can specify the week and time at which you want the maintenance to run each month.</li> <li>• <b>Day in Week in Month in Year:</b> Runs the maintenance once a year on a specific day, week, and month. If you select this option, the <b>Due month</b>, <b>Due week in month</b>, <b>Due day of week</b>, and <b>Due time</b> fields appear, where you can specify the month, week, day, and time at which you want the maintenance to run each year.</li> </ul>
Lead time	Number days required for the scheduled maintenance work.

### Meter Details

**Note:** This form section appears only if you set the **Trigger** field to **Meter** or **Duration or Meter** in the Maintenance Schedule form section.

Field	Description
Field	Enterprise asset field that you want to match against to trigger the maintenance to run.
Every	Field value that an enterprise asset must match to trigger the maintenance to run.

### Condition Details

**Note:** This form section appears only if you set the **Trigger** field to **Condition** in the Maintenance Schedule form section.

Field	Description
Filter Condition	<p>Filter conditions that trigger the maintenance to run</p> <p>You can add multiple filter conditions to the trigger using the following options:</p> <ul style="list-style-type: none"> <li>• <b>or:</b> Enables you to specify any of the conditions that an enterprise asset can meet to trigger the maintenance to run.</li> <li>• <b>and:</b> Enables you to specify all the conditions that an enterprise asset must meet to trigger the maintenance to run.</li> <li>• <b>+ New condition set:</b> Enables you to specify additional sets of conditions that an enterprise asset can meet to trigger the maintenance to run.</li> </ul>

### Script Details

**Note:** This form section appears only if you set the **Trigger** field to **Script** in the Maintenance Schedule form section.

Field	Description
Script	Script specifying the advanced criteria that triggers the maintenance to run.

## Work plan fields for Enterprise Asset Management

A detailed description of all work plan fields in the Enterprise Asset Management application.

### Work Plan

Field	Description
Number	Unique number for the work plan.
Name	Name of the work plan.
Short description	Brief description of the work plan.
Effective start	Effective start date from when the work plan is active.
Effective end	Effective end date until when the work plan is active.
Active	Option that indicates if the work plan is available to use.
Forecast work orders	Option to specify if this work plan is applicable to estimate and generate the upcoming work orders.  If this option is selected, you can view the <b>Generate work orders</b> option by selecting the <b>More Actions</b> ellipsis icon. This generates a work order for the schedule per asset.

### Conditions

Field	Description
Table	Target Enterprise Asset Management table that the work plan is associated with. The default table is <b>Enterprise asset</b> .
Category	Determine whether the work plan is applicable for either category: original equipment scheduling (OEM) or alternative equipment scheduling (AEM).
Apply to new matching records	Option to apply the work plan to any subsequent enterprise assets that are added to the target Enterprise Asset Management table and meet the specified filter conditions.
Task creation policy	Specify what to do when a work plan runs based on a schedule occurrence that is already in progress.  Select one of the following options:

Field	Description
	<ul style="list-style-type: none"> <li>• <b>Leave alone:</b> Prevents the creation of tasks for the new work plan and the deletion of tasks that are associated with the existing work plan.</li> <li>• <b>Cancel existing:</b> Deletes existing tasks associated with the plan and creates tasks to replace them.</li> <li>• <b>Add to existing:</b> Allows new tasks to replace the existing active tasks for the specific schedule occurrence of a plan.</li> </ul>
Filter conditions	<p>Filter conditions that enable you to apply the work plan to specific subsets of enterprise assets.</p> <p>You can add multiple filter conditions to a single work plan using the following options:</p> <ul style="list-style-type: none"> <li>• <b>or:</b> Enables you to specify any of the conditions that an enterprise asset can meet to have the maintenance plan applied to it.</li> <li>• <b>and:</b> Enables you to specify all the conditions that an enterprise asset must meet to have the maintenance plan applied to it.</li> <li>• <b>+ New condition set:</b> Enables you to specify additional sets of conditions that an enterprise asset can meet to have the maintenance plan applied to it.</li> </ul>

## Work plan schedule fields for Enterprise Asset Management

A detailed description of all the work plan schedule fields in the Enterprise Asset Management application.

### Planned Work Schedule

Field	Description
Name	Name of the work plan schedule.
Short description	Brief description of the work plan schedule.
Trigger	<p>Trigger that specifies the type of conditions that must be met for the work plan to run.</p> <p>Select one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Duration:</b> Triggers the work plan to run based on time. If you select this option, the Duration Details form section appears, where you can specify more details about the trigger.</li> <li>• <b>Meter:</b> Triggers the work plan to run based on a specific enterprise asset field value. If you select this option, the Meter Details form section appears, where you can specify more details about the trigger.</li> <li>• <b>Condition:</b> Triggers the work plan to run based on filter conditions. If you select this option, the Condition Details form section appears, where you can specify more details about the trigger.</li> <li>• <b>Script:</b> Triggers the work plan to run based on advanced script criteria. If you select this option, the Script Details form section appears, where you can specify more details about the trigger.</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>• <b>Duration or Meter:</b> Triggers the work plan to run based on time or a specific enterprise asset field value, whichever comes first. If you select this option, the Duration Details and Meter Details form sections appear, where you can specify more details about the trigger.</li> </ul>
Active	Option that indicates if the work plan schedule is active.

## Duration Details

**Note:** This form section appears only if you set the **Trigger** field to **Duration** or **Duration or Meter** in the Planned Work Schedule form section.

Field	Description
Trigger type	<p>Frequency at which you want the work plan to run.</p> <p>Select one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Interval:</b> Runs the work plan at a specified time interval. If you select this option, the <b>Days, Hours, Minutes, and Seconds</b> fields appear, where you can specify the amount of time that must pass before the work plan runs again.</li> <li>• <b>Weekly:</b> Runs the work plan once a week. If you select this option, the <b>Due day of week</b> and <b>Due time</b> fields appear, where you can specify the day and time at which you want the work plan to run each week.</li> <li>• <b>Multiple days of the week:</b> Runs the work plan multiple days in a week. If you select <b>Multiple days of the week</b>, the Due days of week field appears so you can specify on which days in a week the planned work should be performed.</li> <li>• <b>Monthly:</b> Runs the work plan once a month on a specific date. If you select this option, the <b>Due day of month</b> and <b>Due time</b> fields appear, where you can specify the date and time at which you want the work plan to run each month.</li> <li>• <b>Annually:</b> Runs the work plan once a year on a specific date and month. If you select this option, the <b>Due month, Due day of month, and Due time</b> fields appear, where you can specify the month, date, and time at which you want the work plan to run each year.</li> <li>• <b>Week in Month:</b> Runs the work plan once a month during a specific week of the month. If you select this option, the <b>Due week in month</b> and <b>Due time</b> fields appear, where you can specify the week and time at which you want the work plan to run each month.</li> <li>• <b>Day in Week in Month in Year:</b> Runs the work plan once a year on a specific day, week, and month. If you select this option, the <b>Due month, Due week in month, Due day of week, and Due time</b> fields appear, where you can specify the month, week, day, and time at which you want the work plan to run each year.</li> </ul>
Lead time	Number of days required for the scheduled work plan.
Preserve calculated interval	<p>Option to restart the interval calculation from the time when the work order was completed.</p> <p>This check box appears when <b>Interval, Monthly, or Annually</b> is selected for <b>Trigger type</b> and <b>Fixed</b> is selected for the <b>Monthly type</b> and <b>Annually type</b> field.</p>

## Meter Details

**Note:** This form section appears only if you set the **Trigger** field to **Meter** or **Duration or Meter** in the Planned Work Schedule form section.

Field	Description
Field	Enterprise asset field that you want to match against to trigger the work plan to run.
Every	Field value that an enterprise asset must match to trigger the work plan to run.
Preserve calculated meter	Option to restart the meter calculation based on the value defined in the <b>Every</b> field.

## Condition Details

**Note:** This form section appears only if you set the **Trigger** field to **Condition** in the Planned Work Schedule form section.

Field	Description
Filter Condition	<p>Filter conditions that trigger the work plan to run</p> <p>You can add multiple filter conditions to the trigger using the following options:</p> <ul style="list-style-type: none"> <li>• <b>or</b>: Enables you to specify any of the conditions that an enterprise asset can meet to trigger the work plan to run.</li> <li>• <b>and</b>: Enables you to specify all the conditions that an enterprise asset must meet to trigger the work plan to run.</li> <li>• <b>+ New condition set</b>: Enables you to specify additional sets of conditions that an enterprise asset can meet to trigger the work plan to run.</li> </ul>

## Script Details

**Note:** This form section appears only if you set the **Trigger** field to **Script** in the Planned Work Schedule form section.

Field	Description
Script	Script specifying the advanced criteria that trigger the work plan to run.

## Effectivity Details

Field	Description
Start planned	Option based on which the planned work schedule should determine its start date.

Field	Description
schedule on	<ul style="list-style-type: none"> <li>• Date</li> <li>• Field Value</li> <li>• Schedule</li> </ul>
Effective Start	Effective start date from when the planned work is scheduled to work.
Effective start reference	<p>Field value that should be used to determine the start date of the planned work. Effective start reference displays the list of fields from the table that is selected to create conditions for the work plan. For example, Printer [cmdb_ci_printer].</p> <p>This field appears only when <b>Field Value</b> is selected from <b>Start planned schedule based on</b>.</p>
Schedule	<p>Name of the schedule that should be used to calculate the start date of the work plan.</p> <p>This field appears only when <b>Schedule</b> is selected from <b>Start planned schedule based on</b>.</p>
End planned schedule based on	<p>Determines the end date of a planned work schedule.</p> <ul style="list-style-type: none"> <li>• Date</li> <li>• Field Value</li> <li>• Frequency</li> </ul>

## Expense line fields for Enterprise Asset Management

A detailed description of all expense line fields in the Enterprise Asset Management application.

### Expense Line

Field	Description
Number	Unique number that is used to identify and track the expense line. This field populates automatically.
Date	Date on which you are creating the expense line. This field is automatically set to the current date.
Inherited	<p>Option that indicates if the expense line is inherited from a parent expense line.</p> <p>If you enable this option, the <b>Parent</b> field appears below the <b>Inherited</b> field. In the <b>Parent</b> field, search for and select the parent expense line that this expense line is inherited from. The following fields are then inherited from the parent expense line and can no longer be modified:</p> <ul style="list-style-type: none"> <li>• <b>Source ID</b></li> <li>• <b>Asset</b></li> <li>• <b>Contract</b></li> <li>• <b>User</b></li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>• <b>Configuration Item</b></li> <li>• <b>Task</b></li> <li>• <b>Cost center</b></li> </ul>
Source ID	Enterprise asset that you want to associate with the expense line. Based on the enterprise asset that you select, the corresponding fields in the Source form section populate automatically.
Amount	<p>Cost of the enterprise asset that you want to associate with the expense line. To indicate that you have received a credit towards the enterprise asset, enter a negative number.</p> <p><b>Note:</b> You can set this field to any currency of your choice.</p>
Process date	Date and time at which the expense line is processed.
State	State of the expense line.
Summary type	<p>Expense line category. Select one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Grow Business:</b> Expense lines for enterprise assets that are used to help your business grow.</li> <li>• <b>Run Business:</b> Expense lines for enterprise assets that are used to help your business run.</li> <li>• <b>Transform Business:</b> Expense lines for enterprise assets that are used to help transform your business.</li> </ul>
Short description	Brief description of the expense line.

## Source

Field	Description
Asset	Enterprise asset that you want to associate with the expense line.
Fixed asset	<p>Fixed asset that contains the selected enterprise asset.</p> <p>A fixed asset is a container that holds one or more individual assets. If the enterprise asset that you selected in the <b>Asset</b> field is contained within a fixed asset, the <b>Fixed asset</b> field populates automatically.</p>
Contract	Contract that the selected enterprise asset is associated with.
User	User who the selected enterprise asset is assigned to.
Configuration item	Configuration item (CI) that is associated with the expense line.
Task	Task that is associated with the expense line.
Cost center	Cost center that is financially responsible for the selected enterprise asset.

## Fields inherited from a parent asset group to a sub group

A list of all the fields that are inherited from the parent asset group to a subgroup.

Column label	Inherited from parent?	Appears on asset group form
Assigned	Yes, if empty; can be edited.	Yes
Assigned to	Yes, if empty; can be edited.	Yes
Company	Yes, if empty; can be edited.	Yes
Cost Center	Yes, if empty; can be edited.	No
Department	Yes, if empty; can be edited.	Yes
Life cycle stage	Yes	No
Life cycle stage status	Yes	No
Location	Yes, if empty; can be edited but must be a location that descends from the parent group's location.	Yes
Managed by	Yes, if empty; can be edited.	Yes
Owned by	Yes, if empty; can be edited.	Yes
Retired date	Yes	Yes
State	Yes, can be edited.	Yes
Sub state	Yes; can be edited.	Yes
Support group	Yes, if empty; can be edited.	Yes
Supported by	Yes, if empty; can be edited.	Yes

## Enterprise asset disposal order stages

An enterprise asset disposal order goes through various stages in the disposal process before it's completed. With each stage, the task that's associated with that stage changes too.

Closing a task in the asset disposal process completes that task and automatically creates the next task in the process. For example, after you close the Schedule Pickup task, the state for that task changes to Closed Complete and the next task, Asset Departure, is created. This process continues until you close all the tasks required for disposing of the selected assets. After you close all the tasks, the disposal order is completed.

### Enterprise asset disposal order stages

Enterprise disposal stages	Task	Description
Draft	Verify Assets	Asset disposal record is created.
Scheduling	Schedule Pickup	Scheduling details for the asset disposal order.
Transit	Asset Departure	Verified assets are ready for departure.

### Enterprise asset disposal order stages (continued)

Enterprise disposal stages	Task	Description
Confirmation	Vendor Confirmation	Asset disposal order is confirmed by the vendor.
Documentation	Disposal Documentation	Documentation for the disposal record is attached.
Completed	None	Asset disposal record request is completed.
Cancelled	None	Disposal order can be canceled only until the transit stage.

### Terminology for linear assets

Terms commonly used for linear assets in the Enterprise Asset Management application.

#### Linear asset terms and their description

Term	Description
Linear asset	<p>An asset that has a physical length or dimension, such as roads, railways, pipelines, and power transmission lines.</p> <p>Linear assets have a series of geopoints; at least a start and end point and have segments with different attributes.</p>
Geo point	<p>Geo points, or graphical coordinates, are a way of expressing a location on the earth's surface using a set of numerical values.</p> <p>Geo points consists of latitudes, longitudes, and altitudes and can be visualized on a map. In the Enterprise Asset Management application, geo point latitude and longitude refer to the coordinate format defined by WGS 84 and uses signed#decimal degrees.</p>
Route	<p>Geo points of a linear asset form a route. Routes can be plotted and visualized on a map.</p>
Boundary width	<p>Maximum width of the linear asset. It's used to validate whether a cmn_location is on-route or not.</p>
Marker	<p>A point location that can be identified on or near a linear asset. A marker should contain a geo point so it can be visualized on a map.</p>

Term	Description
	If the geo point is on the route of the linear asset, then it's an on-route marker.
Segment	A section of a linear asset with certain attributes. A segment consists of a start point and an end point, or a start point and length.
Discrete asset	Discrete assets are enterprise assets and consumables. Discrete assets can be associated to a linear asset and be managed as part of the linear asset.
Overlap asset	A linear asset relationship where two or more linear assets are in close proximity and within the boundary width. For example, a northbound and a southbound highway. A linear asset can be defined for a northbound highway and another linear asset for a southbound highway.
Intersect asset	A linear asset relationship where linear assets have an intersect point. For example, intersecting roads, where two or more roads meet or cross each other.
Continue asset	A linear asset relationship for linear assets that have a start and an end marker. For example, a highway that after a particular point changes into another highway.

### Installed with Enterprise Asset Management for Healthcare

The user role components, plugins, and applications are installed with activation of the com.sn\_eamhc plugin.

### Roles installed

Role title [name]	Description	Contains roles
Medical asset manager [sn_eamhc.medical_asset_manager]	Manages healthcare-specific models and assets in Enterprise Asset Workspace	sn_eam.enterprise_asset_manager
Medical asset technician [sn_eamhc.medical_asset_technician]	Performs tasks related to healthcare-specific assets.	sn_eam.enterprise_asset_technician

## Plugins installed

Name	Description
Asset Management (com.snc.asset_management)	Provides functionalities to integrate the physical, technological, contractual, and financial aspects of information technology assets.
Procurement (com.snc.procurement)	Provides the capability to source and receive requested assets so that you can fulfill service catalog requests.
Enterprise model normalization (com.sn_eam_core)	Provides information related to normalization such as normalization status, model content service download, and life-cycle overview.
Asset Management Workspace - Recommendations (com.sn_itam_recomm)	Provides actionable recommendations for users in configurable workspaces.
SM Planned Maintenance (com.snc.planned_maintenance)	Provides the capability to manage regular preventative maintenance of assets.
Work Management (com.snc.work_management)	Provides the capability to manage your work orders, work order tasks, maintenance plans, and other relevant work order information.
Performance Analytics (com.snc.pa)	Provides dashboards containing actionable data visualizations that help you improve your business processes and practices.
Playbook Experience (com.glide.playbook_experience.config)	Provides a step-by-step guidance for setting up your assets with important information.
Playbooks for App Engine (com.glide.pad.license)	Provides a simplified and task-oriented view of processes.
Cost Management (com.snc.cost_management)	Provides options to plan and control business costs.

## Applications installed

Name	Description
ServiceNow Enterprise Asset Management (com.sn_eam)	Manages the complete life cycle of your enterprise connected and non-connected assets.
Expanded Model and Asset Classes (com.sn_ent)	Adds enterprise model and asset classes that extend out-of-the-box product model and asset classes within the CMDB class hierarchy. In addition, creates model categories that associate these enterprise model and asset classes with CMDB configuration item (CI) classes.
CMDB CI Class Models (com.sn_cmdb_ci_class)	Adds class models that extend the CMDB class hierarchy, including class descriptions, identification rules, identifier entries, and dependent relationships.
Asset Management Common (com.sn_itam_common)	Provides features that are common to the Hardware Asset Management, Software Asset Management, and Enterprise Asset

Name	Description
	Management applications, including the catalog item to request asset reclamation.
Physical Assets (sn_phy_assets)	Marker that aligns features for physical asset-based applications, including the Hardware Asset Management and Enterprise Asset Management applications.
Risk Heat Map (com.sn_risk_heatmap)	Provides a heatmap component that enables you to visualize the risk posture of your organization.
Geo Map Component (com.sn_geo_map)	Provides the capability to track the location of the assets using indoor maps.

### Installed with OT Asset Management

The user role components, plugins, and applications are installed with activation of the com.sn\_otam plugin.

### Roles installed

Role title [name]	Description	Contains roles
OT asset manager [sn_otam.ot_asset_manager]	Manages Operational Technology-specific models and assets in the OT Asset Workspace.	sn_eam.asset_manager
OT asset technician [sn_otam.ot_asset_technician]	Performs tasks related to Operational Technology-specific assets in the OT Asset Workspace.	sn_eam.asset_technician

### Plugins installed

Name	Description
Asset Management (com.snc.asset_management)	Provides functionalities to integrate the physical, technological, contractual, and financial aspects of information technology assets.
Procurement (com.snc.procurement)	Provides the capability to source and receive requested assets so that you can fulfill service catalog requests.
Enterprise model normalization (com.sn_eam_core)	Provides information related to normalization such as normalization status, model content service download, and life-cycle overview.
Asset Management Workspace - Recommendations (com.sn_itam_recomm)	Provides actionable recommendations for users in configurable workspaces.
SM Planned Maintenance (com.snc.planned_maintenance)	Provides the capability to manage regular preventative maintenance of assets.

Name	Description
Work Management (com.snc.work_management)	Provides the capability to manage your work orders, work order tasks, maintenance plans, and other relevant work order information.
Performance Analytics (com.snc.pa)	Provides dashboards containing actionable data visualizations that help you improve your business processes and practices.
Playbook Experience (com.glide.playbook_experience.config)	Provides a step-by-step guidance for setting up your assets with important information.
Playbooks for App Engine (com.glide.pad.license)	Provides a simplified and task-oriented view of processes.
Cost Management (com.snc.cost_management)	Provides options to plan and control business costs.

## Applications installed

Name	Description
Enterprise Asset Management (com.sn_eam)	Manages the complete life cycle of your enterprise connected and non-connected assets.
Expanded Model and Asset Classes (com.sn_ent)	Adds enterprise model and asset classes that extend out-of-the-box product model and asset classes within the CMDB class hierarchy. In addition, creates model categories that associate these enterprise model and asset classes with CMDB configuration item (CI) classes.
CMDB CI Class Models (com.sn_cmdb_ci_class)	Adds class models that extend the CMDB class hierarchy, including class descriptions, identification rules, identifier entries, and dependent relationships.
Asset Management Common (com.sn_itam_common)	Provides features that are common to the Hardware Asset Management, Software Asset Management, and Enterprise Asset Management applications, including the catalog item to request asset reclamation.
Physical Assets (sn_phy_assets)	Marker that aligns features for physical asset-based applications, including the Hardware Asset Management and Enterprise Asset Management applications.
Risk Heat Map (com.sn_risk_heatmap)	Provides a heatmap component that enables you to visualize the risk posture of your organization.
Geo Map Component (com.sn_geo_map)	Provides the capability to track the location of the assets using indoor maps.

## Asset put away task fields

Fields on the Asset put away task form help you create a put away task for the in stock assets.

### Create New Asset put away task form





Field	Description
Number	This field is automatically set to the Asset put away task number.
State	Displays the current state of the Asset put away task. When a new task is created, this field is automatically set to <b>Open</b> .
Asset	Asset for which the put away task is created. All the in stock assets are listed.
Task name	This field is automatically set to <b>Put away</b> .
Stockroom	This field is automatically populated when the asset is selected.
Assignment group	Assignment group to which you want to assign the Asset put away task.
Drop off location	Aisle and space in the stockroom where you want to put away the hardware asset. This value is required to close the Asset put away task.
Assigned to	Person from the assignment group who is primarily responsible for the Asset put away task.
Due date	Date by which the Asset put away task should be closed.
Notes	The <b>Short description</b> and <b>Description</b> field values are automatically populated.

## Cloud Cost Management




ServiceNow<sup>®</sup> Cloud Cost Management application (formerly known as Cloud Insights) gives you visibility and control of your cloud usage and costs and helps you to discover all of your cloud resources, breaks down cloud spend by cost center, business service, and other entity, provides recommendations on how to reduce cloud spend, and automates repetitive cost optimization tasks.

### Overview

## Get started

<p style="text-align: center;">Explore</p>  <p style="text-align: center;">Learn the key features and business value that the Cloud Cost Management application offers.</p>	<p style="text-align: center;">Configure</p>  <p style="text-align: center;">Activate Cloud Cost Management supporting plugins, features, and assign roles to enable additional setup activities.</p>
<p style="text-align: center;">Using</p>  <p style="text-align: center;">Automate and streamline manual processes by automating cloud tasks.</p>	<p style="text-align: center;">Reference</p>  <p style="text-align: center;">Get details about the roles, domain separation, and service categories in Cloud Cost Management.</p>

## Troubleshoot and get help

- [Ask or answer questions in the Cloud Cost Management ServiceNow Community](#) 
- [Search the Known Error Portal for known error articles](#) 
- [Contact Customer Service and Support](#) 

## Exploring Cloud Cost Management

Learn more about Cloud Cost Management with a sample workflow and reviewing the benefits that it can provide for different users in your organization.

### Cloud Cost Management overview

Cloud Cost Management helps you analyze the full range of costs related with cloud assets so you can identify and act on chances to save money and optimize operations.

### Cloud Cost Management workflow

Cloud Cost Management continuously monitors your cloud infrastructure to analyze costs so you can identify and act on resources to save money and optimize operations.

### Monitor your cloud infrastructure



## Cloud Cost Management benefits

Benefit	Feature	Users
Optimize cloud costs and usage by gaining complete visibility of your cloud spend and usage through an intuitive and streamlined user interface.	Cloud Cost Management Workspace	Executives/FinOps Practitioners/Cloud Managers/Cloud Administrators
Rightsize cloud resources by getting automated recommendations on how to reduce cloud costs by correctly dimensioning cloud resources to match usage.	Rightsizing resources	Cloud Administrators/ Application owners
Decrease costs by the conversion of on-demand payment plans to reservation plans for your cloud resources.	Reservation or Saving plans	Cloud Administrators/ Application owners
Identify cost optimizations targets by analyzing areas of high spend and stranded cloud assets.	Unused resources	Cloud Administrators/ Application owners
Turn off resources when not in use by identifying cloud resources that aren't used outside normal working hours and automatically turn them off and on.	Business hours	Cloud Administrators/ Application owners
Allocate budgets	Cloud budgets	FinOps Practitioners/ Cloud Administrators
Automate optimization approvals by integrating cloud optimization tasks into your existing change management processes.	Change Management	FinOps Practitioners/ Cloud Administrators

## Cloud Cost Management Workspace

Use the Cloud Cost Management Workspace, the intuitive and streamlined user interface of the Cloud Cost Management application, to analyze the full range of costs that are associated with cloud resources. You can identify and act on opportunities to save money and optimize operations.

The Cloud Cost Management Workspace is a unified medium with multiple views. The views let you analyze costs, spend, budget of your cloud resources, and provides insight into how IT supports business application and services through various dashboards.

The Cloud Cost Management Workspace contains the following views:

- **Cloud Cost Management overview:** Use the Cloud Cost Management Workspace through this simplified overview page and get insights into your cloud resources.
- **Budget view:** Reduce cloud spend by proactively understanding the budget compliance of your cloud resources.
- **Spend dashboard view:** Analyze and understand the spend on your cloud resources.
- **Operations view:** View and manage recommendations, cost usage tags, and admin-related operations.
- **Admin view:** Install, set up, and configure Cloud Cost Management through a guided experience.

**i Note:** You can view the reports and data based on your role. For more information, see [Cloud Cost Management roles](#).

### Cloud Cost Management overview

Enhance your experience by using the modernized and user-friendly Cloud Cost Management overview. This simplified overview page helps you use the Cloud Cost Management application more effectively by reducing complexity.

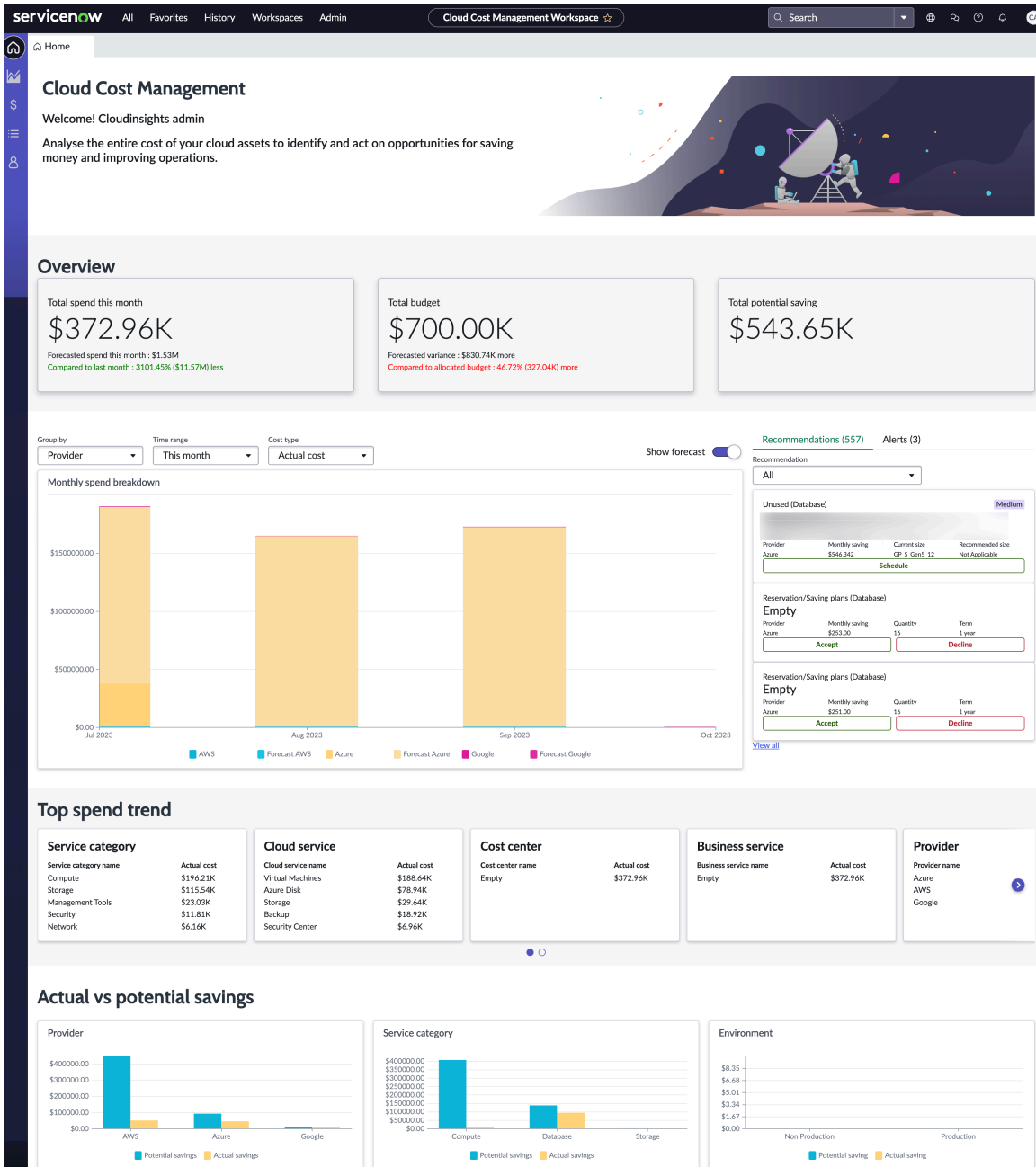
**i Important:** If you have the `insights_owner` role, only the accounts that are assigned to you appear in the filters and data.

Use the Cloud Cost Management overview to,

- Understand how you currently spend on cloud resources or service accounts for the last 30 days.
- Gain insights into key metrics such as the total budget and potential savings for your cloud resources.
- Analyze your spend breakdown and group your results by provider, service category, service account, cloud service, or purchase option. You can also sort your results by months past such as 3, 6, 9, or 12 months, actual cost or amortized cost, and by hiding or showing the future cost.

**i Note:** You can view the forecast grouped only by provider or service account.

- View cloud spending analytics based on provider, service category, and cloud service.
- Get information about the top spend trends that are grouped by service category, cloud service, cost center, business service, and provider.
- Understand your savings breakdown by viewing your potential and actual saving.
- Get actionable insights into your cloud resources through alerts and recommendations.



## Overview

Report	Description
Total spend this month	<p>Actual spend on your service accounts or cloud resources for the last 30 days.</p> <p>The <b>Forecasted spend this month</b> amount displays the total future spends for all your cloud assets.</p> <p>The <b>Compared to last month</b> percentage amount shows the spend difference of the current month and last month.</p>

### Overview (continued)

Report	Description
Total budget	<p>Total budget of your service accounts or cloud assets where the current date falls between the start date and end date of the budget.</p> <p>For a budget owner, the budget for only the created policies is displayed.</p> <p>The <b>Forecasted variance</b> amount shows the budget amount based on the spend on your cloud resources, which is</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <math display="block">\text{Forecasted spend this month} - \text{Total budget}</math> </div> <p>.</p>
Total potential saving	Total saving for your cloud assets based on all the recommendations that you haven't acted on.
Monthly spend breakdown	<p>Monthly spend breakdown grouped by provider, service category, service account, cloud service, or purchase option. The results can be sorted by time range and cost type. Use the <b>Show forecast</b> toggle switch for hiding or showing the future cost.</p> <p>Selecting a monthly spend breakdown bar navigates you to the Spend analytics page. For more information, see <a href="#">Spend analytics</a>.</p>

### Top spend trend

Report	Description
Top spend trend	Spend trend or actual cost grouped by service category, cloud service, cost center, business service, and provider.

### Actual vs potential savings

Report	Description
Actual vs potential savings grouped by provider, service category, and environment	<p>Actual vs potential savings grouped by provider, service category, and environment.</p> <p><b>Note:</b> To view the Actual vs potential savings grouped by environment chart, you must create tag categories as Production and Non Production. For more information about creating a tag category, see <a href="#">Create and update a tag category</a>.</p>

**Actual vs potential savings (continued)**

Report	Description
	<p>Potential saving indicates the total spend on your cloud resources that could be optimized by the recommendations.</p> <p>Actual saving indicates the total savings achieved by following the recommendations to optimize your cloud resources.</p>

**Alerts**

**i Note: The alerts that you view on the Cloud Cost Management Overview page are for the last one week.**

Alert	Description
Last <provider> billing download job failed	The billing download job that downloads organizes, and stores billing data for your payer account has failed.
Last <provider> price sheet download job failed	The price sheet download job that download and stores price sheet data for your cloud provider has failed.
Scheduled jobs failed	One or more scheduled jobs, which automate processes for cloud providers have failed.
<Number> declined recommendations	Number of recommendations that you've declined, which indicates potential savings.
<Number> failed recommendations	Number of recommendations that have failed, which indicates potential savings for your cloud resources.

**Recommendations**

Recommendation	Description
All	Displays all the recommendations that Cloud Cost Management provides for your cloud assets.
Business hour	The Business hour recommendation helps you identify resources that are running when they should be powered off.
Reservation/Saving plans	<p>The reservation and saving recommendation helps you identify resources that would save you money with reservation plans or saving plans.</p> <p>You can accept or decline the reservation and saving recommendation.</p>

### Recommendations (continued)

Recommendation	Description
Rightsizing	<p>The Rightsizing recommendation helps you identify the users, user groups, or locations that are wasting money by running over-provisioned or underused resources.</p> <p>You can schedule the rightsizing processes and specify the amount of potential rightsizing savings that triggers notifications.</p>
Unused	<p>The Unused recommendation helps you identify the unused resources.</p> <p>You can schedule unused machines to be powered off or terminated.</p>

### Spend analytics

The Spend analytics page helps you gain visibility to your cloud costs by displaying your cloud, Kubernetes, and shared resources spend over a time range or a cost type that you specify.

**i Important:** If you have the `insights_owner` role, only the accounts that are assigned to you appear in the filters and data.

Use the Spend analytics page to view the following:

- Cloud spend analytics
- Kubernetes spend analytics
- Shared cost analytics

**i Note:** You can't view the spend of your resources for nested tag values. For example, `{"name": "test", "created-by": "xyz", "prod": "false", "shared_resource": "false"}`.

### Cloud spend analytics

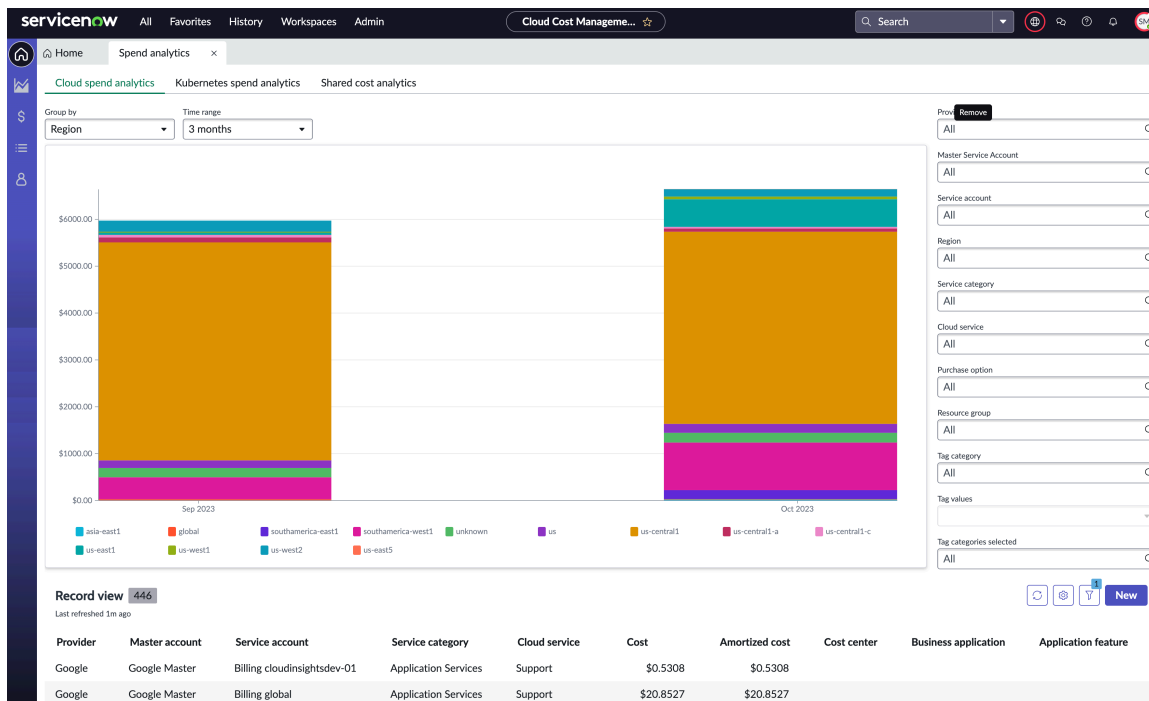
Select the **Cloud spend analytics** tab to do the following tasks:

- Understand how you currently spend on cloud resources for a period that you can select in the **Time range** field.
- Group the cloud spend analytics by using either of the following values:
  - Provider
  - Purchase option
  - Region
  - Service account
  - Service category
  - Cloud service
  - Resource group
  - Tag category

- Sort your cloud spend results by the current month or select a time range such as 3, 6, 9, or 12 months.
- Get a better picture of your results by searching and selecting values through the following filters:
  - Provider
  - Master Service Account
  - Service account
  - Region
  - Service category
  - Cloud service
  - Purchase option
  - Resource group
  - Tag category

**Note:** For more information about tag categories and the list of default tag categories, see [Tags and tag categories](#) and [List of default tag categories](#).

- Tag values
- Tag categories selected

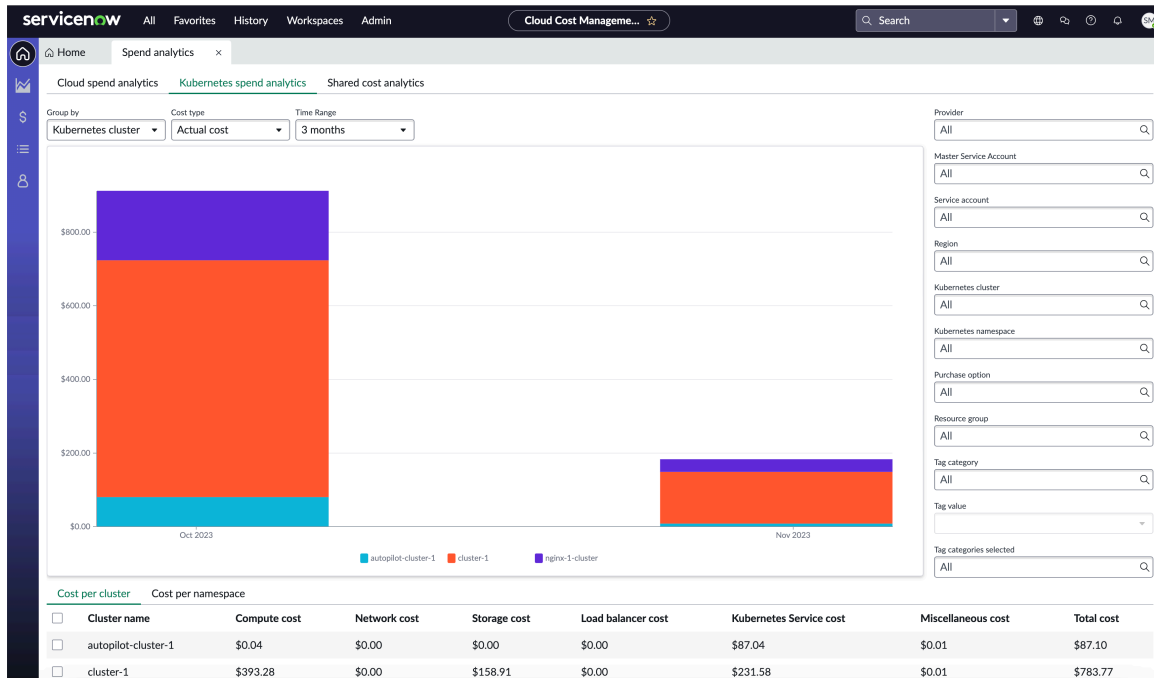


## Kubernetes spend analytics

Select the **Kubernetes spend analytics** tab to do the following tasks:

- Understand how you currently spend on Kubernetes on the cloud for a period that you can select in the **Time range** field.
- Group the Kubernetes spend analytics by using either of the following values:

- Kubernetes cluster
- Kubernetes namespace
- Tag category
- Select the cost type as Actual cost or Amortized cost.
  - Actual cost: Each billing period, your organization pays for direct cloud services.
  - Amortized cost: Your organization pays the effective cost of the upfront and monthly reservation fees spread across the billing period. The amortized cost type is described in detail on the provider site.
- Sort your Kubernetes spend results by the current month or select a time range such as 3, 6, 9, or 12 months.
- Get a better picture of your results by searching and selecting values through the following filters:
  - Provider
  - Master Service Account
  - Service account
  - Region
  - Kubernetes cluster
  - Kubernetes namespace
  - Purchase option
  - Resource group
  - Tag category
- **Note:** For more information about tag categories and the list of default tag categories, see [Tags and tag categories](#) and [List of default tag categories](#).
- Tag value
- Tag categories selected
- View details of cost per Kubernetes cluster and cost per Kubernetes namespace.



## Shared cost analytics

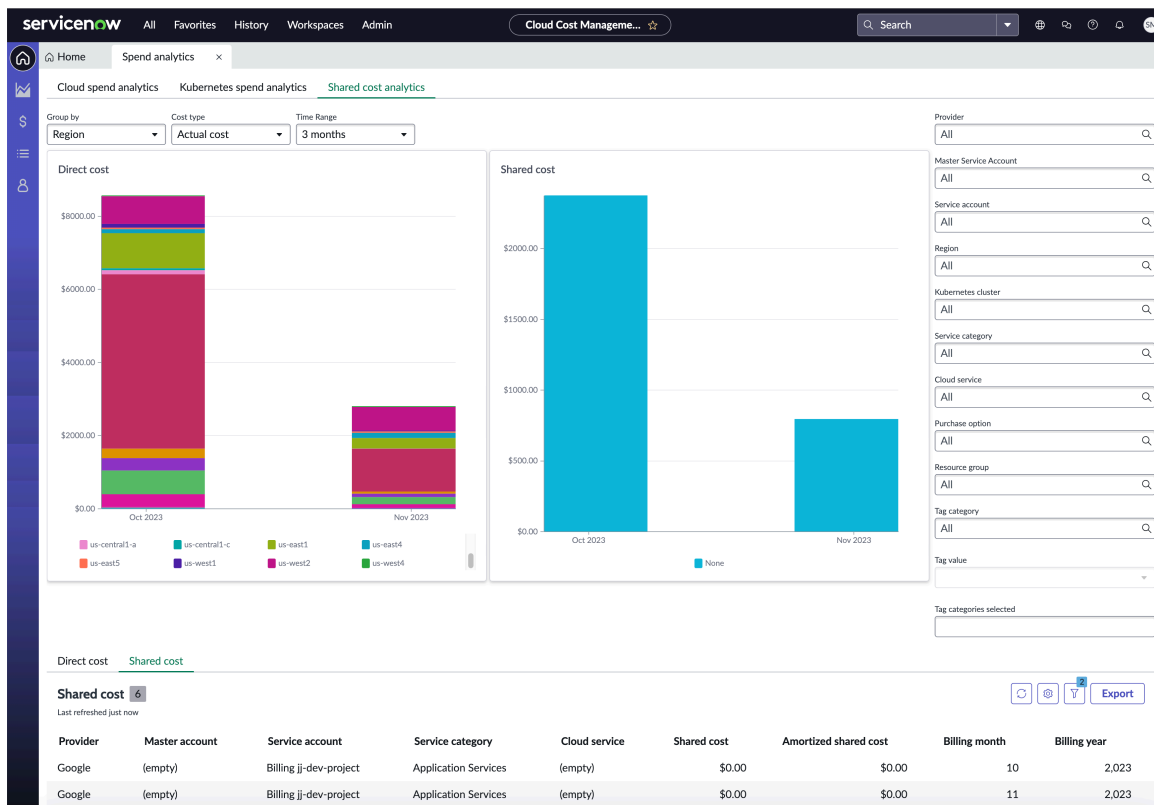
Select the **Shared cost analytics** tab to do the following tasks:

- Understand how you currently spend on shared cloud resources for a period that you can select in the **Time range** field.
- Group the Shared cost analytics by using either of the following values:
  - Provider
  - Purchase option
  - Region
  - Service account
  - Service category
  - Cloud service
  - Resource group
  - Tag category
- Select **Cost type** as Actual cost or Amortized cost.
  - Actual cost: Each billing period, your organization pays for direct cloud services.
  - Amortized cost: Your organization pays the effective cost of the upfront and monthly reservation fees spread across the billing period. The amortized cost type is described in detail on the provider site.
- Sort your shared resources cost results by the current month or select a time range such as 3, 6, 9, or 12 months.
- Get a better picture of your results by searching and selecting values through the following filters:
  - Provider
  - Master Service Account
  - Service account

- Region
- Service category
- Cloud service
- Purchase option
- Resource group
- Tag category

**Note:** For more information about tag categories and the list of default tag categories, see [Tags and tag categories](#) and [List of default tag categories](#).

- Tag value
- Tag categories selected
- View details of the direct cost and shared cost of your cloud resources.



### Related topics

- [Cloud service categories in Cloud Cost Management](#)
- [Tags and tag categories](#)
- [Create and update a tag category](#)
- [Create or update a shared cost allocation policy](#)

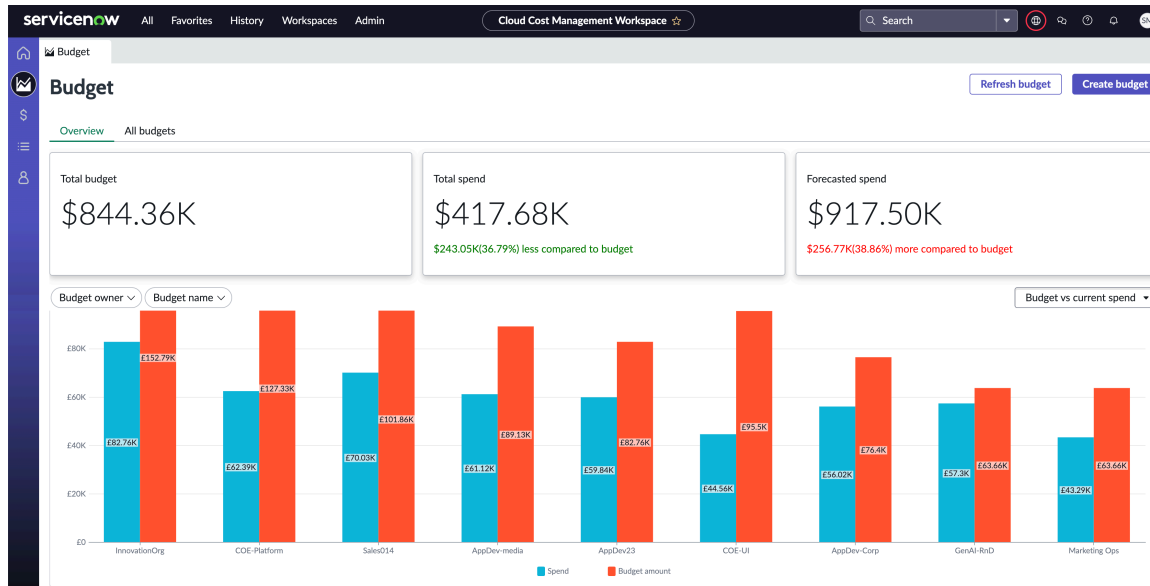
### Budget view

Understand budget compliance by groups and service accounts can significantly improve oversight and reduce cloud spend.

**Important:** If you have the insights\_owner role, only the accounts that are assigned to you appear in the filters and data.

Use the Budget view to:

- View your total budget and spend on your cloud assets.
- Analyze your future spend and understand if you are within or over the budget.
- Manage your cloud spend, you can define and monitor custom Budget plans.
- Create and manage a budget policy. For more information, see [Create or update a budget policy](#).

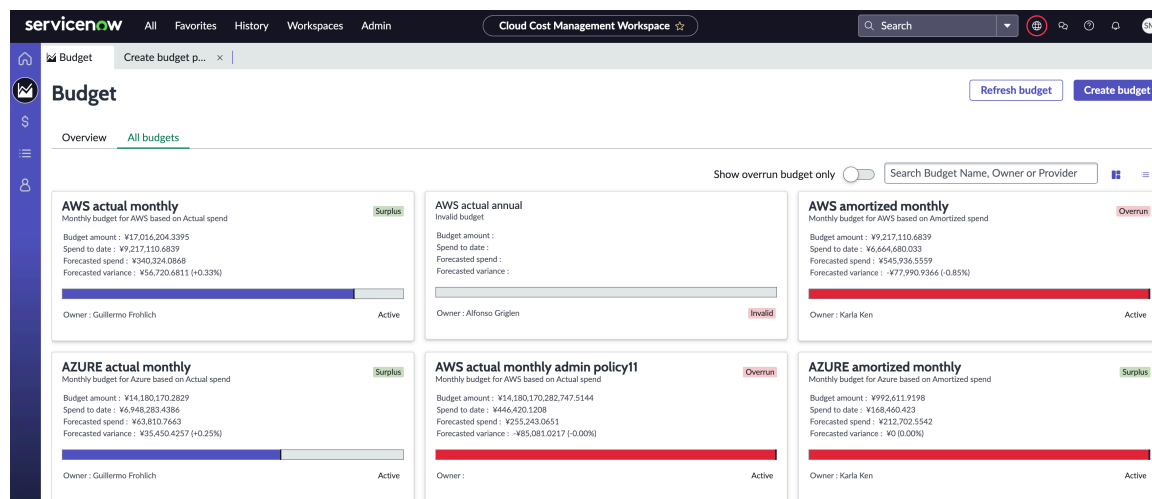


### Budget overview

Report	Description
Total budget	Valid budget of your cloud assets for the current period.
Total spend	Total spend on your cloud assets for the current month.  Indicates if your current spend is within or has exceeded the budget.
Forecasted spend	Forecasted spend based on the total spend on your cloud resources.  Indicates if your forecasted spend is within or has exceeded the budget.
Budget vs Spend	Comparison between budget and current or forecasted spend of each budget policy.  You can filter the data by: <ul style="list-style-type: none"> <li>• Budget owner</li> <li>• Budget name</li> <li>• Budget vs current spend</li> <li>• Budget vs forecasted spend</li> </ul>

## All budgets

After you create or modify a budget policy, the policies get displayed on the **All Budgets** page. Find the details of the budget such as overrun, surplus, or invalid budgets. You can view only the overrun budgets by toggling the **Show overrun budget only** toggle button. Search a budget by its name, owner, or provider.



## Spend dashboard view

Ensure accurate spend reporting by using the Spend view in the Cloud Cost Management Workspace.

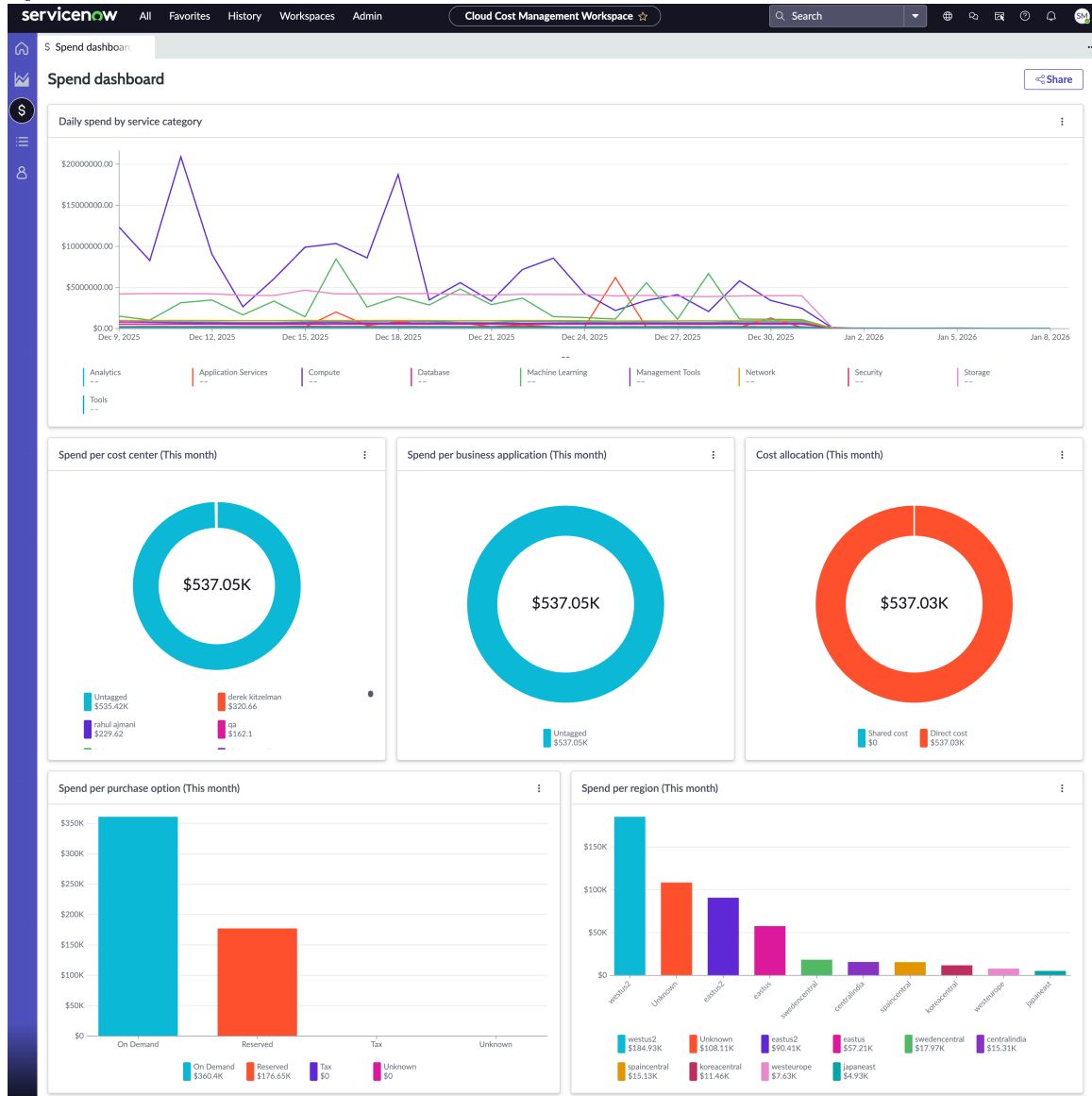
**i Important:** If you have the insights\_owner role, only the accounts that are assigned to you appear in the filters and data.

Use the Spend view to analyze and understand the spend on your assets that are grouped by various categories:

- Daily spend by service category
- Spend per cost center (This month)
- Spend per purchase option (This month)
- Spend per business application (This month)
- Cost allocation, displaying shared and direct cost
- Spend per region (This month)

The Spend view displays detailed reports for the listed categories. You can select a report to view the cloud resource spend and fields in the list view. For more information on these reports, see [Spend dashboard](#). You can access the Spend view by navigating to **Workspaces > Cloud Cost Management Workspace > Spend**.

## Spend dashboard



### Spend dashboard

Report	Source	Description
Daily spend by service category	Spend Report Daily Aggregated Cost [sn_cld_spend_core_daily_aggregated_cost]	Service category-wise daily spend on cloud resources.
Spend per cost center (This month)	Spend Report Monthly Cost [sn_cld_spend_core_monthly_aggregated_cost]	Cost center-wise spend on cloud resources for the current month.
Spend per purchase option (This month)	Spend Report Monthly Cost [sn_cld_spend_core_monthly_aggregated_cost]	Purchase option-wise spend on cloud resources for the current month.
Spend per business application (This month)	Spend Report Monthly Cost [sn_cld_spend_core_monthly_aggregated_cost]	Business application-wise spend on cloud resources for the current month.

### Spend dashboard (continued)

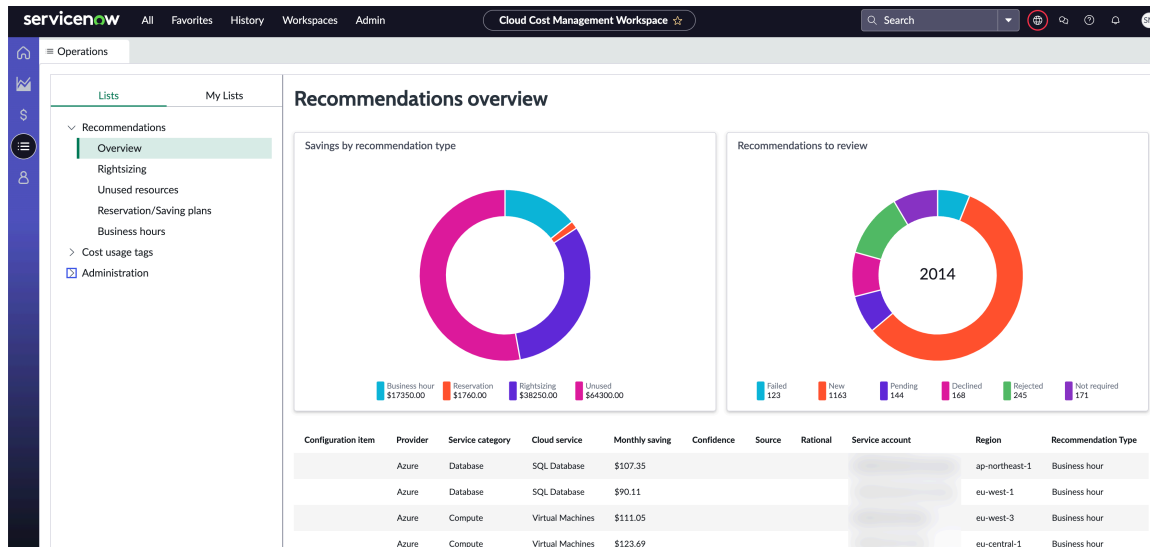
Report	Source	Description
Cost allocation	This report fetches data from the Spend analytics dashboard.	Cost allocated for cloud resources including direct cost and shared cost.
Spend per region (This month)	Spend Report Monthly Cost [sn_cld_spend_core_monthly_aggregated_cost]	Region-wise spend on cloud resources for the current month.

### Operations view

Use the Operations view in the Cloud Cost Management Workspace to view and manage recommendations, cost usage tags, and administration-related operations.

**Important:** If you have the insights\_owner role, only the accounts that are assigned to you appear in the filters and data.

You can access the Operations view by navigating to *Cloud Cost Management Workspace > Operations*.



The Operations view lets you do the following tasks by expanding each category in the **Lists** tab:

- **Overview:** View your total savings by recommendation type and the number of recommendations to review, which are grouped by their state.
- **Recommendations:** View the savings of your cloud assets by recommendation type such as Rightsizing, Unused resources, Reservation/Saving plans, and Business hours. Select the recommendation type to view detailed reports and act accordingly:
  - **Rightsizing:** View the total potential savings by service category, total potential savings by change group, number of resources that are scheduled, completed, declined, failed, and excluded for rightsizing. You can also exclude or schedule resources for rightsizing resources, configure the rightsize settings, and create service category metrics. For more information, see [Resize resources with Rightsizing](#).
  - **Unused resources:** View the total potential savings by service category, total potential savings by change group, number of unused resources that are scheduled, completed, declined, failed, and excluded. You can also exclude or schedule unused resources to identify resources that are wasting money because they aren't used, configure the unused

settings, and create unused recommendations. For more information, see [Manage unused resources](#).

- **Reservation/Saving plans:** View upfront cost to reserve, overall RI utilization percentage, potential savings by service category. You can accept or decline the recommendations for reserved instances. For more information, see [Reduce resource cost with Reservation Plans](#)
- **Business hours:** View the total potential savings by service category, total potential savings by change group, business hour against non-business hour spend, and number of resources that are scheduled, completed, declined, failed, and excluded from business hour policies. You can also exclude resources from the policies. For more information, see [Improve resource usage with Business hours](#).
- **Cost usage tags:** Associate resource usage with particular business entities. For more information, see [Tags and tag categories](#).
  - **Tag categories:** Create and update tag categories.
  - **Tag names:** Create tag names for the tag categories. For more information, see [Create and update a tag category](#).
- **Administration**
  - **Service accounts:** Create service accounts for AWS, Azure, and Google to store the credentials and access information for your account.
    - [Add an AWS service account](#)
    - [Add a Microsoft Azure government service account](#)
    - [Add a Google Cloud service account](#)
  - **Credentials:** Create credentials for accessing AWS, Azure, and Google accounts.
    - [Set up access to AWS billing and usage data](#)
    - [Set up access to Microsoft Azure billing and usage data](#)
    - [Set up access to Google Cloud billing and usage data](#)
  - **Billing download jobs:** View, manage, and schedule the jobs that download billing data for AWS, Azure, and Google.
    - [Schedule and manage the jobs that download AWS billing data](#)
    - [Schedule and manage the jobs that download Azure billing data](#)
    - [Schedule and manage the jobs that download Google Cloud billing data](#)
  - **Price sheet download jobs:** View, manage, and schedule the jobs that download the price sheet for AWS, Azure, and Google.
    - [Schedule and manage the Cloud Cost Management jobs that download AWS price sheets](#)
    - [Schedule and manage the Cloud Cost Management jobs that download Microsoft Azure price sheets](#)
    - [Schedule and manage the Cloud Cost Management jobs that download Google Cloud price sheets](#)
  - **Business hours schedules:** Create a schedule for business hours. For more information, see [Create Business hours schedule](#).
  - **Unassigned resources:** View list of unassigned resources and details of the resources such as provider, region, CMDB CI, service account and category, and Sys ID.
  - **Global exclusions:** Exclude resources for ensuring that cost data for a particular resource doesn't appear in a report. For more information, see [Exclude a resource from all Cloud Cost Management reports](#).
  - **Job executions:** View the job execution details of the following:

- Billing download
- Price sheet download
- Spend
- Budget
- Rightsizing/Unused
- Business hour
- Unassigned
- Reservation plan
- **Account to owner mappings:** Set up or update ownership of service accounts. For more information, see [Assign service accounts to an insights\\_owner](#) and [Update or reassign insights\\_owner privileges](#).
- **View insights owners:** View the list of insights owner and also create a cloud service account. For more information, see [View the service accounts owned by an insights\\_owner](#).
- **AWS price discounts:** View and specify the provider discount rate for each service account. For more information, see [Specify rate discounts to enable accurate pricing for Rightsizing recommendations](#).
- **AWS Gov account mappings:** Create mapping of AWS Gov account to a linked service account. For more information, see [Create AWS Gov accounts mapping](#).
- **Shared cost allocation policies:** Create, update, and view shared cost allocation policies with different allocation types to split the cost of shared cloud resources among various business lines. For more information, see [Create or update a shared cost allocation policy](#).
- **Tools- Compare MetricBase with Spend data:** Compare MetricBase (Clotho) data with your Spend data for Amazon Web Services (AWS), Azure, and Google Cloud Platform (GCP) and easily diagnose and troubleshoot Cloud Cost Management billing issues. For more information see, [Compare MetricBase data with spend data](#).

**Note:** This option is available with Cloud Cost Management 8.0.0 version or later.

### Admin view

Use the Admin view in the Cloud Cost Management Workspace that enables you to install, set up, and configure the application through a guided experience.

The Admin view lets you to:

- Get to value faster by using Guided Setup for configuring Cloud Cost Management for AWS, Azure and GCP. Guided Setup provides a prescriptive guidance on the tasks that you must perform for completing the configuration. This Guided Setup organizes configuration activities into various categories for ease of use.
- Watch a tutorial to familiarize with Cloud Cost Management.
- View helpful resources and related products or features.

servicenow All Favorites History Workspaces Admin Cloud Cost Management Workspace ☆

Admin

## Administration: One stop for everything nerdy in Cloud Cost Management

Everything you need to do to from installing the application, setting it up correctly, to configuring it as per your operational needs, all in one place. Use this hub for a detailed yet guided experience to go through your adoption journey.

### 3 major steps to setup

**Step 1**  
Activate plug-ins

First steps towards a successful setup is to ensure all required and plugins and dependencies are installed. Let's get started.

[Install plug-ins](#)

**Step 2**  
Configure integrations

Second step is to create integrations with cloud providers and get started with data ingestion. We will step you through a guided experience of creating the integration with the supported cloud providers.

[Start guided setup](#)

**Step 3**  
Preference settings

Third step is to review the default settings or edit them according to your needs for various features in the application. One place to configure them all. Let's explore.

[Configure settings](#)

Activate plug-ins

Create integrations

Preference settings

## Using Guided Setup to implement Cloud Cost Management

Guided Setup provides a sequence of tasks that help you configure Cloud Cost Management on your ServiceNow instance.

To open Cloud Cost Management Guided Setup for AWS, Microsoft Azure, and GCP, navigate to **Workspaces > Cloud Cost Management Workspace > Admin > Create integrations > Integrate**.

For more information, see [Guided setup](#).

Find the following steps on the Admin view for Guided Setup:

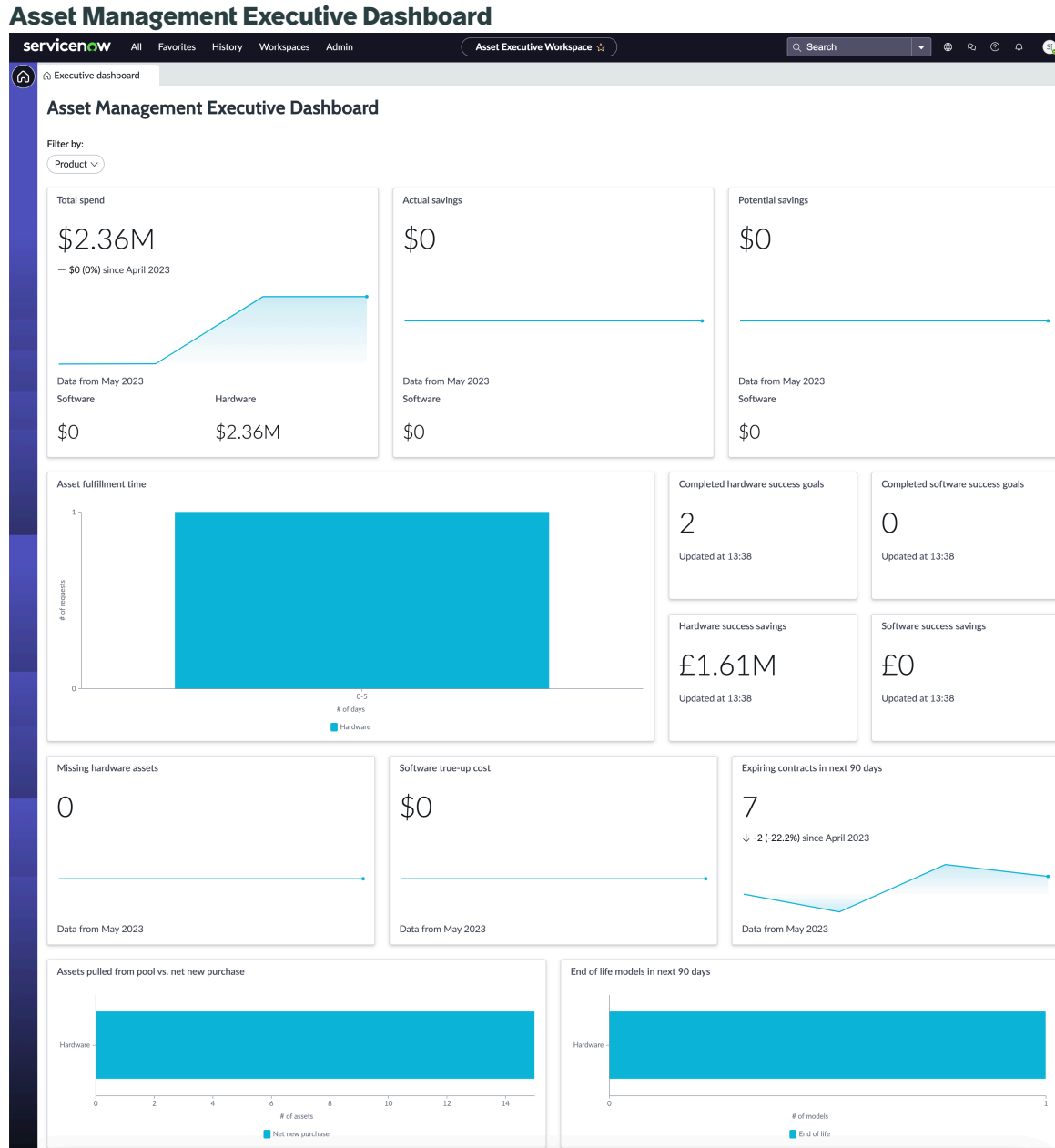
- **Activate plug-ins:** Verify that all required plugins and dependencies are installed.
  - **Note:** You must add the Guided Setup 2.1.2 version.
- **Configure integrations:** Create integrations with cloud providers such as Amazon Web Services AWS, Microsoft Azure, and Google Cloud Platform (GCP).
- **Preference settings:** Review the default settings or edit them according to your needs for various features in the application.

## Visibility into Cloud Cost Management KPIs using the Asset Management Executive Dashboard

Use the Asset Management Executive Dashboard to gain visibility into critical KPIs for Hardware Asset Management, Software Asset Management, and Cloud Cost Management applications via a single dashboard.

To access the Asset Management Executive dashboard, you must either have Software Asset Management or Hardware Asset Management in your ServiceNow instance.

To view the Asset Management Executive dashboard, navigate to **Asset Executive Workspace > Asset Management Executive Dashboard**. A user with the role of `sn_itam_common.asset_exec` can access the dashboard.



You can filter the results in the dashboard by product, domain, or by both product and domain. If you filter by domain, the filter gets applied to all the widgets. If you filter by product, since some widgets are applicable for certain products, the filter isn't applied to all the widgets.

After you select a filter, a blue box gets displayed on the right side of each widget displaying one of the numbers:

- 0: Indicates that no filter is applied to a widget.
- 1: Indicates that only one filter is applied to a widget.
- 2: Indicates that both the filters are applied to a widget.

**Note:** To use the domain filter, you must activate the plugins: com.glide.domain.msp\_extensions.installer and com.snc.pa.domain\_support.

The schedule job, *Asset Management - Populate KPI aggregate table*, runs daily to update the data on the dashboard. To view the latest data for a widget, select the widget to display the list view page.

The dashboard widgets vary depending on the application plugins that you've activated in your instance. The widgets available with each application are listed in the following table:

**Asset Management Executive Dashboard widgets**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
Total spend	Total cost of all entitlements for all products.  Source table: License Metric Results [samp_license_metric_result].	Total cost of all hardware assets whose status is either <b>In stock, In use, In maintenance, or In transit</b> .  Source table: Hardware [alm_hardware].	Total active cost of all cloud resources.  Source table: Spend Report Daily Aggregated Cost [sn_cld_spend_core_daily_aggregated_cost].
Actual savings	Total yearly savings for all products. This value is calculated as the total savings from closed complete reclamation candidates.  Source table: Removal Candidate [samp_sw_reclamation_candidate].	Not applicable	This value is calculated as the monthly savings on cloud resources.  <b>Note:</b> This widget gets displayed only if you have the Software Asset Management application installed on your instance.  Source table: Cloud Insights Rightsizing Recommendation Automatics (sn_clin_core_rs_recommendation_automatic) where State = Completed.
Potential savings	Cost saved if removal candidates are reclaimed.	Not applicable	Total of potential savings on a monthly basis on cloud rightsizing, cloud unused machines, cloud reservations, and cloud business hours.

**Asset Management Executive Dashboard widgets (continued)**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
	<p>Source table: Removal Candidate [samp_sw_reclamation_candidate].</p>		<p><b>Note:</b> This widget appears only if you have the Software Asset Management application installed on your instance.</p> <p>Source tables:</p> <ul style="list-style-type: none"> <li>• Cloud Insights Rightsizing Recommendation Automatics [sn_clin_core_rs_recommendation_automatic].</li> <li>• Cloud Insights Unused Recommendation [sn_clin_core_rs_unused_recommendation].</li> <li>• Reserved Instance Recommendation [sn_clin_core_ri_recommendation].</li> </ul>
<p>Assessment fulfillment time</p>	<p>Fulfillment time bar graph of software requests from the Service Catalog. The graph shows the number of requests and the number of days taken to close those requests in the ranges of 0-5, 6-10, 11-20, 21-30, 31+ days.</p> <p>Source table: Asset fulfillment time [asset_fulfillment_time].</p>	<p>Fulfillment time bar graph of hardware requests from the Service Catalog. The graph shows the number of requests and the number of days taken to close those requests in the ranges of 0-5, 6-10, 11-20, 21-30, 31+ days.</p> <p>Source table: Asset fulfillment time [asset_fulfillment_time].</p>	<p>Not applicable</p>
<p>Completed software success goals</p>	<p>Number of success goals completed for the Software Asset Management application.</p> <p>Source table: SAM Success Goal [samp_success_goal].</p>	<p>Not applicable</p>	<p>Not applicable</p>

**Asset Management Executive Dashboard widgets (continued)**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
	<p><b>i Note:</b> This widget is available only when the Software Asset Workspace (com.sn_sam_workspace) plugin is installed.</p>		
Completed hardware success goals	Not applicable	<p>Number of success goals completed for the Hardware Asset Management application.</p> <p>Source table: HAM Success Goal [sn_hamp_success_goal]</p> <p><b>i Note:</b> This widget is available only when Hardware Asset Management (sn_hamp) is installed.</p>	Not applicable
Software success savings	<p>Actual savings from completed success goals.</p> <p>Source table: SAM Success Goal [samp_success_goal].</p> <p><b>i Note:</b> This widget is available only when the Software Asset Workspace (com.sn_sam_workspace) plugin is installed.</p>	Not applicable	Not applicable
Hardware success savings	Not applicable	Actual savings from completed success goals.	

**Asset Management Executive Dashboard widgets (continued)**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
		<p>Source table: HAM Success Goal [sn_hamp_success_goal]</p> <p><b>i Note:</b> This widget is available only when Hardware Asset Management (sn_hamp) is installed.</p>	
Missing hardware assets	Not applicable	<p>Count of missing, lost, or stolen hardware assets.</p> <p>Source table: Missing Hardware Assets [missing_hardware_assets].</p>	Not applicable
Software true-up cost	<p>Cost of the products actually being used.</p> <p>Source table: Product Results [samp_product_result].</p>	Not applicable	Not applicable
Expiring contracts in 90 days	Count of software contracts that are going to expire in the next 90 days.	Count of hardware contracts that are going to expire in the next 90 days.	Not applicable

**Asset Management Executive Dashboard widgets (continued)**

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
	<p><b>i Note:</b> If the Software Asset Management application and the Hardware Asset Management application both exist in your instance, then this widget shows the total number of software and hardware contracts together; not individual contracts for software and hardware.</p>	<p><b>i Note:</b> If Software Asset Management and Hardware Asset Management both exist in your instance, then this widget shows the total number of software and hardware contracts together; not individual contracts for software and hardware.</p>	
<p>Assets pulled from pool vs net new purchase</p>	<p>Bar charts representing the number of requests for software assets being fulfilled from your inventory versus creating purchase orders for new assets.</p> <p><b>i Note:</b> Ensure that the Procurement (com.snc.procurement) plugin is activated in your instance to view software-related data for this widget.</p> <p>Source tables:</p> <ul style="list-style-type: none"> <li>Pool assets: Assigned Allocations [alm_licenses_assigned].</li> </ul>	<p>Bar charts representing the number of requests for hardware assets being fulfilled from your inventory versus creating purchase orders for new assets.</p> <p>Source tables:</p> <ul style="list-style-type: none"> <li>Pool assets: Consume Asset Task [consume_asset_task].</li> <li>Net new assets: Purchase order line items [proc_po_item].</li> </ul>	<p>Bar charts representing the number of assets used from your inventory versus new assets being procured via purchase orders.</p> <p>Source tables:</p> <ul style="list-style-type: none"> <li>Pool assets: Spend Report Monthly Cost [sn_cld_spend_core_monthly_cost].</li> <li>Net new assets: Purchase order line items [proc_po_item].</li> </ul>

### Asset Management Executive Dashboard widgets (continued)

Widget	Software Asset Management	Hardware Asset Management	Cloud Cost Management
	<ul style="list-style-type: none"> <li>Net new assets: Purchase order line items [proc_po_item].</li> </ul>		
End of life models in next 90 days	<p>Number of software models that are reaching their end of life in the next 90 days.</p> <ul style="list-style-type: none"> <li>End of life</li> <li>End of support</li> <li>End of extended support</li> </ul> <p>Source table: Software Lifecycle Report [sam_sw_product_lifecycle_report].</p>	<p>Number of hardware models that are reaching their end of life in the next 90 days.</p> <ul style="list-style-type: none"> <li>End of life</li> <li>End of support</li> <li>End of extended support</li> </ul> <p>Source table: Hardware model [cmdb_hardware_model_lifecycle].</p>	Not applicable

### Discovering your cloud resources for use

Select the service accounts to discover, the credentials for accessing the accounts, and the MID Servers that scan the resources. If you use the Discovery application, the Discovery Manager wizard simplifies the configuration process for discovering cloud attributes. If you use a different method for discovering resources, you can skip this configuration operation.

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

### Initial set up from the home page

**i Important:** This configuration process applies only if you use the Discovery application to discover cloud resources. You skip this configuration operation if you use a different method such as Service Graph Connector for AWS to discover resources. For more information about this method, see [Service Graph Connector for AWS](#).

During initial installation, on the home page, when you select the **Set up Discovery Schedule** button in the Configure and Run Discovery section, the Discover Schedules form opens. For detailed instructions, see:

- [Amazon AWS Cloud Discovery](#)
- [Azure Cloud Discovery](#)
- [Google Cloud Platform Discovery](#)

## About Cloud Discovery

The Cloud Discovery plugin includes the necessary components from Cloud Provisioning and Governance to perform Cloud Discovery. See [Cloud Discovery](#).

### Related topics

[Discovery basics](#)

## Reservation or Saving plans

The Reservation or Saving plans feature recommends resources that could decrease costs by the conversion of on-demand payment plans to reservation plans. These plans are also called committed-use discounts, committed-use savings plans, or reserved instance plans.

**Note:** Azure Managed Disk reserved instance to save over your on-demand costs is supported.

### How the Reservation/Saving plans feature works

1. Each time that billing and usage data are updated, the system collects the list of resources that the provider recommends would cost less under reservation plans over the planned lifetime.
2. The Reservation or Saving plans feature sorts the resources by estimated savings and displays the list on the **Reservation/Saving plans** page. You can navigate to **Cloud Cost Management Workspace > Operations > Recommendations > Reservation/Saving plans** to view the list.

For more information, see [Reduce resource cost with Reservation Plans](#).

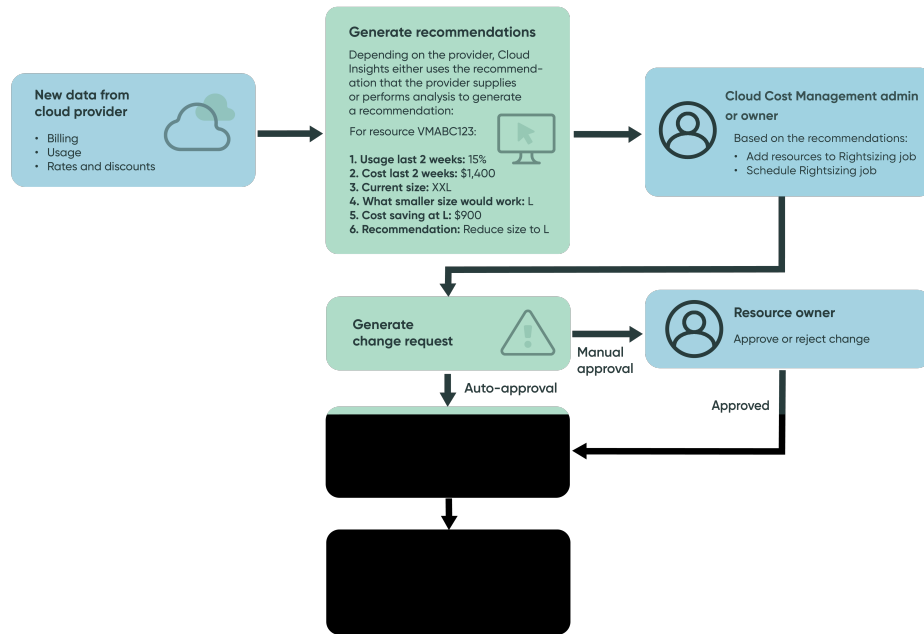
3. The **Reserved Instances** page has three tabs such as **New**, **Accepted**, and **Declined**. You can use the tabs to sort the recommendations into categories for action. If you change your mind, you can move a resource from any tab to any other tab.

## Rightsizing resources

The Rightsizing feature analyzes resource usage to recommend better sizes for resources that are wasting money by being over-provisioned or underused. A confidence rating and predicted savings support each recommendation. Schedule Rightsizing jobs to resize the resources you specify.

## How Rightsizing works

### Cloud Cost Management Rightsizing



The system updates Rightsizing recommendations each time that billing and usage data are updated.

Follow this process to define a Rightsizing job:

1. On the Rightsizing recommendations page, select the resources to rightsize based on your analysis of the recommendations. For more information, see [Resize resources with Rightsizing](#).
2. Add the resources to a Rightsizing job. The job can be a new or an already-defined one.
3. Specify the date and time for the job to run.
4. Specify the type of approval required for the Rightsizing action.

Rightsizing operations are directly integrated with the ServiceNow Change Management feature.

- **Auto-approval:** Generates a Standard Change request and the change request is auto-approved.
- **Manual approval:** Generates a Normal Change request and the appropriate user approves the change request.

5. Save the job.

When you save the job, the system immediately generates the change requests. Later, at the scheduled time, the system runs the job. The job performs the following operations:

- For each approved change, resize the resource. For a resource in the *ON* state, stop the resource, resize it, and then restart it. If the attempt to resize fails, perform a rollback. For more information, see [AWS only – Rollback on failed Rightsizing attempts](#).
- Update the Rightsizing reports with new recommendations and with approved, successful, pending, rejected, and failed changes.

For pending, rejected, and failed change requests, you can reschedule the resources into another job.

- **Note:** Rightsizing operation on a stopped AWS Relational Database Service (RDS) database isn't supported from the AWS provider. If you try to perform Rightsizing on stopped databases, the resize operation fails with the error `InvalidDBInstanceState - You can't modify a stopped DB instance. Start the DB instance, and then modify it..`

## How Cloud Cost Management generates Rightsizing recommendations

Cloud Cost Management uses a process that is optimized for each provider.

- [Rightsizing analysis for AWS](#)
- [Rightsizing analysis for Microsoft Azure](#)
- [Rightsizing analysis for Google Cloud](#)

## Recommendations

The Cloud Cost Management application can generate recommendations for Virtual Machines (AWS, Azure, GCP), SQL Databases (Azure, GCP), and RDS Databases (AWS). CPU, memory, and network usage metrics are used to generate database rightsizing recommendations for the database resources.

The Cloud Cost Management application generates recommendations for storage volumes for AWS and Azure providers:

- Cloud category - AWS Elastic Block Store for Storage Volumes: Service category is storage.
- Cloud category - Azure Disk for Storage Volumes: Service category is storage.

## Confidence levels in recommendations

Each recommendation that the system makes to rightsize a resource has an associated confidence level. You consider the confidence level while deciding whether to rightsize a resource. Confidence levels reflect the following factors:

- High confidence requires the following conditions:
  - The system has 10 or more days of usage data for the resource.
  - The current and recommended family/generation are identical.
- Medium confidence requires the following conditions:
  - The system has less than 10 days of usage data for the resource.
  - The current and recommended family/generation are identical.
- Low confidence: The current and recommended family/generation are different.

## Rightsizing analysis for AWS

Cloud Cost Management uses a process that is optimized for each provider. For AWS, Cloud Cost Management compares the calculated potential costs to actual billed costs and then generates recommendations.

## How Rightsizing resources analysis works for AWS

To generate accurate Rightsizing resources recommendations, Cloud Cost Management follows this procedure every time billing data is updated:

- Obtain costs from the updated billing data tables.
- Collect the CPU and memory usage data for each resource for the preceding 14 days.

**i Important:**

- To enable Rightsizing, you must define memory metrics to obtain memory usage data. For more information, see [Define a metric threshold](#).
- Recommendations are generated only for CPU usage data.

- Obtain rates for resource types and sizes from the price sheet data tables.
- If available, obtain percentage discount rates from the discount tables and apply the appropriate discounts to the rates on the price sheet.
- Compare the calculated potential costs to the actual billed costs and then generate recommendations.
  - If the average top 20% of CPU usage is less than 1%, then the resource is recommended for Unused resources processes.
  - If the average top 20% of CPU usage is greater than 1% but less than 40%, then the resource is recommended for Rightsizing processes. The recommended memory size is calculated so that the peak usage during the analysis period would be no more than 80% of the recommended size. For example, a resource currently has 16 GB and the available sizes are 4 GB, 8 GB, and 16 GB. If the resource used a peak of 3.99 GB over the analysis period, then the recommendation would be 8 GB.

**i Important:** If you have installed the Cloud Cost Management Infra Stack application, for AWS Rightsizing recommendations to work accurately, you must use the *GetCostAndUsageWithResources* API to retrieve the cost and usage metrics with resources for your account from your provider (through AWS Portal). For more information, see *GetCostAndUsageWithResources* API Reference topic in the AWS Billing and Cost Management Documentation.

## Resources that aren't considered

Resources with the following AWS attributes aren't considered for Rightsizing recommendations:

- Members of an Auto Scaling group (ASG)
- Burstable
- Not in a VPC
- Not backed by an EBS root volume
- Don't have enhanced network support
- Virtualization type isn't HVM
- Spot instance

## AWS only – Rollback on failed Rightsizing attempts

AWS only: If a Rightsizing action fails, the system immediately performs a rollback to return the resource to its original size, restarts the resource if needed, updates the change request with full details, and updates Rightsizing report data.

**i Note:**

This description of rollback operations applies only to AWS environments. Cloud Cost Management performs rollback operations for AWS environments.

Cloud Cost Management doesn't perform rollback for Microsoft Azure environments. Instead, the Azure Update service performs rollback.

## Rollback operations (AWS only)

In a successful Rightsizing job, the system resizes each resource that has an approved change request. If a resource is in the *ON* state, the process stops the resource, resizes (modifies) it, and then restarts it. If a resource is in the *OFF* state, the process resizes the resource but doesn't start it.

A resource might fail to restart, for example, when the new size would exceed the quota limit for a resource type or for a constrained availability zone.

A Rightsizing job proceeds in batches of resources, grouped by provider/service account/region. If any modified resource in a batch fails to restart, then each resource in the batch is rolled back to its original size and then restarted. The system then updates the change requests for the resources and sets the **Rightsizing recommendation** status on Rightsizing reports to **Failed**.

Resources in a batch that were in the *OFF* state aren't rolled back or marked as failed.

### Rightsizing analysis for Microsoft Azure

Cloud Cost Management uses an optimized Rightsizing process for each provider.

### How Rightsizing analysis works for Microsoft Azure

The Azure Advisor service generates the recommendations that appear in the Rightsizing reports. Cloud Cost Management displays the recommendations that the Azure Advisor service generates. Cloud Cost Management updates the reports whenever billing data is updated.

For details on how the values are generated, see the Azure Advisor documentation at [Microsoft Learn](#).

### Rightsizing analysis for Google Cloud

Cloud Cost Management uses an optimized Rightsizing process for each provider.

### How Rightsizing analysis works for Google Cloud

The Google Cloud compute engine generates the recommendations that appear in the Rightsizing reports. Cloud Cost Management displays the recommendations that the Google Cloud compute engine generates. Cloud Cost Management updates the reports whenever billing data is updated.

For details on how the values are generated, see [Google Cloud documentation](#).

**Note:** The Google Cloud console may show the same resources for both Unused resources and Rightsizing recommendations. If the same resources are displayed, Cloud Cost Management shows the information in Unused resources and excludes it from the Rightsizing recommendations with the reason, Recommendation already present in unused.

### Roles required for Google Insights modules

To get the recommendations from the Google Cloud console and perform start, stop, resize, and delete operations, you need the following roles.

- compute.autoscalers.get compute.autoscalers.list compute.disks.delete
- compute.disks.get compute.disks.getIamPolicy compute.disks.list compute.disks.resize
- compute.disks.update compute.instances.delete compute.instances.getIamPolicy
- compute.instances.setDiskAutoDelete compute.instances.start compute.instances.stop

- compute.instances.update recommender.computeAddressIdleResourceInsights.get
- recommender.computeAddressIdleResourceInsights.list
- recommender.computeAddressIdleResourceRecommendations.get
- recommender.computeAddressIdleResourceRecommendations.list
- recommender.computeDiskIdleResourceInsights.get
- recommender.computeDiskIdleResourceInsights.list
- recommender.computeDiskIdleResourceRecommendations.get
- recommender.computeDiskIdleResourceRecommendations.list
- recommender.computeImageIdleResourceInsights.get
- recommender.computeImageIdleResourceInsights.list
- recommender.computeImageIdleResourceRecommendations.get
- recommender.computeImageIdleResourceRecommendations.list
- recommender.computeInstanceGroupManagerMachineTypeRecommendations.get
- recommender.computeInstanceGroupManagerMachineTypeRecommendations.list
- recommender.computeInstanceIdleResourceRecommendations.get
- recommender.computeInstanceIdleResourceRecommendations.list
- recommender.computeInstanceMachineTypeRecommendations.get
- recommender.computeInstanceMachineTypeRecommendations.list
- recommender.locations.get recommender.locations.list
- resourcemanager.projects.get resourcemanager.projects.list

## Unused resources

The Unused resources feature analyzes usage data to identify resources that are wasting money because they aren't used. Schedule Unused resources jobs to power off or terminate the resources that you specify.

## Recommendations

For AWS and GCP, database recommendations are fetched from the provider. For Azure, Cloud Cost Management generates recommendations for idle databases.

Storage volume recommendations are fetched for AWS, Azure, and GCP from the providers:

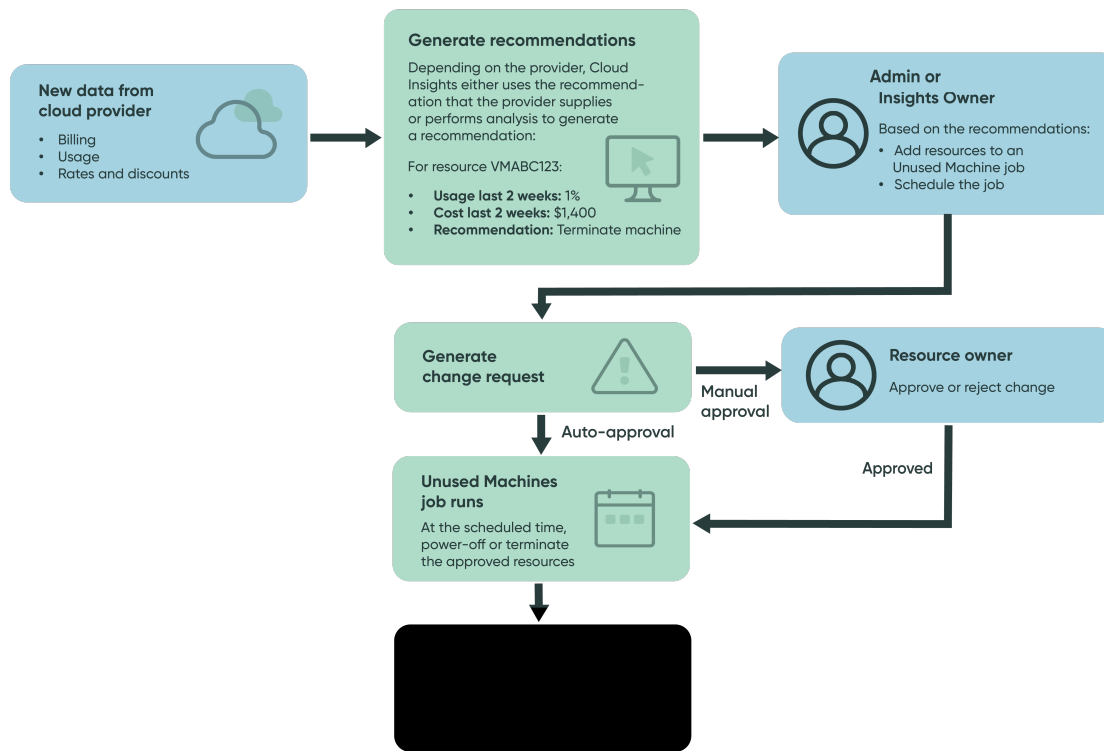
- AWS (AWS Elastic Block Store for Storage Volumes)
- Azure (Azure Disk for Storage Volumes)
- GCP (Persistent Disk for Storage Volumes)

Cloud Cost Management generates aged snapshot recommendations for the following providers:

- AWS (Amazon EBS Snapshot)
- Azure (Azure Snapshot for Storage Snapshots)
- GCP (GCP Snapshot for Storage Snapshots)

## How the Unused resources feature works

### Unused Machines



1. On the Unused resources recommendations page, select the resources to terminate or power off based on your analysis of the recommendations. For more information, see [Manage unused resources](#).
2. Add the resources to an Unused resources job, either a new job or an already-defined job.
3. Specify the date and time for the job to run.
4. Specify the action to take on the selected resources:
  - Power off the resource.
  - Terminate the resource.
  - Terminate the resource and delete storage. Only root or primary storage is deleted.
5. Specify the type of approval required for the specified action. Unused resources operations are directly integrated with the ServiceNow Change Management feature.
  - **Auto-approval:** Generates a Standard Change request and the change request is auto-approved.
  - **Manual approval:** Generates a Normal Change request and the appropriate user approves the change request.
6. Specify the Change template to use when generating the change requests.
7. Save the job.

The system immediately generates the change requests. Later, at the scheduled time, the system runs the job to power off or terminate all resources for which the changes are approved. The instance updates Unused resources reports with new recommendations and with approved, successful, pending, rejected, and failed changes. For resources that failed power off or termination, you can reschedule the resources into another job.

## How Cloud Cost Management generates Unused resources recommendations

Cloud Cost Management uses an optimized process for each provider.

- [Unused resources analysis for AWS](#)
- [Unused resources analysis for Microsoft Azure](#)
- [Unused resources analysis for Google Cloud](#)

### Related topics

[Schedule unused resources to be powered off or terminated](#)

[Change Management](#) 

[Exclude a resource from all Cloud Cost Management reports](#)

### Unused resources analysis for AWS

Cloud Cost Management uses an optimized Unused resources process for each provider. For AWS, Cloud Cost Management compares the calculated potential costs to actual billed costs and then generates recommendations.

### How Unused resources analysis works for AWS

To generate accurate Unused resources recommendations, Cloud Cost Management follows this procedure every time billing data is updated:

- Obtain costs from the updated billing data tables.
- Collect the CPU and memory usage data for each resource for the preceding 14 days.
- Obtain rates for resource types and sizes from the price sheet data tables.
- If available, obtain percentage discount rates from the discount tables and apply the appropriate discounts to the rates on the price sheet.
- Compare the calculated potential costs to the actual billed costs and then generate recommendations.
  - If the average top 20% of CPU usage is less than 1%, then the resource is recommended for Unused resources processes.
  - If the average top 20% of CPU usage is greater than 1% but less than 40%, then the resource is recommended for Rightsizing processes. The recommended memory size is calculated so that the peak usage during the analysis period would be no more than 80% of the recommended size. For example, a resource currently has 16 GB and the available sizes are 4 GB, 8 GB, and 16 GB. If the resource used a peak of 3.99 GB over the analysis period, then the recommendation would be 8 GB.

### Resources that aren't considered

Resources with the following AWS attributes aren't considered for Unused resources recommendations:

- Members of an Auto Scaling group (ASG)
- Burstable
- Not in a VPC
- Not backed by an EBS root volume
- Don't have enhanced network support

- Virtualization type isn't HVM
- Spot instance

### Unused resources analysis for Microsoft Azure

Cloud Cost Management uses an optimized Unused resources process for each provider.

### How Unused resources analysis works for Microsoft Azure

The Azure Advisor service generates the recommendations that appear in the Unused resources reports. Cloud Cost Management displays the recommendations that the Azure Advisor service generates. Cloud Cost Management updates the reports whenever billing data is updated.

For details on how the values are generated, see the Azure Advisor documentation at [Microsoft Learn](#).

### Unused resources analysis for Google Cloud

Cloud Cost Management uses an optimized Unused resources process for each provider.

### How Unused resources analysis works for Google Cloud

The Google Cloud compute engine generates the recommendations that appear in the Unused resources reports. Cloud Cost Management displays the recommendations that the Google Cloud compute engine generates. Cloud Cost Management updates the reports whenever billing data is updated.

- Note:** The Google Cloud console may show the same resources for both Unused resources and Rightsizing recommendations. If the same resources are displayed, Cloud Cost Management shows the information in Unused resources and excludes it from the Rightsizing recommendations with the reason, Recommendation already present in unused.

### Roles required for Google Insights modules

To get the recommendations from the Google Cloud console and perform start, stop, resize, and delete operations, you need the following roles.

- compute.autoscalers.get compute.autoscalers.list compute.disks.delete
- compute.disks.get compute.disks.getIamPolicy compute.disks.list compute.disks.resize
- compute.disks.update compute.instances.delete compute.instances.getIamPolicy
- compute.instances.setDiskAutoDelete compute.instances.start compute.instances.stop
- compute.instances.update recommender.computeAddressIdleResourceInsights.get
- recommender.computeAddressIdleResourceInsights.list
- recommender.computeAddressIdleResourceRecommendations.get
- recommender.computeAddressIdleResourceRecommendations.list
- recommender.computeDiskIdleResourceInsights.get
- recommender.computeDiskIdleResourceInsights.list
- recommender.computeDiskIdleResourceRecommendations.get
- recommender.computeDiskIdleResourceRecommendations.list
- recommender.computeImageIdleResourceInsights.get

- recommender.computeImageIdleResourceInsights.list
- recommender.computeImageIdleResourceRecommendations.get
- recommender.computeImageIdleResourceRecommendations.list
- recommender.computeInstanceGroupManagerMachineTypeRecommendations.get
- recommender.computeInstanceGroupManagerMachineTypeRecommendations.list
- recommender.computeInstanceIdleResourceRecommendations.get
- recommender.computeInstanceIdleResourceRecommendations.list
- recommender.computeInstanceMachineTypeRecommendations.get
- recommender.computeInstanceMachineTypeRecommendations.list
- recommender.locations.get recommender.locations.list
- resourcemanager.projects.get resourcemanager.projects.list

## Business hours

A Business hours job applies policies to identify resources that are running when they should be powered off, reports them, and can start and stop them on a schedule that you specify. Running only during specified business hours can significantly reduce your cloud spend.

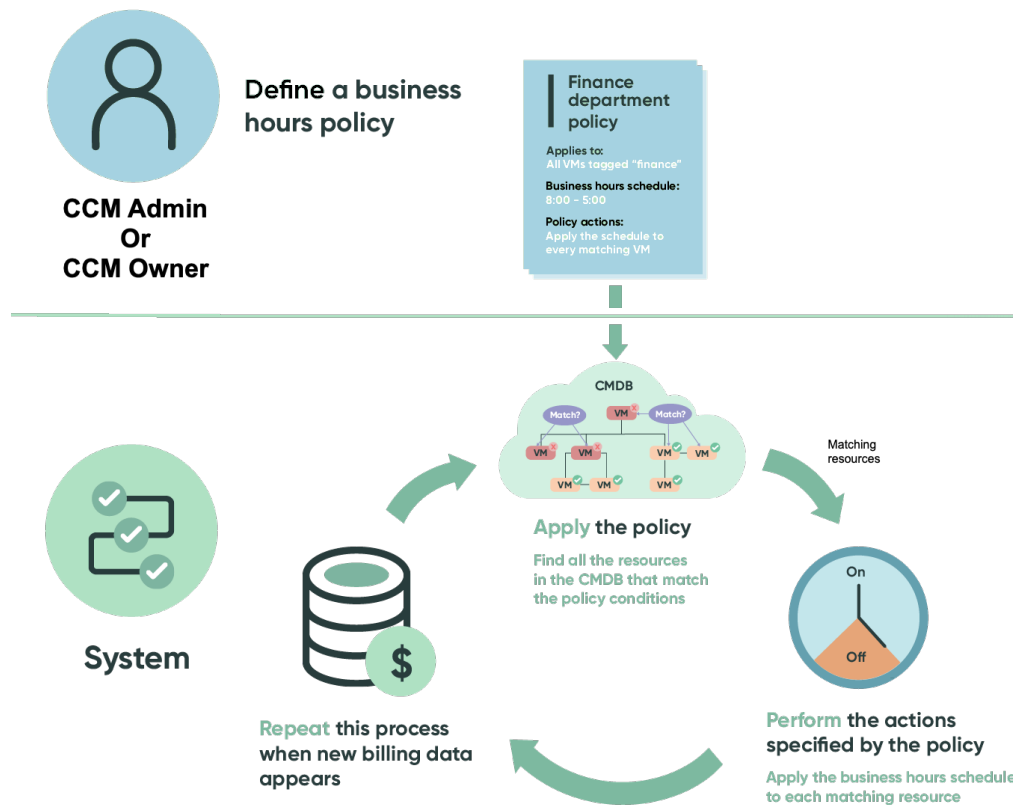
The insights\_admin role can create policies for AWS and GCP databases.

**Note:** Azure only supports compute, not database.

## How the Business hours feature works

Each successful execution of a Billing Download job triggers the Budget Forecast, Business Hours, Reservation Plans, Rightsizing, and Unused resources jobs to analyze the spend and usage data and to update the actionable recommendations in the reports. Business Hours jobs follow this process.

## How the Business Hours feature works



1. For each Business hours policy, examine the CMDB to identify resources that match the policy criteria.
2. For each resource that matches a policy, update Business hours reports that show spend for business hours and non-business hours usage for the last 30 days.
3. Business hours operations are directly integrated with the ServiceNow<sup>®</sup> Change Management feature. For Manual Approval or Auto-approval policy types, generate change requests to enforce the on/off schedule that is defined in the policy. Either of the following, depending on policy settings:
  - Generate a change request for each resource that matches a policy.
  - Generate a single change request that applies to all CIs that match the policy.
4. When a change request is approved, schedule the on/off actions for the associated resources as specified in the policy.
5. Repeat the process whenever billing data is updated.

**i Important:**

AWS only:

- AWS Auto Scaling group (ASG) operations act to maintain minimum capacity for ASG-member resources. To avoid conflicts with ASG operations, the Cloud Cost Management app excludes all instances that are part of an Auto Scaling group from Business Hours operations.
- You can view ASG-member resources on the **Excluded Resources** tab for Business Hours.

Google Cloud only: The instance can be defined as a Managed instance groups (MIGs). MIGs let you operate applications on multiple identical VMs. You can make your workloads scalable and highly available by taking advantage of automated MIG services, including: auto-scaling, auto-healing, regional (multiple zone) deployment, and automatic updating.

## Example: Business hours policy

Policy name:  
**Finance department**

Policy is:  
**Active**

Approval type:  
**Manual approval (Normal change)**

Business hours schedule:  
**8:00 AM to 5:00 PM**

Power-on flow:  
**VM Instance Launch Start**

Power-off flow:  
**VM Instance Launch Stop**

Resource criteria:

**Service Accounts**

Specify the accounts to apply the policy to.

---

Providers

\* Service accounts

**Resources**

Specify the tags that determine which resources match the policy.

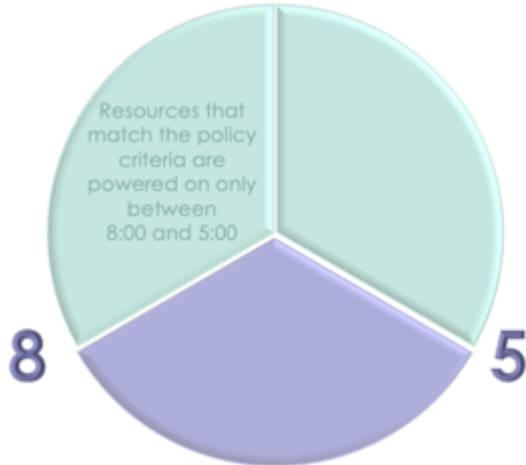
\* This condition must be met

is

The Finance department policy example has the following settings:

- The policy is active, which is applied every time billing and usage data is updated.
- The approval type is Manual approval (Normal Change), which means that, after a qualified user approves the change request, the schedule for resources that match the policy is adjusted.
- The Business hours (on/off) schedule is **ON** from 8:00 AM to 5:00 PM.
- The power-on and power-off flows are specified.
- Only resources that meet the following resource criteria match the policy:
  - The cloud provider is **AWS** and the service account is **Billing 15970**.
  - The resource has a tag with the name *Department* with the value **Finance**.

After the policy is applied, for each resource that matches the policy and where the change request was approved, the system starts the resource at 8:00AM and stops it at 5:00PM. The actual start and stop times vary slightly due to changes in system demand and the time that it takes for the resource to start and stop.



## Business hours approval types

For each resource that matches the policy criteria, the actions that the policy takes depend on the approval type:

### Auto-approval (Standard Change) approval type

- Generate a recommendation to apply the specified business hours and add the resource to the Business hours reports.
- Generate and then auto-approve a change request for the change group.
- Add the resource to the Business hours reports.
- Apply the Business hours schedule to the resource.

### Manual approval (Normal Change) approval type

- Generate a recommendation to apply the specified business hours schedule and add the resource to the Business hours reports.
- Generate a change request for members of the change group.
- Add the resource to the Business hours reports.
- Any member of the group with the sn\_change\_write role can approve the change request.
- When approved, apply the Business hours schedule to the resource.

### Report-only approval type

- Generate a recommendation to apply the specified business hours.
- Add the resource to the Business hours reports.

## Related topics

[Define or update a Business hours policy](#)

[Change Management](#) 

[Exclude a resource from all Cloud Cost Management reports](#)

## Unassigned resources

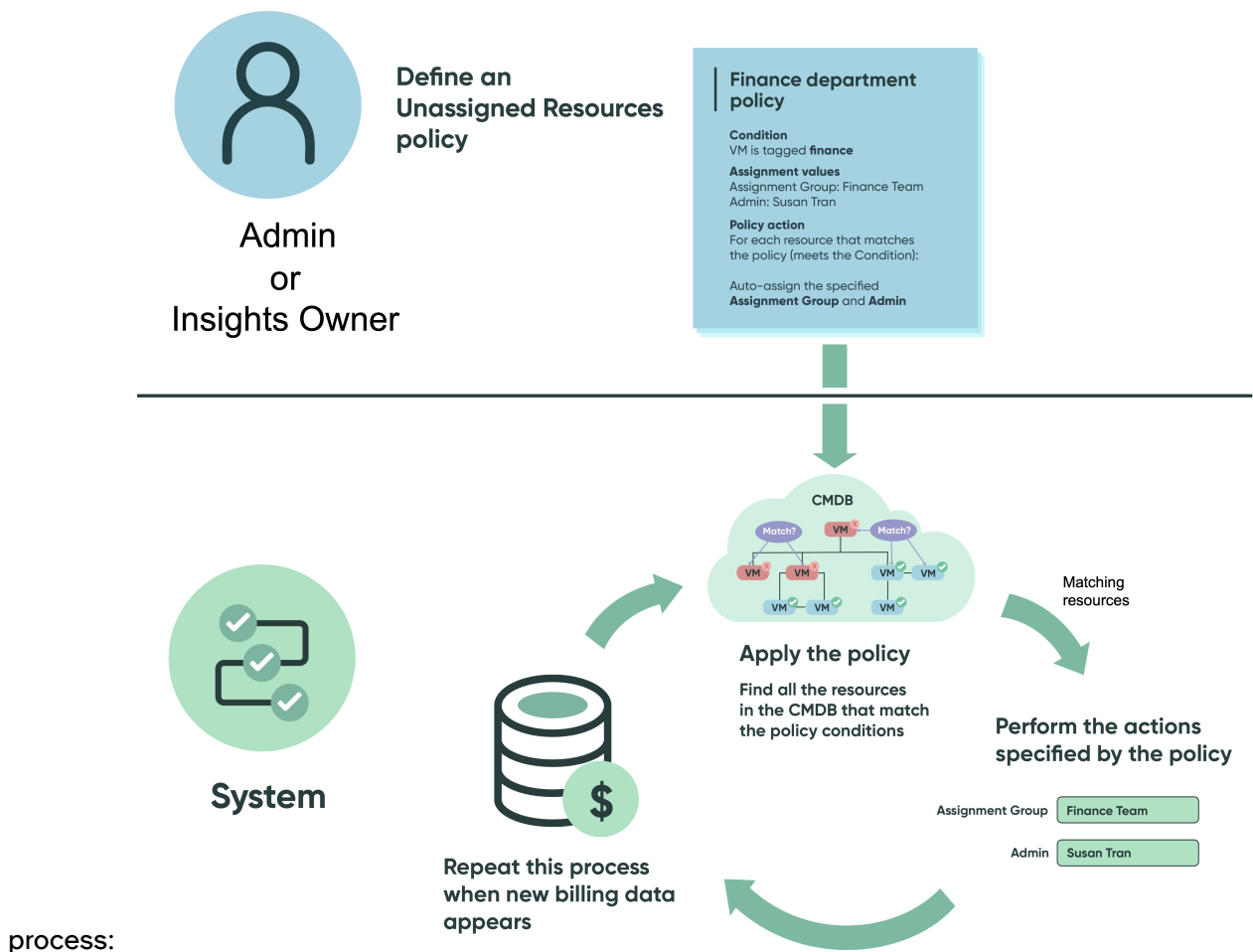
Unassigned resources policies help you to identify the resources that aren't associated with a change group and to assign them appropriately. When a resource is assigned to the correct group, the resource can be appropriately governed even as it goes through stages such as patching, upgrading, and reconfiguring.

The Cloud Cost Management application can generate compute and database recommendations for AWS, Azure, and GCP. The latest data is fetched every day at midnight.

### How Unassigned resources processes work

For cloud billing information to be accurate, it must include all resources in your managed cloud infrastructure. An Unassigned resources policy analyzes all resources to identify resources that aren't assigned to a change group. The policy can then auto-assign the appropriate change group to the resources. Unassigned resources jobs follow this

## Unassigned Resources



### Requirements and limitations

- The Discovery process triggers Unassigned Resources analysis and updates recommendations in reports.
- For AWS, the Unassigned Resources feature supports AWS EC2 instances only.

- Terminated, retired, or canceled resources aren't considered.
- Data appears on reports only when at least one policy is active.

## Cloud budgets

To manage your cloud spend, you can define and monitor custom budget plans. The system compares the plans with billing data to calculate and report on how well budgets are being met. Understanding budget compliance by groups and service accounts can significantly improve oversight and reduce cloud spend.

## How budget analysis works

Each successful Billing download triggers budget refresh automatically. Budget refresh is also triggered manually when a new Budget policy is created.

Budget Forecast jobs use the cost forecast data from the providers and follow this process:

1. Apply each budget plan to billing data. For more information about plans, see are described in [Create or update a budget policy](#).
2. Update all Budget Forecast reports.
3. Repeat the process whenever billing data is updated or a user requests budget reanalysis.

**Note:** If there's a large number of users, the users may not load correctly or may fail to load to the [Budget view](#). See the Knowledge article for more information [KB0866547](#).

## Cloud service categories in Cloud Cost Management

Provider services are grouped into service categories in Cloud Cost Management. This grouping enables you to use filters to focus your analysis on particular types of service.

To perform targeted analysis, you can filter for particular services within a service category. For example, Amazon ElastiCache or Azure Database for PostgreSQL are services in the Database category.

Here are the supported cloud service categories in Cloud Cost Management:

- [Cloud service categories in Cloud Cost Management for Microsoft Azure services](#)
- [Cloud service categories in Cloud Cost Management for Amazon AWS Cloud services](#)
- [Cloud service categories in Cloud Cost Management for Google Cloud services](#)

## Tags and tag categories

Tag categories in the Cloud Cost Management application enable grouping multiple tag names under a single category, making it simpler to track costs against specific business entities. In the provider portal, you can define cost tags to associate resource usage with specific business entities. For example, the `Application`, `Test`, and `QA` tags represent cost centers.

## Overview of tag categories

The Cloud Cost Management application enables you to enhance your cost management capabilities and ensure that the cost reports accurately reflect the business entities. For example, different users might create various tag names like "App", "AppService", and "appl" to represent applications. By creating a tag category named "Application", you can ensure that costs associated with these different tag names are correctly assigned to the application category. You can add multiple tag names to a category during or after its creation. For more information, see [Create and update a tag category](#).

## Key points and considerations

- Tag categories help in organizing and consolidating cost data from different sources.
- Tag categories also enable more accurate cost reporting by grouping related tags together.
- Cost categories are updated with new cost tag values each time billing data is downloaded through a Billing Download job.
- Recent updates to tag category definitions might not be immediately reflected in cost reports.
- To apply the latest tag category definitions to cost data without waiting for the next Billing Download job, you can manually reapply the categories. To reapply tag categories, navigate to *Cloud Cost Management Workspace* > **Operations** > **Cost usage tags** > **Tag categories** > **Reapply tag categories**.

### Related topics

[Create and update a tag category](#)

[List of default tag categories](#)

## Cloud Cost Management Infra Stack

Use the Cloud Cost Management Infra Stack application to process and download billing files with improved data download speed. The Cloud Cost Management Infra Stack application also supports high transaction volumes.

### Overview of the Cloud Cost Management Infra Stack application

The Cloud Cost Management Infra Stack application is an optional plugin that can be installed alongside Cloud Cost Management version 8.1 and later from the ServiceNow Store. Installing this plugin also activates the Glide Fenix (com.glide.fenix) plugin.

**Important:** If you have activated the Cloud Cost Management Infra Stack application, you can't deactivate it later.

Provider specific credential aliases are installed with the base system of the Cloud Cost Management Infra Stack application:

Provider	Credential alias
AWS	ccm_aws_alias
Microsoft Azure	ccm_azure_alias
Google Cloud	ccm_google_alias

For the billing download job to complete successfully, you should map the alias that's applicable to your cloud provider with the corresponding credentials.

### Benefits of the Cloud Cost Management Infra Stack application

The Cloud Cost Management Infra Stack application offers several key benefits for more efficient and effective cloud cost management. These benefits enable organizations to optimize their cloud resources and reduce overall costs.

#### Improved data download speed

The application significantly improves data download speed, which enables faster processing and analysis of billing files.

**Support for high transaction volumes**

It's designed to handle high transaction volumes efficiently, making it suitable for large-scale cloud environments.

**Enhanced performance with Kubernetes**

The application uses a Kubernetes cluster that helps it process billing data quickly and manage complex cloud infrastructures effectively.


**Better cloud cost management**

By providing real-time insights and faster data processing, the Cloud Cost Management Infra Stack application enables organizations to manage their cloud costs effectively and make informed decisions.

**Requirements for processing billing jobs using the Cloud Cost Management Infra Stack application**

The framework of the Cloud Cost Management Infra Stack application enables parallel processing of billing files, resulting in faster download of large files. The application processes billing jobs using a Kubernetes cluster that's outside Cloud Cost Management Glide but within ServiceNow datacenters. By using this framework, the application achieves faster and more efficient billing data processing.

You must fulfill these requirements to process billing jobs.

- Map all the provider-specific credentials of your billing download jobs to the corresponding credential alias. For example, if you have two AWS credentials, map them to `ccm_aws_alias` so that the billing download job completes successfully. For more details on mapping credentials to aliases, see [Credential aliases for Discovery](#) .

**i Note:** If you're upgrading from previous releases to Xanadu (Cloud Cost Management version 10.0) and have installed the Cloud Cost Management Infra Stack application, the mapping of credentials to alias happens automatically for all active billing download jobs. However, for any new job, you should do the mapping manually.

- Make sure to have enough storage on your Cloud Cost Management Glide database for storing the attachments of the AWS billing job with Assume role authentication temporarily until the billing download job is processed. After the job is complete, these temporary attachments are deleted from the Glide database. The storage that you should have depends on the size of data on AWS. For more details, see [Processing AWS billing jobs with Assume role authentication](#).







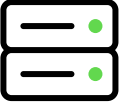


**Configuring Cloud Cost Management**

Plan and configure Cloud Cost Management to gain visibility into your total cloud consumption, reduce costs, and optimize the operations of your cloud platforms.






**Configuration overview**

Here's an overview of the process for configuring Cloud Cost Management.

### Configure Cloud Cost Management

Step	Action	Resource
 Install Cloud Cost Management	Get the Cloud Cost Management application from the <a href="#">ServiceNow Store</a>  .	<a href="#">Install Cloud Cost Management</a>
 Install Cloud Cost Management Infra Stack	Get the Cloud Cost Management Infra Stack application from the <a href="#">ServiceNow Store</a>  . <div style="background-color: #e0f2f7; padding: 10px; margin-top: 10px;"> <p> <b>Important:</b> The Cloud Cost Management Infra stack application is available with Cloud Cost Management version 8.1 and later. Installing the Cloud Cost Management Infra Stack application is optional. However, if you've activated this application, you can't deactivate it later.</p> </div>	<a href="#">Install Cloud Cost Management Infra Stack</a>
 Assign roles	Assign Cloud Cost Management roles to user groups and to individual users based on user activities and responsibilities.	<a href="#">Cloud Cost Management roles</a>
 Install MID servers	Install the MID servers to enable the movement of data between the Discovery application and your cloud platform.	<a href="#">Installing the MID Server</a> 
 Configure MID Servers	Configure the MID Servers for enabling the Discovery application to communicate with your cloud provider accounts.	<ul style="list-style-type: none"> <li>• <a href="#">Configuring access to CI data on your AWS account</a></li> <li>• <a href="#">Configuring access to CI data on your Microsoft Azure account</a></li> <li>• <a href="#">Configuring access to CI data on your Google Cloud account</a></li> </ul>

**Configure Cloud Cost Management (continued)**

Step	Action	Resource
 <p>Discover your cloud resources</p>	<p>Discover the service accounts, the credentials for accessing the accounts, and the MID Servers that scan the resources using one of the mentioned approaches.</p>	<ul style="list-style-type: none"> <li>• <a href="#">Using the Cloud Discovery application</a></li> <li>• <a href="#">Using the Service Graph Connectors</a> <a href="#">↗</a></li> </ul>
 <p>Schedule and manage jobs to download billing data for Cloud Cost Management</p>	<p>Provide the Cloud Cost Management application access to the billing and usage data of the used cloud platforms.</p>	<ul style="list-style-type: none"> <li>• <a href="#">Set up access to AWS billing and usage data</a></li> <li>• <a href="#">Set up access to Microsoft Azure billing and usage data</a></li> <li>• <a href="#">Set up access to Google Cloud billing and usage data</a></li> </ul>
 <p>Schedule and manage jobs to download price sheets for Cloud Cost Management</p>	<p>Enable Cloud Cost Management to download and store price sheet data of the used cloud platforms.</p>	<ul style="list-style-type: none"> <li>• <a href="#">Schedule and manage the Cloud Cost Management jobs that download AWS price sheets</a></li> <li>• <a href="#">Schedule and manage the Cloud Cost Management jobs that download Microsoft Azure price sheets</a></li> <li>• <a href="#">Schedule and manage the Cloud Cost Management jobs that download Google Cloud price sheets</a></li> </ul>
 <p>Configure the Cloud Cost Management features</p>	<p>Configure the Cloud Cost Management features to rightsize, identify, assign, manage, and analyze usage data of your cloud resources.</p>	<ul style="list-style-type: none"> <li>• <a href="#">Reservation or Saving plans</a></li> <li>• <a href="#">Rightsizing resources</a></li> <li>• <a href="#">Unused resources</a></li> <li>• <a href="#">Business hours</a></li> <li>• <a href="#">Unassigned resources</a></li> </ul>
 <p>Use Cloud Cost Management</p>	<p>Gain visibility into your total cloud consumption, reduce costs, and optimize operations of your cloud platforms.</p>	<p><a href="#">Using Cloud Cost Management</a></p>

## Install Cloud Cost Management

You can install the Cloud Cost Management application (sn\_clin) if you have the admin role. The application includes demo data and installs related ServiceNow® Store applications and plugins if they aren't already installed.

### Before you begin

- Ensure that the application and all of its associated ServiceNow Store applications have valid ServiceNow entitlements. For more information, see [Get entitlement for a ServiceNow product or application](#).
- Review the [Cloud Cost Management](#) application listing in the ServiceNow Store for information on dependencies, licensing or subscription requirements, and release compatibility.
- Discovery (com.snc.discovery) and Discovery and Service Mapping Patterns (sn\_itom\_pattern) must be installed.

Role required: admin

### About this task

The following items are installed with Cloud Cost Management:

- Plugins
- Store applications
- Roles
- Scheduled jobs
- Tables

For more information, see [Components installed with Cloud Cost Management](#).

### Procedure

**1.** Navigate to **All > System Applications > All Available Applications > All**.

**2.** Find the Cloud Cost Management application (sn\_clin) using the filter criteria and search bar.

You can search for the application by its name or ID. If you can't find the application, you might have to request it from the ServiceNow Store.

In the list next to the **Install** button, the versions that are available to you're displayed.

**3.** Select a version from the list and select **Install**.

In the Review Installation Details dialog box, any dependencies installed with your application are listed.

**4.** If you're prompted, follow the links to the ServiceNow Store to get any additional entitlements for dependencies.

**5. Optional:** If demo data is available and you want to install it, select the **Load demo data** check box.

Demo data comprises the sample records that describe application features for the common use cases. Load the demo data when you first install the application on a development or test instance.

**i Important:**

- If you don't load the demo data during installation, it's unavailable to load later.
- If you install demo data, Cloud Cost Management features might not work properly.

**6. Select *Install*.****Install Cloud Cost Management Infra Stack**

You can install the Cloud Cost Management Infra Stack application (sn\_cld\_infra\_stack) if you have the admin role. The application includes installs related ServiceNow® Store applications and plugins if they are not already installed.

**Before you begin**

- Ensure that the application and all of its associated ServiceNow Store applications have valid ServiceNow entitlements. For more information, see [Get entitlement for a ServiceNow product or application](#).
- Review the Cloud Cost Management Infra Stack application listing in the ServiceNow Store for information on dependencies, licensing or subscription requirements, and release compatibility.

Role required: admin

**About this task**

The following items are installed with Cloud Cost Management Infra Stack:

- Plugins
- Store applications

The tables, scheduled jobs, and system properties aren't installed with the Cloud Cost Management Infra Stack application. Instead, the components specific to Cloud Cost Management Infra Stack are installed with the Cloud Cost Management application. For more information, see [Components installed with Cloud Cost Management](#).

**Procedure**

1. Navigate to **All > System Applications > All Available Applications > All**.
2. Find the Cloud Cost Management Infra Stack application (sn\_cld\_infra\_stack) using the filter criteria and search bar.

You can search for the application by its name or ID. If you can't find the application, you might have to request it from the ServiceNow Store.

In the list next to the **Install** button, the versions that are available to you are displayed.

3. Select a version from the list and select **Install**.

In the Review Installation Details dialog box, any dependencies installed with your application are listed.

4. If you're prompted, follow the links to the ServiceNow Store to get any additional entitlements for dependencies.
5. Select **Install**.

## Upgrade Cloud Cost Management

You upgrade Cloud Cost Management on the System Applications page.

### Before you begin

Role required: sys\_admin

### Procedure

1. Navigate to **System Applications > All Available Applications > Installed**.
2. In the search box, enter `sn_clin`.
3. Find the **Cloud Cost Management** app.
4. In the selection list, select **Update** for version **8.0**.  
You can also update to the 8.0 version from 5.0.0 onwards.
5. When the update is complete, clear the browser cache.
6. Clear the server cache: `<instanceIP>/cache.do`
7. Perform the Automatic Test Framework (ATF) tests to ensure data continuity after the upgrade.  
See [Run the Automatic Test Framework \(ATF\) tests](#).

### Run the Automatic Test Framework (ATF) tests

Run the ATF tests to ensure data continuity after upgrading Cloud Cost Management.

### Before you begin

Role required: sys\_admin

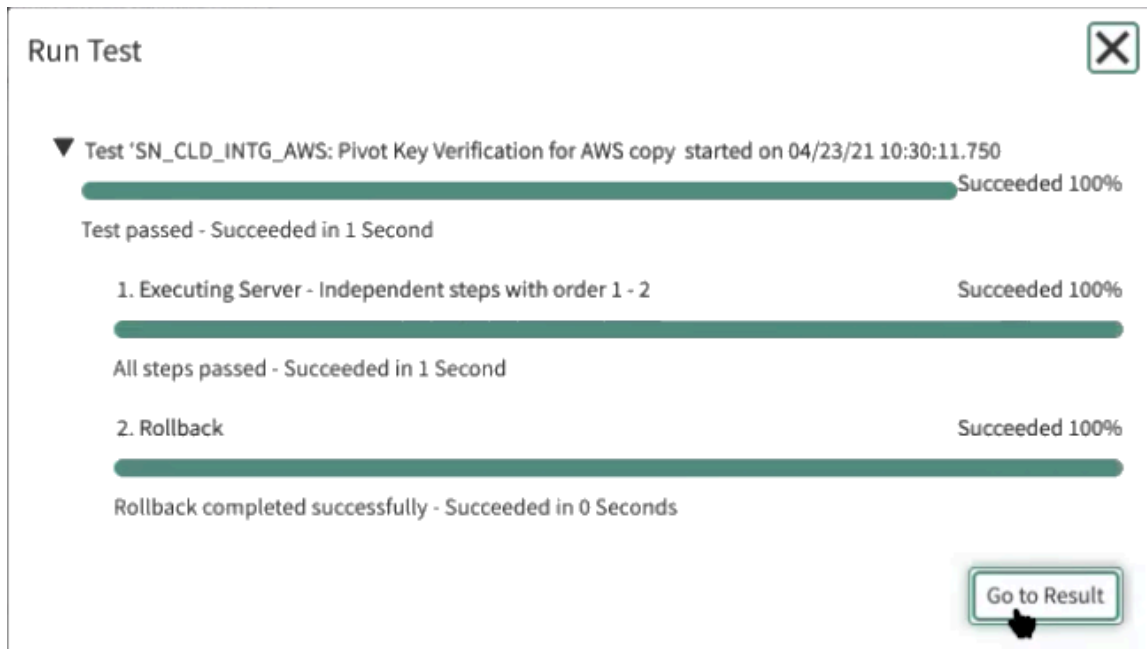
### About this task

In this procedure, you run the following tests after upgrading Cloud Cost Management:

- The Pivot Key Verification test determines whether Cloud Cost Management can correctly calculate the pivot key using pulled data to access the data on the Clotho server.
- The Monthly Spend Validation test determines whether monthly spend data has been correctly carried forward.

### Procedure

1. Navigate to **All > Automated Test Framework (ATF) > Tests**.
2. In the list, search for `Pivot Key Verification` and open the test for your provider.  
A template for the test opens on the Test form.
3. On the Test form, select **Copy Test** and then select **OK** to confirm.  
The system generates the test that you run and opens it on the **Test** form.
4. **Optional:** To customize the test, select **Run Server Side Script** in the **Test Steps** related list and edit the script.
5. Select **Run Test**.  
The Run Test progress dialog box appears.



**6. When the test finishes, select **Go to Result**.**

The **Test Results** related list on the Test form lists logs data for the test execution. If the test fails, contact Customer Support.

**7. Repeat the full procedure for the **Monthly Spend Validation** test.**

## Configure Cloud Cost Management for AWS

The Cloud Cost Management application is available on the ServiceNow Store.

For more information, see [Configuring Cloud Cost Management](#).

### General requirements and limitations

- Cloud Cost Management isn't supported on mobile devices.
- Values in reports might vary slightly from provider billing values due to currency conversion or rounding.

### Requirements and limitations for AWS

- You must have AWS administrator permissions to work in the AWS Management console.
- The Business hours, Unassigned resources, Unused resources, and Rightsizing recommendations features support Amazon Elastic Compute Cloud (EC2) virtual machine (VM), storage (volume and storage snapshots), and database resources.

### Configuring access to CI data on your AWS account

To ensure secure and reliable communications, the Discovery process communicates with your cloud provider accounts and cloud resources through one or more MID Servers. You can set up the MID Servers on your network or in one of your cloud networks.

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

## Requirements

**i Important:** This configuration process applies only if you use the Discovery application to discover cloud resources. Skip this process if you use a different method for discovering resources.

AWS: There must be an internal network connection between the MID Servers and the AWS Cloud API endpoints: *\*.amazonaws.com*.

## Detailed instructions

See [Amazon AWS Cloud Discovery](#).

## MID Server settings for Cloud Cost Management

**i Note:** MID Server minimum memory size should be 4 GB.

Setting	Value
Supported Applications	Cloud Actions
Capabilities	<p>The <b>ALL</b> setting includes all required applications and capabilities. Alternatively, you can specify the following settings:</p> <p><b>i Note:</b> You can specify the following settings for any number of MID Servers. If you specify multiple MID Servers, then Discovery, billing data download operations, and actions that are recommended by Cloud Cost Management are assigned to one of the MID Servers at random.</p> <p>Option 1: To use this MID Server only for AWS, specify both of the following values:</p> <ul style="list-style-type: none"> <li>• Cloud Actions</li> <li>• AWS</li> </ul> <p>Option 2: To use this MID Server for all providers, specify the following values:</p> <ul style="list-style-type: none"> <li>• Cloud Actions</li> <li>• AWS</li> <li>• Azure</li> </ul>

## Using a proxy server

You can use a proxy server for the Cloud Cost Management MID Server. See [Proxy server configuration for your Cloud Cost Management MID Server](#).

**Related topics**

- [MID Servers](#)
- [Install a MID Server on Windows](#)
- [Install a MID Server on Linux](#)

**Proxy server configuration for your Cloud Cost Management MID Server**

You can configure any MID Server to use a proxy server for Cloud Cost Management operations. Proxy servers support all cloud-based activities such as running Discovery, Billing Download jobs, and Price Sheet Download jobs.

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

**Detailed instructions**

[Proxy server configuration for MID Servers used for Cloud Discovery and Cloud Provisioning and Governance](#)

**Proxy server limitations**

- Only Windows or Linux platforms are supported.
- The Google Cloud integration is not supported.
- The VMware integration is not supported.
- Remote PowerShell scripts cannot be executed.
- Custom APIs might not work.

**Supported proxy server authentication for Cloud Cost Management**

Proxy Server type	Authentication type
HTTP/HTTPS	No authentication
SOCKS5	No authentication
HTTP/HTTPS	Basic authentication
SOCKS5	Basic authentication
HTTP/HTTPS	NTLM

**Supported Proxy server configurations**

**Supported configuration settings**

Configuration	Operating system	Proxy server	Authentication mode
Configuration 1	Linux	None	Not Applicable
Configuration 2	Windows	Squid (HTTPS)	None
Configuration 3	Linux	Squid (HTTPS)	Local
Configuration 4	Windows	Squid (HTTPS)	Active Directory

**Related topics**

- [MID Servers](#)
- [Install a MID Server on Windows](#)
- [Install a MID Server on Linux](#)

**Add an AWS service account**

Add an AWS service account to store the credential and access information.

**Before you begin**

Role required: sn\_clin\_core.insights\_admin

Set up download jobs for billing and price sheet data for the service account.

[Configure the MID Server for AWS IAM role](#).

**About this task**

A service account is a secure record on your instance that stores the credential and access information for your provider account. Discovery uses the information to access your provider account to get data on each resource in each specified datacenter. A cloud account can include multiple service accounts and even service accounts from different providers. For each service account, you specify which datacenters to include in the cloud account.

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Service accounts**.
2. Select **New**.
3. On the form, fill in the fields.

**Cloud Service Account**

Field	Description
Name	Unique and meaningful name for this service account.
Account Id	12-digit user account number. Expand the list under the AWS account name on the AWS Management Console to view the number.  <div style="background-color: #e1f5fe; padding: 5px; border: 1px solid #cfcfcf;"> <p><b>Important:</b> Remove the hyphen characters (-) from the number.</p> </div>
Discovery credentials	The credentials needed for ServiceNow applications to access this account. You may configure this field at a later stage, while configuring access to AWS accounts. <ul style="list-style-type: none"> <li>○ If you configured AWS credentials at ServiceNow AI Platform, select the name of the relevant AWS credential.</li> <li>○ To use other AWS accounts to access this account, leave the field empty. For example, you don't need to specify the</li> </ul>

Field	Description
	AWS credentials for accounts assuming IAM roles or member accounts using their management account for access.
Datacenter URL	URL of the datacenter.  This field is required only for AWS GovCloud (US) accounts. For example, <code>https://ec2.us-gov-west-1.amazonaws.com/</code> .
Datacenter Type	Type of the datacenter where the account is hosted.  Select <b>AWS datacenter</b> .
Datacenter discovery status	Status and timestamp of the last execution of Discovery on the datacenter.  This value is generated automatically.
Is Billing Account	Option for enabling the account to access billing data.

**4. Select Save.**

**Result**

The service account that you created gets listed on the **Service accounts** page.

**Related topics**

[Schedule and manage the jobs that download AWS billing data](#)

[Schedule and manage the Cloud Cost Management jobs that download AWS price sheets](#)

**Create an AWS IAM user policy for Cloud Cost Management**

If you manage users with IAM, you must create an IAM user profile that enables access to AWS data.

**Before you begin**

You must know how to create an IAM user and set up a user policy. See the [AWS documentation on IAM](#) for details.

Use an auto-generated access key. You need the key information when you configure AWS credentials in the instance.

Roles required:

On the AWS Management Console: AWS Management Console administrator.

Cloud Cost Management: `insights_admin [sn_clin_core.insights_admin]` or `admin`.

**About this task**

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

## Procedure

1. Log in to the AWS Management Console and create a user in IAM.
2. Save the Access Key ID and Secret Access Key.
3. Attach permissions to the IAM user using either of the following methods:
  - Grant administrator access to the user by attaching the Administrator Access policy.
  - Create an IAM policy with a descriptive name and use the following JSON for billing, cloud watch, forecast, and actions.

### Billing

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "VisualEditor0",
      "Effect": "Allow",
      "Action": [
        "s3:GetObjectVersion",
        "s3:GetObjectTorrent",
        "s3:GetObject",
        "s3:ListBucket",
        "s3:GetObjectTagging",
        "s3:ListMultipartUploadParts",
        "s3:ListBucketMultipartUploads",
        "s3:GetObjectVersion"
      ],
      "Resource": [
        "arn:aws:s3:::<S3BucketName>/*",
        "arn:aws:s3:*:<AWS Master Account ID>:job/*",
        "arn:aws:s3:::<S3BucketName>"
      ]
    },
    {
      "Sid": "VisualEditor1",
      "Effect": "Allow",
      "Action": [
        "s3:GetAccountPublicAccessBlock",
        "s3:ListAllMyBuckets",
        "s3:ListJobs"
      ],
      "Resource": "*"
    }
  ]
}
```

### Cloud watch

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "VisualEditor0",
      "Effect": "Allow",
      "Action": [
        "cloudwatch:GetMetricData",

```

```

        "cloudwatch:ListMetrics"
      ],
      "Resource": "*"
    }
  ]
}

```

### Describe Report Definitions

```

{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "VisualEditor0",
      "Effect": "Allow",
      "Action":
        "cur:DescribeReportDefinitions",
      "Resource": "<BillingReportName>"
    }
  ]
}

```

### Actions

```

{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "VisualEditor0",
      "Effect": "Allow",
      "Action": [
        "ec2:DescribeInstances",
        "ec2:StartInstances",
        "ec2:ModifyInstanceAttribute",
        "ec2:StopInstances",
        "ec2:DescribeInstanceStatus"
      ],
      "Resource": "*"
    }
  ]
}

```

**Use this policy to grant access to AWS Cost Explorer, Forecast, and Reservation Purchase Recommendation APIs for the IAM user that you configure to access billing data on the Service account**

```

{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "VisualEditor0",
      "Effect": "Allow",
      "Action": [
        "ce:GetCostAndUsage",
        "ce:GetCostForecast",
        "ce:GetReservationPurchaseRecommendation"
      ],
      "Resource": "*"
    }
  ]
}

```

```

    }
  ]
}

```

**Use this policy to get AWS Auto-scale instances (Auto-scale instances aren't included in Business Hours recommendations)**

```

{
  "Version": "2012-10-17",
  "Statement": [{
    "Sid": "VisualEditor0",
    "Effect": "Allow",
    "Action": [
      "autoscaling:DescribeAutoScalingInstances",
      "autoscaling:DescribeAutoScalingGroups"
    ],
    "Resource": "*"
  }]
}

```

### Add an AWS GovCloud service account

A cloud\_admin can add an AWS GovCloud service account. Be sure to set up download jobs for billing and price sheet data for the service account.

### Before you begin

Role required: sn\_cmp.cloud\_admin

### About this task

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

### Procedure

Follow the instructions at [Create a service account for AWS GovCloud](#).

### Related topics

[Schedule and manage the jobs that download AWS billing data](#)

[Schedule and manage the Cloud Cost Management jobs that download AWS price sheets](#)

### Create AWS Gov accounts mapping

Create an AWS GovCloud account mapping with an associated standard AWS account for billing and support.

### Before you begin

Role required: sn\_cmp.cloud\_admin

### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **AWS Gov account mappings**.
2. Select **New**.
3. On the form, fill in the fields.

### AWS Gov Accounts Mapping

Field	Description
Gov account	The AWS Gov account that you want to map to the standard AWS account.
Linked account	Standard AWS account that you want to link to the AWS Gov account.

4. Select **Save**.

#### Result

The mapping you created gets displayed on the AWS Gov account mapping page with details such as Sys ID, tags.

#### Set up access to AWS billing and usage data

Set up access to AWS billing and usage data by following the steps.

1. [Create AWS credentials](#)
2. [Create a record of AWS credentials in Cloud Cost Management](#)
3. [Enable cost allocation in AWS for Kubernetes cluster](#)
4. [Schedule and manage the jobs that download AWS billing data](#)
5. [Add an AWS CI class type to ensure accurate billing data](#)

#### Related topics

[Cancel an AWS Billing download job](#)

#### Create AWS credentials

Create credentials in the AWS Management Console to specify the credentials of the user when you configure the MID Servers that communicate with your AWS account.

#### Before you begin

Role required: AWS Management Console administrator

You should be familiar with AWS policies. If you use IAM, you must know how to create an IAM user and set up a user policy. For more information about IAM, see [AWS documentation](#).

#### Procedure

1. On the AWS Management Console, enter IAM in the AWS services search box to open the Identity and Access Managements (IAM) service.
2. On the IAM Resources portal, select **Users**.
3. Select **Add user**.
4. On the Details page, configure the user settings as shown and then select **Next**.

Field	Value
User name	Name for the programmatic user, for example, servicenowcloud.
Access type	Programmatic access.

5. On the Permissions page, configure the following settings and then select **Next**.

Field	Value
Set permissions for <username>	Attach existing policies directly.
Attach one or more policies	<p>The appropriate policy.</p> <p><b>Note:</b> The AdministratorAccess policy has the most powerful permission level, including permission to provision cloud resources.</p> <p>You might instead prefer to create a policy or combine multiple policies to grant the appropriate permission level. For more information, see <a href="#">Create an AWS IAM user policy for Cloud Cost Management</a>.</p>

6. On the Review page, verify your selections and then select **Create user**.

7. On the Complete page, select **Download .csv** to save a CSV backup file that contains the username, Access key ID, and the Secret access key value.

You can create the file as a backup in case that you lose those values. Verify that the file was created and then store the file securely.

**What to do next**

Create a record of the AWS credentials in Cloud Cost Management.

**Create a record of AWS credentials in Cloud Cost Management**

Create a record of the AWS credentials in Cloud Cost Management.

**Before you begin**

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or admin

**Procedure**

1. Navigate to **Cloud Cost Management Workspace > Operations > Administration > Credentials**.
2. On the Cloud API credentials page, select **AWS credentials**.
3. Select **New**.
4. On the form, fill in the fields.

**AWS Credentials**

Field	Description
Name	Unique and descriptive name for the AWS credentials.
Active	Option to use the credential.
Access Key ID	The Access key ID that you generated on the AWS Management Console.

Field	Description
Secret Access Key	The Secret access key that you generated on the AWS Management Console.

## 5. Select **Save**.

### Enable cost allocation in AWS for Kubernetes cluster

Enable cost allocation for a Kubernetes cluster in AWS Management Console before you run a AWS Billing download job to view the Kubernetes spend.

#### Before you begin

Role required: AWS Management Console administrator

- You should be familiar with AWS policies.
- Install Discovery and Service Mapping Patterns application (sn\_itom\_pattern) 1.10.2 or higher. For more information, see [Install Discovery and Service Mapping Patterns](#).
- Install CMDB CI Class Models (sn\_cmdb\_ci\_class) version 1.53.1 or higher. For more information, see [CMDB CI Class Models](#).
- To set up Kubernetes discovery, see [Kubernetes discovery using patterns](#).

#### Procedure

1. Log in to the [AWS Management Console](#).
2. Search for and select **Cost Allocation Tags**.
3. Select the **User-defined cost allocation tags** tab.
4. Activate the following Kubernetes tags to appear in the billing data:
  - Static Tag key
    - aws:eks:cluster-name
    - user:eks:cluster-name
    - eks:cluster-name
  - Dynamic Tag key
    - kubernetes.io/cluster/<Cluster-Name>: shared/owned
    - alpha.eksctl.io/cluster-name: <Cluster-Name>

#### Result

The cost allocation for the selected Kubernetes cluster is enabled and you can view the Kubernetes spend.

### Schedule and manage the jobs that download AWS billing data

Billing Download jobs download, organize, and store billing data for your payer account on the schedule that you specify. The system analyzes the data to generate reports and to make recommendations for changes in your cloud operations that can lead to cost savings.

#### Before you begin

Role required: Cloud Integrations Admin [sn\_cld\_intg\_core.cloud\_integrations\_admin]

Ensure that your system has 8 GB Clotho memory and 4 GB mid memory.

Enable cost allocation for each Kubernetes cluster before you run an AWS Billing download job to view the Kubernetes spend. For more information, see [Enable cost allocation in AWS for Kubernetes cluster](#).

## About this task

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

During billing download, all the resources are pulled into the system. AWS Redshift resources are placed in the [cmdb\_ci\_cloud\_database] table. After the 4.0 upgrade, make sure that the billing download is executed with `reimport true`.

**i Note:** From Cloud Cost Management version 8.1 onwards, the default time for billing download jobs has changed from 12:00 to 01:00 (UTC). Also, schedule or run Cloud Cost Management jobs only during off-business hours and when there's no other heavy operations or jobs running on the ServiceNow instance.

If you have installed the Cloud Cost Management Infra Stack application, then toward the end of a job, significant database update, and insert operations are performed based on your Cloud CIs and spend data volume. Thus, any other job that impacts database performance shouldn't be run during this time alongside Cloud Cost Management jobs.

If you have installed the Cloud Cost Management Infra Stack application, then toward the end of a job, significant database update, and insert operations are performed based on your Cloud CIs and spend data volume. Thus, any other job that impacts database performance shouldn't be run during this time alongside Cloud Cost Management jobs.

- Billing Download jobs can't be in the Global scope.
- If the Cloud Provisioning and Governance application is installed on your instance: Both Cloud Provisioning and Governance and Cloud Cost Management download billing data. The two download jobs are separate processes and they don't interfere with each other.
- You can create only one Billing Download job for each account (enrollment).
- Configure AWS Billing download for the main account otherwise the spend doesn't generate.
- To ensure accurate reporting and recommendations for some providers, make sure that Discovery runs before the scheduled execution.
- Each successful execution of a Billing Download job triggers the Budget Forecast, Business hours, Reservation/saving plans, Rightsizing, and Unused resources jobs to analyze spend and usage data and to update the actionable recommendations in reports.
- Each successful execution of a Billing Download job updates tagged costs. Recent updates that you make to tag category definitions (for example, adding a tag name to a category) might not be reflected in cost reports. To apply the latest tag category definitions to cost data without running a Billing Download job, select *Cloud Cost Management Workspace > Operations > Cost usage tags > Tag categories* and then select **Re-Apply Categories**.
- When the scheduled time arrives, job execution happens in multiple stages (for example, connect to the provider, download the data, perform the post-import sort, and so on). The system logs status and results on the Price Sheet Executions page for each stage.
- Cost categories are updated with new cost tag values each time billing data is downloaded. (You define cost tags in the provider portal to associate usage data with a particular business entity. For example, the Cost Center category might include the tags `development`, `testing`, and `QA`. The User category might include the names of your users.)
- Billing data is downloaded in reverse chronological order by month. For example, if the range is from March to June, data for June is downloaded first.

- To ensure meaningful results for the first billing data download, the app downloads data for at least 30 days. For example, if today is June 10 and you specify June for download, the system downloads data for both May and June to ensure at least 30 days of data for analysis.
- You can download data only for the most recent twelve months.

For AWS.

- You can create only one Billing Download job for each service account.
- Only costs of the unblended type are supported.
- The Billing Download job updates the billing node data table [sn\_cld\_intg\_aws\_cost\_usage] with the CIs in the CMDB that correspond to each resource ID.
- The CI placement process associates downloaded cost and usage data with the appropriate CIs in the CMDB. See [Add an AWS CI class type to ensure accurate billing data](#) for details.

## Procedure

1. Review the settings to verify that the settings on the report meet the requirements for Cloud Cost Management when you have an existing AWS Cost and Usage Report (CUR).
2. On the AWS Management Console, define an AWS CUR as follows:

**Note:** You must configure Legacy CUR because Cloud Cost Management supports the legacy version only.

- a. Follow the instructions in the [Creating Cost and Usage Reports](#) topic and use the following settings:
  - Select the **Include resource IDs** check box.
  - Select the **Automatically refresh your Cost and Usage Report when** check box.
  - Report path prefix: optional
  - Set **Time granularity** to either **Daily** or **Hourly** as needed. The **Hourly** setting generates a larger, more granular data set.
  - Set **Report versioning** to **Create new report version**.
  - Set **Compression type** to **GZIP** or **ZIP**. Cloud Cost Management doesn't support Parquet.
- b. Track the following values because you enter them into a Cloud Cost Management form in a moment.
  - Report name
  - Report prefix
  - Name of the S3 bucket that is the data storage area for the daily detailed billing records on the AWS account.

3. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Billing download jobs**.

4. Select the **AWS** tab.

5. Select **New**.

6. On the form, fill in the fields:

### AWS Billing Download Job

Field	Description
Name	Meaningful name for the scheduled execution of the Billing Download job.
Last successful execution	The timestamp of the most recent successful execution.
Notify users/groups	<p>The users or groups to be notified by email about the status of the job execution (for example, download failure). The system doesn't send a notification for success.</p> <p>Users or groups with the Cloud Integrations Admin [sn_cld_intg_core.cloud_integrations_admin] role are well suited to handle these issues.</p> <p>To update the email template, navigate to <b>System Notification &gt; Email &gt; Notifications</b> and open the Notify on billing job execution error template. For information on configuring the email, see <a href="#">Create an email template</a>.</p>
Active	Option for activating the job. Only active jobs are executed.
Run	<p>Frequency with which to execute the Billing Download job.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>For AWS, Billing Download jobs collect data once per day, even if AWS collects hourly usage data.</li> <li>Depending on the value that you select, additional fields appear.</li> </ul> <p>This field is automatically set to <b>Daily</b>.</p>
Time	Time of day to execute the job.
Latest execution status	The status of the most recently executed job.
Latest execution details	Execution details of the most recently executed job.
<b>AWS Settings</b>	
Service account	The AWS service account.
Bucket	Amazon S3 bucket that is the data storage area for the detailed hourly billing records on the AWS account.
Report name	The report-name value that appears in your AWS Cost and Usage Report.

Field	Description
Report prefix	The report - prefix value that appears in your AWS Cost and Usage Report.

7. Select **Save**.

8. On the **Billing download jobs** page, select the created job.

9. Select **Test connection**.

The Test Connection workflow uses the settings that you configured to attempt to access the provider account. The system displays a progress pop-up and a success/error message that suggests actions to fix the configured settings.

10. Select **Execute now** to execute the job after the connection succeeds.

11. In the **Download billing data** dialog box, fill in the fields.

Field	Description
Start month	Starting month for downloading the billing data.  <b>Note:</b> Data is downloaded for the specified months. If fewer than 30 days of data for analysis is received, data for the preceding month is also downloaded.
End month	Ending month for downloading the billing data.
Re-import data	Option for overwriting data from an earlier download attempt.

12. Select **Download**.

An AWS billing download job goes through the following states during the job execution:

- a. **Ready:** Job is in queue. For example, when a job is created to download billing data for a few months, the jobs for all months except the latest month are in Ready state.
- b. **Requested:** Job will be fetched and processed immediately. For example, the job that's created to download billing data for a month is in the Requested state. Also, when a job is created to download billing data for more than a month, the latest month job is also in the Requested state.

**Note:** If you have installed the Cloud Cost Management Infra Stack application, it takes some time for the job to change from Ready to Requested state for AWS billing download job with Assume role authentication. This is because it takes time for the files to be downloaded to Cloud Cost Management MID Server. For details, see [Processing AWS billing jobs with Assume role authentication](#).

- c. **Reserved:** Job is picked by the Kubernetes cluster for processing. The Kubernetes cluster also sends the Job Id to Cloud Cost Management Glide to show which Kubernetes job is processing the billing job.

**Important:** This state is applicable only if you have installed the Cloud Cost Management Infra Stack application.

**d. In Progress:** Billing data is being processed.

**e. Sink Begin:** Kubernetes cluster sends some part of the processed billing data to the tables such as Spend Report Daily Aggregate Cost and Spend Report Monthly Aggregate Cost on Cloud Cost Management Glide. The records in these tables are in the Generating state. The job remains in the Sink Begin state until the entire billing data is sent to Cloud Cost Management Glide.

In the Sink Begin state, the CI placement also starts and the Status of the CI Placement Stage changes from Ready to In Progress.

**Important:** This state is applicable only if you have installed the Cloud Cost Management Infra Stack application.

**f. Sink Complete:** All the processed billing data is sent to Cloud Cost Management Glide from the Kubernetes cluster.

**Important:** This state is applicable only if you have installed the Cloud Cost Management Infra Stack application.

**g. Finished:** Status after Sink Complete when all the billing files are sent to the Glide database.

**Note:** The following changes happen when the job is marked Finished:

- The state of the records in the Spend Report Daily Aggregate Cost and Spend Report Monthly Aggregate Cost tables change from Generating to Active. Also, existing records are marked inactive.
- The billing account for which the billing file was downloaded is automatically set as a Master account in the Service Accounts table.

**h. Success:** Job is completed successfully.

## Result

The following events happen when the job executes:

- While downloading the data, Cloud Cost Management updates the billing node data table [sn\_cld\_intg\_<provider>\_cost\_usage] with the CIs in the CMDB that correspond to each resource ID. If a CI doesn't exist, the system generates a placeholder CI. On subsequent discovery, the system reconciles the placeholder CI.
- Cloud Cost Management generates a log entry for each stage of the execution on the Billing Download Executions page.

## Add an AWS CI class type to ensure accurate billing data

Specify the details of a new CI or CI type to enable the CI placement process to assign cost and usage data correctly. The process is a part of Billing Download job execution. The CI placement process associates downloaded cost and usage data with the appropriate CIs.

## Before you begin

Role required: Cloud Insights Admin [sn\_clin\_core.insights\_admin]

### About this task

**Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

Billing Download jobs store downloaded billing data in the billing node table. The Class Type table holds CI type definitions for the cost usage table. Cloud Cost Management executes the CI placement process to associate the billing and usage data with CIs in the CMDB. The CI placement process queries the billing node table using the CI type definitions that reside in the CI placement type table. For a new CI (or a CI type from a new provider), you specify the parameters that uniquely define the CI, a CI type definition, and a class type table to store the CI type definition.

**Important:** If the Cloud Cost Management Infra Stack application is installed, you can't add a new AWS CI class type. However, you can use the existing CI class types.

The CI placement type table for AWS [sn\_cld\_intg\_aws\_ci\_placement\_type] inherits from the Core CI placement type table (sn\_cld\_intg\_core\_ci\_placement\_type).

**Important:** If the Discovery patterns application is not installed, then CIs in the following class types are not placed: cmdb\_ci\_cloud\_gateway, cmdb\_ci\_dynamodb\_table, cmdb\_ci\_cloud\_object\_storage, and cmdb\_ci\_cloud\_function.

### Procedure

1. Go to the CI placement type table and select **New**.

#### AWS class types in the Core CI placement type table [sn\_cld\_intg\_core\_ci\_placement\_type]

Name	Class Type	Query params	Query table
Amazon Volume	cmdb_ci_storage_volume	product_code=AmazonEC2^operationSTAR	AWS Cost And Usage Bill Data [sn_cld_intg_aws_cost_usage]
AmazonApiGateway	cmdb_ci_cloud_gateway	product_code=AmazonApiGateway^EQ	AWS Cost And Usage Bill Data [sn_cld_intg_aws_cost_usage]
AmazonDynamoDB	cmdb_ci_dynamodb_table	product_code=AmazonDynamoDB^EQ	AWS Cost And Usage Bill Data [sn_cld_intg_aws_cost_usage]
AmazonRDS	cmdb_ci_cloud_database	product_code=AmazonRDS^EQ	AWS Cost And Usage Bill Data [sn_cld_intg_aws_cost_usage]
AmazonS3	cmdb_ci_cloud_object_storage	product_code=AmazonS3^EQ	AWS Cost And Usage Bill Data [sn_cld_intg_aws_cost_usage]
AmazonVPC	cmdb_ci_network	product_code=AmazonVPC^EQ	AWS Cost And Usage Bill Data [sn_cld_intg_aws_cost_usage]
AWSLambda	cmdb_ci_cloud_function	product_code=AWSLambda^EQ	AWS Cost And Usage Bill Data [sn_cld_intg_aws_cost_usage]
EC2	cmdb_ci_vm_instance	product_code=AmazonEC2^operationSTAR	AWS Cost And Usage Bill Data [sn_cld_intg_aws_cost_usage]

2. Fill in the form.

**CI Placement Type Information form**

Field	Description
Class type	CMDB class type table that this type of CI is stored in. New CIs of this type are added to the table.
Name	Name of the CI type.
Query table	Billing node table that the CI placement process queries to find instances of the CI type.  The Query table is sn_cld_aws_cost_usage and cannot be changed.
Query params	Parameter values in the billing node table that uniquely define the CI type.

3. After you add a class type, you must reimport billing and usage data to ensure that CIs are correctly placed into the new type.

See [Schedule and manage the jobs that download AWS billing data](#).

**Note:** The supported CIs are placed after the Cumulus Unsupported CI Placement scheduled job runs daily. For more information, see [Supported CI class types for Amazon AWS Cloud services](#).

**Cancel an AWS Billing download job**

A Billing download job obtains billing and usage data from each payer account for AWS. The Rightsizing, Unused resources, and Business hours processes use billing and usage data when generating recommendations. You can cancel any Billing download job individually.

**Before you begin**

Role required: Cloud Integrations Admin [sn\_cld\_intg\_core.cloud\_integrations\_admin]

## About this task

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

## Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Billing download jobs**.
2. Select the **AWS** tab.
3. Select either a currently running or scheduled job that you want to cancel.
4. On the AWS Billing Download page, select **Cancel execution**.

## Processing AWS billing jobs with Assume role authentication

Use the Cloud Cost Management Infra Stack application to process and download the AWS billing files with Assume role authentication at a better speed.

When you have installed the Cloud Cost Management Infra Stack application, the processing of all billing download jobs happens completely on the Kubernetes cluster. However, for AWS billing jobs with Assume role authentication the processing of billing data is partially done via Cloud Cost Management MID Server.

## AWS billing download job (with Assume role) workflow

1. The Cloud Cost Management MID Server connects to AWS and downloads the billing data files.
2. The billing data files are sent to Cloud Cost Management Glide as an attachment.
  - i Note:** If the default configuration for maximum attachment size is changed and it's less than the billing data file, it might have an impact on billing. To keep the default configuration or a value higher than the billing file size, see the knowledge base article [KB0718101](#).
3. The attachments are stored temporarily in the Attachment table in the Glide database.
4. After all the attachments are stored in the Glide database, the Kubernetes job fetches details of the billing download jobs that are in the Requested state.
  - i Note:** The temporary attachments are deleted from the Glide database after the billing job is completed.
5. Kubernetes job fetches the attachment files from the Glide database via an API and processes the files on the Kubernetes cluster.
6. The processed billing data is sent to Glide and finally stored in the Glide database.

For AWS Assume Role Billing Download, the Flow Launcher Job Configuration settings determine the parallel processing of multiple download threads. These settings are stored in the AWS Assume Role Billing Download record in the Flow Launcher Job Configuration [sn\_cld\_intg\_core\_flow\_launcher\_job\_config] table. The value in the Concurrency field of the AWS Assume Role Billing Download record is the number of billing files downloaded in parallel. Performance is optimal when the Concurrency field is set to the default value 2. However, if you experience any slowness, you can set the **Concurrency** field to **1** with the admin role.

### Schedule and manage the Cloud Cost Management jobs that download AWS price sheets

A Price Sheet Download job downloads and stores price sheet data. The Rightsizing and Unused resources processes use price sheet data when generating recommendations.

#### Before you begin

For each provider, run Discovery on each service account.

Role required: insights\_admin [sn\_clin\_core.insights\_admin].

#### About this task

- You create a scheduled Price Sheet Download job for each provider.
- Each execution of a Price Sheet Download job runs multiple execution items. Each execution item imports and stores the price sheet for one region.
- To ensure accurate reporting and recommendations for some providers, make sure that Discovery runs before the scheduled execution.
- When the scheduled time arrives, job execution happens in multiple stages (for example, connect to the provider, download the data, perform the post-import sort, and so on). The system logs status and results on the Price Sheet Executions page for each stage.

#### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Price sheet download jobs**.
2. Select **New**.
3. On the form, fill in the fields.

#### Price Sheet Download Job

Field	Value
Name	Meaningful name for the Price Sheet Download job.
Provider	Name of the cloud provider.
Last successful execution	Timestamp of the most recent execution of the job.
Download Price Sheet For	Price sheet downloads for different services. <ul style="list-style-type: none"> <li>○ AWS                             <ul style="list-style-type: none"> <li>▪ Compute and Storage</li> <li>▪ Database</li> <li>▪ All</li> </ul> </li> <li>○ Azure                             <ul style="list-style-type: none"> <li>▪ Compute</li> <li>▪ Database</li> <li>▪ Storage</li> </ul> </li> <li>○ Google</li> </ul>

Field	Value
	<ul style="list-style-type: none"> <li>▪ Compute and Storage</li> <li>▪ Database</li> <li>▪ All</li> </ul>
Active	Option for activating the Price Sheet Download Job. Only active jobs are executed.
Run	<p>Frequency to execute the job.</p> <p><b>i Note:</b> Depending on the value that you select, additional fields appear. For example, if you select a <b>Run</b> value of <b>Monthly</b>, a <b>Day</b> field appears. A value of 3 would mean the third day of the month.</p> <p>This field is automatically set to <b>Monthly</b>.</p>
Time	Time of day to execute the job.
Current execution status	Status of the execution that is currently running.
Current execution details	Details for the execution that is currently running.

**4. Select **Save**.**

**5. Select **Execute** to execute the job.**

During execution, Cloud Cost Management downloads and stores the data. You can find the execution ID, status, and execution logs in the **Price Sheet Executions** tab. If there’s no new data, the execution is marked **Skipped**. If the download process is stuck, the execution is marked as **Canceled**.

**Related topics**

[Rightsizing resources](#)

[Specify rate discounts to enable accurate pricing for Rightsizing recommendations](#)

**Cancel an AWS Price sheet download job in Cloud Cost Management**

An AWS Price sheet download job downloads price sheet data from AWS. You can cancel any Price sheet download job individually.

**Before you begin**

For each provider, run Discovery on each service account.

Make sure to have the proper credentials and service account setup.

Role required: insights\_admin [sn\_clin\_core.insights\_admin].

**About this task**

Cloud Cost Management downloads price sheet data from each provider one region at a time. If you cancel a running price sheet download job, the current region finishes downloading and the system cancels download for the remaining regions. If you delete a scheduled job execution, then all regions are marked as canceled.

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Price sheet download jobs**.
2. Select either a currently running or scheduled job that you want to cancel.
3. On the Price Sheet Download job page, select **Cancel execution**.

**Configure Cloud Cost Management for Microsoft Azure**

The Cloud Cost Management application is available on the ServiceNow Store.

**General requirements and limitations**



- Cloud Cost Management isn't supported on mobile devices.
- Values in reports might vary slightly from provider billing values due to currency conversion or rounding.

**Requirements and limitations for Microsoft Azure**

You must have Microsoft Azure console administrator permissions to work in the Microsoft Azure console

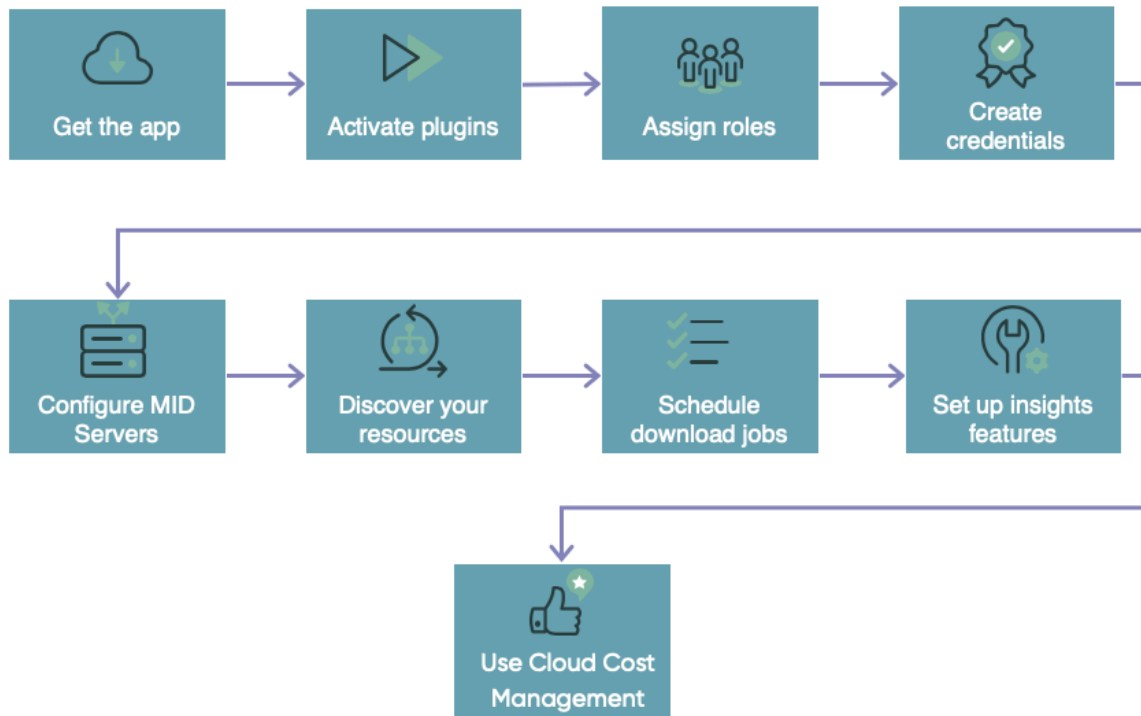
**Download and activate Cloud Cost Management**

Role required: sys\_admin.

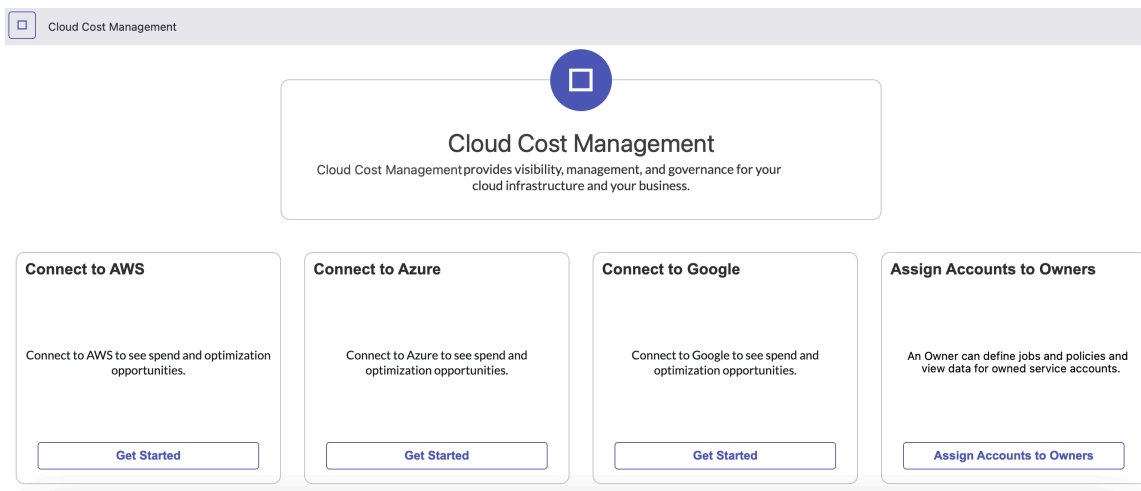
Step	Description	Do this
 Get the app.	Get the Cloud Cost Management app from the ServiceNow Store.	Visit the <a href="#">ServiceNow Store</a> website to get the Cloud Cost Management app and supporting apps.
 Activate all supporting plugins and applications.	Activate the plugins listed on the ServiceNow Store page for Cloud Cost Management. You might need to request some of the plugins from your ServiceNow representative.	For instructions, see: <ul style="list-style-type: none"> <li>• <a href="#">Request as plugin</a></li> <li>• <a href="#">Activate a plugin</a></li> </ul>

**Overview: Setting up Cloud Cost Management**

Here's an overview of your set up process. Detailed instructions appear in the table that follows.



When you first open the app, the home page enables you set up a provider and to assign the insights\_owner role.



After you set up a provider and assign the insights\_owner role, the page displays additional setup activities.

**Note:** The Configure and Run Discovery card appears only if you use the Discovery application to discover cloud resources.

## Connect to <provider>



Perform these tasks to connect Cloud Insights to <provider>





<p><b>Configure and Run Discovery</b></p> <p>Identify your service accounts and configure the Discovery process to download CI data for all resources in your cloud infrastructure.</p> <p><a href="#">Set up and Run Discovery</a></p>	<p><b>Download Billing and Usage Data</b></p> <p>Specify how and when to download, organize, and store billing data for each account.</p> <p><a href="#">Set up Billing Download</a></p>	<p><b>Download Price Sheets</b></p> <p>To ensure accurate recommendations, set up the schedule for downloading price sheets.</p> <p><a href="#">Set up Price Sheet Download</a></p>
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- When you select the **Set up and Run Discovery** button in the Configure and Run Discovery section, the Discover Schedules form opens.
- When you select the **Set up Billing Download** button in the Download Billing and Usage Data section, the Billing Download Jobs form opens.
- When you select the **Set up Price Sheet Download** button in the Download Price Sheets section, the Price Sheets Download Jobs form opens.

After you finish all configuration, the page will show overview data and give quick access to reports.

## Setting up Cloud Cost Management

Step	Description	Do this
 <p>Assign roles to Cloud Cost Management users and groups.</p>	<p>You assign Cloud Cost Management roles to user groups and to individual users based on user activities and responsibilities.</p>	<p><a href="#">Cloud Cost Management roles</a></p>
 <p>Configuring MID Servers to access CI data on provider accounts for Cloud Cost Management</p>	<p>To enable Discovery to communicate with your Microsoft Azure account, you specify your Service Principal credentials while configuring the MID Servers that communicate with your Microsoft Azure account.</p>	<p><a href="#">Configuring access to CI data on your Microsoft Azure account</a></p>

Step	Description	Do this
 <p>Discover your cloud resources.</p>	<p><b>Note:</b> The Configure and Run Discovery card appears only if you use the Discovery application to discover cloud resources.</p> <p>When you select the <b>Set up and Run Discovery</b> button on the Configure and Run Discovery card, the Discover Schedules form opens. You schedule the Discovery process to ensure that the CMDB data on resources remains current.</p>	<p>Discovering your cloud resources for use</p>
 <p>Schedule and manage the jobs that download billing data for Cloud Cost Management</p>	<p>When you select the <b>Set up Billing Download</b> button in the Download Billing and Usage Data section, the Billing Download Jobs form opens. Billing Download jobs download, organize, and store billing data for your payer account on the schedule that you specify. The system analyzes the data to generate reports and to make recommendations for changes in your cloud operations that can lead to cost savings.</p>	<p>Set up access to Microsoft Azure billing and usage data</p>
 <p>Schedule and manage the Cloud Cost Management jobs that download price sheets</p>	<p>When you select the <b>Set up Price Sheets Download</b> button in the Download Price Sheets section, the Price Sheets Download Jobs form opens. A Price Sheet Download job downloads and stores price sheet data. The Rightsizing and Unused resources processes use price sheet data when generating recommendations.</p>	<p>Schedule and manage the Cloud Cost Management jobs that download Microsoft Azure price sheets</p>
 <p>Configure the insights features:</p> <ul style="list-style-type: none"> <li>• Rightsizing</li> <li>• Unused Machines</li> <li>• Business Hours</li> <li>• Unassigned Resources</li> </ul>	<ul style="list-style-type: none"> <li>• The Rightsizing feature analyzes resource usage to recommend better sizes for resources that are wasting money by being over-provisioned or underused. A confidence rating and predicted savings support each recommendation. You schedule Rightsizing jobs to resize the resources you specify.</li> <li>• The Unused Machines feature analyzes usage data to identify resources that are wasting money because they are not used. You schedule Unused Machines jobs to power-off or terminate the resources that you specify.</li> <li>• A Business Hours job applies policies to identify resources that are running when they should be powered off, reports them, and can start and stop them on a schedule that you specify. Running only during specified business hours can significantly reduce your cloud spend.</li> <li>• Unassigned Resources policies help you to identify the resources that are not associated with a change group and</li> </ul>	<ul style="list-style-type: none"> <li>• Rightsizing resources</li> <li>• Unused resources</li> <li>• Business hours</li> <li>• Unassigned resources</li> </ul>

Step	Description	Do this
	to assign them appropriately. When a resource is assigned to the correct group, the resource can be appropriately governed even as it goes through stages such as patching, upgrading, and reconfiguring.	

### Configuring access to CI data on your Microsoft Azure account

To enable Discovery to communicate with your Microsoft Azure account, you specify your Service Principal credentials while configuring the MID Servers that communicate with your Microsoft Azure account.

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

### Detailed instructions

See [Azure Cloud Discovery](#) .

**i Important:** This configuration process applies only if you use the Discovery application to discover cloud resources. Skip this process if you use a different method for discovering resources.

### MID Server settings for Cloud Cost Management

**i Note:** MID Server minimum memory size should be 4 GB.

Setting	Value
Supported Applications	Cloud Actions
Capabilities	<p>The <b>ALL</b> setting includes all required applications and capabilities. Alternatively, you can specify the following settings:</p> <p><b>i Note:</b> You can specify the following settings for any number of MID Servers. If you specify multiple MID Servers, then Discovery, billing data download operations, and actions that are recommended by Cloud Cost Management are assigned to one of the MID Servers at random.</p> <p>Option 1: To use this MID Server only for Azure, specify both of the following values:</p> <ul style="list-style-type: none"> <li>• Cloud Actions</li> <li>• Azure</li> </ul> <p>Option 2: To use this MID Server for all providers, specify the following values:</p>

Setting	Value
	<ul style="list-style-type: none"> <li>• Cloud Actions</li> <li>• AWS</li> <li>• Azure</li> <li>• Google Cloud</li> </ul>

## Using a proxy server

You can use a proxy server for the Cloud Cost Management MID Server. See [Proxy server configuration for your Cloud Cost Management MID Server](#).

### Related topics


[MID Servers](#) 

[Install a MID Server on Windows](#) 

[Install a MID Server on Linux](#) 

### Proxy server configuration for your Cloud Cost Management MID Server

You can configure any MID Server to use a proxy server for Cloud Cost Management operations. Proxy servers support all cloud-based activities such as running Discovery, Billing Download jobs, and Price Sheet Download jobs.

 **Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

### Detailed instructions

See [Proxy server configuration for MID Servers used for Cloud Discovery and Cloud Provisioning and Governance](#) .

### Proxy server limitations

- Only Windows or Linux platforms are supported.
- The Google Cloud integration is not supported.
- The VMware integration is not supported.
- Remote PowerShell scripts cannot be executed.
- Custom APIs might not work.

### Supported proxy server authentication for Cloud Cost Management

Proxy Server type	Authentication type
HTTP/HTTPS	No authentication
SOCKS5	No authentication
HTTP/HTTPS	Basic authentication
SOCKS5	Basic authentication
HTTP/HTTPS	NTLM

## Supported Proxy server configurations

### Supported configuration settings

Configuration	Operating system	Proxy server	Authentication mode
Configuration 1	Linux	None	Not Applicable
Configuration 2	Windows	Squid (HTTPS)	None
Configuration 3	Linux	Squid (HTTPS)	Local
Configuration 4	Windows	Squid (HTTPS)	Active Directory

### Related topics

[MID Servers](#) 

[Install a MID Server on Windows](#) 

[Install a MID Server on Linux](#) 

### Add a Microsoft Azure government service account

A cloud\_admin can add an Azure GovCloud service account. Be sure to set up download jobs for billing and price sheet data for the service account.

### Before you begin

Role required: sn\_cmp.cloud\_admin

### About this task

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

### Procedure

Follow the instructions in [Add an Azure service account](#) .

### Related topics

[Create a Microsoft Azure service principal](#)

[Schedule and manage the Cloud Cost Management jobs that download Microsoft Azure price sheets](#)

### Add a Microsoft Azure service account

Add a Azure service account to store the credential and access information.

### Before you begin

Role required: sn\_cmp.cloud\_admin

Set up download jobs for billing and price sheet data for the service account.

### About this task

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

A service account is a secure record on your instance that stores the credential and access information for your provider account. Discovery uses the information to access your provider

account to get data on each resource in each specified datacenter. A cloud account can include multiple service accounts — even service accounts from different providers. For each service account, you specify which datacenters to include in the cloud account.

**Note:** The service account must have Discovery credentials to get the Azure forecast data.

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Service accounts**.
2. Select **New**.
3. On the form, fill in the fields.

**Cloud Service Account**

Field	Description
Name	Unique and meaningful name for this service account.
Account Id	<p>The Azure Account ID value that you copied from the Azure portal into the text file.</p> <p>The value in this field changes based on the type of account that you set.</p> <ul style="list-style-type: none"> <li>○ For billing service accounts, the Account ID is the Enrollment ID.</li> <li>○ For other service accounts, the Account ID is the Subscription ID.</li> </ul>
Discovery credentials	<p>The credentials needed for ServiceNow applications to access this account. You might configure this field at a later stage, while configuring access to Azure accounts.</p> <ul style="list-style-type: none"> <li>○ If you configured Azure credentials at ServiceNow AI Platform, select the name of the relevant Azure credential.</li> <li>○ To use other Azure accounts to access this account, leave the field empty.</li> </ul>
Datacenter URL	<p>URL of the datacenter.</p> <p>This field is required only for Azure GovCloud (US) accounts.</p> <p>.</p>
Datacenter Type	<p>Type of the datacenter where the account is hosted.</p> <p>Select <b>Azure datacenter</b>.</p>
Datacenter discovery status	<p>Status and timestamp of the last execution of discovery on the datacenter.</p> <p>This value is generated automatically.</p>

Field	Description
Is Billing Account	<p>Option for enabling the account to access billing data.</p> <p>This option is available only when Cloud Integrations Azure scope is used.</p> <p>For the existing billing accounts, this check box is selected by default.</p>
Is Management Group	<p>Option for enabling the account for running Discovery.</p> <p>This option is available only when Cloud Integrations Azure scope is used.</p> <p>For the existing accounts where Discovery is run, this check box is selected by default.</p>

**4. Select Save.**

**Result**

The service account that you created gets listed on the **Service accounts** page.

**Related topics**

[Schedule and manage the jobs that download Azure billing data](#)


[Schedule and manage the Cloud Cost Management jobs that download Microsoft Azure price sheets](#)

[Azure Cloud Discovery](#) 

**Set up access to Microsoft Azure billing and usage data**

Set up access to Microsoft Azure billing and usage data depending on your agreement type.

You can access the billing and usage data, by assigning an appropriate role to the Microsoft Azure service principal, depending on whether you have an Enterprise Agreement (EA) or Microsoft Customer Agreement (MCA). Accordingly, some of the following steps might be optional for you.

 **Important:** The support for MCA accounts is available from Cloud Cost Management version 9.0 and later.

1. [Create a Microsoft Azure service principal](#)
2. For EA accounts - [Add the Enrollment Reader role to the Microsoft Azure service principal](#)
3. For MCA accounts - [Add the Billing Profile Reader role to the Microsoft Azure service principal](#)
4. [Create a record of Microsoft Azure credentials in Cloud Cost Management](#)
5. [Schedule and manage the jobs that download Azure billing data](#)

**Related topics**

[Create exports on the Azure portal](#)

[Cancel an Azure Billing download job in Cloud Cost Management](#)

### Create a Microsoft Azure service principal

Give Cloud Cost Management access to Microsoft Azure billing and usage data by creating a Microsoft Azure service principal.

#### Before you begin

Microsoft Azure Role required: Azure Cloud admin

#### About this task

Cloud Cost Management supports Microsoft Azure billing and cost usage data for two types of billing agreements: Enterprise Agreement (EA) and Microsoft Customer Agreement (MCA). There are specific roles that you must assign to the service principal depending on your billing agreement type. For more information on EA and MCA agreement types, see [Billing information for Microsoft Azure](#).

#### Procedure

1. From a web browser, open the [App Registrations page](#) of the Microsoft Entra ID portal.
2. Log in using your global administrator credentials.
3. In the **Name** field of the Register an application form, enter a name for the application.
4. In the **Supported account types** field, select **Accounts in any organizational directory (Any Microsoft Entra ID – Single tenant)**.
5. Select **Register**.  
The application is registered and you're redirected to the Overview page of the new application.
6. On the Overview page, copy the values in the **Application (client) ID** and **Directory (tenant) ID** fields.  
Save them in a secure location for later use.
7. Generate a Client secret for your application.
  - a. From the side navigation menu, navigate to **Manage > Certificates & secrets**.
  - b. In the Client secrets section, generate a client secret for the application by selecting **New client secret**.
  - c. In the dialog box, fill in the fields.

#### Add a client secret dialog box

Field	Description
Description	Description of the client secret.
Expires	Expiration of the client secret.  <b>Note:</b> Your organization might apply policies to restrict client secret durability. Select an appropriate expiration period.

- d. Select **Add**.
- e. Copy the client secret that is generated and save at a secure location for later use.

8. Get **Subscription ID** to enable the service principal to work with various Azure subscriptions.
  - a. Navigate to **Subscriptions**.
  - b. Select the **Subscription ID** to which the service principal needs access.
  - c. Copy the **Subscription ID** from the Subscription Overview page.
9. Assign access roles and permissions to the service principal depending on your billing agreement type.  
Refer to the table for required roles and permissions for the service principal.

**Roles and permissions for Azure service principal**

Billing agreement type	Role required	Permissions
Enterprise Agreement (EA)	<ul style="list-style-type: none"> <li>o Enrollment Reader</li> <li>o Storage Blob Data Reader</li> </ul>	<p>These permissions are required for the service principal for both EA and MCA.</p> <ul style="list-style-type: none"> <li>o Microsoft.Compute/virtualMachines/instanceView/read</li> <li>o Microsoft.Compute/virtualMachines/deallocate/action</li> <li>o Microsoft.Compute/virtualMachines/start/action</li> <li>o Microsoft.Compute/virtualMachines/delete</li> <li>o Microsoft.Compute/virtualMachines/write</li> <li>o Microsoft.Compute/virtualMachines/read</li> <li>o Microsoft.Compute/locations/usages/read</li> <li>o Microsoft.Advisor/recommendations/read</li> <li>o Microsoft.Advisor/generateRecommendations/read</li> <li>o Microsoft.Advisor/generateRecommendations/action</li> <li>o Microsoft.Compute/disks/delete</li> <li>o Microsoft.Compute/disks/read</li> <li>o Microsoft.CostManagement/forecast/read</li> </ul>
Microsoft Customer Agreement (MCA)	<ul style="list-style-type: none"> <li>o Billing Account Reader</li> <li>o Both Billing Profile Reader and Billing Reader</li> <li>o Storage Blob Data Reader</li> </ul>	

Billing agreement type	Role required	Permissions
		<ul style="list-style-type: none"> <li>○ Microsoft.Compute/locations/diskOperations/read</li> <li>○ Microsoft.Insights/Metrics/Read</li> <li>○ Microsoft.Compute/locations/operations/read</li> <li>○ Microsoft.Sql</li> <li>○ Microsoft.DBforMariaDB</li> <li>○ Microsoft.DBforMySQL</li> </ul>

**What to do next**

[Create a record of Microsoft Azure credentials in Cloud Cost Management](#)

**Related topics**

[Add the Enrollment Reader role to the Microsoft Azure service principal](#)

[Add the Billing Profile Reader role to the Microsoft Azure service principal](#)

**Add the Enrollment Reader role to the Microsoft Azure service principal**

Assign the Enrollment Reader role to the Azure service principal for your Enterprise Agreement (EA) account to retrieve billing, purchase, and pricing data. You can assign this role using a Microsoft API.


**Before you begin**

Role required: Enterprise administrator

**About this task**

Enrollment reader roles can view subscription charges related data at the enrollment, department, and account scopes. They can also view the Azure prepayment balance linked with the enrollment. Enrollment reader role is required only for EA accounts.

**Procedure**

1. Navigate to the [Role Assignments - Put](#)  page in the Microsoft Azure documentation.
2. Run the API by selecting the **Try It** button.
3. Select **Sign in**.
4. On the login page, enter your Microsoft Azure account credentials to sign in to the tenant.
5. On the API request parameters form, fill in the fields.

**Role Assignments API request parameters**

Field	Description
billingAccountName	<p>The Azure EA billing account ID.</p> <p>You can find the billing account ID on the Azure portal on the Cost Management + Billing overview page.</p>

Field	Description
billingRoleAssignmentName	<p>A unique ID to identify the name of the role that you want to assign.</p> <p>You can use a GUID generator website to generate a unique ID.</p>
Body	<p>The request body with parameters in JSON code. Enter the following JSON code in the body.</p> <pre>{ "properties": { "principalId": "{enterprise-application (or SPN) object-id}", "principalTenantId": "{tenant-id}", "roleDefinitionId": "/providers/Microsoft.Billing/billingAccounts/{ea-account-id}/billingRoleDefinitions/24f8edb6-1668-4659-b5e2-40bb5f3a7d7e" } }</pre> <p>In this code:</p> <ul style="list-style-type: none"> <li>○ principalId: object ID of the EA account</li> <li>○ principalTenantId: tenant (directory) ID of the EA account</li> <li>○ roleDefinitionId: ID of the role definition, for example, 24f8edb6-1668-4659-b5e2-40bb5f3a7d7e is the role definition ID of the enrollment reader role</li> </ul> <p>For details on the object ID and tenant ID, see <a href="#">Microsoft documentation</a>.</p> <div style="background-color: #e0f2f1; padding: 5px;"> <p><b>Important:</b> Replace only the <code>ea-account-id</code> string with the actual EA billing account ID.</p> </div>

**Note:** You must not change the values in the **api-version** and **Content-Type** fields.

6. Complete the role assignment for the Azure EA account by selecting **Run**.

**What to do next**

[Schedule and manage the jobs that download Azure billing data](#)

**Add the Billing Profile Reader role to the Microsoft Azure service principal**

Assign the Billing Profile Reader role to the Azure service principal for your Microsoft Customer Agreement (MCA) account to download Azure price sheet data.

**Before you begin**

Role required: Azure Cloud admin

### About this task

The Billing Profile Reader role provides the required permissions to download price sheet data at the profile scope only for MCA accounts. For more information on Azure roles, see [Microsoft documentation](#).

**Important:** The support for MCA accounts is available from Cloud Cost Management version 9.0 and later.

### Procedure

1. Log in to the [Azure portal](#) and search for **Cost Management + Billing**.
2. Select **Billing scopes**.
3. Select **Access Control (IAM)** at the billing profile scope to which you're assigning the billing profile reader role.
4. Select **+Add**.
5. In the Add role assignment window, select **Billing profile reader** in the **Role** field.
6. In the **Users, groups, or apps** field, select the service principal to which you're assigning the role.
7. Complete the role assignment for the Azure MCA account by selecting **Add**.

### What to do next

[Schedule and manage the jobs that download Azure billing data](#)

### Related topics

[Schedule and manage the Cloud Cost Management jobs that download Microsoft Azure price sheets](#)

### Create a record of Microsoft Azure credentials in Cloud Cost Management

Securely store your Microsoft Azure credentials in the ServiceNow AI Platform credentials store. You must create a service account that accepts billing data for Cloud Cost Management.

### Before you begin

Role required: sn\_clin\_core.insights\_admin or admin

### Procedure

1. Navigate to **Cloud Cost Management Workspace > Operations > Administration > Credentials**.
2. On the Cloud API credentials page, select **Azure service principal**.
3. Select **New**.
4. On the form, fill in the fields.

#### Azure Service Principal form

Field	Description
Name	Name of the service principal to register with the instance. For example, <code>CloudInsights - SP</code> .
Tenant ID	An unique identifier or alias for the tenant.

Field	Description
	Copy and paste the Tenant ID value from the <code>Azure - Credentials . txt</code> file.
Client ID	<p>Unique identifier of an application created in Active Directory.</p> <p>Copy and paste the Tenant ID value from the <code>Azure - Credentials . txt</code> file.</p>
Authentication Method	<p>Select <b>Client Secret</b>.</p> <p>The Secret key field appears when you select Client Secret.</p> <p><b>Note:</b> Client Assertion isn't supported.</p>
Secret key	<p>Azure client secret key.</p> <p>Copy and paste the Tenant ID value from the <code>Azure - Credentials . txt</code> file.</p>
Active	Option to enable the credentials for use.

5. Select **Save**.

### What to do next

[Schedule and manage the jobs that download Azure billing data](#)

### Create exports on the Azure portal

Create exports for your Azure service account to download Azure billing data.

### Before you begin

Roles required:

- For Enterprise Agreement (EA): Enterprise administrator, Storage Account Contributor
- For Microsoft Customer Agreement (MCA): Billing account owner or contributor, Storage Account Contributor
- For Subscriptions (EA/MCA): contributor, Storage Account Contributor


### About this task

**Important:** The support for Azure Exports method is available from Cloud Cost Management version 9.0 and later.

When you're using the Azure Export method to download billing data, you must create an export for your service account on the Azure portal to export billing data to your ServiceNow storage account.

### Procedure

1. Log in to the [Azure portal](#) and search for **Cost Management**.
2. Select a billing account scope.
3. Select **Exports**.

4. Select **+ Create**.
5. On the Basics tab, select a template.  
You must create exports with both the **Cost and usage (actual)** and **Cost and usage (amortized)** templates to ensure accuracy of billing data.
6. Select **Next**.
7. On the Datasets tab, enter **Export prefix** to customize your export name.
8. Select the edit icon  next to the export name that you want to edit.
9. In the Edit export window, fill in the fields.

**Edit export window fields**

Field	Description
Type of data	The type of billing data for the export.
Export name	A unique name for the export.
Dataset version	The version of the dataset.  <b>Note:</b> Because other dataset versions might have different requirements, you should select <b>2024-08-01</b> as the dataset version.
Frequency	The option to export data at an interval that meets your requirement.  Select <b>Daily export of month-to-date costs</b> for the daily export of your data.  <b>Important:</b> The Billing Download job must run at least 30–60 minutes after the export of billing data to ensure that the latest data is included in the download.
Compression	Mode of compressing the export data.  You can select <b>None</b> or <b>Zip</b> depending on your preference.
Export description	A brief description of the export.

10. Select **Next**.
11. On the Destination tab, select the field values that meet your requirement.  
  
**Note:** Select **CSV** in the **Format** field because Cloud Cost Management 9.0 currently supports the CSV format only. The **Overwrite data** check box should be cleared so that the previously downloaded data doesn't get overwritten with the latest downloads.
12. Select **Next**.
13. On the Review + create tab, review your export configuration and change if necessary.

## Result

The export that you have created appears in the list of exports.

## Related topics

[Schedule and manage the jobs that download Azure billing data](#)

## Schedule and manage the jobs that download Azure billing data

Billing Download jobs download, organize, and store billing data for your payer account on the schedule that you specify. The system analyzes the data to generate reports and to make recommendations for changes in your cloud operations that can lead to cost savings.

## Before you begin

Ensure that your system has 8 GB Clotho memory and 4 GB mid memory.

Role required: Cloud Integrations Admin [sn\_cld\_intg\_core.cloud\_integrations\_admin]

## About this task

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

The support for Azure Exports method is available from Cloud Cost Management version 9.0 and later.

- To ensure accurate reporting and recommendations for some providers, make sure that Discovery runs before the scheduled execution.
- You can create only one Billing Download job for each service account.
- Only costs of unblended type are supported.
- Each successful execution of a Billing Download job updates tagged costs. Recent updates that you make to tag category definitions (for example, adding a tag name to a category) might not be reflected in cost reports. To apply the latest tag category definitions to cost data without running a Billing Download job, select *Cloud Cost Management Workspace > Operations > Cost usage tags > Tag categories* and then select **Re-Apply Categories**.
- Each successful execution of a Billing Download job triggers the Budget Forecast, Business hours, Reservation/saving plans, Rightsizing, and Unused resources jobs to analyze spend and usage data and to update the actionable recommendations in reports.
- When the scheduled time arrives, job execution happens in multiple stages (for example, connect to the provider, download the data, perform the post-import sort, and so on). The system logs status and results on the Price Sheet Executions page for each stage.
- Cost categories are updated with new cost tag values each time billing data is downloaded. (You define cost tags in the provider portal to associate usage data with a particular business entity. For example, the Cost Center category might include the tags development, testing, and QA. The User category might include the names of your users.)
- Billing data is downloaded in reverse chronological order by month. For example, if the range is from March to June, data for June is downloaded first.
- To ensure meaningful results for the first billing data download, the app downloads data for minimum 30 days. For example, if today is June 10 and you specify June for download, the system downloads data for both May and June to ensure minimum 30 days of data for analysis.
- You can download data only for the most recent 12 months.

- Whenever you provision a Kubernetes cluster, one default resource group gets created as *MC\_myResourceGroup\_myAKSCluster\_eastus*. For example, if you provision a Kubernetes cluster with a resource group name as *TestResourceGroup*, Azure uses this resource group name and provisions another resource group as *MC\_<name of the resource group>\_<name of the cluster>\_<location of the cluster>*.

All resources of the Kubernetes cluster are included in the resource group provided by Azure. When you run a Billing Download job, the list of resources included in the resource group with this naming convention *MC\_<name of the resource group>\_<name of the cluster>\_<location of the cluster>* is checked.

- A tag *sn\_ccm\_k8\_cluster\_name* is added to the Kubernetes cluster during the running of the billing download job.
- A tag *sn\_ccm\_k8\_cluster\_name* is added to the resources of the Kubernetes cluster present in the resource group during the running of the Spend job.

### **Note:**

- If you provide your own name to the asset or resources of a resource group, you can't view the spend for Kubernetes clusters.
  - Install Discovery and Service Mapping Patterns application (sn\_itom\_pattern) 1.10.2 or higher. For more information, see [Install Discovery and Service Mapping Patterns](#).
  - Install CMDB CI Class Models (sn\_cmdb\_ci\_class) version 1.53.1 or higher. For more information, see [CMDB CI Class Models](#).
  - To set up Kubernetes discovery, see [Kubernetes discovery using patterns](#).
- If you have installed the Cloud Cost Management Infra Stack application along with Cloud Cost Management version 8.1, bill processing only happens on the Kubernetes cluster outside the Glide but within the ServiceNow datacenter. This framework supports parallel processing of data in chunks, making the billing file download faster.

After you submit a request for Azure billing data, the blobs are generated based on the chunk size. You can use the system property *sn\_cld\_intg\_azure.billing\_chunk\_duration* to set the chunk size. For details, see [Configure the chunk size of Microsoft Azure billing blob](#). Consider an example where you want to download 30 days of billing data and you have set the chunk size to 3, then the billing data is available in 10 blobs. After all the blobs are generated, the state of the job changes from Ready to Requested. These blobs are stored in some blob storage on the Azure portal. The Kubernetes framework then downloads and processes the generated blobs from Azure.

### **Note:**



If you have installed the Cloud Cost Management Infra Stack application, then toward the end of a job, significant database update, and insert operations are performed based on your Cloud CIs and spend data volume. Thus, any other job that impacts database performance shouldn't be run during this time alongside Cloud Cost Management jobs.

- From Cloud Cost Management version 8.1 onwards, the default time for billing download jobs has changed from 12:00 to 01:00 (UTC). Also, schedule or run Cloud Cost Management jobs only during off-business hours and when there's no other heavy operations or jobs running on the ServiceNow instance.

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Billing download jobs**.
2. Select the *Azure* tab.
3. Select **New**.
4. On the form, fill in the fields:

**Azure Billing Download Job**

Field	Description
Name	Meaningful name for the scheduled execution of the Billing Download job.
Last successful execution	The timestamp of the most recent successful execution.
Notify users/groups	<p>The users or groups to be notified by email of the status of the job execution (for example, download failure). The system doesn't send a notification for success.</p> <p>Users or groups with the Cloud Integrations Admin [sn_cld_intg_core.cloud_integrations_admin] role are well suited to handle these issues.</p> <p>To update the email template, navigate to <b>System Notification</b> &gt; <b>Email</b> &gt; <b>Notifications</b> and open the Notify on billing job execution error template. For information on configuring the email, see <a href="#">Create an email template</a> .</p>
Active	Option for activating the job. Only active jobs are executed.
Run	<p>Frequency with which to execute the Billing Download job.</p> <p>This field is automatically set to <b>Daily</b>.</p> <p> <b>Note:</b> Depending on the value that you select, additional fields appear.</p>
Time	Time of day to execute the job.
Latest execution status	The status of the most recently executed job.
Latest execution details	Execution details of the most recently executed job.
<b>Azure Settings</b>	
Azure Service account	The Azure service account.
Use Exports	Option for selecting the Azure Export method.

Field	Description
	The <b>Use Exports</b> check box is selected by default. If you don't want to use the Exports method, you must clear this check box.
The following fields appear when the <b>Use Exports</b> check box is selected.	
Billing Account Id Type	<p>Level of billing account ID.</p> <p>Values include:</p> <ul style="list-style-type: none"> <li>○ Account: When the billing is done on account level</li> <li>○ Subscription: When the billing is done on subscription level</li> </ul> <p><b>Note:</b> Select <b>Account</b> when the account ID is selected in the <b>Azure Service Account</b> field.</p>
Actual Cost Export Name	<p>Name of the actual cost export configured on the Azure portal.</p> <p>For more information, see <a href="#">Create exports on the Azure portal.</a></p>
Amortized Cost Export Name	<p>Name of the amortized cost export configured on the Azure portal.</p> <p>For more information, see <a href="#">Create exports on the Azure portal.</a></p>

5. Select **Save**.

6. On the **Billing download jobs** page, select the created job.

7. Select **Test connection**.

The Test Connection workflow uses the settings that you configured to attempt to access the provider account. The system displays a progress pop-up and a success/error message that suggests actions to fix the configured settings.

8. Select **Execute now** to execute the job after the connection succeeds.

9. In the **Download billing data** dialog box, fill in the fields.

Field	Description
Start month	<p>Starting month for downloading the billing data.</p> <p><b>Note:</b> Data is downloaded for the specified months. If fewer than 30 days of data for analysis is received, data for the preceding month is also downloaded.</p>

Field	Description
End month	Ending month for downloading the billing data.
Re-import data	Option for overwriting data from an earlier download attempt.  <b>Note:</b> The complete billing download occurs on the fourth day or on the billing finalization date for the previous month, irrespective of the Re-import data option setting.

**10. Select Download.**

An Azure billing download job goes through the following states during the job execution:

- a. Ready:** Job is in queue. For example, when a job is created to download billing data for a few months, the jobs for all months except the latest month are in Ready state.

**Note:** If you have installed the Cloud Cost Management Infra Stack application, the Azure blob URLs are generated in the Ready state. For details, see [Configure the chunk size of Microsoft Azure billing blob](#). Only when all the blobs are generated, the state changes to Requested.

- b. Requested:** Job is fetched immediately. For example, the job that's created to download billing data for a month is in the Requested state. Also, when a job is created to download billing data for more than a month, the latest month job is also in the Requested state.

- c. Reserved:** Job is picked by the Kubernetes cluster for processing. The Kubernetes cluster also sends the Job Id to the Glide side to show which Kubernetes job is processing the billing job.

**Important:** This state is applicable only if you have installed the Cloud Cost Management Infra Stack application.

- d. In Progress:** Billing data is being processed.

- e. Sink Begin:** Kubernetes cluster sends some part of the processed billing data to the tables such as Spend Report Daily Aggregate Cost and Spend Report Monthly Aggregate Cost on the Glide. The records in these tables are in the Generating state. The job remains in the Sink Begin state until the entire billing data is sent to Cloud Cost Management Glide.

In the Sink Begin state, the CI placement also starts and the Status of the CI Placement Stage changes from Ready to In Progress.

**Important:** This state is applicable only if you have installed the Cloud Cost Management Infra Stack application.

- f. Sink Complete:** All the processed billing data is sent to Cloud Cost Management Glide from the Kubernetes cluster.

**Important:** This state is applicable only if you have installed the Cloud Cost Management Infra Stack application.

**g. Finished:** Status after Sink Complete when all the billing files are sent to the Glide database.

**Note:** The following changes happen when the job is marked Finished:

- The state of the records in the Spend Report Daily Aggregate Cost and Spend Report Monthly Aggregate Cost tables change from Generating to Active. Also, existing records are marked inactive.
- The status of the Azure EA to SA mapping execution stage changes from Ready to In Progress. In this execution stage, the Enterprise account is mapped to the Service account.

**h. Success:** Job is completed successfully.

## Result

The following events happen when the job executes:

- While downloading the data, Cloud Cost Management updates the billing node data table [sn\_cld\_intg\_<provider>\_cost\_usage] with the CIs in the CMDB that corresponds to each resource ID. If a CI doesn't exist, the system generates a placeholder CI. On subsequent discovery, the system reconciles the placeholder CI.
- Cloud Cost Management generates a log entry for each stage of the execution on the Billing Download Executions page.

**Note:** The supported CIs are placed after the Cumulus Unsupported CI Placement scheduled job runs daily. For more information, see [Supported CI class types for Microsoft Azure services](#).

## Cancel an Azure Billing download job in Cloud Cost Management

A Billing download job obtains billing and usage data from each payer account for Azure. The Rightsizing, Unused resources, and Business hours processes use billing and usage data when generating recommendations. You can cancel any Billing download job individually.

### Before you begin

Role required: Cloud Integrations Admin [sn\_cld\_intg\_core.cloud\_integrations\_admin]

### About this task

**Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Billing download jobs**.
2. Select the **Azure** tab.
3. Select either a currently running or scheduled job that you want to cancel.
4. On the Azure Billing Download page, select **Cancel execution**.

### Configure the chunk size of Microsoft Azure billing blob

Reduce the time required to download Azure billing files by defining the chunk size of a blob.

### Before you begin

Role required: admin

## About this task

**i Important:** This task is applicable only if you have installed the Cloud Cost Management Infra Stack application along with Cloud Cost Management version 8.1.

A single Azure billing blob can be large, resulting in performance issues during the download. If you have installed the Cloud Cost Management Infra Stack application, bill processing only happens on the Kubernetes cluster that's outside Cloud Cost Management Glide but within ServiceNow datacenters. This new framework with Kubernetes cluster supports parallel processing of multiple chunks of blobs, making the billing file download faster. You can also set the system property `sn_cld_intg_azure.billing_chunk_duration` to specify the duration in number of days for which the billing data will be included in each chunk.

## Procedure

1. Open the System properties table by entering `sys_properties.list` in the application filter.
2. Filter the list to open the `sn_cld_intg_azure.billing_chunk_duration` property. The default value is 3, which means that each blob contains three days billing data.
3. Modify the value as needed.

**i Note:** Performance improves by setting the property to a value below 3.

4. Save the property.

## Schedule and manage the Cloud Cost Management jobs that download Microsoft Azure price sheets

A Price Sheet Download job downloads and stores price sheet data. The Rightsizing and Unused resources processes use price sheet data when generating recommendations.

## Before you begin

Run the Discovery application on each service account.

Role required: `insights_admin` [`sn_clin_core.insights_admin`].

## About this task

- You create a scheduled Price Sheet Download job for Microsoft Azure.
- Each execution of a Price Sheet Download job runs multiple execution items. Each execution item imports and stores the price sheet for one subscription or billing profile.
- To ensure accurate reporting and recommendations for some providers, make sure that Discovery runs before the scheduled execution.
- When the scheduled time arrives, job execution happens in multiple stages (for example, connect to the provider, download the data, perform the post-import sort, and so on). The system logs status and results on the Price Sheet Executions page for each stage.
- Cloud Cost Management version 9.0 supports price sheet download for both Azure Enterprise Agreement (EA) and Microsoft Customer Agreement (MCA) accounts.

## Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Price sheet download jobs**.
2. Select **New**.
3. On the form, fill in the fields.

**Price Sheet Download Job form fields**

Field	Description
Name	A unique and meaningful name for the Price Sheet Download job.
Provider	Name of the cloud provider.
Download retail price sheet	Option to download retail price sheet without the need to provide account details and credentials required for the download.
Azure Service Account	Name of the Azure service account.
Download Price Sheet For	Price sheet downloads for different services. <ul style="list-style-type: none"> <li>○ Compute</li> <li>○ Database</li> <li>○ Storage</li> </ul>
Last successful execution	Timestamp of the most recent execution of the job.
Active	Option for activating the Price Sheet Download Job. Only active jobs are executed.
Run	Frequency to execute the job. <p><b>Note:</b> Depending on the value that you select, additional fields appear. For example, if you select a <b>Run</b> value of <b>Monthly</b>, a <b>Day</b> field appears. A value of 3 would mean the third day of the month.</p> <p>This field is automatically set to <b>Monthly</b>.</p>
Time	Time of the day to execute the job.
Current execution status	Status of the execution that is currently running.
Current execution details	Details for the execution that is currently running.

**4.** Select **Save**.

**5.** Select **Execute** to execute the job.

During execution, Cloud Cost Management downloads and stores the data. You can find the execution ID, status, and execution logs in the **Price Sheet Executions** tab. If there’s no new data, the execution is marked **Skipped**. If the download process is stuck, the execution is marked as **Canceled**.

**Related topics**

[Rightsizing resources](#)

[Specify rate discounts to enable accurate pricing for Rightsizing recommendations](#)

### Cancel an Azure Price sheet download job in Cloud Cost Management

An Azure Price sheet download job downloads price sheet data from Azure. You can cancel any Price sheet download job individually.

#### Before you begin

For each provider, run Discovery on each service account.

Make sure to have the proper credentials and service account setup.

Role required: insights\_admin [sn\_clin\_core.insights\_admin].

#### About this task

Cloud Cost Management downloads price sheet data from each provider one region at a time. If you cancel a running price sheet download job, the current region finishes downloading and the system cancels download for the remaining regions. If you delete a scheduled job execution, then all regions are marked as canceled.

#### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Price sheet download jobs**.
2. Select either a currently running or scheduled job that you want to cancel.
3. On the Price Sheet Download job page, select **Cancel execution**.

### Configure Cloud Cost Management for Google Cloud

The Cloud Cost Management application is available on the ServiceNow Store.

#### General requirements and limitations



- Cloud Cost Management isn't supported on mobile devices.
- Values in reports might vary slightly from provider billing values due to currency conversion or rounding.

#### Requirements and limitations for Google Cloud

You must have Google Cloud administrator permissions to work in the Google Cloud Console

### Download and activate Cloud Cost Management

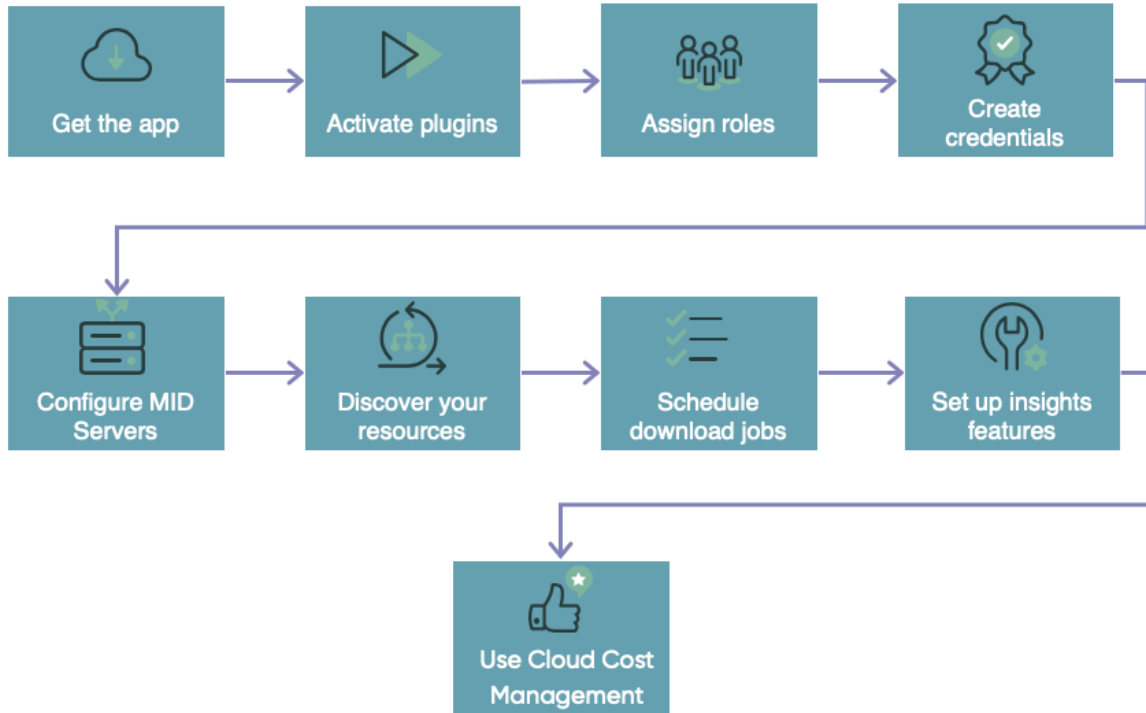
Role required: sys\_admin.

Step	Description	Do this
 Get the app.	Get the Cloud Cost Management app from the ServiceNow Store.	Visit the <a href="#">ServiceNow Store</a> website to get the Cloud Cost Management app and supporting apps.
 Activate all supporting	Activate the plugins listed on the ServiceNow Store page for Cloud Cost Management. You might need to request some of the plugins from your ServiceNow representative.	For instructions, see: <ul style="list-style-type: none"> <li>• <a href="#">Request as plugin</a></li> <li>• <a href="#">Activate a plugin</a></li> </ul>

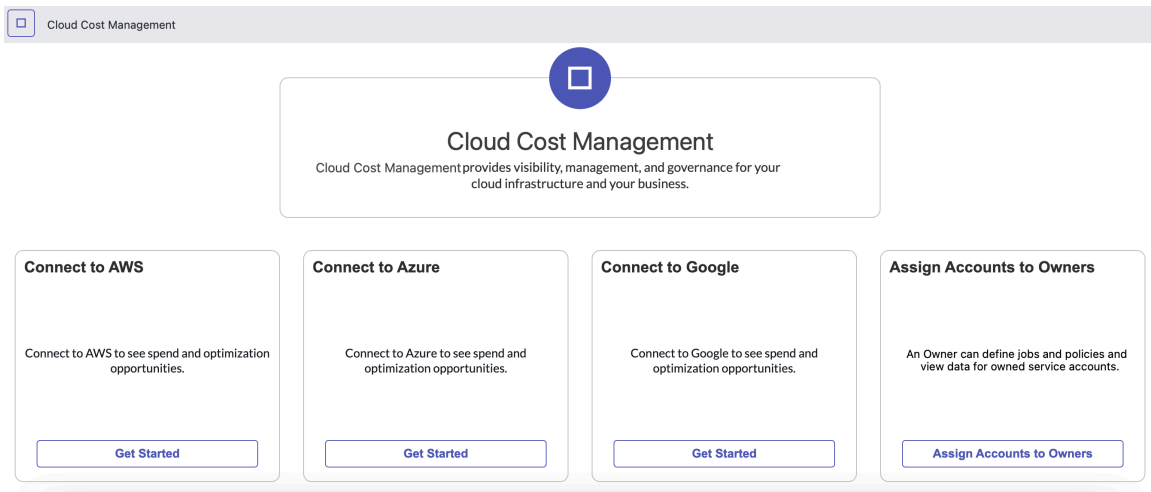
Step	Description	Do this
plugins and applications.		

### Overview: Setting up Cloud Cost Management

Here's an overview of your set up process. Detailed instructions appear in the table that follows.



When you first open the app, the home page enables you set up a provider and to assign the insights\_owner role.



After you set up a provider and assign the insights\_owner role, the page displays additional setup activities.

**Note:** The Configure and Run Discovery card appears only if you use the Discovery application to discover cloud resources.

## Connect to <provider>




Perform these tasks to connect Cloud Insights to <provider>





<p><b>Configure and Run Discovery</b></p> <p>Identify your service accounts and configure the Discovery process to download CI data for all resources in your cloud infrastructure.</p> <p><a href="#">Set up and Run Discovery</a></p>	<p><b>Download Billing and Usage Data</b></p> <p>Specify how and when to download, organize, and store billing data for each account.</p> <p><a href="#">Set up Billing Download</a></p>	<p><b>Download Price Sheets</b></p> <p>To ensure accurate recommendations, set up the schedule for downloading price sheets.</p> <p><a href="#">Set up Price Sheet Download</a></p>
---	--	---

- When you select the **Set up and Run Discovery** button in the Configure and Run Discovery section, the Discover Schedules form opens.
- When you select the **Set up Billing Download** button in the Download Billing and Usage Data section, the Billing Download Jobs form opens.
- When you select the **Set up Price Sheet Download** button in the Download Price Sheets section, the Price Sheets Download Jobs form opens.

After you finish all configuration, the page will show overview data and give quick access to reports.

### Tasks: Setting up Cloud Cost Management

Step	Description	Do this
 <p>Assign roles to Cloud Cost Management users and groups.</p>	<p>You assign Cloud Cost Management roles to user groups and to individual users based on user activities and responsibilities.</p>	<p><a href="#">Cloud Cost Management roles</a></p>
 <p>Set up access to Google Cloud.</p>	<p>To securely access data on your provider account, the Discovery process must present appropriate credentials. To make the credentials available to Discovery, you first create Google Cloud credentials in the Google Cloud portal. You then securely store the credentials in a service account in your instance.</p>	<p><a href="#">Set up access to Google Cloud billing and usage data</a></p>
 <p>Configuring MID Servers to access CI data on</p>	<p>To ensure secure and reliable communications, the Discovery process communicates with your cloud provider accounts and cloud resources through one or more MID Servers. You can set up the MID Servers on your network or in one of your cloud networks.</p>	<p><a href="#">Configuring access to CI data on your Google Cloud account</a></p>

Step	Description	Do this
provider accounts for Cloud Cost Management .		
 <p>Discover your cloud resources.</p>	<p><b>Note:</b> The Configure and Run Discovery card appears only if you use the Discovery application to discover cloud resources.</p> <p>When you select the <b>Set up and Run Discovery</b> button on the Configure and Run Discovery card, the Discover Schedules form opens. You schedule the Discovery process to ensure that the CMDB data on resources remains current.</p>	<p>Discovering your cloud resources for use</p>
 <p>Schedule and manage the jobs that download billing data for Cloud Cost Management .</p>	<p>When you select the <b>Set up Billing Download</b> button in the Download Billing and Usage Data section, the Billing Download Jobs form opens. Billing Download jobs download, organize, and store billing data for your payer account on the schedule that you specify. The system analyzes the data to generate reports and to make recommendations for changes in your cloud operations that can lead to cost savings.</p>	<p>Schedule and manage the jobs that download Google Cloud billing data</p>
 <p>Schedule and manage the Cloud Cost Management jobs that download price sheets .</p>	<p>When you select the <b>Set up Price Sheets Download</b> button in the Download Price Sheets section, the Price Sheets Download Jobs form opens. A Price Sheet Download job downloads and stores price sheet data. The Rightsizing and Unused resources processes use price sheet data when generating recommendations.</p>	<p>Schedule and manage the Cloud Cost Management jobs that download Google Cloud price sheets</p>
 <p>Configure the insights features:</p> <ul style="list-style-type: none"> <li>• Rightsizing</li> <li>• Unused Machines</li> </ul>	<ul style="list-style-type: none"> <li>• The Rightsizing feature analyzes resource usage to recommend better sizes for resources that are wasting money by being over-provisioned or underused. A confidence rating and predicted savings support each recommendation. You schedule Rightsizing jobs to resize the resources you specify.</li> <li>• The Unused Machines feature analyzes usage data to identify resources that are wasting money because they are not used. You schedule Unused Machines jobs to power-off or terminate the resources that you specify.</li> <li>• A Business Hours job applies policies to identify resources that are running when they should be powered off, reports</li> </ul>	<ul style="list-style-type: none"> <li>• Rightsizing resources</li> <li>• Unused resources</li> <li>• Business hours</li> <li>• Unassigned resources</li> </ul>

Step	Description	Do this
<ul style="list-style-type: none"> <li>Business Hours</li> <li>Unassigned Resources</li> </ul>	<p>them, and can start and stop them on a schedule that you specify. Running only during specified business hours can significantly reduce your cloud spend.</p> <ul style="list-style-type: none"> <li>Unassigned Resources policies help you to identify the resources that are not associated with a change group and to assign them appropriately. When a resource is assigned to the correct group, the resource can be appropriately governed even as it goes through stages such as patching, upgrading, and reconfiguring.</li> </ul>	

### Configuring access to CI data on your Google Cloud account

To ensure secure and reliable communications, the Discovery process communicates with your cloud provider accounts and cloud resources through one or more MID Servers. You can set up the MID Servers on your network or in one of your cloud networks.

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

### Requirements

**i Important:** This configuration process applies only if you use the Discovery application to discover cloud resources. Skip this process if you use a different method for discovering resources.

### Detailed instructions

[Google Cloud Platform Discovery](#) 

### MID Server settings for Cloud Cost Management

**i Note:** MID Server minimum memory size should be 4 GB.

Setting	Value
Supported Applications	Cloud Actions
Capabilities	<p>The <b>ALL</b> setting includes all required applications and capabilities. Alternatively, you can specify the following settings:</p> <p><b>i Note:</b> You can specify the following settings for any number of MID Servers. If you specify multiple MID Servers, then Discovery, billing data download operations, and actions that are recommended by Cloud Cost Management are assigned to one of the MID Servers at random.</p>

Setting	Value
	<p>Option 1: To use this MID Server only for Google Cloud, specify both of the following values:</p> <ul style="list-style-type: none"> <li>• Cloud Actions</li> <li>• Google Cloud</li> </ul> <p>Option 2: To use this MID Server for all providers, specify the following values:</p> <ul style="list-style-type: none"> <li>• Cloud Actions</li> <li>• Google Cloud</li> <li>• AWS</li> <li>• Azure</li> </ul>

### Using a proxy server

You can use a proxy server for the Cloud Cost Management MID Server. See [Proxy server configuration for Cloud Cost Management MID Server](#).

#### Related topics

- [MID Servers](#)
- [Install a MID Server on Windows](#)
- [Install a MID Server on Linux](#)

#### Proxy server configuration for Cloud Cost Management MID Server

You can configure any MID Server to use a proxy server for Cloud Cost Management operations. Proxy servers support all cloud-based activities such as running Discovery, Billing Download jobs, and Price Sheet Download jobs.

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

#### Detailed instructions

See [Proxy server configuration for MID Servers used for Cloud Discovery and Cloud Provisioning and Governance](#).

#### Proxy server limitations

- Only Windows or Linux platforms are supported.
- The Google Cloud integration is not supported.
- The VMware integration is not supported.
- Remote PowerShell scripts cannot be executed.
- Custom APIs might not work.

## Supported proxy server authentication for Cloud Cost Management

Proxy Server type	Authentication type
HTTP/HTTPS	No authentication
SOCKS5	No authentication
HTTP/HTTPS	Basic authentication
SOCKS5	Basic authentication
HTTP/HTTPS	NTLM

## Supported Proxy server configurations

### Supported configuration settings

Configuration	Operating system	Proxy server	Authentication mode
Configuration 1	Linux	None	Not Applicable
Configuration 2	Windows	Squid (HTTPS)	None
Configuration 3	Linux	Squid (HTTPS)	Local
Configuration 4	Windows	Squid (HTTPS)	Active Directory

### Related topics

[MID Servers](#) 

[Install a MID Server on Windows](#) 

[Install a MID Server on Linux](#) 

### Add a Google Cloud service account

Add a Google Cloud service account to store the credential and access information.

### Before you begin

Role required: sn\_cmp.cloud\_admin

Set up download jobs for billing and price sheet data for the service account.

### About this task

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

A service account is a secure record on your instance that stores the credential and access information for your provider account. Discovery uses the information to access your provider account to get data on each resource in each specified datacenter. A cloud account can include multiple service accounts – even service accounts from different providers. For each service account, you specify which datacenters to include in the cloud account.

### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Service accounts**.
2. Select **New**.

3. On the form, fill in the fields.

**Cloud Service Account**

Field	Description
Name	Unique and meaningful name for this service account.
Account Id	The project_ID value from the associated JSON key file.
Discovery credentials	<p>The credentials needed for ServiceNow applications to access this account. You may configure this field at a later stage, while configuring access to Google Cloud accounts.</p> <ul style="list-style-type: none"> <li>○ If you configured Google Cloud credentials at ServiceNow AI Platform, select the name of the relevant Google Cloud credential.</li> <li>○ To use other Google Cloud accounts to access this account, leave the field empty.</li> </ul>
Datacenter URL	<p>URL of the datacenter.</p> <p>This field is required only for Google Gov Cloud accounts.</p>
Datacenter Type	<p>Type of the datacenter where the account is hosted.</p> <p>Select <i>Google Cloud Platform datacenter</i>.</p>
Datacenter discovery status	<p>Status and timestamp of the last execution of Discovery on the datacenter.</p> <p>This value is generated automatically.</p>
Is Billing Account	Option for enabling the account to access billing data.

4. Select **Save**.

**Result**

The service account that you created gets listed on the **Service accounts** page.

**Related topics**

[Schedule and manage the jobs that download Google Cloud billing data](#)

[Schedule and manage the Cloud Cost Management jobs that download Google Cloud price sheets](#)

**Setup roles for Google Cloud billing download**

To perform billing download for Google Cloud, you need specific roles and permissions for various features.

## Before you begin

Roles required:

- On the Google Cloud Console: Google Cloud administrator.
- Cloud Cost Management: insights\_admin [sn\_clin\_core.insights\_admin] or admin.

## About this task

### Procedure

1. Add the following required permissions for the Billing module in the Google Cloud provider console.

Function and feature	APIs and permission
<p>Cost analysis and reporting</p> <ul style="list-style-type: none"> <li>○ Cost allocation and tracking</li> <li>○ Cost trend analysis</li> <li>○ Budget monitoring</li> <li>○ Spend forecasting</li> <li>○ Custom cost reports</li> </ul>	<p><b>Note:</b> These permissions enable retrieving billing and spend data for cost analysis.</p> <p>BigQuery (Billing data)</p> <ul style="list-style-type: none"> <li>○ bigquery.jobs.create: Create jobs to query billing data</li> <li>○ bigquery.jobs.list: List query jobs</li> <li>○ bigquery.tables.getData: Read billing export data</li> </ul> <p>Resource manager</p> <ul style="list-style-type: none"> <li>○ resourcemanager.projects.get: Get project cost context</li> <li>○ resourcemanager.projects.list: List projects for cost aggregation</li> </ul>
<p>Recommendations</p> <ul style="list-style-type: none"> <li>○ Identify under-used resources</li> <li>○ Suggest optimal instance types</li> <li>○ Recommend disk size adjustments</li> <li>○ Cost optimization opportunities</li> </ul>	<p><b>Note:</b> These permissions enable viewing the cost-saving recommendations. You must grant the permissions for retrieving billing and spend data before viewing the recommendations.</p> <p>BigQuery</p> <ul style="list-style-type: none"> <li>○ bigquery.jobs.list: List BigQuery jobs</li> <li>○ bigquery.tables.getData: Access table data for cost analysis</li> </ul> <p>Cloud SQL</p> <ul style="list-style-type: none"> <li>○ cloudsql.instances.get: Retrieve Cloud SQL instance details</li> <li>○ cloudsql.instances.list: List all Cloud SQL instances</li> </ul>

Function and feature	APIs and permission
	<ul style="list-style-type: none"> <li>○ <code>cloudsql.databases.get</code>: Get database details</li> <li>○ <code>cloudsql.databases.list</code>: List databases</li> </ul> <p>Compute engine</p> <ul style="list-style-type: none"> <li>○ <code>compute.instances.get</code>: Retrieve VM instance details</li> <li>○ <code>compute.instances.list</code>: List all VM instances</li> <li>○ <code>compute.instances.getIamPolicy</code>: Get IAM policies for instances</li> <li>○ <code>compute.disks.get</code>: Retrieve disk details</li> <li>○ <code>compute.disks.list</code>: List all disks</li> <li>○ <code>compute.autoscalers.get</code>: Get autoscaler configurations</li> <li>○ <code>compute.autoscalers.list</code>: List autoscalers</li> <li>○ <code>compute.regions.list</code>: List available regions</li> <li>○ <code>compute.snapshots.get</code>: List all snapshot</li> </ul> <p>Recommender - Compute Instance Recommendations</p> <ul style="list-style-type: none"> <li>○ <code>recommender.computeInstanceMachineTypeRecommendations.get</code></li> <li>○ <code>recommender.computeInstanceMachineTypeRecommendations.list</code></li> <li>○ <code>recommender.computeInstanceMachineTypeRecommendations.update</code></li> <li>○ <code>recommender.computeDiskIdleResourceRecommendations.get</code></li> <li>○ <code>recommender.computeDiskIdleResourceRecommendations.list</code></li> <li>○ <code>recommender.computeDiskIdleResourceRecommendations.update</code></li> <li>○ <code>recommender.computeInstanceIdleResourceRecommendations.get</code></li> <li>○ <code>recommender.computeInstanceIdleResourceRecommendations.list</code></li> <li>○ <code>recommender.computeInstanceIdleResourceRecommendations.update</code></li> </ul> <p>Recommender - Cloud SQL Recommendations</p> <ul style="list-style-type: none"> <li>○ <code>recommender.cloudsqlIdleInstanceRecommendations.get</code></li> <li>○ <code>recommender.cloudsqlIdleInstanceRecommendations.list</code></li> <li>○ <code>recommender.cloudsqlIdleInstanceRecommendations.update</code></li> <li>○ <code>recommender.cloudsqlOverprovisionedInstanceRecommendations.get</code></li> <li>○ <code>recommender.cloudsqlOverprovisionedInstanceRecommendations.list</code></li> <li>○ <code>recommender.cloudsqlOverprovisionedInstanceRecommendations.update</code></li> </ul> <p>Recommender - General</p>

Function and feature	APIs and permission
	<ul style="list-style-type: none"> <li>○ recommender.locations.get: Get recommender location details</li> <li>○ recommender.locations.list: List available recommender locations</li> </ul>
<p>Resource Lifecycle Management</p> <ul style="list-style-type: none"> <li>○ Start/stop instances on schedule</li> <li>○ Delete unused resources</li> <li>○ Resize resources based on recommendations</li> <li>○ Automated cost optimization actions</li> </ul>	<p><b>Note:</b> These permissions enable active resource management to act on cost-saving measures across your cloud environments. You must grant the permissions for retrieving billing and spend data and viewing recommendations before granting permissions for resource management.</p> <p>Compute engine - Lifecycle operations</p> <ul style="list-style-type: none"> <li>○ compute.instances.start: Start stopped instances</li> <li>○ compute.instances.stop: Stop running instances</li> <li>○ compute.instances.delete: Delete unused instances</li> <li>○ compute.instances.update: Update instance configurations</li> <li>○ compute.instances.setDiskAutoDelete: Configure disk auto-delete</li> <li>○ compute.disks.delete: Delete unused disks</li> <li>○ compute.disks.update: Update disk configurations</li> <li>○ compute.snapshots.create: Create a new snapshot</li> </ul> <p>Cloud SQL - Lifecycle operations</p> <ul style="list-style-type: none"> <li>○ cloudsql.instances.restart: Restart Cloud SQL instances</li> <li>○ cloudsql.instances.delete: Delete unused SQL instances</li> <li>○ cloudsql.instances.update: Update SQL instance configurations</li> <li>○ cloudsql.databases.delete: Delete unused databases</li> <li>○ cloudsql.databases.update: Update database configurations</li> </ul>

2. Set the roles at the Google Cloud organization level so that it is applicable for all the projects under that level.  
The following APIs should be enabled on the Google Cloud Console for each project.

- Compute Engine API
- Recommender API
- BigQuery API
- BigQuery Data Transfer API
- Cloud Resource Manager API
- Cloud SQL Admin API
- Batch API

3. For details on policy creation see [Google Cloud docs](#) .

### Set up access to Google Cloud billing and usage data

Set up access to Google Cloud Platform (GCP) billing and usage data by following the steps.

1. [Create a Google Cloud billing account](#)
2. [Create Google API credentials](#)
3. [Enable cost allocation in Google Cloud for Kubernetes cluster](#)
4. [Schedule and manage the jobs that download Google Cloud billing data](#)
5. [Add a Google Cloud CI class type to ensure accurate billing data](#)

### Related topics

[Cancel a Google Cloud Billing download job](#)

### Create a Google Cloud billing account

Create a billing account, project, and BigQuery dataset in the Google Cloud Console.

### Before you begin


You must be familiar with Google Cloud policies.

Role required: Google Cloud administrator

### Procedure

1. Under the Google Cloud billing account, create a project that can store the billing data in a BigQuery dataset.

 **Note:** Charges associated with BigQuery usage are based on billing plans.

- a. Create a service account under the project and create a key.  
See the [Create service accounts and Manage service accounts](#) sections in [Google Cloud docs](#)  for more information.
- b. Configure the service account to have access to all projects.  
You must have the Viewer role to all the projects.
- c. Download the key file (JSON file) which contains the required credentials.

2. In the Google Cloud, enable Detailed usage costs to use Google Cloud Billing

## Billing export

**BIGQUERY EXPORT**

FILE EXPORT

BigQuery export sends your billing data to a BigQuery dataset. Learn more about [BigQuery](#) and [how to export data to BigQuery](#)

### Standard usage cost

Disabled

[SHOW ME HOW THIS WORKS](#)

The selected BigQuery dataset will be updated each day with your daily cost detail per SKU.

[EDIT SETTINGS](#)

### Detailed usage cost

Enabled

The selected BigQuery dataset will be updated each day with your detailed usage cost. [Learn more about the Detailed usage cost export and supported regions.](#)

Project name

Dataset name

Download.

**Note:** If you're configuring the billing download BigQuery dataset for the first time, read the Data availability section in the [Understand the Cloud Billing data tables in Big Query](#) topic from [Google cloud documentation](#).

### Create Google API credentials

To access data securely on your provider account, the Discovery process must be present with appropriate credentials.

### Before you begin

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or admin

### About this task

**Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

## Procedure

1. In Cloud Cost Management, navigate to **Cloud Cost Management Workspace > Operations > Administration > Credentials**.
2. Select **Google API credentials**.
3. Select **New**.
4. On the form, fill in the fields.

### Google API Credentials

Field	Description
Name	Unique and descriptive name for the Google Cloud credentials.
Active	Option to use the credential.
Type	Provider name, GCP.
Applies to	Indicates the MID Servers. If all, type All MID Servers.
E-Mail	Billing service account email.
Secret Key	Secret key that you generated on the Google Cloud Console.

5. Select **Save**.

## Related topics




[Cloud credentials](#) 

## Enable cost allocation in Google Cloud for Kubernetes cluster

Enable cost allocation for each Kubernetes cluster before you run a Google Cloud Billing download job to view the Kubernetes spend.

### Before you begin



Role required: Google Cloud administrator

- You should be familiar with Google Cloud policies.
- Install Discovery and Service Mapping Patterns application (sn\_itom\_pattern) 1.10.2 or higher. For more information, see [Install Discovery and Service Mapping Patterns](#) .
- Install CMDB CI Class Models (sn\_cmdb\_ci\_class) version 1.53.1 or higher. For more information, see [CMDB CI Class Models](#) .
- To set up Kubernetes discovery, see [Kubernetes discovery using patterns](#) .

### About this task

- For identifying resources for Kubernetes clusters during billing download, the tag `sn_ccm_k8_cluster_name` is added to the resources, which already have **goog-k8s-cluster-name** tags.
- You must enable cost allocation for each individual Kubernetes cluster.

## Procedure

1. Log in to the [Google Cloud Console](#) .
2. Select the hamburger icon ()
3. Select **Kubernetes Engine**.
4. Select **Clusters**.
5. In the Overview section, select a cluster name.
6. In the Features section, enable Cost Allocation.

## Result

The cost allocation for the selected Kubernetes cluster is enabled and you can view the Kubernetes spend.

## Schedule and manage the jobs that download Google Cloud billing data

Billing Download jobs download, organize, and store billing data for your payer account on the schedule that you specify. The system analyzes the data to generate reports and to make recommendations for changes in your cloud operations that can lead to cost savings.

## Before you begin

- Ensure that your system has 8 GB Clotho memory and 4 GB mid memory.
- You must set up required roles to perform billing download. For more information, see [Setup roles for Google Cloud billing download](#).
- Enable cost allocation for each Kubernetes cluster before you run a Google Cloud Billing download job to view the Kubernetes spend. For more information, see [Enable cost allocation in Google Cloud for Kubernetes cluster](#).

Roles required:

- On the Google Cloud Console: Google Cloud administrator.
- Cloud Cost Management: insights\_admin [sn\_clin\_core.insights\_admin] or admin.

## About this task

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

During the billing download, all the resources are pulled into the system. GCP SQL databases are placed in the [cmdb\_ci] table.

**i Note:** From Cloud Cost Management version 8.1 onwards, the default time for billing download jobs has changed from 12 a.m. to 1 a.m. (UTC). Also, schedule or run Cloud Cost Management jobs only during off-business hours and when there's no other heavy operations or jobs running on the ServiceNow instance.

If you have installed the Cloud Cost Management Infra Stack application, then toward the end of a job, significant database update, and insert operations are performed based on your Cloud CIs and spend data volume. Thus, any other job that impacts database performance shouldn't be run during this time alongside Cloud Cost Management jobs.

- A Billing Download job creates and updates the billing node data table [sn\_cld\_intg\_gcp\_cost\_usage] with billing line items from the BigQuery dataset.

**i Note:** Charges associated with BigQuery usage are based on billing plans.



- The CI placement process associates downloaded cost and usage data with the appropriate CIs in the CMDB. See [Add a Google Cloud CI class type to ensure accurate billing data](#) for details.
- Billing Download jobs can't be in the Global scope.
- You can create only one Billing Download job for each account.
- To ensure accurate reporting and recommendations for some providers, make sure that Discovery runs before the scheduled execution.
- Each successful execution of a Billing Download job triggers the Budget Forecast, Business hours, Reservation/saving plans, Rightsizing, and Unused resources jobs to analyze spend and usage data and to update the actionable recommendations in reports.
- Each successful execution of a Billing Download job updates tagged costs. Recent updates that you make to tag category definitions (for example, adding a tag name to a category) might not be reflected in cost reports. To apply the latest tag category definitions to cost data without running a Billing Download job, select *Cloud Cost Management Workspace* > **Operations** > **Cost usage tags** > **Tag categories** and then select **Re-Apply Categories**.
- When the scheduled time arrives, job execution happens in multiple stages (for example, connect to the provider, download the data, perform the post-import sort, and so on). The system logs status and results on the Price Sheet Executions page for each stage.
- Cost categories are updated with new cost tag values each time billing data is downloaded. (You define cost tags in the provider portal to associate usage data with a particular business entity. For example, the Cost Center category might include the tags development, testing, and QA. The User category might include the names of your users.)
- Billing data is downloaded in reverse chronological order by month. For example, if the range is from March to June, data for June is downloaded first.
- To ensure meaningful results for the first billing data download, the app downloads data for at least 30 days. For example, if today is June 10 and you specify June for download, the system downloads data for both May and June to ensure at least 30 days of data for analysis.
- You can download data only for the most recent twelve months.

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Billing download jobs**.
2. Select the *Google* tab.
3. Select **New**.
4. On the form, fill in the fields.

**Google Billing Download Job**

Field	Description
Name	Meaningful name for the scheduled execution of the Billing Download job.
Last successful execution	The timestamp of the most recent successful execution.
Notify users/groups	The users or groups to notify by email of the status of the job execution (for example, download failure). The system doesn't send a notification for success.

Field	Description
	<p>Users or groups with the Cloud Integrations Admin [sn_cld_intg_core.cloud_integrations_admin] role are well suited to handle these issues.</p> <p>To update the email template, navigate to <b>System Notification &gt; Email &gt; Notifications</b> and open the Notify on billing job execution error template. For information on configuring the email, see <a href="#">Create an email template</a> .</p>
Active	Option for activating the job. Only active jobs are executed.
Run	<p>Frequency with which to execute the Billing Download job.</p> <p>This field is automatically set to <b>Daily</b>.</p> <p> <b>Note:</b> Depending on the value that you select, additional fields appear.</p>
Time	Time of day to execute the job.
Latest execution status	The status of the most recently executed job.
Latest execution details	Execution details of the most recently executed job.
Google Settings	
Billing account	<p>Account to access for billing data. Every account for which the <b>Is Billing account</b> setting is true appears in the selection list. For more information about the <b>Is Billing account</b> field, see <a href="#">Add a Google Cloud service account</a>.</p> <p>For example, the Billing account ID must be in the <code>0XX0A - AXX9 - 6XXXA</code> format.</p>
BigQuery project Id	The project ID, which contains the BigQuery dataset.
BigQuery dataset name	The name of the BigQuery dataset where the billing data is getting stored on an hourly basis.

**5. Select Test Connection.**

The Test Connection workflow uses the settings that you configured to attempt to access the provider account. The system displays a progress pop-up and a success/error message that suggests actions to fix the configured settings.

**6. Select Execute now to execute the job after the connection succeeds.**

**7. In the Download billing data dialog box, fill in the fields.**

Field	Description
Start month	Starting month for downloading the billing data.  <b>Note:</b> Data is downloaded for the specified months. If fewer than 30 days of data for analysis is received, data for the preceding month is also downloaded.
End month	Ending month for downloading the billing data.
Re-import data	Option for overwriting data from an earlier download attempt.

**8. Select Download.**

A Google Cloud billing download job goes through the following states during the job execution:

- a. Ready:** Job is in queue. For example, when a job is created to download billing data for a few months, the jobs for all months except the latest month are in Ready state.
- b. Requested:** Job will be fetched and processed immediately. For example, the job that's created to download billing data for a month is in the Requested state. Also, when a job is created to download billing data for more than a month, the latest month job is also in the Requested state.
- c. Reserved:** Job is picked by the Kubernetes cluster for processing. The Kubernetes cluster also sends the Job Id to Cloud Cost Management Glide to show which Kubernetes job is processing the billing job.

**Important:** This state is applicable only if you have installed the Cloud Cost Management Infra Stack application.

- d. In Progress:** Billing data is being processed.
- e. Sink Begin:** Kubernetes cluster sends some part of the processed billing data to the tables such as Spend Report Daily Aggregate Cost and Spend Report Monthly Aggregate Cost on the Glide. The records in these tables are in the Generating state. The job remains in the Sink Begin state until the entire billing data is sent to Glide.

In the Sink Begin state, the CI placement also starts and the Status of the CI Placement Stage changes from Ready to In progress.

**Important:** This state is applicable only if you have installed the Cloud Cost Management Infra Stack application.

- f. Sink Complete:** All the processed billing data is sent to Cloud Cost Management Glide from the Kubernetes cluster.

**Important:** This state is applicable only if you have installed the Cloud Cost Management Infra Stack application.

- g. Finished:** Status after Sink Complete when all the billing files are sent to the Glide database.

**Note:** The following changes happen when the job is marked Finished:

- The state of the records in the Spend Report Daily Aggregate Cost and Spend Report Monthly Aggregate Cost tables change from Generating to Active. Also, existing records are marked inactive.
- All the sub accounts are mapped to the parent account.

**h. Success:** Job is completed successfully.

## Result

The following events happen when the job executes:

- While downloading the data, Cloud Cost Management updates the billing node data table [sn\_cld\_intg\_<provider>\_cost\_usage] with the CIs in the CMDB that correspond to each resource ID. If a CI doesn't exist, the system generates a placeholder CI. On subsequent discovery, the system reconciles the placeholder CI.
- Cloud Cost Management generates a log entry for each stage of the execution on the Billing Download Executions page.

## Add a Google Cloud CI class type to ensure accurate billing data

Specify the details of a new CI or CI type to enable the CI placement process to assign cost and usage data correctly. The process is a part of Billing Download job execution. The CI placement process associates downloaded cost and usage data with the appropriate CIs.

## Before you begin

Role required: Cloud Cost Management Admin [sn\_clin\_core.insights\_admin]

## About this task

**Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

Billing Download jobs store downloaded billing data in the billing node table. The Class Type table holds CI type definitions for the cost usage table. Cloud Cost Management executes the CI placement process to associate the billing and usage data with CIs in the CMDB. The CI placement process queries the billing node table using the CI type definitions that reside in the CI placement type table. For a new CI (or a CI type from a new provider), you specify the parameters that uniquely define the CI, a CI type definition, and a class type table to store the CI type definition.

The CI placement type table for Google Cloud [sn\_cld\_intg\_gcp\_ci\_placement\_type] inherits from the Core CI placement type table (sn\_cld\_intg\_core\_ci\_placement\_type).

**Procedure**

1. Go to the CI placement type table and select **New**.

**Google Cloud class types in the Core CI placement type table [sn\_cld\_intg\_core\_ci\_placement\_type]**

	Name	Active	Class Type	Query params
<input type="checkbox"/>	<a href="#">Compute Engine</a>	true	cmdb_ci_vm_instance	Resource global name contains compute.go
<input type="checkbox"/>	<a href="#">Disk</a>	true	cmdb_ci_storage_disk	Resource global name contains disk

2. Fill in the form.

**CI Placement Type Information form**

Field	Description
Class type	CMDB class type table that this type of CI is stored in. New CIs of this type are added to the table.
Name	Name of the CI type.
Query table	<p>Billing node table that the CI placement process queries to find instances of the CI type.</p> <p>Query table is sn_cld_gcp_cost_usage and cannot be changed.</p>
Query params	Parameter values in the billing node table that uniquely define the CI type.

- After you add a class type, you must reimport billing and usage data to ensure that CIs are correctly placed into the new type.

**Note:** The supported CIs are placed after the Cumulus Unsupported CI Placement scheduled job runs daily. For more information, see [Supported CI class types for Google Cloud services](#).

### Cancel a Google Cloud Billing download job

A Billing download job obtains billing and usage data from each payer account for Google Cloud. The Rightsizing, Unused resources, and Business hours processes use billing and usage data when generating recommendations. You can cancel any Billing download job individually.

#### Before you begin

Roles required:

#### About this task

**Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

#### Procedure

- Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Billing download jobs**.
- Select the **Google** tab.
- Select either a currently running or scheduled job that you want to cancel.
- On the Google Billing Download page, select **Cancel execution** or **Cancel**.

### Schedule and manage the Cloud Cost Management jobs that download Google Cloud price sheets

A Price Sheet Download job downloads and stores price sheet data.

#### Before you begin

Ensure that you have the proper credentials and service account setup.

Role required: insights\_admin [sn\_clin\_core.insights\_admin].

#### About this task

- You create a scheduled Price Sheet Download job for each provider.
- A single API fetches the Price Sheet details for all regions at once.
- When the scheduled time arrives, job execution happens in multiple stages (for example, connect to the provider, download the data, perform the post-import sort, and so on). The system logs status and results on the Price Sheet Executions page for each stage.

#### Procedure

- Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Price sheet download jobs**.
- Select **New**.
- On the form, fill in the fields.

**Price Sheet Download Job**

Field	Value
Name	Meaningful name for the Price Sheet Download job.
Provider	Name of the cloud provider.
Last successful execution	Timestamp of the most recent execution of the job.
Download Price Sheet For	Price sheet downloads for different services. <ul style="list-style-type: none"> <li>○ AWS <ul style="list-style-type: none"> <li>▪ Compute and Storage</li> <li>▪ Database</li> <li>▪ All</li> </ul> </li> <li>○ Azure <ul style="list-style-type: none"> <li>▪ Compute</li> <li>▪ Database</li> <li>▪ Storage</li> </ul> </li> <li>○ Google <ul style="list-style-type: none"> <li>▪ Compute and Storage</li> <li>▪ Database</li> <li>▪ All</li> </ul> </li> </ul>
Active	Option for activating the Price Sheet Download Job. Only active jobs are executed.
Run	Frequency to execute the job. <p><b>i Note:</b> Depending on the value that you select, additional fields appear. For example, if you select a <b>Run</b> value of <b>Monthly</b>, a <b>Day</b> field appears. A value of 3 would mean the third day of the month.</p> <p>This field is automatically set to <b>Monthly</b>.</p>
Time	Time of day to execute the job.
Current execution status	Status of the execution that is currently running.
Current execution details	Details for the execution that is currently running.

**4. Select Save.**

**5. Select Execute** to execute the job.

During execution, Cloud Cost Management downloads and stores the data. You can find the execution ID, status, and execution logs in the **Price Sheet Executions** tab. If there's no new data, the execution is marked **Skipped**. If the download process is stuck, the execution is marked as **Canceled**.

## Related topics

[Rightsizing resources](#)

### Cancel a GCP Price sheet download job in Cloud Cost Management

An GCP Price sheet download job downloads price sheet data from Google Cloud Platform (GCP). You can cancel any Price sheet download job individually.

#### Before you begin

For each provider, run Discovery on each service account.

Make sure to have the proper credentials and service account setup.

Role required: insights\_admin [sn\_clin\_core.insights\_admin].

#### About this task

Cloud Cost Management downloads price sheet data from each provider one region at a time. If you cancel a running price sheet download job, the current region finishes downloading and the system cancels download for the remaining regions. If you delete a scheduled job execution, then all regions are marked as canceled.

## Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Price sheet download jobs**.
2. Select either a currently running or scheduled job that you want to cancel.
3. On the Price Sheet Download job page, select **Cancel execution**.

## Using Cloud Cost Management

Use Cloud Cost Management to rightsize, identify, assign, manage, and analyze usage data of your cloud resources.

### Reduce resource cost with Reservation Plans

View the Reserved Instances (RI) report, implement recommendations, and configure processes to convert on-demand payment plans to reservation plans, and save the cost of your resources.

You can filter by payment option, term, and look back period to view specific results for the Reserved Instances report.

The screenshot displays the 'Reservation/Saving plans' section in the ServiceNow Cloud Cost Management Workspace. The interface includes a left-hand navigation menu with options like 'Recommendations', 'Business hours', and 'Administration'. The main content area features three charts: 'Upfront cost to reserve' showing \$0, 'Overall RI utilization percentage' showing 'No data available', and 'Potential savings by service category' showing a donut chart with \$15.12K in savings. Below the charts is a table of 'New Recommendations' with 18 items, including details for Provider, Service category, Cloud service, Monthly savings, Service account, and Region.

Chart	Description
Upfront cost to reserve	Upfront cost if all Reservation/Saving plans recommendations were applied.
Overall RI utilization percentage	Percentage of resources on reservation plans that were used and that weren't used in the last 30-day period.
Potential savings by service category	Monthly savings to expect when all Reservation/Saving plan recommendations are applied.

Recommendation tab	Description	Available selections on selected recommendations
New	Resources that would benefit most in reservation plans. Review the list and decide the conversion to reservation plans by moving a resource to one of the other tabs by selecting the appropriate action.	<ul style="list-style-type: none"> <li>Accept</li> <li>Decline</li> </ul>
Accepted	Resources that are converted to reservation plans. After a resource is moved to the <b>Accepted Recommendations</b> tab, it won't reappear on the <b>New Recommendations</b> tab.	Decline
Declined	Resources that aren't converted to reservation plans. After a resource is moved to the <b>Declined Recommendations</b> tab, it	Accept

Recommendation tab	Description	Available selections on selected recommendations
	won't reappear on the <b>New Recommendations</b> tab.	

**i Important:** When you move a resource to the **Accepted Recommendations** or **Declined Recommendations** tab, the Cloud Cost Management application doesn't perform any action. You can change payment plans on the provider management interface.

Google Cloud recommendations are updated periodically and might not show the latest suggestions until the console is manually refreshed. In contrast, Cloud Cost Management fetches recommendations via API, ensuring it has the most current data. This difference can sometimes cause Google Cloud RI recommendations in Cloud Cost Management to diverge from what's shown in the Google Cloud console. A manual refresh is required to see the latest recommendations.

You can also [configure Reservation/Saving plans operations](#) by selecting **Settings**.

### Configure Reservation/Saving plans operations

Configure Reservation/Saving plans processes and specify the amount of potential savings that triggers notifications.

#### Before you begin

Run Discovery on each service account.

Ensure that the Billing Download job has completed for each provider.

Role required: insights\_admin and insights\_owner

#### Procedure

1. Navigate to **Cloud Cost Management Workspace > Operations > Recommendations > Reservation/Saving plans**.
2. On the Reserved Instances page, select **Settings**.
3. On the form, fill in the fields:

#### Reserved Instance Settings

Field	Description
Enable Reserved Instance	Option for enabling Reserved Instance activities. Clearing the check box disables Reservation/Saving plans operations.  Default: Enabled
Notify when potential reserved instance savings exceed (%) of total spends	Percentage of overall cloud spends for potential savings on reserved savings that should trigger an email notification to the users or groups that you specify.  The value is calculated using the amount that could be saved if all the Reservation/Saving plans recommendations are followed.

Field	Description
	The default value of <b>15</b> means that notifications are sent only when the savings for potential reserved instances are greater than 15% of total costs.
Do not recommend if savings are below threshold	<p>Minimum cost, as calculated over the Lookback period, to use when deciding whether to recommend a Reservation/Saving plan for a resource.</p> <p>For example, a setting of ¥100 means that the app should ignore any Reservation/Saving plan recommendation that would result in less than ¥100 in savings.</p>
Notify groups/Notify users	Users or groups to notify by email when the spend for potential reserved instance savings exceed the specified percentage of overall cloud spend. For information on configuring the email, see <a href="#">Create an email template</a> .
<b>Default Filter Settings</b>	
Payment option	Sets the selected payment option as the default filter on the Reservation/Savings Plan page.
Term	Sets the selected term as the default filter on the Reservation/Savings Plan page.
Look back period	Sets the selected look back period as the default filter on the Reservation/Savings Plan page.

**4. Select Save.**

**What to do next**

To view the changes, rerun the Billing Download job.

**Resize resources with Rightsizing**

Gain better visibility of resource usage by identifying your over-provisioned or underused resources, configuring rightsizing operations, implementing rightsizing recommendations, and performing various rightsizing operations.

You can [configure Rightsizing operations](#) by selecting **Settings**.

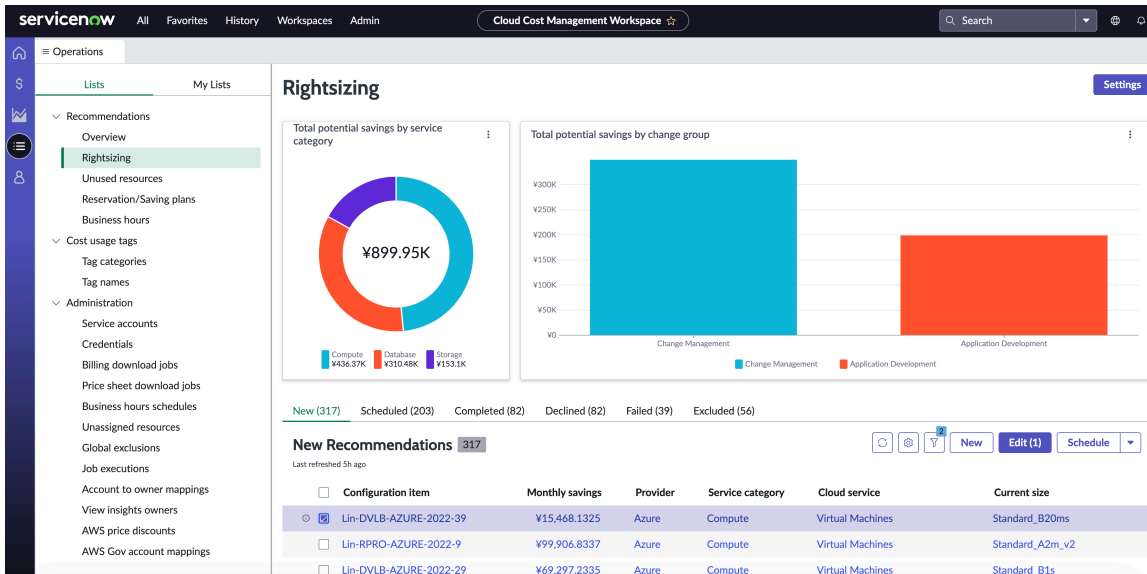


Chart	Description
Total potential savings by service category	Total savings to expect if all rightsizing recommendations are applied by service category such as Compute, Database, and Storage.
Total potential savings by change group	Total savings to expect if all rightsizing recommendations are applied by change group such as Change Management and Application Development.

Recommendations tab	Description	Available actions on selected recommendations
New	Resources that are candidates for Rightsizing. Each successful execution of a Billing Download job triggers the Rightsizing jobs to analyze spend and usage data and to update the actionable recommendations in reports.	<ul style="list-style-type: none"> <li>Exclude</li> <li>Schedule</li> </ul>
Scheduled	Resources that are scheduled in Rightsizing jobs.	<ul style="list-style-type: none"> <li>Reschedule</li> <li>Remove</li> </ul>
Declined	Resources that owners didn't want to resize (declined the change request).	<ul style="list-style-type: none"> <li>Exclude</li> <li>Reschedule</li> </ul>

Recommendations tab	Description	Available actions on selected recommendations
Completed	Resources that were rightsized by the Rightsizing job.	None
Failed	Resources for which the Rightsizing operation wasn't successful. For failed attempts, the Rightsizing operation performs a rollback as described in <a href="#">AWS only – Rollback on failed Rightsizing attempts</a> .	<ul style="list-style-type: none"> <li>• Exclude</li> <li>• Reschedule</li> </ul>
Excluded	Resources that are configured not to be considered for Rightsizing.	Remove from exclusion

**Columns on the New, Scheduled, Declined, Completed, and Failed Recommendations tabs**

Column	Description
Configuration item	Unique identifier of the resource.
Monthly savings	Potential savings if the resource is resized to the Recommended size.
Provider	The provider that hosts the resource.
Service category	Lists all service categories from the instance sorted by name.
Cloud service	Lists all cloud categories sorted by name.
Current size	Size of the resource that was analyzed for Rightsizing, the size that you're currently paying for.
Recommended size	<ul style="list-style-type: none"> <li>• AWS: The size that is operationally and cost-wise most appropriate for the resource, based on the analysis of provisioning and usage levels over the last 14 days.</li> <li>• Microsoft Azure: Recommendation from the Azure Advisor service.</li> </ul>
Override size	Size to use instead of the recommended size. By default, the system uses the Recommended size when Rightsizing. Specify a different size by specifying an Override size.
Rationale	The reason that the system recommends resizing.

**Columns on the New, Scheduled, Declined, Completed, and Failed Recommendations tabs (continued)**

Column	Description
	<ul style="list-style-type: none"> <li>• AWS: Based on Cloud Cost Management analysis of provisioning and usage levels over the last 14 days.</li> <li>• Microsoft Azure: Recommendation from the Azure Advisor service.</li> </ul>
Confidence	<p>The confidence level in a recommendation.</p> <ul style="list-style-type: none"> <li>• High confidence requires the following conditions:               <ul style="list-style-type: none"> <li>○ The system has at least 10 days of usage data for the resource.</li> <li>○ The current and recommended family or generation is identical.</li> </ul> </li> <li>• Medium confidence requires the following conditions:               <ul style="list-style-type: none"> <li>○ The system has less than 10 days of usage data for the resource.</li> <li>○ The current and recommended family or generation is identical.</li> </ul> </li> <li>• Low confidence: The current and recommended family/generation are different.</li> </ul>
Account	The service account that includes the resource. A service account represents a group of related regions in your provider account.
Region	If appropriate for the provider, region in the service account that hosts the resource.
Owned by	Owner of the resource.
Change group	Change group for the resource.
Source	<p>Source of the recommendations.</p> <ul style="list-style-type: none"> <li>• AWS / Azure / GCP: Provider-generated recommendations</li> <li>• ServiceNow: Custom-generated recommendations</li> </ul>
State	For resources that match an Auto-approval (Standard Change) approval type, status of the change request.
Job	Name of the Rightsizing job that the resource is part of.

**Columns on the New, Scheduled, Declined, Completed, and Failed Recommendations tabs (continued)**

Column	Description
Planned date	Date that the job is scheduled to run.
Change request	The change request that is associated with the recommendation.

**Configure Rightsizing operations**

Configure Rightsizing processes and specify the amount of potential rightsizing savings that triggers notifications.

**Before you begin**

Run Discovery on each service account.

Ensure that the Billing Download job has completed for each provider.

Ensure that the Price Sheet Download job has completed for each provider.

Role required: insights\_admin or insights\_owner

**Procedure**

1. Navigate to **Cloud Cost Management Workspace > Operations > Recommendations > Rightsizing**.
2. Select **Settings**.
3. On the form, fill in the fields.

**Rightsizing Settings**

Field	Value
Enable Rightsizing	Option for enabling Rightsizing activities. Clearing the check box disables Rightsizing.  Default: Enabled  This field is automatically enabled.
After resize, exclude resource for (days)	Number of days to place a resized resource in the Excluded Resources list. During this monitoring period, you can't remove the resource from the Excluded Resources list.  Cloud Cost Management monitors resized resources for the specified period to verify that the new size is appropriate. When the period expires, the resource is removed from the list and rightsizing analysis resumes.

Field	Value
	<p><b>Note:</b> Microsoft Azure only: The Azure Advisor service begins to analyze usage and may again recommend resizing after seven days regardless of this setting. If you specify a value greater than seven days, the Cloud Cost Management doesn't report the Azure Advisor recommendation for the time period that you specify.</p> <p>Minimum value: 7</p>
Do not recommend if savings are below threshold	<p>Minimum cost over a 30-day period to use when deciding whether to rightsize.</p> <p>For example, a setting of ¥100 means that Cloud Cost Management ignores any rightsizing recommendation that would result in less than ¥100 in savings over 30 days.</p>
Notify when potential rightsizing savings exceed (%) of total spend	<p>Percentage of overall cloud spend for resources that are sized incorrectly that should trigger an email notification to the users or groups that you specify.</p> <p>The value is calculated using the amount that could be saved if all rightsizing recommendations are followed.</p> <p>Default: 15%</p> <p>The default value of <b>15</b> means that notifications are sent only when the cost of non-rightsized resources is greater than 15% of total costs.</p>
Notify users / Notify groups	<p>Users or groups to notify by email when the spend for incorrectly sized resources exceeds the specified percentage of overall cloud spend. For information on configuring the email, see <a href="#">Create an email template</a>.</p>
Advanced	<p>Option for specifying non-default change templates for generating change requests.</p>
Auto-approval (Standard Change)	
Script include	<p>This field appears only when the <b>Advanced</b> check box is selected.</p> <p>CLINRSSstandardChangeRequestUtil: The Change group is derived from the Standard Change template and can't be overridden.</p>
Manual Approval (Normal Change)	

Field	Value
Script include	This field appears only when the <b>Advanced</b> check box is selected.  CLINRSNormalChangeRequestUtil: Manual approval or Normal Change policies.

**4. Select Save.**

**Specify rate discounts to enable accurate pricing for Rightsizing recommendations**

To generate an accurate Rightsizing recommendation, the system analyzes usage data for the last 14 days, obtains prices from the price sheet data tables, and then applies appropriate discounts. To enable the calculations, specify the provider's discount rate for each service account.

**Before you begin**

Role required: insights\_admin [sn\_clin\_core.insights\_admin]

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **AWS price discounts**.
2. Select **New**.
3. On the form, fill in the fields.

**AWS Price Discount**

Field	Description
Service account	The service account that the specified discount applies to.
Discount (%)	The percentage discount for the selected service account.

**4. Select Save.**

**What to do next**

View the provider's discount rate for each service account by navigating to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **AWS price discounts**.

**Related topics**

[Schedule and manage the Cloud Cost Management jobs that download AWS price sheets](#)

**Define a metric threshold**

To enable accurate memory usage data for use in generating Rightsizing recommendations, you first define memory metrics in your account. You then define a custom memory metric in Cloud Cost Management.

**Before you begin**

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner]

- Run Discovery on each service account.
- Verify that the Billing Download and Price Sheet Download job has been completed successfully.

**About this task**

**Note:** You can configure the memory threshold for AWS and Azure only.

AWS doesn't automatically collect memory metric statistics. On the AWS Management Console, you specify the statistics to collect and push the data to Amazon CloudWatch. Cloud Cost Management accesses the data through CloudWatch, and verifies that the combination of namespace and metric name is defined correctly. To recommend resources for Rightsizing, Cloud Cost Management analyzes the memory usage data for the custom metric. If no data is returned, the analysis uses the maximum memory of the resource.

**Procedure**

1. Navigate to **Cloud Cost Management Workspace > Operations > Recommendations > Rightsizing**.
2. Select **Settings**.
3. Select the **Service category metric** tab.
4. Select **New**.
5. On the form, fill in the fields.

**Create New Metrics Configuration**

Field	Description
Provider	Name of the service provider. <ul style="list-style-type: none"> <li>○ AWS</li> <li>○ Azure</li> </ul>
Service Category	Service category for the provider. <ul style="list-style-type: none"> <li>○ Compute</li> <li>○ Database</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>○ For AWS, recommendations are generated only on CPU usage (Compute).</li> <li>○ For Azure, recommendations are generated based on CPU, Memory, and Network usage (Compute and Database).</li> </ul>
Service Accounts	Service accounts for the selected provider.
Aggregation Type	Metric statistics received in time intervals. <ul style="list-style-type: none"> <li>○ Avg</li> <li>○ Min</li> <li>○ Max</li> </ul>

Field	Description
Metric Type	Type of the metric statistic. <ul style="list-style-type: none"> <li>○ CPU</li> <li>○ Memory</li> <li>○ Network</li> </ul>
Threshold (%)	Threshold value used while generating Rightsizing recommendations. <p><b>Note:</b> If <b>Provider</b> is selected as <b>AWS</b>, <b>Service Category</b> is selected as <b>Database</b>, and <b>Metric Type</b> is selected as <b>Network</b>, the value shows up as an integer.</p>

**6. Select Save.**

**Schedule resources to be rightsized**

To rightsize a resource, add it to a Rightsizing job and specify when the job should run. You can also move resources out of one scheduled job into a different job or remove a resource from a job.

**Before you begin**

Run Discovery on each service account.

Ensure that the Billing Download has completed for each provider.

Ensure that the Price Sheet Download job has completed for each provider.

Role required: insights\_admin or insights\_owner

**About this task**

When you change the resources that are included in a job, Cloud Cost Management checks for the following conditions:

- A resource in the job is owned by another user (as when a insights\_admin updates a job that was created by an insights\_owner or an insights\_owner updates a job that was created by a different insights\_owner).
- The job was created by another user.

If either condition is met, the app sends an email notification to the owner of the resource or the creator of the job.

**Note:** If a recommendation to rightsize a Google Cloud resource is dismissed from the Google Cloud management portal, the resource doesn't appear in Rightsizing recommendations.

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Rightsizing**.
2. In the list on the appropriate tab, select the check boxes for the resources to rightsize.

- To create a Rightsizing job for resources that are new candidates for rightsizing: On the **New Recommendations** tab, select resources and then select **Schedule**.
- To create a new job for resources that had previously been scheduled but were not resized: On the **Declined Recommendations** tab or the **Failed Recommendations** tab, select resources and then select **Reschedule**.

3. In the dialog box, fill in the fields.

**Schedule job**

Field	Value
Job type	Type of job action. Select <b>Schedule job</b> .
Job name	Unique and descriptive name for the Rightsizing job.
Schedule	Date and time to run the Rightsizing job.
Approval type	Type of change request to use. <ul style="list-style-type: none"> <li>○ <b>Auto approval:</b> Generates and auto-approves a change request to resize the resource. The system also sends the approved change request to the change group. The resource is added to the list of resources that the job will resize.</li> <li>○ <b>Manual approval:</b> Generates a change request (Normal Change type) for a member of the change group to resize the resource and continues to list the resource in the appropriate Rightsizing reports.</li> </ul> <p><b>i Note:</b></p> <p>The <b>Short description, Description, Assignment group, and Affected CIs</b> fields are auto populated. For more information, see <a href="#">Create a change request</a>.</p>
Change template	This field appears only when the <b>Approval type</b> is selected as <b>Auto approval</b> . Change request template (Standard Change type) to be used. If no template appears in the list, you must create one. See <a href="#">Create a change request template</a> .

4. Select **Submit**.

## Result

The Rightsizing job is created and will run at the scheduled time.

- Until a member of the change group approves or rejects the change, the resource state is set to **Pending**, the resource remains listed on reports, and no other action is taken.
- If a member of the change group approves the request, the state is set to **Approved** and the resource is added to the list of resources that the job will resize.
- If a member of the change group rejects the request, the resource state is set to **Declined**, the resource remains listed on reports, and no action is taken.

## Related topics

[Change Management](#) 

[Standard change catalog](#) 

[Create a change request template](#) 

[Exclude a resource from all Cloud Cost Management reports](#)

## Move a resource to a different Rightsizing job

You can add resources to a currently scheduled job, move resources from one job to another, or remove resources from a job.

## Before you begin

Run Discovery on each service account.

Ensure that the Billing Download job has completed for each provider.

Ensure that the Price Sheet Download job has completed for each provider.

Role required: insights\_admin or insights\_owner

## About this task

When you change the resources that are included in a job, the app checks for the following conditions:

- A resource in the job is owned by another user (as when a insights\_admin updates a job that was created by an insights\_owner or an insights\_owner updates a job that was created by a different insights\_owner).
- The job was created by another user.

If either condition is met, the app sends an email notification to the owner of the resource or the creator of the job.

## Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Rightsizing**.
2. In the list on the appropriate tab, select the check boxes for the resources to rightsize.
  - On the **New Recommendations** tab, select **Schedule**.
  - On the **Declined Recommendations** tab or the **Failed Recommendations** tab, select **Reschedule**.
3. In the dialog box, fill in the fields.

### Schedule job

Field	Value
Job type	Type of job action. Select <b>Add to job</b> .
Job name	Unique and descriptive name for the Rightsizing job.
Schedule	Date and time to run the Rightsizing job.
Approval type	Type of change request to use. <ul style="list-style-type: none"> <li>○ <b>Auto approval:</b> Generates and auto-approves a change request to resize the resource. The system also sends the approved change request to the change group. The resource is added to the list of resources that the job will resize.</li> <li>○ <b>Manual approval:</b> Generates a change request (Normal Change type) for a member of the change group to resize the resource and continues to list the resource in the appropriate Rightsizing reports.</li> </ul>
Change template	This field appears only when the <b>Approval type</b> is selected as <b>Auto approval</b> . Change request template (Standard Change type) to be used. If no template appears in the list, you must create one. See <a href="#">Create a change request template</a> .

#### 4. Select **Submit**.

#### Exclude a resource from Rightsizing analysis

To ensure that a particular resource is not considered or recommended for Rightsizing, add the resource to the Excluded Resources list. The system continues to collect cost and usage data but does not consider the resource for Rightsizing.

#### Before you begin

Run Discovery on each service account.

Ensure that the Billing Download job has completed for each provider.

Ensure that the Price Sheet Download job has completed for each provider.

Role required: insights\_admin or insights\_owner

#### About this task

When you change the resources that are included in a job, the app checks for the following conditions:

- A resource in the job is owned by another user (as when a `insights_admin` updates a job that was created by an `insights_owner` or an `insights_owner` updates a job that was created by a different `insights_owner`).
- The job was created by another user.

If either condition is met, the app sends an email notification to the owner of the resource or the creator of the job.

### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Rightsizing**.
2. On the New, Declined, or Failed tabs, select the resources that you want to exclude from rightsizing analysis.
3. Select **Exclude**.  
The resources are added to the Excluded Resources list. To remove a resource from the list, select the resources from the **Excluded** tab and then select **Remove From Exclusion**.

### Related topics

[Exclude a resource from all Cloud Cost Management reports](#)

### View or edit scheduled and completed Rightsizing jobs

View and manage the upcoming and completed Rightsizing jobs.

### Before you begin

Role required: `insights_admin` or `insights_owner`

### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Rightsizing**.
2. Select the **Scheduled** or **Completed** tab.
3. In the **Job** column, select a job to view the details.

### Cloud Insights Job

Field	Description
Approval type	The type of approval that is specified for the job, such as Auto-approval (Standard Change) or Manual approval (Normal Change).
Job status	Status of the job execution.
Name	Name of the scheduled job.
Job Action	The action that is specified for Rightsizing jobs.
Standard change template	The used change request template (Standard Change type).
Job owner	Owner of the Rightsizing job.
Action	Action taken for the resource such as Resize.

Field	Description
Planned date	Time that the job ran or will run.  You can edit the date.

**4. Select Save.**

**Manage unused resources**

Reduce cost by identifying the unused resources and scheduling jobs to power-off or terminate the unused resources.

You can [configure Unused resources operations](#) by selecting **Settings**.

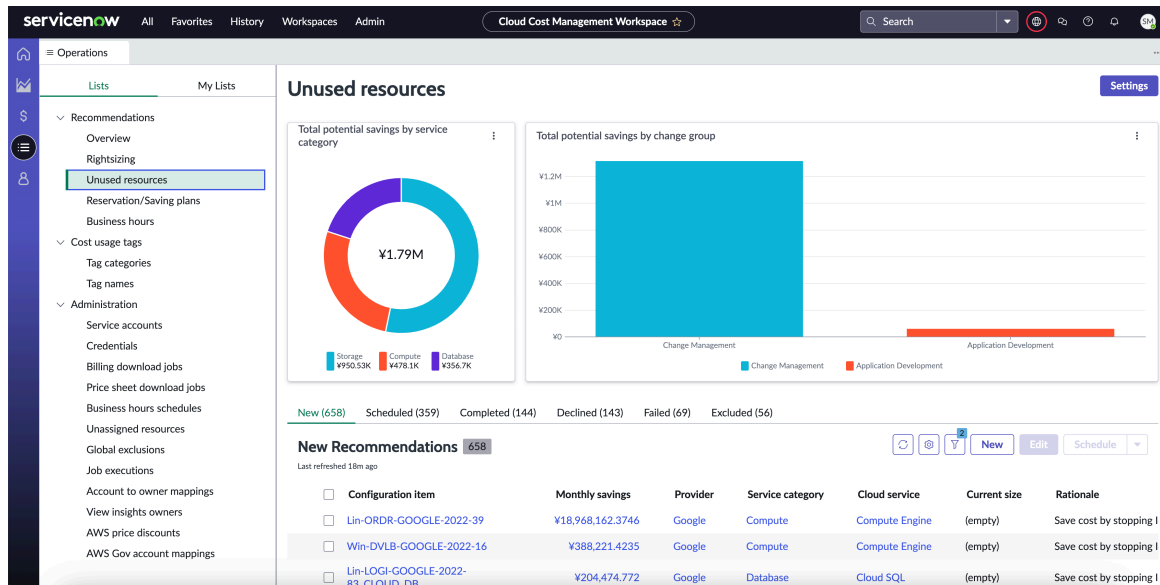


Chart	Description
Total potential savings by service category	Total savings to expect if all Unused resources recommendations are applied by service category such as Compute, Database, and Storage.
Total potential savings by change group	Total savings to expect if all Unused resources recommendations are applied by change group such as Change Management and Application Development.

Recommendation tab	Description	Available actions on selected recommendations
New	Resources that are candidates for Unused resources. Each successful execution of a Billing Download job triggers the Budget Forecast, Business Hours, Reservation Plans, Rightsizing, and Unused resources jobs to analyze	<ul style="list-style-type: none"> <li>• Schedule</li> <li>• Exclude</li> </ul>

Recommendation tab	Description	Available actions on selected recommendations
	<p>the spend and usage data of resources and to update the actionable recommendations in reports.</p> <p><b>i Note:</b> Microsoft Azure only: The Azure Advisor service generates the recommendations that appear in Rightsizing and Unused resources reports. Cloud Cost Management doesn't generate the recommendations.</p>	
Scheduled	Resources that are scheduled in Unused resources jobs.	<ul style="list-style-type: none"> <li>Reschedule</li> <li>Remove from Job</li> </ul>
Completed	Resources that the Unused resources job terminated or stopped.	None
Declined	Resources for which owners didn't want to perform any action or declined the change request.	<ul style="list-style-type: none"> <li>Reschedule</li> <li>Exclude</li> </ul>
Failed	Resources for which the Unused resources operation wasn't successful.	<ul style="list-style-type: none"> <li>Reschedule</li> <li>Exclude</li> </ul> <p><b>i Note:</b> If you perform any action on the terminated or stopped virtual machines, the recommendations get completed but don't show up in the Failed recommendations tab.</p>
Excluded	Resources that are configured not to be considered for Unused resources.	Remove from exclusion

**Columns on the New, Scheduled, Declined, Completed, and Failed Recommendations tabs**

Column	Description
Configuration item	Unique identifier of the resource.

**Columns on the New, Scheduled, Declined, Completed, and Failed Recommendations tabs (continued)**

Column	Description
Monthly savings	Potential savings if the resource is resized to the recommended size.
Provider	The provider that hosts the resource.
Service category	Lists all service categories from the instance sorted by name.
Cloud service	Lists all cloud categories sorted by name.
Current size	Size of the resource that was analyzed for.
Rationale	<p>The reason that the system recommends terminating or stopping.</p> <ul style="list-style-type: none"> <li>• AWS: Cloud Cost Management analysis of provisioning and usage levels over the last 14 days.</li> <li>• Microsoft Azure: Recommendation from the Azure Advisor service.</li> </ul>
Confidence	<p>The confidence level in a recommendation.</p> <ul style="list-style-type: none"> <li>• High confidence requires the following conditions: <ul style="list-style-type: none"> <li>○ The system has at least 10 days of usage data for the resource.</li> <li>○ The current and recommended family or generation is identical.</li> </ul> </li> <li>• Medium confidence requires the following conditions: <ul style="list-style-type: none"> <li>○ The system has less than 10 days of usage data for the resource.</li> <li>○ The current and recommended family or generation is identical.</li> </ul> </li> <li>• Low confidence: The current and recommended family/generation are different.</li> </ul>
Change Group	Change group for the resource.
Account	The service account that includes the resource. A service account represents a group of related regions in your provider account.
Region	If appropriate for the provider, region in the service account that hosts the resource.
Owned by	Owner of the resource.
Source	Source of the recommendations.

**Columns on the New, Scheduled, Declined, Completed, and Failed Recommendations tabs (continued)**

Column	Description
	<ul style="list-style-type: none"> <li>• AWS / Azure / GCP: Provider-generated recommendations</li> <li>• ServiceNow: Custom-generated recommendations</li> </ul>

**Configure Unused resources operations**

The Unused resources feature recommends termination or power-off for resources that are wasting money because they aren't being used. Configure Unused resources processes and specify the potential savings that trigger notifications.

**Before you begin**

Run Discovery on each service account.

Ensure that the Billing Download job has completed for each provider.

Ensure that the Price Sheet Download job has completed for each provider.

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner].

**About this task**

**Note:** Microsoft Azure only: The Azure Advisor service generates the recommendations that appear in Rightsizing and Unused resources reports. Cloud Cost Management doesn't generate the recommendations.

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Unused resources**.
2. Select **Settings**.
3. On the form, fill in the fields.

**Unused Machine Settings**

Field	Value
Enable Unused Machines	<p>Option for enabling Unused resources activities.</p> <p>This field is automatically enabled.</p>
Advanced	Option to specify non-default change templates.
Auto pause interval	<p>Indicates the minimum idle time for the Azure SQL database in minutes.</p> <p>Default: 60 minutes</p>

Field	Value
Maximum age for snapshots in AWS/Azure/Google (days)	Age of the snapshot. The snapshot data is displayed in the <b>Rationale</b> column in the <b>Recommendations</b> tab.  Default: 90 days
Notify when potential unused savings exceed (%) of total spend	Percentage of overall cloud spend on unused resources that triggers an email notification to the users or groups that you specify.  The value is calculated using the amount that could be saved if all Unused resources recommendations are applied.  Default: 15%  The default value of 15 means that notifications are sent only when the cost of operation for unused resources is greater than 15% of total costs.
Notify users / Notify groups	Users or groups to notify by email when the spend for unused resources exceeds the specified percentage of overall cloud spend.  For information on configuring the email, see <a href="#">Create an email template</a> .
Auto-approval (Standard Change)	
Script include	This field appears only when the <b>Advanced</b> check box is selected.  CLINRSSstandardChangeRequestUtil  Script include to use for change requests when a resource matches a policy of the specified type. The Change group is derived from the Standard Change template and can't be overridden.
Manual approval (Normal Change)	
Script include	This field appears only when the <b>Advanced</b> check box is selected.  CLINRSNormalChangeRequestUtil

4. Select **Save**.

**Related topics**

[Change Management](#)

### Schedule unused resources to be powered off or terminated

To terminate or power off an unused resource, add it to an Unused resources job, specify whether to terminate or power off, and specify when the job should run. You can also move resources from one scheduled job to a different job.

#### Before you begin

Run Discovery on each service account.

Ensure that the Billing Download job has completed for each provider.

Ensure that the Price Sheet Download job has completed for each provider.

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner]

#### About this task

**i Important:** After an Unused resources job powers off or terminates a machine, the machine is added to the Excluded Resources list for Business Hours. This process ensures that the resource isn't started again in the future because it matches a Business Hours policy. The exclusion reason on the Business Hours **Excluded Resources** tab indicates that the resource is an unused resource.

When you change the resources that are included in a job, the app checks for the following conditions:

- A resource in the job is owned by another user (as when a insights\_admin updates a job that was created by an insights\_owner or an insights\_owner updates a job that was created by a different insights\_owner).
- The job was created by another user.

If either condition is met, the app sends an email notification to the owner of the resource or the creator of the job.

#### Procedure

**1.** Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Unused resources**.

- 2.** In the list on the appropriate tab, select the check boxes for the resources to terminate.
- To create an Unused resources job for resources that are new candidates for termination: On the **New Recommendations** tab, select the resources and then select **Schedule Job**.
  - To create a job for resources that had previously been scheduled but the action wasn't completed successfully: On the **Declined Recommendations** tab or the **Failed Recommendations** tab, select the resources and then select **Reschedule**.

**i Note:** Microsoft Azure only: The Azure Advisor service generates the recommendations that appear in Rightsizing and Unused resources reports. Cloud Cost Management doesn't generate the recommendations.

**3.** In the dialog box, fill in the fields.

Field	Value
Job Type	Type of job action. Select <b>Schedule job</b> .

Field	Value
Job name	Unique and descriptive name for the Unused resources job.
Action	<p>The action to take on the selected resources:</p> <ul style="list-style-type: none"> <li>○ <b>Power off machine:</b> Power off triggers a Microsoft Azure process called deallocation to set the resource as Stopped (Deallocated).</li> <li>○ <b>Terminate machine:</b> Terminated machines can't be recovered.</li> <li>○ <b>Terminate machine and delete storage:</b> If the root volume isn't automatically deleted when the VM is terminated, the job deletes the root volume. No other volumes are deleted.</li> </ul> <p><b>Note:</b> Terminated resources or deleted volumes can't be recovered.</p>
Schedule	Date and time to run the Unused resources job.
Approval type	<p>Type of change request to use. Unused Machines operations are directly integrated with the ServiceNow<sup>®</sup> Change Management feature.</p> <ul style="list-style-type: none"> <li>○ <b>Auto approval (Standard Change):</b> Generates and auto-approves a change request to terminate or stop the resource. The system also sends the approved change request to the change group. The resource is added to the list of resources that the job terminates or stops.</li> <li>○ <b>Manual approval (Normal Change):</b> Generates a change request (Normal Change type) for a member of the change group to terminate or stop the resource and continues to list the resource in the appropriate Unused resources reports. <ul style="list-style-type: none"> <li>▪ Until a member of the change group approves/rejects the change, the resource state is set to Pending, the resource remains listed on reports, and no other action is taken.</li> <li>▪ If a member of the change group approves the request, the state is set to <b>Approved</b> and the resource is added</li> </ul> </li> </ul>

Field	Value
	<p>to the list of resources that the job terminates or stops.</p> <ul style="list-style-type: none"> <li>If a member of the change group rejects the request, the resource state is set to <b>Declined</b>, the resource remains listed on reports, and no action is taken.</li> </ul> <p><b>Note:</b></p> <p>The <b>Short description</b>, <b>Description</b>, <b>Assignment group</b>, and <b>Affected CIs</b> fields are auto populated. For more information, see <a href="#">Create a change request</a>.</p>
Change template	<p>This field appears only when the <b>Approval type</b> is selected as <b>Auto approval</b>.</p> <p>Change request template (Standard Change type) to be used. If no template appears in the list, you must create one. See <a href="#">Create a change request template</a>.</p>

**4. Select Submit.**

**Result**

The Unused resources job is created and runs at the scheduled time.

**Related topics**

[Change Management](#)

[Standard change catalog](#)

[Create a change request template](#)

[Exclude a resource from all Cloud Cost Management reports](#)

**Move a resource to a different Unused resources job**

You can add resources to a currently scheduled job, move resources from one job to another, or remove resources from a job.

**Before you begin**

Run Discovery on each service account.

Ensure that the Billing Download job has completed for each provider.

Ensure that the Price Sheet Download job has completed for each provider.

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner].

**About this task**

When you change the resources that are included in a job, the app checks for the following conditions:

- A resource in the job is owned by another user (as when a insights\_admin updates a job that was created by an insights\_owner or an insights\_owner updates a job that was created by a different insights\_owner).
- The job was created by another user.

If either condition is met, the app sends an email notification to the owner of the resource or the creator of the job.

### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Unused resources**.


2. In the list on the appropriate tab, select the check boxes for the resources to terminate.

- To create an Unused resources job for resources that are new candidates for termination: On the **New Recommendations** tab, select the resources and then select **Schedule Job**.
- To create a job for resources that had previously been scheduled but weren't resized: On the **Declined Recommendations** tab or the **Failed Recommendations** tab, select the resources and then select **Reschedule**.

**i Note:** Microsoft Azure only: The Azure Advisor service generates the recommendations that appear in Rightsizing and Unused resources reports. Cloud Cost Management doesn't generate the recommendations.

3. In the dialog box, fill in the fields.

Field	Value
Job Type	Type of job action.  Select <b>Add to job</b> .
Job name	Unique and descriptive name for the Unused resources job.
Action	The action to take on the selected resources: <ul style="list-style-type: none"> <li>○ <b>Power off machine:</b> Power off triggers a Microsoft Azure process called deallocation to set the resource as Stopped (Deallocated).</li> <li>○ <b>Terminate machine:</b> Terminated machines can't be recovered.</li> <li>○ <b>Terminate machine and delete storage:</b> If the root volume isn't automatically deleted when the VM is terminated, the job deletes the root volume. No other volumes are deleted.</li> </ul> <p><b>i Note:</b> Terminated resources or deleted volumes can't be recovered.</p>

Field	Value
Schedule	Date and time to run the Unused resources job.
Approval type	<p>Type of change request to use. Unused Machines operations are directly integrated with the ServiceNow® Change Management feature.</p> <ul style="list-style-type: none"> <li>○ <b>Auto approval (Standard Change):</b> Generates and auto-approves a change request to terminate or stop the resource. The system also sends the approved change request to the change group. The resource is added to the list of resources that the job terminates or stops.</li> <li>○ <b>Manual approval (Normal Change):</b> Generates a change request (Normal Change type) for a member of the change group to terminate or stop the resource and continues to list the resource in the appropriate Unused Machines reports. <ul style="list-style-type: none"> <li>▪ Until a member of the change group approves/rejects the change, the resource state is set to Pending, the resource remains listed on reports, and no other action is taken.</li> <li>▪ If a member of the change group approves the request, the state is set to <b>Approved</b> and the resource is added to the list of resources that the job terminates or stops.</li> <li>▪ If a member of the change group rejects the request, the resource state is set to <b>Declined</b>, the resource remains listed on reports, and no action is taken.</li> </ul> </li> </ul>
Change template	<p>This field appears only when the <b>Approval type</b> is selected as <b>Auto approval</b>.</p> <p>Change request template (Standard Change type) to be used. If no template appears in the list, you must create one. See <a href="#">Create a change request template</a> .</p>

**4. Select Submit.**

## Exclude a resource from Unused resources analysis

To ensure that a particular resource is not considered or recommended for Unused resources, add the resource to the Excluded Resources list. The system continues to collect cost and usage data but does not consider the resource for the processes of Unused resources.

### Before you begin

Run Discovery on each service account.

Ensure that the Billing Download job has completed for each provider.

Ensure that the Price Sheet Download job has completed for each provider.

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner].

### About this task

When you change the resources that are included in a job, the app checks for the following conditions:

- A resource in the job is owned by another user (as when a insights\_admin updates a job that was created by an insights\_owner or an insights\_owner updates a job that was created by a different insights\_owner).
- The job was created by another user.

If either condition is met, the app sends an email notification to the owner of the resource or the creator of the job.

### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Unused resources**.
2. On the New, Declined, or Failed tabs, select the resources that you want to exclude from unused resources analysis.
3. Select **Exclude**.  
The resources are added to the Excluded Resources list. To remove a resource from the list, select the resources from the **Excluded** tab and then select **Remove From Exclusion**.

### Related topics

[Exclude a resource from all Cloud Cost Management reports](#)

### View or edit scheduled and completed Unused resources jobs

View and manage the upcoming and completed Unused resources jobs.

### Before you begin

Role required: insights\_admin or insights\_owner

### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Unused resources**.
2. Select the **Scheduled** or **Completed** tab.
3. In the **Job** column, select a job to view the details.

**Cloud Insights Job**

Field	Description
Approval type	The type of approval that is specified for the job, such as Auto-approval (Standard Change) or Manual approval (Normal Change).
Job status	Status of the job execution.
Name	Name of the scheduled job.
Job Action	The action that is specified for Unused resources jobs.
Standard change template	The used change request template (Standard Change type).
Job owner	Owner of the Unused resources job.
Action	Action taken for the unused resource such as Terminate.
Planned date	Time that the job ran or will run.  You can edit the date.

**4. Select Save.****Improve resource usage with Business hours**

Improve resource usage and reduce your cloud spend by running resources during the specified business hours.

Use the Business hours recommendation page to:

- Manage Business hours processes.
- [Configure Business hours operations](#) by selecting **Settings**.
- [Define or update Business hours processes](#)

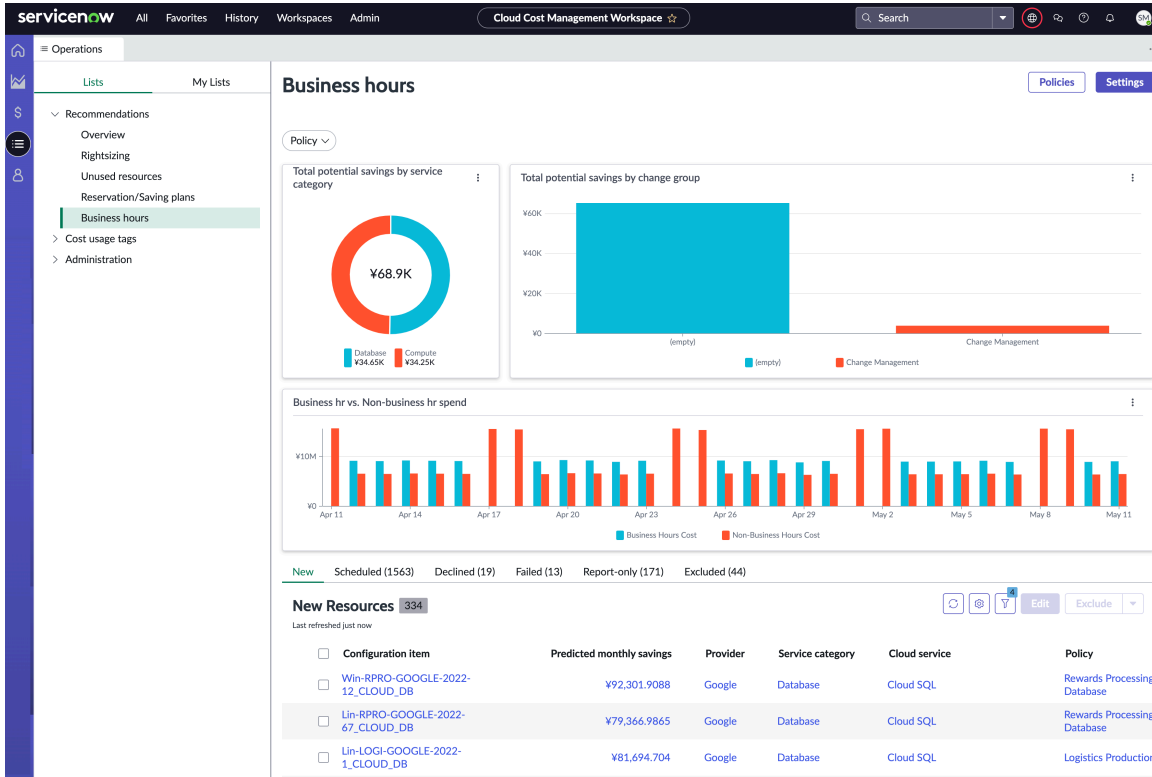


Chart	Description
Total potential savings by service category	Total savings to expect if all Business hours recommendations are applied by service category such as Compute and Database.
Total potential savings by change group	Total savings to expect if all Business hours recommendations are applied by change group such as Change Management and Application Development.
Business hr vs. Non-business hr spend	Spend for resources during business hours against non-business hours.

Tab	Description	Available action on selected recommendations
New	Resources that are candidates for applying Business hours processes.	Exclude
Scheduled	Resources that are tagged to have business hours enforced.	None
Declined	Resources for which owners (or other approver) didn't want to enforce business hours (rejected the change request).	Exclude
Failed	Resources for which the attempt to enforce business hours failed.	Exclude

Tab	Description	Available action on selected recommendations
Report-only	Resources that match Report-only policies.	Exclude
Excluded	<p>Resources that are configured not to be considered for business hours.</p> <div style="background-color: #e1f5fe; padding: 10px; border: 1px solid #cfcfcf;"> <p><b>i Important:</b> After an Unused resources job powers off a machine, the machine is added to the Excluded Resources list for Business Hours. This process ensures that the resource isn't started again in the future because it matches a Business hours policy. The exclusion reason on the Business hours <b>Excluded</b> tab indicates that the resource is an unused resource.</p> </div>	Remove from exclusion

**Columns on the New, Scheduled, Declined, Failed, and Report-only Recommendations tabs**

Column	Description
Configuration item	Unique identifier of the resource.
Predicted monthly savings	Predicted savings if the Business hours recommendations are applied.
Provider	The provider that hosts the resource.
Service category	Lists all service categories from the instance sorted by name.
Cloud service	Lists all cloud categories sorted by#name.
Policy	The Business hours policy that the resource matches to.
Policy type	Type of the Business hours policy that the resource matches to.
Change request	Change request that is associated with the recommendation.
Change Group	Change group for the resource.
Account	The service account that includes the resource. A service account represents a group of related regions in your provider account.

**Columns on the New, Scheduled, Declined, Failed, and Report-only Recommendations tabs (continued)**

Column	Description
Region	If appropriate for the provider, region in the service account that hosts the resource.
Owned by	Owner of the resource.
Failure type	This column appears only for the Failed tab.  Reason for which the change request wasn't generated or the specified business hours weren't applied to the resource.
Details	This column appears only for the Failed tab.  Details of the failure type and the action that you must take to resolve the failure.

**Configure Business hours operations**

You can choose to use or to disable Business Hours features and specify the amount of non-business hour spend that triggers notifications to users or groups. Controlling unnecessary resource use can help reduce costs.

**Before you begin**

A cloud account (parent account) that has at least one service account and associated datacenters is required.

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner] for owned service accounts.

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Business hours**.
2. Select **Settings**.
3. On the form, fill in the fields.

**Business Hours Settings**

Field	Description
Enable business hours	Option for enabling the Business hours feature. All active policies are applied when data becomes available.  Deselect the check box to disable the Business hours feature. No policies are applied regardless of the <b>Active</b> setting for a policy.

Field	Description
	<p><b>Note:</b> When you disable the Business hours feature, all schedules that were applied by policies are deactivated and resources return to their original schedules.</p>
Precedence	<p>The role that should have precedence when policies are applied. Select one of the following:</p> <ul style="list-style-type: none"> <li>Admin Policies</li> <li>Owner Policies</li> </ul> <p>Precedence determines the order in which batches of policies are applied. Each batch is based on the role of the user who created the policy – insights_admin or insights_owner. After a match, no other policy is applied to the resource.</p> <p>Default: <b>Admin Policies</b> (The set of policies that were created by users with the insights_admin role.)</p> <pre> graph TD     Start([Start]) --&gt; ApplyPrecedence[Apply all policies that have precedence (in Run order)]     ApplyPrecedence --&gt; Match1{Match?}     Match1 -- No --&gt; ApplyOther[Apply all other policies (in Run order)]     Match1 -- Yes --&gt; CollectResources[Collect matching resources]     ApplyOther --&gt; Match2{Match?}     Match2 -- No --&gt; Stop([Stop])     Match2 -- Yes --&gt; CollectResources     CollectResources --&gt; GenerateReports([Generate reports, make recommendations, and perform policy actions on matches])     </pre>

Field	Description
Advanced	<p>Option to generate a single change request that applies to all CIs that match a policy (default setting) or a separate change request for each CI.</p> <p>Some attributes of the change request template have static/constant values that cannot be changed. Some attributes (for example, risk and work_notes) have dynamic values that you can set using a script include.</p>
Auto-approval (Standard Change)	
Single change request	Option for enabling the system to generate a single change request, which applies to all CIs that match the policy.
Script include	<p>This field appears only when the <b>Advanced</b> check box is selected.</p> <p>CLINBHStandardChangeRequestUtil</p> <p>The Change group is derived from the Standard Change template and cannot be overridden.</p>
Manual approval (Normal Change)	
Single change request	Option for enabling the system to generate a single change request, which applies to all CIs that match the policy.
Script include	<p>This field appears only when the <b>Advanced</b> check box is selected.</p> <p>CLINBHNormalChangeRequestUtil</p>
Notify when non-business hour spend exceeds (%) of total spend	<p>Percentage of overall cloud spend on resources during business hours that triggers email notification to the users or groups that you specify.</p> <p>Default: 15</p> <p>The value is calculated using the amount that could be saved if all Business hours recommendations are applied. The default value of 15 means that notifications are sent only when the cost of operation during non-business hours is greater than 15% of total costs.</p>
Notify when unassigned resources exceed (%) of total CIs	The percentage of overall cloud spend for non-business hour usage that triggers email notification of the users or groups that you specify.

Field	Description
	The default value of <b>15</b> means that notifications are sent only when the cost of operation during non-business hours is greater than 15% of total costs.
Notify users / Notify groups	The users or groups to notify by email when the non-business hour spend exceeds the specified percentage of overall cloud spend.  If you do not specify users or groups, then no notification is sent.
Maximum CIs per change	This field appears only when the <b>Single change request</b> check box is selected in the <b>Manual approval (Normal Change)</b> section.  Maximum number of resources to associate with a single change request. If the maximum is reached, the system generates a new change request.  Default value: 1000

**4. Select Save.**

**Related topics**

[Change Management](#) 

**Create Business hours schedule**

Create and apply a Business hours schedule to the cloud resources for enforcing the on/off schedule.

**Before you begin**

Role required: insights\_admin or insights\_owner

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Business hours schedules**.
2. Select **New**.
3. On the form, fill in the fields.

**Schedule**

Field	Description
Name	Unique name for the schedule.
Time zone	Time zone for the schedule.  Default value: Floating, which means that the time zone is relative to whatever process is accessing the item at the time.

Field	Description
	When a schedule is defined in a time zone, users in different time zones see the schedule with their own time zone applied.
Parent	Parent schedule that constraints the new schedule.
Application	Application scope of the schedule. Default value: Cloud Insights Core
Type	Text label that describes the purpose of the schedule.
Description	Description of the schedule.

**4. Select Save.**

**Define or update a Business hours policy**

A Business hours job applies policies to identify resources that are running when they should be powered off, reports them, and can start and stop them on a schedule that you specify. Running only during specified business hours can significantly reduce your cloud spend.

**Before you begin**

Required: A cloud account (parent account) that has at least one service account or project that has associated datacenters.

A Billing Download job must be defined.

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner] for owned service accounts.

**About this task**

**i Important:** A resource matches the policy if all criteria in the Service Account and Resource Criteria section are met.

- You must select one of the Cloud Cost Management application scopes to create or update a Business hours policy.
- You can create as many policies as needed.
- You can't change the provider while editing an existing policy.
- When you deactivate a Business Hours policy, the resources that met the policy criteria might match a different policy (the matching policy with lowest run order) and therefore move to another schedule. In this case, the system generates a new change request. If a resource no longer meets any policy, the system attempts to power on the resource using the specified **Power-on flow** setting.

**Procedure**

**1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Recommendations** > **Business hours**.**

**2. Select Policies.**

When a policy is created or updated with changes other than to its name or description, a notification appears on the tab. Select **Apply policies** to apply the updated policy and recalculate the reported data.

**3. Select **New/Edit** to create a policy.**

You can edit an existing policy by selecting a policy name from the **Business Hours Policies** list.

**4. On the form, fill in the fields.**

**Business Hours Policy Creation form**

Field	Value
Select business hours policy to edit	The business hour policy that you want to edit.
Active	The option to apply the policy. Selecting the <b>Active</b> check box enables Business hours analysis whenever billing data is updated.
Policy name	A unique name that describes the policy for other users.
Description	A brief description of the policy.
Run order	<p>The order in which to apply policies. Each policy must have a unique value. The system applies policies in low-to-high run order and performs the actions for the first policy that matches. After a match, no other policy is applied to the resource.</p> <div style="background-color: #e1f5fe; padding: 10px; border: 1px solid #cfe2f3;"> <p><b>i Important:</b> The system applies two batches of policies in the precedence order that you specify: Policies created by Admins and policies created by Insights Owners. See the <b>Precedence</b> setting in <a href="#">Configure Business hours operations</a>.</p> </div> <p>Run order values for Unassigned Resources policies and Business hours policies don't interfere with each other.</p>
Provider	<p>The cloud provider to apply the policy to.</p> <p><b>i Note:</b> You can't change the provider while editing an existing policy.</p>
Service category	List of all service categories that the policy applies to.
Service accounts	<p>The service accounts to apply the policy to.</p> <p>For Google Cloud only, this field is called Projects.</p>
Tag Values Condition	
Tag Name	List of tag names that you can add by selecting <b>Add</b> .

Field	Value
Tag Value	List of tag values in a new line.
Approval type	<p>The action to take on each resource that matches the policy. Business Hours operations are directly integrated with the ServiceNow Change Management feature.</p> <p>Auto-approval (Standard Change):</p> <ul style="list-style-type: none"> <li>○ Generate a recommendation to apply the specified business hours and add the resource to the Business hours reports.</li> <li>○ Generate and then auto-approve a change request for the change group.</li> <li>○ Add the resource to the Business hours reports.</li> <li>○ Apply the Business hours schedule to the resource.</li> </ul> <p>Manual approval (Normal Change):</p> <ul style="list-style-type: none"> <li>○ Generate a recommendation to apply the specified business hours schedule and add the resource to the Business hours reports.</li> <li>○ Generate a change request for members of the change group.</li> <li>○ Add the resource to the Business hours reports.</li> <li>○ Any member of the group with the <code>sn_change_write</code> role can approve the change request.</li> <li>○ When approved, apply the Business hours schedule to the resource.</li> </ul> <p>Report-only:</p> <ul style="list-style-type: none"> <li>○ Generate a recommendation to apply the specified business hours.</li> <li>○ Add the resource to the Business hours reports.</li> </ul>
Business hour schedule	<p>The schedule that specifies the days of the week and times of day that the resource should be powered on.</p> <p>Select a schedule from the list or define a schedule by navigating to <i>Cloud Cost Management Workspace</i> &gt; <b>Operations</b> &gt; <b>Administration</b> &gt; <b>Business hours schedules</b>.</p>

Field	Value
	For more information, see <a href="#">Create Business hours schedule</a> .

## 5. Select **Submit**.

### Result

- The created policy appears on the **Business Hours Policies** tab.
- When the Discovery and Billing Download job executions finish, the system applies active policies to identify matching resources and then performs the policy actions on the resources.

### What to do next

After you create or update a policy, select **Apply policies** to apply the created policy to a resource. This action also notifies you if enough recent billing data for AWS, Azure, or Google doesn't exist to apply the policy.

### Related topics

[Business hours](#)

[Change Management](#) 

[Standard change catalog](#) 

[Create a change request template](#) 

[Exclude a resource from all Cloud Cost Management reports](#)

## Manage cloud budgets


Define and monitor custom budget plans for managing your cloud spend by using the Budget view in the Cloud Cost Management Workspace.

### Create or update a budget policy

Create budget policy to specify a budgeted amount, cost type, reset period, and other aspects of the budget. In addition, specify who can view budget data and who is notified of variances from the budgeted amount.

### Before you begin

- A cloud account (parent account) that has at least one service account and associated datacenters is required.
- A Billing Download job must be defined.

 **Note:** For Microsoft Azure, you must first execute a Billing Download job before defining a budget plan.

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner] for owned service accounts.

### About this task

You must select one of the Cloud Cost Management application scopes to create or update a budget policy.

## Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Budget**.
2. Select **Create budget**.
3. On the Budget policy creation form, fill in the fields.  
For a description of the field values, see [List of Budget policy creation fields](#).
4. Select **Submit**.

## Result

After you create or modify a budget policy, the policies get displayed on the **All Budgets** page in the Budgets view. Find the details of the budget such as overrun, surplus, or invalid budgets. You can view only the overrun budgets by toggling the **Show overrun budget only** toggle button. Search a budget by its name, owner, or provider.

## Assign service accounts to an insights\_owner

Assign ownership of one or more service accounts and, optionally, the related CIs to users that have the insights\_owner role. An insights\_owner can define jobs and policies and can view data for owned service accounts.

### Before you begin

Before you assign service accounts, you might want to view the list of current insights\_owner and their owned accounts. For more information, see [View the service accounts owned by an insights\\_owner](#).

Role required: insights\_admin [sn\_clin\_core.insights\_admin]

### About this task

The insights\_owner role spreads responsibility for Cloud Cost Management activities to persons who have good knowledge of operations in the service accounts. For more information about the insights\_owner role, see [Cloud Cost Management roles](#).

A service account is a secure record on your instance that holds the credential and access information for your provider account. Discovery uses the information to access your provider account to get data on each resource in each specified datacenter.

 **Tip:** When you assign service accounts to a user, the user is auto-granted the insights\_owner role.

## Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Account to owner mappings**.
2. Select **Assign accounts that currently have no owner**.
3. On the form, fill in the fields.

### Set up or update ownership of service accounts

Field	Description
Insights Owner	User to whom the service account has to be assigned.
Service accounts	Service accounts to be assigned to the insight_owner.

Field	Description
Change template	<p>Change template to use to create the change request for this task.</p> <p>The system uses a Standard Change to alert the insights_owner of the change for the task to be auto-approved. If no change request template appears in the list, navigate to <b>Service Catalog &gt; Standard Changes</b> to create a template.</p>

4. Specify how to populate the **Owner** field for CIs in service accounts.

Option	Description
<b>Assign insights_owners only to CIs with no owner</b>	<p>For newly created CIs and for CIs in the service accounts that have no value for the <i>Owner</i> property, assign the new insights_owner.</p> <p><b>Note:</b> A daily scheduled job sets the <b>Owner</b> field of each newly discovered CI to the Owner setting for the associated service account.</p>
<b>Assign insights_owners to all CIs</b>	<p>For the <i>Owner</i> property of every CI in the specified service accounts, assign the new insights_owner.</p> <p><b>Note:</b> A daily scheduled job sets the <b>Owner</b> field of each newly discovered CI to the Owner setting for the associated service account.</p>
<b>Do not update any CIs</b>	<p>Make no changes to CIs in the specified service accounts.</p>

- The affected service accounts are removed from policies that were created with the insights\_owner role. The affected service accounts aren't removed from policies that were created with the insights\_admin role.
- The new insights\_owner must create and manage new policies for the affected service accounts.
- The new account owner takes ownership of Rightsizing and Unused Machines jobs that include resources from all transferred service accounts.

5. **Optional:** Add any additional details to your request such as delivery address and special instructions.

6. Select **Submit**.

### Update or reassign insights\_owner privileges

Assign ownership of one or more service accounts and, optionally, the related CIs to users that have the insights\_owner role. An insights\_owner can define jobs and policies and can view data for owned service accounts.

#### Before you begin

Before you assign service accounts, you might want to view the list of current insights\_owner and their owned accounts. See [View the service accounts owned by an insights\\_owner](#) for details.

Role required: insights\_admin [sn\_clin\_core.insights\_admin]

#### Procedure

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Account to owner mappings**.
2. Select **Change the owner for one or more accounts**.
3. On the form, fill in the fields.

#### Set up or update ownership of service accounts

Field	Description
Original Insights Owner	Owner to transfer the ownership of service accounts from.
New Insights Owner	User to transfer the ownership of service accounts to.
Service accounts	Service accounts to be assigned to the insights_owner.
Change template	Change template to use to create the change request for this task.  The system uses a Standard Change to alert the insights_owner of the change for the task to be auto-approved. If no change request template appears in the list, navigate to <b>Service Catalog</b> > <b>Standard Changes</b> to create a template.

4. Specify how to populate the **Owner** field for CIs in service accounts.

Option	Description
<b>Assign insights_owners only to CIs with no owner</b>	For newly created CIs and for CIs in the service accounts that have no value for the <i>Owner</i> property, assign the new insights_owner.  <b>Note:</b> A daily scheduled job sets the <b>Owner</b> field of each newly discovered CI to the Owner setting for the associated service account.

Option	Description
<p><b>Assign insights_owners to all CIs</b></p>	<p>For the <i>Owner</i> property of every CI in the specified service accounts, assign the new insights_owner.</p> <p><b>Note:</b> A daily scheduled job sets the <b>Owner</b> field of each newly discovered CI to the Owner setting for the associated service account.</p>
<p><b>Do not update any CIs</b></p>	<p>Make no changes to CIs in the specified service accounts.</p>

- The affected service accounts are removed from policies that were created with the insights\_owner role. The affected service accounts aren't removed from policies that were created with the insights\_admin role.
- The new insights\_owner must create and manage new policies for the affected service accounts.
- The new account owner takes ownership of Rightsizing and Unused Machines jobs that include resources from all transferred service accounts.

**5. Optional:** Specify whether to transfer policies to the new owner.

This setting applies when the selected service accounts are currently owned by a different insights\_owner. Transferring the policies enables the new insights\_owner to own (view, update, or delete) policies that are associated with the specified service accounts.

**Important:** Policies owned by users with the insights\_admin role aren't changed in any way.

Option	Description
<p><b>Yes</b></p>	<p>The following process runs:</p> <ol style="list-style-type: none"> <li><b>a.</b> The instance clones all affected policies that are owned by Insights Owners.</li> <li><b>b.</b> The instance removes appropriate service accounts from each affected policy and moves the accounts to the new clone policy. Each clone policy contains only the affected service accounts. <ul style="list-style-type: none"> <li>▪ If service accounts remain in the original policy, then the original owner retains ownership of the original policy.</li> <li>▪ If an original policy has no service accounts after all affected accounts are removed, then the clone isn't used. Instead, the new insights_owner becomes the owner of the original policy.</li> </ul> </li> </ol>

Option	Description
	<ul style="list-style-type: none"> <li><b>c.</b> The instance assigns ownership of the new policies to the new insights_owner.</li> <li><b>d.</b> The instance sends email notifications to both the original and new owners.</li> </ul>
<p><b>No</b></p>	<ul style="list-style-type: none"> <li>○ The instance removes the affected service accounts from all policies owned by Insights Owners. If no service accounts remain in a policy, then the policy is set to the Invalid state.</li> <li>○ The new insights_owner must create and manage the new policies for the affected service accounts.</li> </ul>

**6. Select **Submit**.**

**View the service accounts owned by an insights\_owner**

View the list of users that have the insights\_owner role and the service accounts that each owner owns.

**Before you begin**

Role required: sn\_clin\_core.insights\_admin or sn\_clin\_core.insights\_owner

**About this task**

A service account is a secure record on your instance that holds the credential and access information for your provider account. Discovery uses the information to access your provider account to get data on each resource in each specified datacenter.

**Procedure**

- 1.** Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **View insights owners**.
- 2.** Select the name of any user to view the details of the owned service accounts.

**Exclude a resource from all Cloud Cost Management reports**

To ensure that cost data for a particular resource doesn't appear in a report, you exclude the resource by adding it to the Excluded Resources list.

**Before you begin**

A cloud account (parent account) that has at least one service account and related datacenters is required.

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner] for owned service accounts.

**About this task**

- Excluding a resource from a report means that the resource doesn't get displayed in the report. This setting doesn't affect analysis of data for the resource.
- At any time, you can remove a resource from the Excluded Resources list.
- An insights\_owner can exclude resources and remove a resource from the Excluded Resources list only in owned service accounts.

- Production resources are examples of resources that you might exclude. Because production resources must always be active, you might, for example, want to exclude production resources from Business Hours reports.
- You can exclude a resource either from a single report type or from all reports. You can select a resource and select **Exclude** for excluding the resource from the current report. The resource you exclude gets added to the **Excluded Resources** list for the report.

**Procedure**

1. Navigate to *Cloud Cost Management Workspace* > **Operations** > **Administration** > **Global exclusions**.
2. Select **New**.
3. On the form, fill in the fields.

**Excluded Resources**

Field	Value
Resource	The resource to exclude. Only virtual machine resources appear in the list.
Description	The reason for excluding the resource.

4. Select **Save**.

**Result**

The resource is excluded from all reports. After you submit the record, you can open it to update the reports from which to exclude the resource.

**Remove a resource from the Excluded Resources list**

You can remove a resource from the Excluded Resources list.

**Before you begin**

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner] for owned service accounts.

**About this task**

When you remove a resource from the Excluded Resources list, the resource appears in the appropriate reports.

**Procedure**

1. Navigate to **Cloud Cost Management** > **Operations** > **Administration** > **Global exclusions**.
2. Select the resources to remove.
3. In the Actions on selected rows list, select **Delete**.

**Create and update a tag category**

Create a tag category to enable multiple tag names for representing costs against a single business entity. For example, multiple users might independently have created the tag names "App", "AppService", and "appl" to indicate applications. With a tag category of "Application", any costs for items tagged App, AppService, or appl are correctly assigned as costs against an application.

Watch this short video to learn how to create and update a tag category.

[https://player.vimeo.com/video/1136169557?h=447f9cfac5&badge=0&autoplay=0&player\\_id=0&app\\_id=58479](https://player.vimeo.com/video/1136169557?h=447f9cfac5&badge=0&autoplay=0&player_id=0&app_id=58479)

### Before you begin

Role required: insights\_admin [sn\_clin\_core.insights\_admin]

### About this task

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

This procedure describes the process as performed from the user interface. Alternatively, to speed the process, you can edit the affected tables directly.

- Tag Category [sn\_clid\_intg\_core\_tag\_category]
- Tag Name-Category [sn\_clid\_intg\_core\_tag\_name\_category]

**i Note:** Each successful execution of a Billing Download job updates tagged costs. Recent updates that you make to tag category definitions might not reflect on the cost reports. To apply the latest tag category definitions to cost data without running a Billing Download job, select **Reapply categories** by navigating to **Cloud Cost Management Workspace > Operations > Cost usage tags > Tag categories**.

### Procedure


1. Navigate to **Cloud Cost Management Workspace > Operations > Cost usage tags > Tag categories**.
2. On the Tag Categories list, select **New**.  
For the list of default tag categories, see [List of default tag categories](#).


**i Note:** In this step, you add a single tag name to the category to create the initial category record. You can add any number of tag names to the category later.

3. On the form, fill in the fields.

#### Tag Category form

Field	Description
Name	A unique and meaningful name for the category.
Active	The option to add the category to the <b>Tag Category</b> filter list on spend reports.
Enable grouping	Option to add a <i>category: value</i> option for this category to the list of <b>Group by</b> choices on spend reports.  <b>i Note:</b> A category must be active to appear in the <b>Group by</b> list.
Tag names	The list of tag names that you can add to the category.

Field	Description
	<p><b>a.</b> Select the Lookup icon  to open the list of tag names that came with the latest Billing Download Job. All tag names appear on the Tag Names list.</p> <p><b>b.</b> Select tag names from the drop-down list.</p>

4. Select **Save** to create the category.  
The new category appears in the Tag Categories list.
5. In the Tag Categories list, select the category that you just added.  
The Tag Category form reopens and the tag name that you added appears in the **Tag names** list.
6. **Optional:** On the **Tag names** list, select the Lookup icon  to add multiple tag names.

**Related topics**

[Tags and tag categories](#)


**Add or update a tag value for an AI Service tag category**

Associate a tag name with its corresponding tag value whenever a new AI service or a category within an existing AI service is introduced for Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP).

**Before you begin**

Role required: insights\_admin [sn\_clin\_core.insights\_admin]

**About this task**

 **Important:** This feature is available with the Cloud Cost Management 8.0.0 version or later.

**Procedure**

1. Navigate to **Cloud Cost Management Workspace > Operations > Cost usage tags**.
2. Select **Tag categories**.
3. On the Tag categories page, select the **AI Service** tag category.
4. On the AI Service page, select the **Tag name value** tab.
5. Select **Add/Update tag values**.
6. In the **Add/Update AI Service tag values** dialog box, select the **Create** tab.
7. Select the service provider tag name and provide a tag value.
  - For AWS, add the lineltem/ProductCode as the tag value against the AWS AI service tag name **sn\_ccm\_aws\_ai\_service**.
  - For Azure, add the Meter Category name as the tag value against the Azure AI service tag name **sn\_ccm\_azure\_ai\_service**.
  - For GCP, add the Service description name as the tag value against the GCP AI service tag name **sn\_ccm\_gcp\_ai\_service**.
8. Select **Submit**.
9. **Optional:** If you want to update the tag value of an AI service that you have created, select **Add/update tag values**.

**i Note:** You can't update the tag values for the default cloud categories for managing AI services. To view the default cloud categories for managing AI services within the Machine Learning service category, see [List of default Cloud categories for AI services](#).

- a. Select the **Update** tab.
- b. Select the provider tag name.  
For example, select **sn\_ccm\_aws\_ai\_service**.
- c. Select the tag value that you want to update.  
For example, select **Amazon Test**.
- d. Provide a new tag value for it.  
For example, change the existing tag value to **Amazon Test 2**.
- e. Select **Submit**.

## Result

After a tag name is associated with its corresponding tag value, you can view the spend data of the AI service you added on the Spend analytics page. For more information, see [Spend analytics](#).

## What to do next

After you add a tag value for an AI Service tag category, you must reimport the billing data to generate the spend for the added tag.

## Related topics

[Tags and tag categories](#)

[Create and update a tag category](#)

[Schedule and manage the jobs that download AWS billing data](#)

[Schedule and manage the jobs that download Azure billing data](#)

[Schedule and manage the jobs that download Google Cloud billing data](#)

## Create or update a shared cost allocation policy

Create a shared cost allocation policy with different allocation types to split the cost of shared cloud resources among various business lines.

## Before you begin

- A cloud account (parent account) that has at least one service account and associated datacenters is required.
- A Billing Download job must be created and the billing data must be pulled.
- For Kubernetes, you must enable the cost allocation tag on your provider console for each Kubernetes cluster before you execute the Billing Download job.

Role required: insights\_admin [sn\_clin\_core.insights\_admin] or insights\_owner [sn\_clin\_core.insights\_owner] for owned service accounts.

## About this task

- You must select one of the Cloud Cost Management application scopes to create or update a shared cost allocation policy.
- You can create as many policies as needed.
- If Kubernetes Service is selected as Service Category, you can't edit the Service Category, Resource Type, Kubernetes Cluster fields while editing a policy.
- When you deactivate a shared cost allocation policy, allocations get updated with the latest policy match.

## Procedure

1. Navigate to **Workspaces > Cloud Cost Management Workspace > Operations > Administration**.
2. Select **Shared cost allocation policies**.
3. Select **New/Edit**.
4. On the Shared Cost Allocation Policy Creation form, fill in the fields.  
For a description of the field values, see [List of Shared cost allocation policy fields](#).
5. Select **Submit**.

## Result

After you create or modify a shared cost allocation policy, the policy gets displayed on the **Shared Cost Allocation Policies** page. Find the details of the policy such as the name, allocation type, business unit, and cloud service.

When the Discovery and Billing Download job executions finish, the system applies active policies to identify matching resources and then performs the policy actions on the resources.

## What to do next


After you create or update a shared cost allocation policy, select **Reapply policies** to apply the created policy to a resource.

## Compare MetricBase data with spend data

Compare MetricBase (Clotho) data with your Spend data for Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP) to diagnose and troubleshoot Cloud Cost Management billing issues.


## Before you begin

Role required: Cloud Insights Admin [sn\_clin\_core.insights\_admin]

Request the MetricBase [com.snc.clotho] plugin. For more information, see [Requesting the MetricBase product](#) .

Verify that the Billing Download job has been completed successfully for the cloud provider.

## About this task

 **Important:** This feature is available with the Cloud Cost Management 8.0.0 version or later.

## Procedure

1. Navigate to **Cloud Cost Management Workspace > Operations > Tools**.
2. Select **Compare MetricBase with spend data**.

3. On the form, fill in the fields.

**Compare MetricBase with spend data form**

Field	Description
Provider	<p>Cloud provider for which you want to compare MetricBase (Clotho) data with your Spend data.</p> <ul style="list-style-type: none"> <li>○ AWS</li> <li>○ Azure</li> <li>○ GCP</li> </ul>
Cost type	<p>Contractual payment agreement with the provider.</p> <ul style="list-style-type: none"> <li>○ Actual: Each billing period, your organization pays for direct cloud services.</li> <li>○ Amortized: Your organization pays the effective cost of the upfront and monthly reservation fees spread across the billing period. The amortized cost type is described in detail on the provider's site.</li> </ul>
Billing month	<p>Months for which billing data is available based on the provider you select.</p> <p>This field is populated only with those months for which billing data is available.</p>

4. Select **Submit**.

**Result**

A request with a unique number gets created and a CSV file is attached to the request item, which lists the comparison data. The process to generate the CSV file runs in the background and the file is attached to the request item when the processing is complete.

If there are any errors, the **Work notes** field of this request item is updated and Cloud Cost Management doesn't generate the CSV file.

**What to do next**

Select the **Requested Items** tab and then select the Requested Items number to navigate to the CSV file. In the Attachments section, you can find the CSV file. Download this file to analyze any mismatch in the cost values from both of the sources. You can also filter the data according to your requirements.

**Cloud Cost Management reference**

Reference topics provide additional information about the lists and forms that you use to configure and administer Cloud Cost Management.

**Domain separation and Cloud Cost Management**

Domain separation is unsupported for Cloud Cost Management. Domain separation enables you to separate data, processes, and administrative tasks into logical groupings called domains. You can control several aspects of this separation, including which users can see and access data.

### Support level: No support

- The domain field may exist on data tables but there is no business logic to manage the data.
- This level is not considered domain-separated.

For more information on support levels, see [Application support for domain separation](#).

### Related topics

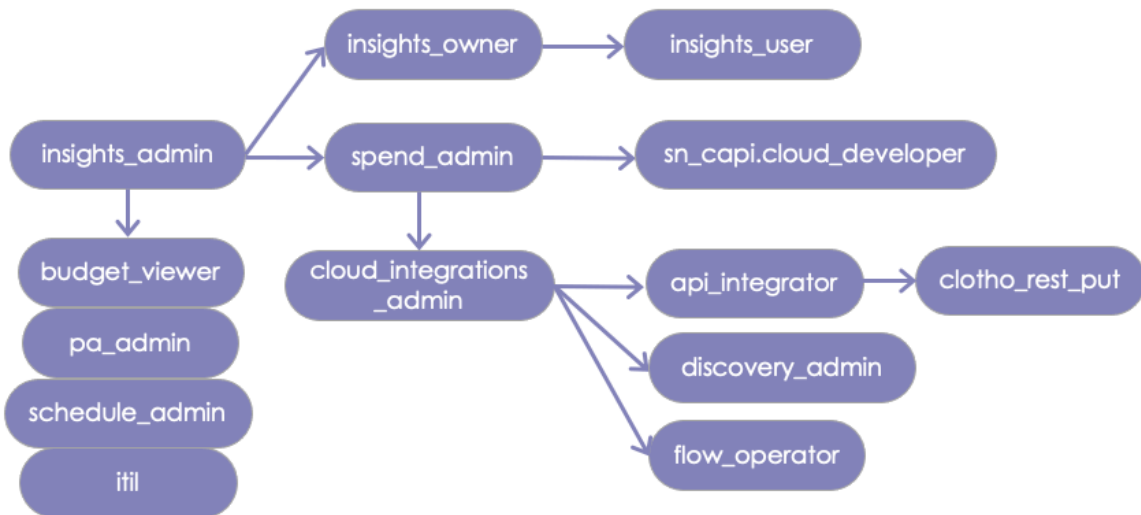
[Domain separation for service providers](#)

## Cloud Cost Management roles

You assign Cloud Cost Management roles to user groups and to individual users based on user activities and responsibilities.

**i Important:** This information applies to both the Cloud Cost Management and Cloud Insights Billing apps. All references to Cloud Cost Management also apply to Cloud Insights Billing.

### Role relationships in Cloud Cost Management



### Primary Roles

Role title [name]	Permissions	Contains roles
Cloud Insights Admin [sn_clin_core.insights_admin]	<p>The role is in the Cloud Cost Management Core plugin. You typically assign the role to the person who is financially responsible.</p> <ul style="list-style-type: none"> <li>• Assign ownership of one or more service accounts and, optionally, the related CIs to users that have the insights_owner role.</li> <li>• Define Business hours and Unassigned resources policies.</li> </ul>	<ul style="list-style-type: none"> <li>• insights_owner</li> <li>• spend_admin</li> <li>• cloud_integrations_admin</li> <li>• budget_viewer</li> <li>• [pa_admin]</li> <li>• [schedule_admin]</li> <li>• [itil]</li> </ul>

Role title [name]	Permissions	Contains roles
	<ul style="list-style-type: none"> <li>Define and view Budget plans.</li> <li>View spend optimization reports.</li> <li>Add report extensions.</li> <li>Perform the actions that Cloud Cost Management recommends.</li> </ul>	
Cloud Insights Owner [sn_clin_core.insights_owner]	<p>The role is in the Cloud Cost Management Core plugin. The role spans only the Cloud Cost Management application.</p> <ul style="list-style-type: none"> <li>Define jobs and policies.</li> <li>View data for owned service accounts.</li> </ul> <p>For more information, see <a href="#">Assign service accounts to an insights_owner</a>.</p>	insights_user
Cloud Insights User [sn_clin_core.insights_user]	<p>The role is in the Cloud Cost Management Core plugin. The role spans only the Cloud Cost Management application.</p> <p>View the Cloud Cost Management Workspace home page.</p>	— none —

### Secondary roles

The roles in this section are contained in the insights\_admin role. These roles enable integration with platform (Performance Analytics, MetricBase/Clotho) to execute Cloud Cost Management flows.

Role title [name]	Permissions	Contains roles
Cloud Spend Admin [sn_cld_spend_core.spend_admin]	<p>The role is in the Cloud Spend Reports Core plugin.</p> <p>Edit the Cloud Billing dashboards.</p>	<ul style="list-style-type: none"> <li>cloud_integrations_admin</li> <li>[sn_capi.cloud_developer]</li> </ul>

Role title [name]	Permissions	Contains roles
Cloud Integrations Admin [sn_cld_intg_core.cloud_integrations_admin]	The role is in the Cloud Integrations Core plugin.  Configure Billing Download jobs and Price Sheet Download jobs.	<ul style="list-style-type: none"> <li>• [api_integrator]</li> <li>• [discovery_admin]</li> <li>• [flow_operator]</li> </ul>
API Integrator [sn_cld_intg_core.api_integrator]	The role is in the Cloud Integrations Core plugin.  Used by the MID Server to access REST endpoints that are related to the Cloud Integrations, Cloud Integrations AWS applications, and Cloud Integrations Azure applications.	[clotho_rest_put]
Cloud Budget Viewer [sn_clin_core.budget_viewer]	The role is in the Cloud Cost Management Core plugin. The role spans only the Cloud Cost Management application.  View Budget Forecast reports and policies.	— none —
PA Admin [pa_admin]	See <a href="#">Performance Analytics roles</a> .	— none —
Clotho Put [clotho_rest_put]	Role that is used by the MID Server to send the billing data to the instance and store the data in MetricBase / Clotho.	— none —

**Related topics**

[Assign a role to a group](#) ↗

[Assign a role to a user](#) ↗

**Components installed with Cloud Cost Management**

Several types of components are installed with activation of Cloud Cost Management, including tables, user roles, and scheduled jobs.

**Scheduled jobs installed**

Scheduled job	Description
Price Sheet Table Cleaner	Cleans up AWS price sheet records.
Resource Group Table Cleaner	Cleans up Azure resource group records that are no longer required.
CCM CleanUp Inactive Aggregated Spend Records	Cleans up inactive aggregated spend records.
Cloud Insights Historical Data Collection	Collects GCP spend data.
Cloud Insights Saving Daily Data Collection	Collects potential savings and realized savings for spend.
Cloud Insights Spend Saving Data Collection	Collects cloud spend potential saving percentage.
Execute Tasks	Executes tasks associated with AWS billing download.
Flow Launcher and Hierarchical Flow Launcher Keep Alive	Cancel stale flow jobs.
GCP Price Sheet Table Cleaner	Cleans up GCP Price sheet table
Tag Categories Based Recommendation	Generates Tag Category based recommendations.
<p><b>i Important:</b> The following scheduled jobs are used only when the Cloud Cost Management Infra Stack application is installed in addition to Cloud Cost Management version 8.1.</p>	
Cumulus- Cancel stuck job	Monitors scheduled billing jobs and cancels the jobs that are stuck. This enables billing jobs in the queue to be processed.
Unsupported CI Type Placement	Places the CI types that aren't used for daily recommendations.
CCM - Daily job	Performs daily maintenance activities such as cleanup of left-out attachments of AWS billing job (with assume role authentication).

## Tables installed

Table	Description
CI Placement Extension Progress Calculation [sn_cld_intg_aws_ci_placement_extension_progress_calculation]	Configuration Items placement progress for AWS. Contains number of records to be processed by the AWS extension.
CI Placement Stats [sn_cld_intg_aws_ci_placement_stats]	Status of bookmarks created during the Configuration Items placement for AWS.
AWS CI Placement Type Information [sn_cld_intg_aws_ci_placement_type]	All types of Configuration Items deployed by Cloud Cost Management for AWS.
AWS Cost And Usage Bill Data [sn_cld_intg_aws_cost_usage]	Cost and billing data for AWS.
Cost Usage Bookmarks [sn_cld_intg_aws_cost_usage_bookmarks]	Time stamp bookmarks created for the ingested Cloud Cost Management placement records.
CloudWatch Metric Association [sn_cld_intg_aws_cw_metric_association]	Custom metrics created by user.
AWS CloudWatch Metric Definition [sn_cld_intg_aws_cw_metric_definition]	Definitions for various AWS cloud watch metrics.
CloudWatch Metric Definition to Account [sn_cld_intg_aws_cw_metric_definition_account_m2m]	Metric to service account mapping information.
AWS Baseline Performance for EC2 Burstable Instances [sn_cld_intg_aws_ec2_burstable_baseline_perf]	Baseline performance percentage for AWS EC2 burstable instances.
AWS Gov Accounts Mapping [sn_cld_intg_aws_gov_account_mapping]	AWS Gov accounts and linked accounts details.
AWS Instance details [sn_cld_intg_aws_instance_detail]	Details for various AWS instances present.
AWS Instance Price details [sn_cld_intg_aws_instance_price_detail]	Pricing and rate details for AWS instances.
AWS Offer Term [sn_cld_intg_aws_offer_term]	Offer term details based on configurations of AWS products.
AWS Price Discount [sn_cld_intg_aws_price_discount]	Price discounts for AWS service accounts.
AWS Price Sheet Information [sn_cld_intg_aws_price_sheet_info]	Price sheet details for AWS.

Table	Description
AWS Product Details Base [sn_cld_intg_aws_product_details]	All product details or specifications for AWS.
AWS Product Details EC2 [sn_cld_intg_aws_product_details_ec2]	EC2 product details or specifications for AWS.
AWS Product Details RDS [sn_cld_intg_aws_product_details_rds]	RDS product details or specifications for AWS.
AWS Resource Hourly Usage Last Downloaded [sn_cld_intg_aws_resource_hourly_usage_last_downloaded]	Hourly usage download status for AWS resources.
AWS Resource Rate [sn_cld_intg_aws_resource_rate]	Resource rates for AWS product SKUs.
AWS Billing Download Job [sn_cld_intg_aws_schedule]	Billing download jobs and their status for AWS.
AWS Storage Price Details [sn_cld_intg_aws_storage_price_detail]	Storage price sheet information for AWS.
Azure CI Placement Type Information [sn_cld_intg_azure_ci_placement_type]	Defines all types of Configuration Items deployed by Cloud Cost Management for Azure.
Azure Cost And Usage Bill Data [sn_cld_intg_azure_cost_usage]	Cost and billing data for Azure.
Azure Database Price Sheet [sn_cld_intg_azure_db_price_sheet]	Price sheet details for Azure database.
Azure Database retail price detail [sn_cld_intg_azure_db_retail_price]	Retail price information for Azure database.
Azure Enrollment To Service Account Mapping [sn_cld_intg_azure_ea_sa_mapping]	Mapping information for enrollment account to the service accounts used by Cloud Cost Management.
Azure Instance Details [sn_cld_intg_azure_instance_detail]	Details of various Azure instances present.
Azure Instance Price Details [sn_cld_intg_azure_instance_price_detail]	Pricing and rate details for Azure instances.
Azure Instance Series To Family Mapping [sn_cld_intg_azure_instance_series_family_mapping]	Instance family to instance series mapping information for Azure.
Azure Instance Size Details [sn_cld_intg_azure_instance_size_detail]	Details about various Azure instances sizes & their functionalities.
Azure Normalized Region [sn_cld_intg_azure_normalized_region]	Resource location to a generic normalized location mapping information.

Table	Description
Azure Price Sheet Version [sn_cld_intg_azure_price_sheet_version]	Price sheet status and version for Azure.
Azure Product Details [sn_cld_intg_azure_product_details]	All product details or specifications for Azure.
Azure Product Details VM [sn_cld_intg_azure_product_details_vm]	Virtual Machine product details or specifications for Azure.
Azure Product Offering VM [sn_cld_intg_azure_product_offering_vm]	Offer term details for Azure Virtual Machine service.
Azure Product Details Instance Type Map [sn_cld_intg_azure_prod_dtls_inst_type_map]	Product details for various instance types for Azure.
Azure Advisor Subscription Queue [sn_cld_intg_azure_recommendation_subscription_queue]	Stores the states of generate, get generate status and list recommendations flow launcher jobs, for provider based recommendations of Azure.
Azure resource hourly usage last downloaded [sn_cld_intg_azure_resource_hourly_usage_last_downloaded]	Hourly usage download status for Azure resources.
Azure Resource Rate [sn_cld_intg_azure_resource_rate]	Resource rates for Azure meter IDs.
Azure Billing Download Job [sn_cld_intg_azure_schedule]	Billing download jobs and their status for Azure.
Azure Software Cost Details [n_cld_intg_azure_software_cost_detail]	Hourly cost details for Azure software.
Azure Storage Price Details [sn_cld_intg_azure_storage_price_detail]	Storage price sheet information for Azure.
Azure Storage Size Details [sn_cld_intg_azure_storage_size_detail]	Various Azure storage sizes & their functionalities.
Cloud Action Execution [sn_cld_intg_core_action_exec]	Execution details for various cloud actions.
Cloud Alias [sn_cld_intg_core_alias]	List of defined aliases.
Cloud Alias Mapping [sn_cld_intg_core_alias_mapping]	Alias mapping to the script or action flow.
Cloud API Request [sn_cld_intg_core_api_request]	API request & parameters sent to the provider.
Cloud API Request Error [sn_cld_intg_core_api_request_error]	Error responses for failed request items.

Table	Description
Cloud API Request Item [sn_cld_intg_core_api_request_item]	API request item details sent to the provider.
Cloud API Response [sn_cld_intg_core_api_response]	API responses for the API calls made to providers.
Cloud Availability Zones [sn_cld_intg_core_availability_zone]	Availability zones for various providers.
Billing Report Information [sn_cld_intg_core_billing_report_info]	Billing summary reports for billing download jobs.
Billing Import Progress [sn_cld_intg_core_bill_imp_progress]	Import information for various extensions under billing download job.
CI Placement Stats [sn_cld_intg_core_ci_placement_stats]	Status of bookmarks created during Configuration Items placement.
CI Placement Status [sn_cld_intg_core_ci_placement_status]	Configuration Items placement status for extensions executed.
CI Placement Type Information [sn_cld_intg_core_ci_placement_type]	All types of Configuration Items deployed by our product for all providers.
Cost Tags [sn_cld_intg_core_cost_tags]	Mapping information of tag category to cost hash.
Execution [sn_cld_intg_core_execution]	Execution details for all types of running IH flows.
Execution Batch [sn_cld_intg_core_execution_batch]	Execution batches for running the flows.
Execution To Batch Map [sn_cld_intg_core_execution_batch_map]	Mapping information of execution jobs to the respective batches.
Execution Log [sn_cld_intg_core_execution_log]	Log messages for all the executions.
Execution Metric [sn_cld_intg_core_execution_metric]	Metrics for executions.
Execution Monitor [sn_cld_intg_core_execution_monitor]	Live status of the ongoing execution.
Extension [sn_cld_intg_core_ext]	All the available extensions and their details.
Extension Type [sn_cld_intg_core_ext_type]	Types of extensions defined.

Table	Description
Flow Launcher Execution [sn_cld_intg_core_flow_launcher_execution]	Flow launcher job execution details.
Flow Launcher Job [sn_cld_intg_core_flow_launcher_job]	List of flow launcher jobs and their status.
Flow Launcher Job Configuration [sn_cld_intg_core_flow_launcher_job_config]	Configurations for flow launcher jobs.
Flow Launcher Workload [sn_cld_intg_core_flow_launcher_workload]	Workload information for flow launcher executions.
Flow Map [sn_cld_intg_core_flow_map]	Mapping information of input parameters to the flow workloads.
Flow Reflection [sn_cld_intg_core_flow_reflection]	Flow reflection link in flow designer for given context.
Hierarchical Flow Launcher Execution [sn_cld_intg_core_hierarchical_flow_launcher_execution]	Hierarchical flow launcher job execution details.
Imported Date Range [sn_cld_intg_core_imported_date_range]	Imported date range of data during billing download execution.
Instance Family [sn_cld_intg_core_instance_family]	Instance families available for various providers.
Cloud Instance Types [sn_cld_intg_core_instance_type]	Instance types & details for various providers.
Cloud Instance Type Family [sn_cld_intg_core_instance_type_family]	Instance family types available for various providers.
Billing Line Item Types [ sn_cld_intg_core_line_item_type]	Types of billing charges for various providers.
Associated Flow Execution [sn_cld_intg_core_m2m_ext_exec_flow_exec]	Mapping information of extension execution to flow execution.
M2m Profile Exec Metrics Profile Table Metrics [sn_cld_intg_core_m2m_profile_exec_metrics_profile_table_metrics]	Mapping information of profile execution to profile table metrics.
Pipeline Stage Extension Type Map [sn_cld_intg_core_map_pp_stage_ext_type]	Mapping information of extension types to their respective stages.
Cloud Operating Systems [sn_cld_intg_core_os_type]	Operating system details for various providers.
Pipeline Execution [sn_cld_intg_core_pp_exec]	Contains all the pipeline executions for billing download.

Table	Description
Execution Stage [sn_cld_intg_core_pp_exec_stage]	Contains all the pipeline executions for each billing download stage.
Extension Execution [sn_cld_intg_core_pp_exec_stage_ext_log]	Pipeline execution logs.
Execution Stage Log [sn_cld_intg_core_pp_exec_stage_log]	Pipeline execution logs for each stage.
Import Stage [sn_cld_intg_core_pp_import_stage]	Executions details for the import state of billing download.
Cloud Price Sheet Version [sn_cld_intg_core_price_sheet_version]	Price sheet status and version for providers.
sn_cld_intg_azure_storage_ps	Store azure storage price sheet details.
Cloud Product Regions [sn_cld_intg_core_product_region]	List of product regions for various providers.
Profile Execution Metrics [sn_cld_intg_core_profile_execution_metrics]	Execution metrics for performance profiling.
Profile Flow Launcher Job Metrics [sn_cld_intg_core_profile_flow_launcher_job_metrics]	Flow launcher execution metrics for performance profiling.
Profile Flow Metrics [sn_cld_intg_core_profile_flow_metrics]	Flow metrics for performance profiling.
Profile Table Metrics [sn_cld_intg_core_profile_table_metrics]	Table metrics for performance profiling.
Cloud Provider Service [sn_cld_intg_core_provider_service]	List of services provided by various cloud providers & their end points.
Cloud Provider Service Action [sn_cld_intg_core_provider_service_action]	Script include actions for the cloud services provided.
Price Sheet Execution [sn_cld_intg_core_ps_download_request]	Price sheet job status and summary.
Execution Item [n_cld_intg_core_ps_download_request_items]	List of items fetched for every price sheet execution.
Price Sheet Download Execution [sn_cld_intg_core_ps_execution]	Price sheet execution and download information for all scheduled job.
Price Sheet Download Job [sn_cld_intg_core_ps_schedule]	List of the price sheet download jobs created.
Cloud Purchase Options [n_cld_intg_core_purchase_option]	Various purchase options available for providers.

Table	Description
Cloud Regions [sn_cld_intg_core_region]	List of cloud regions available for various providers
Resource Group [sn_cld_intg_core_resource_group]	List of resource groups.
RS Metrics Configuration [sn_cld_intg_core_rs_metrics_configuration]	Metric configurations for rightsizing.
Cloud Billing Schedule [sn_cld_intg_core_schedule]	List of billing download jobs created.
Billing Download Execution [sn_cld_intg_core_scheduled_exec]	Billing download execution and download information for all scheduled jobs.
Cloud Integration Action Schedule Job [sn_cld_intg_core_schedule_job]	Scheduled jobs for invoking cloud actions.
Cloud Integration Action Schedule Trigger [sn_cld_intg_core_schedule_trigger]	Triggers for invoking cloud actions scheduled jobs
Storage Details Base [sn_cld_intg_core_storage_detail]	Available storage details for providers.
Storage Option [sn_cld_intg_core_storage_option]	Available storage options for providers
Tag Category [sn_cld_intg_core_tag_category]	List of tag categories having various tags under them.
Tag Name [sn_cld_intg_core_tag_name]	Tag names from the billing data or user generated names.
Tag Name-Category [sn_cld_intg_core_tag_name_category]	Mapping of tag name to category.
Tag Name-Value [sn_cld_intg_core_tag_name_value]	Mapping of tag name to value.
Tag Resource [sn_cld_intg_core_tag_resource]	Tag value pairs associated with a resource.
Tag Value [sn_cld_intg_core_tag_value]	Tag values from the billing data or user generated values.
Test Connection Execution [sn_cld_intg_core_test_connection_execution]	Test connection execution details
Variable [sn_cld_intg_core_variable]	Local variables for integrations core.
GCP CI Placement Type Information [sn_cld_intg_gcp_ci_placement_type]	All types of Configuration Items deployed by Cloud Cost Management for Google Cloud Platform (GCP).

Table	Description
GCP Cost And Usage Bill Data [sn_cld_intg_gcp_cost_usage]	Cost and billing data for GCP.
GCP Product Details [sn_cld_intg_gcp_product_details]	All product details or specifications for GCP.
Google Billing Download Job [sn_cld_intg_gcp_schedule]	Billing download jobs and their status for GCP.
GCP Services [sn_cld_intg_gcp_services]	List of services provided by GCP.
AWS Spend Report Finalization Information [sn_cld_spend_aws_report_finalization_info]	Spend reports finalization status for AWS.
Spend Report Daily Aggregated Cost [sn_cld_spend_core_daily_aggregated_cost]	Spend report on daily basis aggregated on resources.
Spend Report Daily Cost [sn_cld_spend_core_daily_cost]	Spend report for resource usage on daily basis.
Spend Report Forecast Cost [n_cld_spend_core_forecast_cost]	Forecasted spend information.
Spend Report Monthly Cost [sn_cld_spend_core_monthly_cost]	Monthly spend report for resource usage.
	<div style="background-color: #e1f5fe; padding: 10px; border: 1px solid #cfe2f3;"> <p><b>i Important:</b> From Cloud Cost Management version 8.1 onward, if you have installed the Cloud Cost Management Infra Stack application, this table won't be populated.</p> </div>
Spend Report Execution Info [sn_cld_spend_core_report_info]	Spend report execution details.
AWS Rightsizing Analytics Report [sn_clin_aws_rs_analytics_report]	Rightsizing report for AWS.
AWS Rightsizing Skipped Instance Families [sn_clin_aws_rs_skipped_instance_family]	AWS instance families that are not considered in rightsizing recommendations.
Azure Rightsizing Analytics Report [sn_clin_azure_rs_analytics_report]	Rightsizing report for Azure.
Cloud Insights Aggregated Cost Saving Snapshot [sn_clin_core_aggregated_cost_saving_snapshot]	Snapshot of aggregated cost for different service accounts.

Table	Description
Cloud Insights Aggregated Potential Saving Snapshot [sn_clin_core_aggregated_potential_saving_snapshot]	Snapshot of aggregated potential savings from various recommendations.
Cloud Insights Aggregated Realized Saving Snapshot [sn_clin_core_aggregated_realized_saving_snapshot]	Snapshot of the actual realised aggregated savings.
Business Hours Cost [sn_clin_core_bh_cost]	Business hours vs non business hours cost for a resource.
Business Hours Policy [sn_clin_core_bh_policy]	List of policies configured for business hours.
Business Hours Policy Execution [sn_clin_core_bh_policy_execution]	Business hours policy execution information.
Business Hours Policy Match [sn_clin_core_bh_policy_match ]	Policy matches for various resources in the Business hours cost table.
Business Hours Policy Summary [sn_clin_core_bh_policy_summary]	Information summary for the business hour policies.
Cloud Insights Business Hour Recommendations [n_clin_core_bh_recommendation]	Recommendations for business hours.
Business Hours Settings [sn_clin_core_bh_settings]	Settings record for Business hours module.
Budget [sn_clin_core_budget_policy]	List of budget policies & details.
Budget Report Forecast Cost [sn_clin_core_budget_report_forecast_cost]	Spend calculation for the budget.
Budgets Policy Summary [sn_clin_core_budget_summary]	Summaries of budget policies with stats.
Cloud Insights realized saving snapshot [sn_clin_core_daily_realized_saving_snapshot]	Snapshot of the actual realised daily savings.
Excluded Resources Report Mapping [sn_clin_core_exclusion_mapping]	Excluded resource mapping to the type report or recommendation it belongs to.
Excluded Resources [sn_clin_core_excl_res]	List of excluded resources from the Cloud Cost Management modules for different service accounts and providers.

Table	Description
Insights Alias [sn_clin_core_insights_alias]	List of defined aliases for Cloud Cost Management scope.
Insights Alias Mapping [sn_clin_core_insights_alias_mapping]	Alias mapping to the script or action flow for Cloud Cost Management scope.
Insights Execution [sn_clin_core_insights_execution]	Execution details for all Cloud Cost Management executions.
Insights Type [sn_clin_core_insights_type]	List of insights types available for Cloud Cost Management.
M2m Insights Exec Profile Flow Metrics [sn_clin_core_m2m_insights_exec_profile_flow_metrics]	Insights execution to profile flow metrics.
Cloud Insights Policy Action [sn_clin_core_policy_action]	Actions and flows to be executed for a policy.
Policy Change Request Templates [sn_clin_core_policy_change_request_template]	Change request templates for business hours and unassigned recommendations.
Cloud Insights Policy Match [sn_clin_core_policy_match]	Policy matches for various resources and modules.
Policy Summary [sn_clin_core_policy_summary]	Summary of all the policies available
Policy [sn_clin_core_pol_policy]	Policies to be applied on various modules.
Cloud Insights potential saving snapshot [sn_clin_core_potential_saving_snapshot]	Snapshot of the actual realised savings.
Cloud Insights Recommendations [sn_clin_core_recommendation]	Recommendations for Cloud Cost Management modules.
Recommendation Action Job Execution [sn_clin_core_recommendation_action_job_execution]	Job execution status for recommendations.
Reserved Instance Settings [sn_clin_core_reserved_instance_settings]	Settings record for Reserved Instance module.
Reserved Instance Recommendation [sn_clin_core_ri_recommendation]	Recommendations for reserved instances modules.
Rightsizing Analytics Report [sn_clin_core_rs_analytics_report_base]	Potential resources for rightsizing recommendations.

Table	Description
Cloud Insights Job [sn_clin_core_rs_job]	List of jobs for rightsizing or unused machines module.
Cloud Insights Rightsizing Recommendation Automatic [sn_clin_core_rs_recommendation_automatic]	Rightsizing recommendations.
Cloud Insights Rightsizing Recommendation [sn_clin_core_rs_recommendation_base]	Parent table for rightsizing or unused recommendations.
Rightsizing Settings [sn_clin_core_rs_settings]	Settings record for Rightsizing module.
Cloud Insights Unused Recommendation [sn_clin_core_rs_unused_recommendation]	Unused resources recommendations.
Service Account Owner Update Policy [sn_clin_core_sa_owner_policy]	Policies to update the service account owners.
Insights Settings[sn_clin_core_settings]	Settings for various Cloud Cost Management modules.
Tag key [sn_clin_core_tag_key]	Tag keys derived from billing data as well as user generated keys.
Unassigned Resources Count [sn_clin_core_unassigned_count]	Count of unassigned resources for various service accounts.
Cloud Insights Unassigned Policies [sn_clin_core_unassigned_policy]	Policies available for unassigned resources.
Policy CI View [sn_clin_core_unassigned_policy_ci_view_list]	Used for generating unassigned resources count. Contains information about the table to be queried and the encoded query and the columns to be queried in the specified table. The records in this table are manually hardcoded.
Unassigned Policy Summary [sn_clin_core_unassigned_policy_summary]	Policy summaries available for unassigned resources.
Unassigned Recommendations [sn_clin_core_unassigned_recommendation]	Unassigned recommendations with assignment group, generated based on matched policies.
Unassigned Report [sn_clin_core_unassigned_report]	Reports or policy match for various unassigned resources.

Table	Description
Unassigned Resources [sn_clin_core_unassigned_resource]	List of unassigned resources on which policies can be applied.
Unassigned Resource Settings [sn_clin_core_unassigned_settings]	Settings record for Unassigned resources module.
Unused Machine Settings [sn_clin_core_unused_settings]	Settings record for Unused machines module.
Spend Report Monthly Aggregated Costs [sn_cld_spend_core_monthly_aggregated_cost]	Stores spend for all resources over a time range or a cost type.
<p><b>i Important:</b> The following tables are used only when the Cloud Cost Management Infra Stack application is installed in addition to Cloud Cost Management version 8.1.</p>	
Resource Average Costs [sn_cld_intg_core_resource_avg_cost_list]	Average daily cost of the resource. This average daily cost is used to calculate savings for unused recommendations.
Google Policy Usage Last Downloaded [sn_cld_intg_gcp_resource_usage_last_downloaded]	Usage last downloaded timestamp of the resources. This helps in downloading only the delta usage for Business hours.
AWS billing job files [sn_cld_intg_aws_billing_files]	Reference and status of the attachments of billing CSV files downloaded for a corresponding billing job of AWS assume role setup.
Azure billing Job chunk blob detail [sn_cld_intg_azure_job_chunk_blob_detail]	Tracking and download URLs of Azure billing CSV data for a given date range corresponding to a billing job. Blobs are generated on Glide and download URLs are passed to the backend.

Table	Description
<p>Resource Latest Usage</p> <p>sn_cld_intg_core_resource_latest_usage</p>	<p>Latest usage date and corresponding pivot key of the supported resources like VM, DB, storage, and snapshots for a specific provider. Resources used on the previous day are used for license calculation.</p>
<p>Spend Report Monthly Provider Agg Cost</p> <p>sn_cld_spend_core_monthly_provider_agg_cost</p>	<p>Cloud Cost Management Workspace loads data from these tables when a user logs in with the insights_admin role. These tables contain monthly aggregated spend data based on various categories such as Provider and Region.</p>
<p>Spend Report Monthly Master Account Agg Cost</p> <p>sn_cld_spend_core_monthly_master_account_agg_cost</p>	
<p>Spend Report Monthly Service Account Agg Cost</p> <p>sn_cld_spend_core_monthly_service_account_agg_cost</p>	
<p>Spend Report Monthly Purchase Option Agg Cost</p> <p>sn_cld_spend_core_monthly_purchase_option_agg_cost</p>	
<p>Spend Report Monthly Region Agg Cost</p> <p>sn_cld_spend_core_monthly_region_agg_cost</p>	
<p>Spend Report Monthly Cloud Category Agg Cost</p> <p>sn_cld_spend_core_monthly_cloud_category_agg_cost</p>	
<p>Spend Report Monthly Service Category Agg Cost</p> <p>sn_cld_spend_core_monthly_service_category_agg_cost</p>	
<p>Spend Report Monthly Resource Group Agg Cost</p> <p>sn_cld_spend_core_monthly_resource_group_agg_cost</p>	
<p>Spend Report Monthly Tag Agg Cost</p> <p>sn_cld_spend_core_monthly_tag_agg_cost</p>	

## System properties for Cloud Cost Management

Set some property values on the System Properties form, but other lesser-used properties are available only on the System Property [sys\_properties] table.

### System properties for Billing Download jobs

System property	Description
sn_cld_intg_core.ci_placement_threads_number	<p>Number of threads that are used by CI placement flow to create CIs in the billing process.</p> <ul style="list-style-type: none"> <li>• Type: integer</li> <li>• Default value: 4</li> <li>• Location: System properties</li> </ul>
sn_cld_intg_aws.max_unprocessed_records_for_placement	<p>Maximum number of records to read in one batch from the AWS Cost And Usage Bill Data table for CI Placement.</p> <ul style="list-style-type: none"> <li>• Type: integer</li> <li>• Default value: 300000</li> <li>• Location: System properties</li> </ul>
sn_cld_intg_aws.min_unprocessed_records_for_placement	<p>Minimum number of records to read in one batch from the AWS Cost And Usage Bill Data table for CI Placement.</p> <ul style="list-style-type: none"> <li>• Type: integer</li> <li>• Default value: 100000</li> <li>• Location: System properties</li> </ul>

### System properties for Spend analysis

System property	Description
sn_cld_spend_core.metricbase_transform_limit	<p>Maximum number of Billing records to use in one Metric Base transform.</p> <ul style="list-style-type: none"> <li>• Type: integer</li> <li>• Default value: 20000</li> <li>• Location: System properties</li> </ul>
sn_cld_spend_core.spend_report_flow_launcher_chunk_size	<p>Number of non-empty CI chunks to send to the spend flow launcher.</p> <ul style="list-style-type: none"> <li>• Type: integer</li> <li>• Default value: 40</li> <li>• Location: System properties</li> </ul>

### System properties for Spend analysis (continued)

System property	Description
sn_cld_spend_core.spend_report_per_chunk_workload_size	<p>Number of workloads (CI ranges and metadata) for each chunk in the spend flow launcher.</p> <ul style="list-style-type: none"> <li>• Type: integer</li> <li>• Default value: 500</li> <li>• Location: System properties</li> </ul>
sn_cld_spend_aws.num_months_forecast	<p>Number of future months after the current month for which the AWS Forecast spend is retrieved during every execution of the Spend job.</p> <ul style="list-style-type: none"> <li>• Type: integer</li> <li>• Default value: 2</li> <li>• Location: System properties</li> </ul>

### System properties for Business Hours

**i Note: The collection of data for a single download of billing or price sheet data is called a workload. Data in a workload is held in sets of data called chunks. You can specify the size of each chunk and the number of chunks in a workload.**

System property	Description
sn_clin_core.bh_report.batch_size	<p>The number of resources to include in a Business Hours report batch.</p> <ul style="list-style-type: none"> <li>• Type: integer</li> <li>• Default value: 5000</li> <li>• Location: System properties</li> </ul>
sn_clin_core.bh_recom_max_chunk_size	<p>Number of records used to create workload chunks of rightsizing recommendations. If you set a value greater than glide.db.max_view_records , then the glide.db.max_view_records value is used instead. A smaller number means more chunks and a larger number means fewer chunks.</p> <p>Records considered in one execution of generating recommendations = (number of chunks) * (data records/chunk)</p>

**System properties for Business Hours**

**Note:** The collection of data for a single download of billing or price sheet data is called a workload. Data in a workload is held in sets of data called chunks. You can specify the size of each chunk and the number of chunks in a workload.

(continued)

System property	Description
	<ul style="list-style-type: none"> <li>Type: integer</li> <li>Default value: 10000</li> <li>Location: System properties</li> </ul>
sn_clin_core.bh_recom_num_chunks_per_workload	<p>Number of chunks per workload. This value times the value of sn_clin_core.bh_recom_max_chunk_size is the total number of records per workload when generating rightsizing recommendations.</p> <p>Records considered in one execution of generating recommendations = (number of chunks) * (data records/chunk)</p> <ul style="list-style-type: none"> <li>Type: integer</li> <li>Default value: 10</li> <li>Location: System properties</li> </ul>

**System properties for Microsoft Azure**

System property	Description
mid.azure_action.batch_size	<p>Use <code>batch_size</code> to set the batch size to fewer than 20 for action calls like Stop, Start, Modify (resize), Terminate, and Describe.</p> <p>Cloud Cost Management uses the Azure Batch API to make a bulk request for the actions. By default, Azure Batch supports a maximum of 20 for the synchronous call.</p> <ul style="list-style-type: none"> <li>Type: integer</li> <li>Default value: 20</li> <li>Location: System properties</li> </ul>

System properties for Rightsizing and Unused resources operations for Microsoft Azure

**Note:** The collection of data for a single set of recommendations is called a workload. Data in a workload is held in sets of data called chunks. You can specify the size of each chunk and the number of chunks in a workload.

System property	Description
sn_cld_intg_azure.az_rs_recommendation_queue_polling_time_for_the_microsoft	<p>Being used for the Microsoft Azure recommendation orchestrator to check the status of the generate, get generate status, list recommendation, or process recommendation call and move it to the next stage for processing.</p> <p><b>Note:</b> A short polling time is better in the case of fewer subscriptions.</p> <ul style="list-style-type: none"> <li>Type: integer</li> <li>Default value: 5000 (ms)</li> <li>Location: System properties</li> </ul>
sn_cld_intg_azure.chunk_size_generate_recommendation_subscriptions	<p>Number of subscriptions to be processed by each workload. Each workload creates a maximum of 5 threads to process 10 subscriptions in parallel based on the available MID Server worker threads.</p> <p>Changing the setting to lower number increases the number of created workloads. Generate Recommendation is a asynchronous API call that quickly returns the generate recommendation operation ID.</p> <p><b>Note:</b> For fewer than 50 subscriptions, you can decrease the value to enable parallel processing. For example, for 40 subscriptions, changing the chunk size to 10 allows 4 workloads to process subscriptions. By default, a maximum of 3 parallel workload executions are allowed. The maximum is configured in the flow launcher job that is defined in the sn_cld_intg_core_flow_launcher_job_config table.</p>

System properties for Rightsizing and Unused resources operations for Microsoft Azure

**Note:** The collection of data for a single set of recommendations is called a workload. Data in a workload is held in sets of data called chunks. You can specify the size of each chunk and the number of chunks in a workload.

(continued)

System property	Description
	<ul style="list-style-type: none"> <li>Type: integer</li> <li>Default value: 5</li> <li>Location: System properties</li> </ul>
<p>sn_cld_intg_azure.advisor_get_status_min_chunk_size</p>	<p>Minimum number of subscriptions to process in a workload for Get generate status API call.</p> <p>The call creates a new workload when the specified minimum chunk size is met and, after all subscriptions are processed, does not create another workload.</p> <p><b>Note:</b> By default, a maximum of 4 parallel workload executions are allowed. The maximum is configured in the flow launcher job that is defined in the <code>sn_cld_intg_core_flow_launcher_job_conf</code> table.</p> <ul style="list-style-type: none"> <li>Type: integer</li> <li>Default value: 5</li> <li>Location: System properties</li> </ul>
<p>sn_cld_intg_azure.advisor_list_recommendation_min_chunk_size</p>	<p>Minimum number of subscriptions to process in a workload for the list recommendation API call.</p> <p>The call creates a new workload when the specified minimum chunk size is met and, after all subscriptions are processed, does not create another workload.</p>

System properties for Rightsizing and Unused resources operations for Microsoft Azure

**Note:** The collection of data for a single set of recommendations is called a workload. Data in a workload is held in sets of data called chunks. You can specify the size of each chunk and the number of chunks in a workload.

(continued)

System property	Description
	<p><b>Note:</b> Increasing the chunk size might increase the overall processing time because subscriptions are processed sequentially. By default, a maximum of 4 parallel workload executions are allowed. The maximum is configured in the flow launcher job that is defined in the <code>sn_cld_intg_core_flow_launcher_job_conf</code> table.</p> <ul style="list-style-type: none"> <li>Type: integer</li> <li>Default value: 1</li> <li>Location: System properties</li> </ul>
<p><code>sn_clin_azure.advisor_process_recommendation_min_chunk_size</code></p>	<p>The number of recommendation responses that should be processed in a workload for the API call and persisted in the Rightsizing or Unused Machines recommendation table.</p> <p>The call creates a workload when the specified minimum chunk size is met and, after all subscriptions are processed, doesn't create another workload.</p> <p><b>Note:</b> Increasing the chunk size might increase the overall processing time because subscriptions are processed sequentially. By default, a maximum of 4 parallel workload executions are allowed. The maximum is configured in the flow launcher job that is defined in the <code>sn_cld_intg_core_flow_launcher_job_conf</code> table.</p> <ul style="list-style-type: none"> <li>Type: integer</li> <li>Default value: 20</li> <li>Location: System properties</li> </ul>

### System properties for AWS Priceshet

System property	Description
sn_cld_intg_aws.priceshet_timeout_aws	<p>Controls AWS price sheet download flow time out duration.</p> <ul style="list-style-type: none"> <li>• Value format: DD HH:MM:SS</li> <li>• Default value: 2 days</li> </ul>

### System properties for Cloud Cost Management Infra Stack

**i Important:** These system properties are used only if the Cloud Cost Management Infra Stack application is installed in addition to the Cloud Cost Management version 8.1.

System property	Description
ready.job.files.timeout	<p>Maximum time in minutes to generate billing files for AWS assume role setup or blobs for Azure on Glide.</p> <p>You can monitor AWS billing job files [sn_cld_intg_aws_billing_files] table for AWS and Azure billing Job chunk blob detail [sn_cld_intg_azure_job_chunk_blob_detail] table for Azure only when the download is in progress and the time-out condition is met.</p> <ul style="list-style-type: none"> <li>• Type: String</li> <li>• Default value: 180</li> <li>• Location: System properties</li> </ul>
ready.job.nofiles.timeout	<p>Maximum time in minutes to wait for the backend to pick up the job when there's no other job being processed for the same provider.</p> <p><b>i Important:</b> To configure this system property, contact your support team. Don't configure it on your own.</p> <ul style="list-style-type: none"> <li>• Type: String</li> <li>• Default value: 10</li> <li>• Location: System properties</li> </ul>
reserved.job.timeout	<p>Maximum time in minutes to wait for the job to change from Reserved to In progress state.</p>

System properties for Cloud Cost Management Infra Stack

**i Important:** These system properties are used only if the Cloud Cost Management Infra Stack application is installed in addition to the Cloud Cost Management version 8.1.

(continued)

System property	Description
	<p><b>i Important:</b> To configure this system property, contact your support team. Don't configure it on your own.</p> <ul style="list-style-type: none"> <li>• Type: String</li> <li>• Default value: 5</li> <li>• Location: System properties</li> </ul>
inprogress.job.timeout	<p>Maximum time in minutes to wait for the job to change from In progress to Sink complete state.</p> <p><b>i Important:</b> To configure this system property, contact your support team. Don't configure it on your own.</p> <ul style="list-style-type: none"> <li>• Type: String</li> <li>• Default value: 10</li> <li>• Location: System properties</li> </ul>
sinkcomplete.job.timeout	<p>Maximum time in minutes to wait for the job to change from Sink begin to Sink complete state.</p> <p><b>i Important:</b> To configure this system property, contact your support team. Don't configure it on your own.</p> <ul style="list-style-type: none"> <li>• Type: String</li> <li>• Default value: 20</li> <li>• Location: System properties</li> </ul>
billing.data.post.processing.timeout	<p>Maximum waiting time in minutes for billing from Post processing to Complete phase.</p> <p>The final stage of billing job includes inserting spend data into Glide. During the Post processing phase, the newly inserted data is activated and the existing data is inactivated.</p>

**System properties for Cloud Cost Management Infra Stack**

**i Important:** These system properties are used only if the Cloud Cost Management Infra Stack application is installed in addition to the Cloud Cost Management version 8.1.

(continued)

System property	Description
	<p>Increasing the time out value gives more time for the activation flow to complete.</p> <ul style="list-style-type: none"> <li>• Type: String</li> <li>• Default value: 30</li> <li>• Location: System properties</li> </ul>
retry.cred.failed.billing.job.timeout	<p>Maximum time in minutes to wait before canceling a job that's in the Requested state due to credential failure.</p> <p>When you add a credential, it's sent to the backend only in the next billing run, resulting in a temporary failure. However, retries are made to establish a connection. This property specifies how long to wait before canceling the reattempted job.</p> <ul style="list-style-type: none"> <li>• Type: String</li> <li>• Default value: 30</li> <li>• Location: System properties</li> </ul>
sn_cld_intg_azure.billing_chunk_duration	<p>Defines the chunk size for Azure billing blob in days.</p> <p>By default, each blob contains billing data for three days.</p> <ul style="list-style-type: none"> <li>• Type: Number</li> <li>• Default value: 3</li> <li>• Location: System properties</li> </ul>

**Cloud service categories in Cloud Cost Management for Amazon AWS Cloud services**

In Cloud Cost Management, provider services are grouped into service categories. This grouping enables you to use filters to focus your analysis on particular types of service (for example, Compute or Database). To perform more targeted analysis, you can filter for particular services within a service category (for example, Amazon ElastiCache or Azure Database for PostgreSQL are services in the Database category).

## Service categories in Cloud Cost Management for Amazon AWS Cloud services

Cloud service in AWS	Cloud Cost Management Service Category
Alexa for business	Business Productivity
Amazon API Gateway	Application Services
Amazon Athena	Analytics
Amazon Aurora	Database
Amazon Chime	Business Productivity
Amazon Cloud Directory	Security
Amazon CloudFront	Network
Amazon CloudSearch	Analytics
AmazonCloudWatch	Management Tools
Amazon Cognito	Security
Amazon Comprehend	Machine Learning
Amazon Connect	Application Services
Amazon DocumentDB	Database
Amazon DynamoDB	Database
Amazon EC2 Auto Scaling	Compute
Amazon EC2 Container Service	Compute
Amazon ElastiCache	Database
Amazon Elastic Block Store	Storage
Amazon Elastic Compute Cloud	Compute
Amazon Elastic Container Registry	Compute
Amazon Elastic File System	Storage
Amazon Elasticsearch Service	Analytics
Amazon Elastic Transcoder	Application Services
Amazon EMR	Analytics
Amazon FreeRTOS	IOT
Amazon GameLift	Application Services
Amazon Glacier	Storage
Amazon GuardDuty	Security
Amazon Inspector	Security
Amazon Kinesis	Analytics
Amazon Kinesis Video Streams	Application Services
Amazon Lex	Machine Learning
Amazon Lightsail	Compute

Cloud service in AWS	Cloud Cost Management Service Category
Amazon Machine Learning	Machine Learning
Amazon Macie	Security
Amazon MQ	Application Services
Amazon Neptune	Database
Amazon Pinpoint	Mobile
Amazon Polly	Machine Learning
Amazon QuickSight	Analytics
Amazon Redshift	Database
Amazon Rekognition	Machine Learning
Amazon Relational Database Service	Database
Amazon Route 53	Network
Amazon SageMaker	Application Services
Amazon SimpleDB	Database
Amazon Simple Email Service	Application Services
Amazon Simple Notification Service	Tools
Amazon Simple Queue Service	Application Services
Amazon Simple Storage Service	Storage
Amazon Simple Workflow Service	Productivity
Amazon Sumerian	Application Services
Amazon Transcribe	Machine Learning
Amazon Translate	Machine Learning
Amazon Virtual Private Cloud	Network
Amazon WorkDocs	Business Productivity
Amazon WorkMail	Productivity
Amazon Workspaces	Productivity
AWS (Unknown Product)	Application Services
AWS Application Discovery Service	Application Services
AWS AppSync	Mobile
AWS Auto Scaling	Management Tools
AWS Batch	Compute
AWS Certificate Manager	Security
AWS Cloud9	Developer Tools
AWS CloudFormation	Compute
AWS CloudHSM	Security
AWS Cloud Map	Network

Cloud service in AWS	Cloud Cost Management Service Category
AWS CloudShell	Developer Tools
AWS CloudTrail	Tools
AWS CloudWatch	Tools
AWS CodeBuild	Developer Tools
AWS CodeCommit	Developer Tools
AWS CodeDeploy	Developer Tools
AWS CodePipeline	Developer Tools
AWS CodeStar	Developer Tools
AWS Config	Tools
AWS Cost Explorer	Management Tools
AWS Database Migration Service	Database
AWS Data Pipeline	Analytics
AWS DataSync	Application Services
AWS Device Farm	Mobile
AWS Direct Connect	Network
AWS Directory Service	Security
AWS Elastic Beanstalk	Compute
AWS Elastic Block Store	Storage
AWS Elastic Compute Cloud	Compute
AWS Elastic Load Balancing	Load Balancer
AWS Elemental MediaConvert	Application Services
AWS Elemental MediaLive	Application Services
AWS Elemental Mediapackage	Application Services
AWS Elemental MEdiaStore	Application Services
AWS Elemental MediaTailor	Application Services
AWS Fargate	Compute
AWS Glue	Analytics
AWS Greengrass	IOT
AWS Identity and Access Management	Security
AWS IoT	IOT
AWS IoT 1-Click	IOT
AWS IoT Analytics	IOT
AWS IoT Core	IOT
AWS IoT Device Management	IOT
AWS IoT Events	IOT

Cloud service in AWS	Cloud Cost Management Service Category
AWS Key Management Service	Security
AWS Lambda	Compute
AWS Lamda	Compute
AWS Mobile Hub	Mobile
AWS OpsWorks	Management Tools
AWS Relational Database Service	Database
AWS Route 53	Network
AWS Secrets Manager	Security
AWS Service Catalog	Management Tools
AWS Shield	Security
AWS Simple Notification Service	Tools
AWS Simple Storage Service	Storage
AWS Snowball	Storage
AWS Snowball Edge	Storage
AWS Snowmobile	Storage
AWS Step Functions	Application Services
AWS Storage Gateway	Storage
AWS Systems Manager	Management Tools
AWS Trusted Advisor	Management Tools
AWS Virtual Private Cloud	Network
AWS WAF	Security
AWS X-Ray	Developer Tools
Elastic Load Balancing	Load Balancer

## Cloud service categories in Cloud Cost Management for Microsoft Azure services

In Cloud Cost Management, provider services are grouped into service categories. This grouping enables you to use filters to focus your analysis on particular types of service (for example, Compute or Database). To perform more targeted analysis, you can filter for particular services within a service category (for example, Amazon ElastiCache or Azure Database for PostgreSQL are services in the Database category).

## Service categories in Cloud Cost Management for Microsoft Azure services

Services in Microsoft Azure	Cloud Cost Management Service Category
Advanced Threat Protection	Security
API Management	Tools

Services in Microsoft Azure	Cloud Cost Management Service Category
App Center	Application Services
Application Gateway	Network
Application Insights	Management Tools
Automation	Management Tools
Azure Active Directory B2C	Security
Azure Active Directory Domain Services	Security
Azure Alert	Event
Azure Analysis Services	Analytics
Azure API for FHIR	Application Services
Azure App Service	Compute
Azure ARM	Compute
Azure Bastion	Network
Azure Blockchain	Blockchain
Azure Bot Service	Machine Learning
Azure Cosmos DB	Database
Azure Database for MariaDB	Database
Azure Database for MySQL	Database
Azure Database for PostgreSQL	Database
Azure Database Migration Service	Database
Azure Databricks	Analytics
Azure Data Explorer	Analytics
Azure Data Factory	Database
Azure Data Factory v2	Database
Azure Data Share	Analytics
Azure DDOS Protection	Network
Azure DevOps	Developer Tools
Azure DNS	Network
Azure Firewall	Network
Azure Firewall Manager	Network
Azure Front Door Service	Network
Azure Lab Services	Developer Tools
Azure Machine Learning	Machine Learning
Azure Maps	IOT
Azure Monitor	Management Tools
Azure NetApp Files	Storage

Services in Microsoft Azure	Cloud Cost Management Service Category
Azure Remote Rendering	Application Services
Azure Search	Machine Learning
Azure Site Recovery	Management Tools
Azure Spring Cloud	Application Services
Azure Stack	Hybrid Cloud
Azure Stack Edge	Machine Learning
Azure Synthetics	Application Services
Backup	Management Tools
Bandwidth	Compute
BizTalk Services	Application Services
Cloud Services	Compute
Cognitive Services	Machine Learning
Container Instances	Containers
Container Registry	Containers
Content Delivery Network	Network
Cost Management	Management Tools
Data Box	Storage
Data Catalog	Analytics
Datacenter Capacity	Application Services
Data Lake Analytics	Analytics
Data Lake Store	Analytics
Data Management	Application Services
Digital Twins	IOT
Dynamics 365 for Customer Insights	Management Tools
Event Grid	Management Tools
Event Hubs	Analytics
ExpressRoute	Network
Functions	Compute
GitHub	Management Tools
HDInsight	Analytics
HPCCache	Storage
Insight and Analytics	Analytics
IoT Central	IOT
IoT Hub	IOT
Key Vault	Security

Services in Microsoft Azure	Cloud Cost Management Service Category
Kusto	Application Services
Load Balancer	Load Balancer
Log Analytics	Analytics
Logic Apps	Tools
Machine Learning Service	Machine Learning
Machine Learning Studio	Machine Learning
Marketplace	Marketplace
Media Services	Application Services
Microsoft.ApiManagement	Application Services
Microsoft.BlockStorage	Storage
Microsoft.Cache	Application Services
Microsoft.Compute	Compute
Microsoft.DocumentDB	Database
Microsoft.Insights	Tools
Microsoft.LoadBalancer	Load Balancer
Microsoft.Network	Network
Microsoft.Security	Security
Microsoft.ServiceBus	Tools
Microsoft.Sql	Database
Microsoft.Storage	Storage
Microsoft.Web	Application Services
Microsoft (Unknown Product)	Application Services
Microsoft Azure Internet Analyzer	Network
Microsoft Azure Peering Service	Network
Microsoft Genomics	Application Services
Mixed Reality	Virtual Reality
Multi-Factor Authentication	Security
NAT Gateway	Network
Network Watcher	Management Tools
Notification Hubs	IOT
PlayFab	Application Services
Power BI Embedded	Analytics
Redis Cache	Database
Scheduler	Management Tools
Security Center	Security

Services in Microsoft Azure	Cloud Cost Management Service Category
Sentinel	Security
Service Bus	Management Tools
Service Fabric	Compute
Service Fabric mesh	Compute
SignalR	Application Services
Spatial Anchors	Virtual Reality
Specialized Compute	Compute
SQL Advanced Threat Protection	Security
SQL Database	Database
SQL Data Warehouse	Database
SQL DB Edge	Database
SQL Server Stretch Database	Database
Storage	Storage
StorSimple	Storage
Stream Analytics	Analytics
Time Series Insights	IOT
Traffic Manager	Management Tools
Virtual Machines	Compute
Virtual Machines Licenses	Compute
Virtual Network	Network
Virtual WAN	Security
Visual Studio Online	Management Tools
Visual Studio Subscription	Developer Tools
VPN Gateway	Network
Windows 10 IoT Core Services	IOT
Xamarin University	Application Services

### Cloud service categories in Cloud Cost Management for Google Cloud services

In Cloud Cost Management, provider services are grouped into service categories. This grouping enables you to use filters to focus your analysis on particular types of service (for example, Compute or Database). To perform more targeted analysis, you can filter for particular services within a service category (for example, Amazon ElastiCache or Azure Database for PostgreSQL are services in the Database category).

## Service categories in Cloud Cost Management for Google Cloud services

Cloud service in Google Cloud	Cloud Cost Management Service Category
Bigtable	Database
Cloud Storage	Storage
Cloud SQL	Database
Database Migration	Database
Datastore	Database
Data Transfer	Storage
Development Manager	Tools
Endpoints	Tools
File Store	Storage
Firestore	Database
Hybrid Connectivity	Network
Memorystore	Database
Network Intelligence	Network
Network Security	Network
Network services	Network
Service Catalog	Tools
VPC network	Network

### List of Budget policy creation fields

Fields on the Budget policy creation form help you create a budget policy to specify a budgeted amount, cost type, reset period, and other aspects of the budget.

#### Budget policy creation

Field	Description
Budget policy	List of created budget policies.  If you want to update a budget policy, search and select a created budget policy from the drop-down list. After you select a budget, all the relevant fields get automatically populated.
Active	Option to apply the policy, which executes Budget Forecast analysis whenever billing data is updated.
Name	A unique name that describes the policy for other users.
Description	A unique description that describes the policy for other users.

**Budget policy creation (continued)**

Field	Description
Cost type	<p>Contractual payment agreement with the provider.</p> <ul style="list-style-type: none"> <li>• <b>Amortized:</b> Your organization pays the effective cost of the upfront and monthly reservation fees spread across the billing period. The amortized cost type is described in detail on the provider site.</li> <li>• <b>Actual:</b> Each billing period, your organization pays for direct cloud services.</li> </ul>
Start month	Month from which the plan applies.
End month	Month until when the plan applies.
Start day	Date from which the plan applies.
End day	Date until when the plan applies.
Start year	Year from which the plan applies.
End year	Year until when the plan applies.
Currency	Currency type of the policy.
Amount	<p>Total spend that is budgeted for the time period that is specified by the Granularity value.</p> <p><b>Calculated</b></p> <p>Behaves in the same way as the default currency field type. Whenever conversions are performed, the system uses the latest currency conversion rates. The amount appears in the session currency for the user.</p> <p><b>Fixed</b></p> <p>The amount displays in the currency code that you used when you entered the Amount value. Conversions use the latest currency conversion rates.</p> <p><b>Multiple</b></p> <p>Enables you to enter multiple amounts using a different currency for each amount. The field value is the value entered in the user’s session currency. Otherwise, the first value entered converts to the user’s session currency. Conversions use the latest currency rates.</p> <p><b>Note:</b> The first amount entered is used during display. The other values aren’t used to perform calculations.</p>

**Budget policy creation (continued)**

Field	Description
	<p>The session currency for the instance determines the numbers that a user sees on budget reports. If the currency you specify in the Budget plan differs from the session currency, then the amount displays in the reports in two fields:</p> <ul style="list-style-type: none"> <li>• <b>Budgeted amount:</b> The money amount expressed in the currency used in the plan.</li> <li>• <b>Converted budget amount:</b> The same money amount, expressed in the session currency.</li> </ul>
Granularity	<p>Reset period for the budget.</p> <ul style="list-style-type: none"> <li>• <b>Annual:</b> The Amount value applies to a one-year period.</li> <li>• <b>Monthly:</b> The Amount value applies to a one-month period.</li> </ul>
Account and Resource criteria	
Parent account	<p>The primary account with which the service accounts are associated.</p> <p><b>Note:</b> While editing a policy, changing the parent account can change the provider.</p>
Service accounts	<p>The service accounts to apply the plan to. Move all appropriate service accounts to the <b>Selected</b> list.</p> <p>For Google Cloud only, this field is called Projects.</p>
Tag category condition	<p>Add tag category by selecting a tag category from the drop-down list and by adding tag values separated by comma.</p>
Budget Viewer and Notifications	
Viewer (user)	<p>User that can view this Budget policy.</p> <p><b>Note:</b> Regardless of this selection, only users that also have the Cloud Budget Viewer [sn_clin_core.budget_viewer] role have viewing access.</p>
Viewer (group)	<p>User group that can view this Budget policy.</p>
Notification frequency	<p>The recurrence of email to users as described in Users to notify.</p>

### Budget policy creation (continued)

Field	Description
User to be notified	<p>Users to notify by email when the following conditions occur:</p> <ul style="list-style-type: none"> <li>• Budget is forecast to be exceeded.</li> <li>• Budget is exceeded.</li> <li>• Budget is invalid.</li> </ul>

### List of Shared cost allocation policy fields

Fields on the Shared cost allocation policy creation form help you create a shared cost allocation policy.

#### Shared cost allocation policy creation form

Field	Description
Select shared cost policy to edit	The shared cost policy that you want to edit.
Active	The option to apply the policy. Selecting the <b>Active</b> check box enables shared cost allocation whenever billing data is updated.
Name	A unique name that describes the policy for other users.
Description	A brief description of the policy.
Run order	The order in which to apply policies. Each policy must have a unique value. The system applies policies in low-to-high run order and performs the actions for the first policy that matches. After a match, no other policy is applied to the resource.
Start month	<p>The start month from when the monthly spend records are processed. This field is automatically set to the current month.</p> <p><b>Note:</b> The Start month must be before the End month.</p>
End month	<p>The month till when the monthly spend records are processed.</p> <p><b>Note:</b> The End month must be after the Start month.</p>
Start year	The start year from when the monthly spend records are processed. This field is automatically set to the current year.

Shared cost allocation policy creation form (continued)

Field	Description
	<p><b>i Note:</b> The Start year must be before the End year.</p>
End year	<p>The year till when the monthly spend records are processed.</p> <p><b>i Note:</b> The End year must be after the Start year.</p>
Provider	<p>The cloud provider to apply the policy to.</p> <p><b>i Note:</b> You can't change the provider while editing an existing policy.</p>
Service category	<p>List of all service categories that the policy applies to.</p>
Service accounts	<p>The service accounts to apply the policy to.</p> <p>For Google Cloud only, this field is called Projects.</p>
Cloud service	<p>Cloud service that the policy applies to.</p> <ul style="list-style-type: none"> <li>• All</li> <li>• Specific</li> </ul>
Select cloud service	<p>The cloud service that the policy you want to apply to.</p> <p>This field appears only when <b>Specific</b> is selected from <b>Cloud Service</b>.</p>
Resource type	<p>Resource type of the Kubernetes service category.</p> <ul style="list-style-type: none"> <li>• Cloud resource</li> <li>• Kubernetes cluster</li> </ul> <p>This field appears only when <b>Kubernetes Service</b> is selected from <b>Service category</b>.</p>
Region	<p>Region of the resource that the policy applies to.</p> <ul style="list-style-type: none"> <li>• All</li> <li>• Specific</li> </ul>
Select region	<p>The region of the resource that the policy you want to apply to.</p>

Shared cost allocation policy creation form (continued)

Field	Description
	This field appears only when <b>Specific</b> is selected from <b>Region</b> .
Purchase option	Purchasing options for your cloud resources. <ul style="list-style-type: none"> <li>• On demand</li> <li>• Reserved</li> <li>• Savings plans</li> <li>• Tax</li> <li>• Unknown</li> </ul>
Select the tag	
Business unit	Business unit of the resource to which the policy applies to. <ul style="list-style-type: none"> <li>• All</li> <li>• Specific</li> </ul>
Select business unit	The business unit of the resource that the policy you want to apply to.  This field appears only when <b>Specific</b> is selected from <b>Business unit</b> .
Department	The department of the resource that the policy you want to apply to. <ul style="list-style-type: none"> <li>• All</li> <li>• Specific</li> </ul>
Select department	The department of the resource that the policy you want to apply to.  This field appears only when <b>Specific</b> is selected from <b>Department</b> .
Division	The department division of the resource that the policy you want to apply to. <ul style="list-style-type: none"> <li>• All</li> <li>• Specific</li> </ul>
Select division	The department division of the resource that the policy you want to apply to.  This field appears only when <b>Specific</b> is selected from <b>Division</b> .

**Shared cost allocation policy creation form (continued)**

Field	Description
Cost center	<p>Cost center of the resource that the policy is applied to.</p> <ul style="list-style-type: none"> <li>• All</li> <li>• Specific</li> </ul>
Select cost center	<p>The cost center of the resource that the policy you want to apply to.</p> <p>This field appears only when <b>Specific</b> is selected from <b>Cost center</b>.</p>
Allocation type	<p>Allocation type to be used while defining the shared cost allocation policy.</p> <ul style="list-style-type: none"> <li>• <b>Fixed:</b> The allocation percentage is specified in the Cost distribution section for each group. #For example, if the cost of a cloud service is shared with two other groups, specify the allocation percentage for each group.</li> <li>• <b>Even:</b> The allocation is split across the allocation groups evenly. #For example, if the cost of a cloud service is shared with two other groups, the allocation percentage is automatically populated evenly among these groups.</li> <li>• <b>Proportional:</b> Policy for cloud services and service categories, or both, is defined. #The combination of these attributes is considered for shared cost allocation. #For example, if a policy is defined for the following combination, then all costs associated with this combination would be considered for shared cost. <ul style="list-style-type: none"> <li>○ Service category: Database and Cloud service: Amazon#DocumentDB</li> <li>○ Service category: Database and Cloud service: Empty</li> </ul> <p>Here, all Database category cloud services are considered as shared cost.</p> <p>The allocation percentage is automatically populated based on the direct cost of the resources.</p> </li> </ul>

**Shared cost allocation policy creation form (continued)**

Field	Description
	<p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• The sum of allocation percentages across the groups must be 100%.</li> <li>• The allocation percentage can't be negative.</li> <li>• The combination of groups must be unique.</li> </ul>
Cost distribution	Add Business unit, Division, Department, Cost center, and Allocation percentage to distribute the resource costs among various business lines by selecting <b>Add</b> .
Namespace Distribution	<p>For Kubernetes, add Namespace and Allocation percentage to distribute the resource costs among various business lines by selecting <b>Add</b>.</p> <p>This field appears only when <b>Kubernetes Service</b> is selected from <b>Service category</b> and <b>Kubernetes cluster</b> is selected from <b>Resource type</b>.</p> <p><b>Note:</b> The allocation type that you can define can be only Fixed and Even.</p>
Allocation percentage	Percentage of the shared cost allocation for each cloud resource.

**List of default tag categories**

View the list of default tag categories on the Tag categories page. A tag category helps you to enable multiple tag names for representing costs against a single business entity.

You can view the list of default categories by navigating to *Cloud Cost Management Workspace* > **Operations** > **Cost usage tags** > **Tag categories**.

Default tag categories
Application feature
Application owner
Application team
AI Service
<p><b>Important:</b> This tag category is available with the Cloud Cost Management 8.0.0 version or later.</p>

**Default tag categories**

**Note:** If you want to associate a tag name with its corresponding tag value whenever a new AI service or a category within an existing AI service is introduced for Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP), see [Add or update a tag value for an AI Service tag category](#).

- Business application
- Business service
- Business unit
- Cost center
- Department
- Division
- Environment
- Kubernetes cluster name

**Related topics**

- [Tags and tag categories](#)
- [Create and update a tag category](#)

**List of default Cloud categories for AI services**

List of default Cloud categories applicable to the Machine Learning service category for managing AI services.

**Default provider-specific AI services**

Service provider	AI services
Amazon Web Services (AWS)	<ul style="list-style-type: none"> <li>• Amazon CodeGuru</li> <li>• Amazon Comprehend</li> <li>• Amazon Comprehend Medical</li> <li>• Amazon DevOps Guru</li> <li>• Amazon Forecast</li> <li>• Amazon Fraud Detector</li> <li>• AWS HealthLake</li> <li>• Amazon Kendra</li> <li>• Amazon Lex</li> <li>• Amazon Lookout for Equipment</li> <li>• Amazon Lookout for Metrics</li> <li>• Amazon Lookout for Vision</li> <li>• Amazon Monitron</li> <li>• Amazon Omics</li> <li>• Amazon Personalize</li> <li>• Amazon Polly</li> </ul>

**Default provider-specific AI services (continued)**

Service provider	AI services
	<ul style="list-style-type: none"> <li>• Amazon Rekognition</li> <li>• Amazon Textract</li> <li>• Amazon Transcribe</li> <li>• Amazon Translate</li> <li>• Amazon Augmented AI</li> </ul>
Microsoft Azure	<ul style="list-style-type: none"> <li>• Azure Cognitive Services</li> <li>• Azure AI Search</li> <li>• Azure AI Bot Service</li> </ul>
Google Cloud Platform (GCP)	<ul style="list-style-type: none"> <li>• Cloud Dialogflow API</li> <li>• Cloud Document AI API</li> <li>• Cloud Document API</li> <li>• Cloud Natural Language</li> <li>• Cloud Speech API</li> <li>• Cloud Text-to-Speech API</li> <li>• Cloud Video Intelligence API</li> <li>• Cloud Vision API</li> <li>• Translate</li> <li>• Vertex AI Vision</li> <li>• Vertex AI</li> <li>• Vertex AI Search</li> </ul>

**Related topics**

[Add or update a tag value for an AI Service tag category](#)

**Supported CI class types for Amazon AWS Cloud services**

Supported CI class types for AWS enable assigning cost and usage data correctly using the CI placement process. The CI placement process places a subset of CIs into corresponding CI tables that are used in the recommendation generation process for Cloud Cost Management.

**i Note:** All the supported CI class types are placed after the Cumulus Unsupported CI Placement scheduled job runs daily. Some of the CI class types are placed immediately after Billing Download job execution.

### Supported CI class types

All supported CI class types	CI class types that are placed immediately after job execution
cmdb_ci_storage_vol_snapshot	cmdb_ci_vm_instance
cmdb_ci_cloud_database	cmdb_ci_cloud_database
cmdb_ci_storage_volume	cmdb_ci_storage_volume
cmdb_ci_cloud_gateway	cmdb_ci_storage_vol_snapshot
cmdb_ci_dynamodb_table	
cmdb_ci_cloud_object_storage	
cmdb_ci_network	
cmdb_ci_cloud_function	
cmdb_ci_vm_instance	
cmdb_ci_kubernetes_cluster	

### Supported CI class types for Microsoft Azure services

Supported CI class types for Microsoft Azure enable assigning cost and usage data correctly using the CI placement process. The CI placement process places a subset of CIs into corresponding CI tables that are used in the recommendation generation process for Cloud Cost Management.

**i Note:** All the supported CI class types are placed after the Cumulus Unsupported CI Placement scheduled job runs daily. Some of the CI class types are placed immediately after Billing Download job execution.

### Supported CI class types

All supported CI class types	CI class types that are placed immediately after job execution
cmdb_ci_instance_scale_set	cmdb_ci_vm_instance
cmdb_ci_vm_instance	cmdb_ci_cloud_database
cmdb_ci_cloud_database	cmdb_ci_database
cmdb_ci_kubernetes_cluster	cmdb_ci_storage_volume
cmdb_ci_cloud_load_balancer	cmdb_ci_storage_vol_snapshot
cmdb_ci_database	
cmdb_ci_network	
cmdb_ci_storage_vol_snapshot	
cmdb_ci_cloud_storage_account	
cmdb_ci_storage_volume	

### Supported CI class types for Google Cloud services

Supported CI class types for Google Cloud enable assigning cost and usage data correctly using the CI placement process. Some CI class types are placed immediately. The CI

placement process places a subset of CIs into corresponding CI tables that are used in the recommendation generation process for Cloud Cost Management.

**Note:** All the supported CI class types are placed after the Cumulus Unsupported CI Placement scheduled job runs daily. Some of the CI class types are placed immediately after Billing Download job execution.

**Supported CI class types**

All supported CI class types	CI class types that are placed immediately after job execution
cmdb_ci_instance_scale_set	cmdb_ci_vm_instance
cmdb_ci_vm_instance	cmdb_ci_cloud_database
cmdb_ci_cloud_database	cmdb_ci_database
cmdb_ci_kubernetes_cluster	cmdb_ci_storage_volume
cmdb_ci_cloud_load_balancer	cmdb_ci_storage_vol_snapshot
cmdb_ci_database	
cmdb_ci_network	
cmdb_ci_storage_vol_snapshot	
cmdb_ci_cloud_storage_account	
cmdb_ci_storage_volume	

## Contract Management

Manage and track contracts with the ServiceNow® Contract Management application.

A contract is a binding agreement between two parties. In the ServiceNow platform, contracts contain detailed information such as the following:

- Contract number
- Contract start and end dates
- Active status
- Terms and conditions statements
- Documents
- Renewal information
- Financial terms

Contract Management is active by default. If the Cost Management plugin is activated, the Contract Management application integrates with the Cost Management plugin to associate contracts with costs and determine the total cost of ownership. You can track recurring expenses with expense lines. An administrator can activate the Cost Management plugin.

If you are using the Software Asset Management plugin, use the Software Licenses option.

**Related topics**

- [Create a new expense line](#)
- [Terms and conditions](#)
- [Software Asset Management](#)

**Use the Asset Contract Overview module**

You can view information about your contract status in the Contract Management Overview module.

**Before you begin**

Role required: asset, contract\_manager

**About this task**

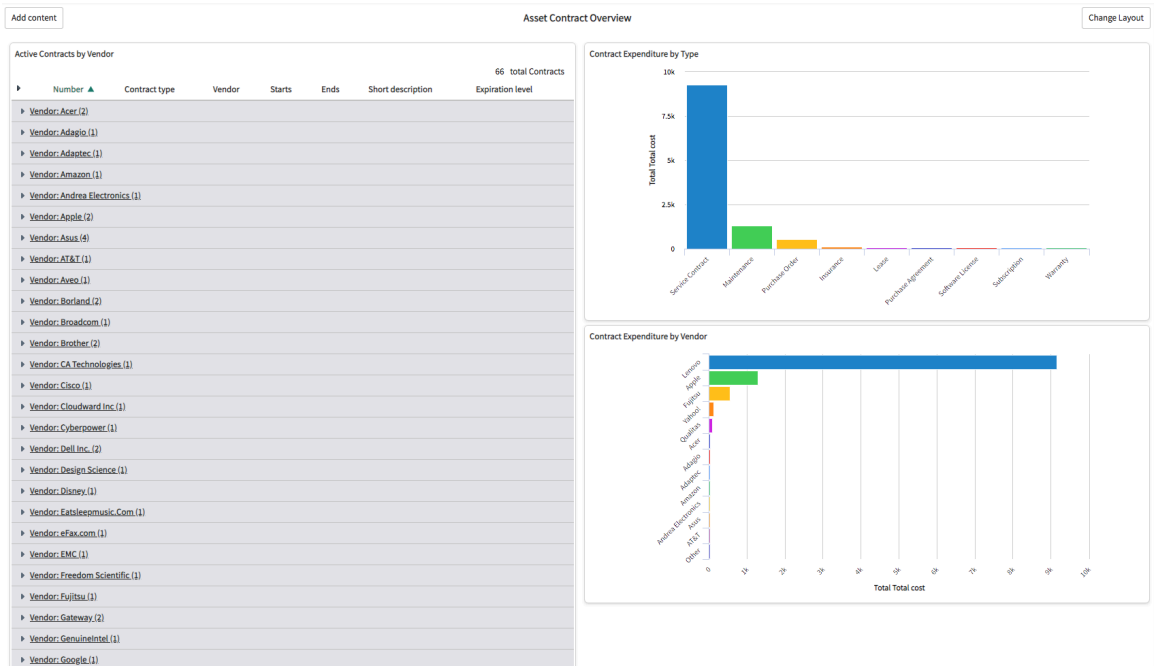
Because the Contract Management Overview module is a type of homepage, you can add, delete, and rearrange reports on the page.

**Procedure**

1. Navigate to **All > Contract > Overview**.
2. Click elements within the reports to obtain more information.

**Example**

For example, click any of the colored bars in the **Contract Expenditure by Type** bar chart to see detailed information.



**Components installed with Contract Management**

Several types of components are installed with Contract Management.

Demo data is available.

**Tables installed with Contract Management**

Tables are added with Contract Management.

Table	Description
Asset Covered [clm_m2m_contract_asset]	Lists the assets covered by a contract. An asset can be covered by multiple contracts and a contract can have multiple assets.  <b>Note:</b> The contract_manager, itil, inventory_admin, or procurement_user role can only access the reports. You must activate the Procurement (com.snc.procurement) plugin for the procurement_user role and the Hardware Asset Management Professional (com.sn_hamp) plugin for the itil and inventory_admin roles.
Asset Covered [clm_m2m_rate_card_asset]	Lists the rate cards that apply to an asset.
Condition [clm_condition_checker]	Lists the conditions and values for each condition checker.
Condition Checks [clm_condition_check]	Stores conditions and values that modify specified condition fields.
Contract [ast_contract]	Stores contract information.
Contract History [clm_contract_history]	Stores a copy of the contract when the start date, end date, or terms and conditions change.
Terms and Conditions [clm_terms_and_conditions]	Lists the terms and conditions used by contracts.
Terms and Conditions [clm_m2m_contract_and_terms]	Lists all terms and conditions available for use with contracts.
Users Covered [clm_m2m_contract_user]	Lists the users covered by contracts.

## User roles installed with Contract Management

A user role is added with Contract Management.

Role	Contains Role	Description
contract_manager	financial_mgmt_user	Manages the contract life cycle. Can create, edit, and delete contracts.

## Script includes installed with Contract Management

Script includes are added with Contract Management.

Name	Description
ConditionChecks	Checks for matching conditions, such as for contract expirations and license compliance, defined in the Condition Checks [clm_condition_check] table.
ContractManagementUtils	Utilities that manage contract management actions, such as state transitions.

## Client scripts installed with Contract Management

Client scripts are added with Contract Management.

Name	Table	Description
Calculate Tax Cost - Base cost	Contract [ast_contract]	Calculates the <b>Tax cost</b> field and the <b>Total cost</b> field on the Contract form when the <b>Payment amount</b> field changes.
Calculate Tax Cost - Sales tax	Contract [ast_contract]	Calculates the <b>Tax cost</b> field and the <b>Total cost</b> field on the Contract form when the <b>Sales tax</b> field changes.
Calculate Tax Cost - Tax rate	Contract [ast_contract]	Calculates the <b>Tax cost</b> field and the <b>Total cost</b> field on the Contract form when the <b>Tax rate</b> field changes.
Ensure discount is valid percent	Contract [ast_contract]	Ensures that the <b>Discount</b> field does not contain a value less than zero or greater than 99.
Renew Cost Adjustment	Contract [ast_contract]	Sets the <b>Percentage</b> field on the Contract form to zero if the user sets a dollar amount for the cost adjustment.
Renew Cost Percentage	Contract [ast_contract]	Sets the <b>Amount</b> field on the Contract form to zero if the user enters a percentage for the cost adjustment.
Tax exempt/rate	Contract [ast_contract]	Changes all tax-related fields on the Contract form to read-only if the <b>Tax Exempt</b> check box is selected.
Tax rate/exempt	Contract [ast_contract]	Changes all tax-related fields on the Contract form to writeable if the <b>Sales Tax</b> check box is selected.

## Business rules installed with Contract Management

Business rules are added with Contract Management.

Name	Table	Description
Calculate projected costs (Reports)	Contract [ast_contract]	Calculates the projected monthly and annual costs for a contract when costs or payment schedule changes.
Calculate totals with tax	Contract [ast_contract]	Calculates the <b>Tax cost</b> and <b>Total cost</b> fields for a contract when the contract is created or updated.
Contract history	Contract [ast_contract]	Stores history when the start, end, or terms and conditions of a contract change.
Create approval record	Contract [ast_contract]	Updates contract <b>Terms and Conditions</b> and starts the contract approval workflow when a contract is sent for review.
Flag terms and conditions	Terms and Conditions [clm_m2m_contract_and_terms]	Sets the <b>Use</b> flag on a Terms and Conditions record to <b>true</b> after the record is associated with a contract or to <b>false</b> after the record is disassociated from a contract.
Activate count for manual licenses	Software License Instance [ast_license_software_instance]	Calculates and updates the number of computers a particular license is installed on when a software license instance is created or deleted.

Name	Table	Description
Manage contract lifecycle	Contract [ast_contract]	<p>This business rule:</p> <ul style="list-style-type: none"> <li>• Updates the end date of a contract when a contract extension has been approved.</li> <li>• Renews the contract, updating its start date, end date, and base cost (if cost adjustments must be applied) when a contract renewal has been approved and the renewal has reached its start date.</li> <li>• Runs the condition checks to evaluate if dates need to be changed when a contract is approved, or an extension or renewal is approved, or the start or end dates have changed.</li> </ul>
Post outage to news	Service [cmdb_ci_service]	Posts a news article on the knowledge table when there is an outage.
Update contract cost per asset	Asset Covered [clm_m2m_contract_asset]	Updates the cost per unit value based on the total cost and number of assets associated to the contract.
Update contract lifetime cost	Contract Rate Card [fm_contract_rate_card]	Calculates the lifetime cost of the contract by calculating the sum of the contract expense lines.
Updates after contract dates change	Contract [ast_contract]	Updates the <b>Date added</b> and <b>Date removed</b> fields for all assets and users associated with a contract if the contract end date changes.
Updates after rate card dates change	Contract Rate Card [fm_contract_rate_card]	Updates the related contract assets and users linked to the rate card when the end date is changed.
Verify contract's start and end dates	Contract [ast_contract]	Validates contract start and end dates and contract renewal start and end dates.
Verify purchase agreement discount price	Contract [ast_contract]	For contracts with the contract model <b>Purchase Agreement</b> , the business rule validates that the <b>Discount</b> field does not contain a value less than zero or greater than 99.

## Contract renewal workflow

Use the contract renewal workflow to renew contracts that are nearing their expiry date or are already expired. This workflow enables you to renew contracts through a streamlined and managed process.

Renew your contracts by creating, validating, approving, and activating a contract record that references the original contract. This workflow enables you to manage related entities like hardware assets, software entitlements, terms and conditions, and rate cards.

**Note:** The contract renewal workflow supports Software license, Subscription contract, Maintenance, and Warranty contract models.

Complete the following tasks in the contract renewal workflow to renew your contracts:

1. **Contract renewal request:** Create a contract renewal request for contracts that are nearing their expiry date or are already expired.
2. **Contract selection:** Renew multiple child contracts under the parent contract.
3. **Build renewal:** Supply the contract renewal information.
4. **Asset selection:** Add or remove hardware or enterprise assets from the contract renewal process, and view the assets carried over to the new contract.
5. **Software assets selection:** Add or remove software entitlements that you want to include in the contract renewal process, and view the entitlements carried over to the new contract.
6. **Terms and conditions:** Update the terms and conditions in your new contract, and view the terms and conditions carried over to the new contract.
7. **Rate cards:** Add rate card details to the new contract to track contract expenses.
8. **Renewal confirmation:** Review the renewal details after completing all the details of a contract.
9. **Renewal approval:** Approve or reject a contract renewal request for all Contract Renewal Request Lines.
10. **Renewal purchase order:** Receive the purchase order for assets covered in the contract.

**Note:**

- You can't edit a task after you close it.
- You can cancel a contract renewal process for a Contract, Contract Renewal Request, Contract Renewal Request Lines, and Contract Renewal tasks. For more information, see [Results of canceling a contract renewal process](#).

## Prerequisites

Before using the contract renewal workflow, you must complete the following prerequisites:

- Activate the Software Asset Management Professional (com.snc.samp) plugin on your ServiceNow instance.

If you want to manage hardware or enterprise asset contracts, request and install the Hardware Asset Management or Enterprise Asset Management application from the [ServiceNow Store](#) instead.

- Enable the `sn_contract_enable_renewal_flow` system property.

**Note:** If you're already using Software Asset Management, Hardware Asset Management, or both, this system property is set to false. If you're a new user, this system property is set to true.

## Domain separation

Domain separation with data separation is supported for the contract renewal workflow with the following requirements:

- The request is created in the domain of the contract that initiated the renewal process.
- Request lines are in the domain of the contract of the request line.
- Tasks are created in the domain of the contract being renewed.

The `sn_contract_enable_renewal_flow` system property also supports domain separation.

## Create a contract renewal request

Create a contract renewal request for contracts that are nearing their expiry date or are already expired.

### Before you begin

Role required: `asset`, `contract_manager` (core UI and Hardware Asset Workspace only), `sn_eam.enterprise_admin` (Enterprise Asset Workspace only), or `sn_eam.enterprise_asset_manager` (Enterprise Asset Workspace only)

### About this task

You can create a renewal request only for Maintenance, Warranties, Subscriptions, and Software Licenses. If you have installed only the Software Asset Management application, you can renew Subscriptions, Maintenance, and Software Licenses contracts. If you have installed only the Hardware Asset Management application, you can renew Maintenance and Warranties contracts. If you have installed only the Enterprise Asset Management application, you can renew Maintenance and Warranties contracts.

### Procedure

#### 1. Open the list of contracts that you want to renew.

- If you are using the core UI, navigate to **All > Contracts > Contract Renewal**.
- If you are using the Hardware Asset Workspace, open the Contract management view and then select the **Overview** tab. In the Contract overview section, locate the Expiring contract widget.

Alternatively, open the Contract management view and then select a tab for a contract type, such as **All** or **Maintenance**.

- If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **Overview** tab. In the Contract overview section, locate the Expiring contract widget.

Alternatively, open the Contract and lease management view and then select a tab for a contract type, such as **All** or **Maintenance**.

#### 2. Select the contract that you want to renew with a type of either Maintenance, Warranties, Subscriptions, Software Licenses, or Service.

#### 3. Click **Renew** for the selected contract.

#### 4. Submit the contract renewal request.

- If you are using the core UI or Hardware Asset Workspace, click **OK**.

The contract renewal request includes the following information:

- An auto-generated unique number
  - The Stage indicating the type of task in the contract renewal process
  - Reference to the contract for which you have requested the renewal
  - Date and time when the request was created
- If you are using the Enterprise Asset Workspace, the Renew the Contract dialog box appears. In the dialog box, fill in the fields and then click **Submit for review**.

**Renew the Contract dialog box**

Field	Description
Approver	User who approves or rejects the contract renewal request.
Options	Duration of the contract renewal.
Renewal start date	Date on which the contract renewal begins.
Renewal end date	Date on which the contract renewal ends.
Cost adjustment type	Type of cost adjustment that is applied to the contract. The options are <b>Fixed</b> , <b>Manual</b> , and <b>CPI</b> (consumer price index).
Cost adjustment percentage	Percentage increase or decrease in the contract price. To indicate a decrease in price, enter a negative percentage.  <b>Note:</b> You can specify either a cost adjustment percentage or cost adjustment amount on a contract renewal request. You cannot specify both.
Cost adjustment amount	Numerical increase or decrease in the contract price. To indicate a decrease in price, enter a negative number.  <b>Note:</b> You can specify either a cost adjustment percentage or cost adjustment amount on a contract renewal request. You cannot specify both.

- 5. Optional:** Select the **Contract Renewal Request Lines** tab to view the parent Contract Renewal Request Line or existing and valid child contracts under the parent contract. A contract renewal request line is created for each contract that is being renewed.
- 6. Optional:** View all open contract renewal flow tasks and the details of each contract renewal task by selecting the **Open Tasks** tab.
- 7. Optional:** View all contract renewal flow tasks and the details of each contract renewal task by selecting the **All Tasks** tab.

**Result**

The substate of the contract that is being renewed is set to **Renewal in process**.

**What to do next**

If the parent contract doesn't have child contracts, select the [Build renewal task](#).

If the parent contract has child contracts, select the [Contract selection task](#).

## Renew multiple child contracts

Renew multiple child contracts under the parent contract by using the Contract selection task.

### Before you begin

Role required: asset, contract\_manager

### About this task

This task is created only when the contract that you want to renew has valid child contracts supported by the contract renewal workflow that are not already renewed or in draft state.

### Procedure

1. On the Contract form, select the **Contract Renewal Requests** tab in the Related Links section to view the list of contract renewal requests.
2. Select a renewal request.
3. View all the child contracts linked to the selected contract by selecting the **Renewal contracts** tab on the Contract Renewal Task form.
4. Indicate the child contracts you want to renew.
  - a. Open the record by selecting the preview icon ⓘ besides a child contract.
  - b. Choose whether to include child contracts for renewal by entering Yes or No in the **Renewal Decision** field.  
You must provide a value for the **Renewal decision** field for each child contract.
5. Select **Update**.  
The Renewal decision column in the **Renewal contracts** tab displays your decision.
6. Select **Close Task**.

### Result

The contract renewal request lines for parent and child contracts are listed in the Contract Renewal Request Lines tab. Each contract request line has its own flow of tasks.

### What to do next

[Supply contract renewal information](#)

## Supply contract renewal information

Supply the contract renewal information by completing the Build renewal task.

### Before you begin

Role required: asset, contract\_manager

### About this task

Each contract renewal request line has its own flow of tasks.

### Procedure

1. On the Contract Renewal Request Line form, select the Build renewal task number.
2. On the Contract Renewal Task form, select the **Renewal contract details** tab.
3. Provide the contract renewal information.

You must fill in all the required fields before you close the task. If you are renewing the child contract, you must provide the end date and start date within the range of the start date and end date of the parent contract.

**Note:** The Contract approver field is displayed only for the parent contract. The same Contract approver value is filled in automatically for any child contracts.

#### 4. Select **Close Task**.

##### **Result**

New draft contracts are created.



##### **What to do next**

[Add or remove assets for a contract renewal](#)

### **Add or remove assets for a contract renewal**

Add or remove hardware or enterprise assets from the contract renewal process. You can also view the hardware or enterprise assets carried over to the new contract.

#### **Before you begin**

To add or remove hardware assets from the contract renewal process, request the Hardware Asset Management application from the [ServiceNow Store](#) . To add or remove enterprise assets from the contract renewal process, request the Enterprise Asset Management application from the [ServiceNow Store](#) .

Role required: asset, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

#### **About this task**

The active and valid assets from the contract that are being renewed are carried over to the new contract, and are listed in the Assets Covered tab. Valid hardware and enterprise assets are the assets that are not removed from the contract before the end date, and are in the following states or substates:

- State
  - In stock
  - In transit
  - In maintenance
  - In use
- Substate
  - Available
  - Reserved
  - Pending transfer
  - None
  - Pending repair
  - Pending install

Invalid assets are not carried over to the draft contract and you must add them manually.

**Procedure**

1. Open the assets selection task or contract for which you want to add assets.
  - If you are using the core UI or Hardware Asset Workspace, select the assets selection task number on the Contract Renewal Request Line form.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view. Select the **All contracts** tab and then open the contract that you want to add assets to.
2. Select the **Assets Covered** tab.
3. If you are using the core UI or Hardware Asset Workspace, click **Edit**.
4. Update the hardware or enterprise assets in the contract.

Interface	Action
<b>Core UI</b>	Indicate the assets that you want to cover by moving assets to the <b>Assets Covered List</b> or removing them.
<b>Hardware Asset Workspace</b>	Add or remove assets from the existing list to indicate the assets you want to cover. <ul style="list-style-type: none"> <li>○ To add an asset, select <b>Add</b> and provide the required asset information.</li> <li>○ To remove an asset, select it and select <b>Remove</b>.</li> </ul>
<b>Enterprise Asset Workspace</b>	Add or remove assets from the existing list to indicate the assets you want to cover. <ul style="list-style-type: none"> <li>○ To add an asset, click <b>Add</b>. In the Add as sets dialog box, select the check box for each asset that you want to add and then click <b>Add</b>.</li> <li>○ To remove an asset, select the check box for that asset and then click <b>Remove</b>.</li> </ul>

5. Select **Save**.
6. Edit the renewal cost of the assets.
  - Note:** This step is applicable only if you are using the core UI or Hardware Asset Workspace.
  - a. Select the asset that you want to update the renewal cost for.
  - b. In the **Renewal cost** field, update the renewal cost of the asset.
  - c. Click **Update**.
7. Click **Save**.
8. If you are adding assets through the asset selection task on the Contract Renewal Request Line form, click **Close Task**.

**Result**

The Payment amount field in the Financial tab of the draft contract shows the total renewal cost of the hardware or enterprise assets you selected.

**What to do next**

[Add or remove entitlements for a contract renewal](#)

**Add or remove entitlements for a contract renewal**

Add or remove software entitlements that you want to include in the contract renewal process by using the Software assets selection task. You can also view the entitlements carried over to the new contract.

**Before you begin**

The Software Asset Management Professional (com.snc.samp) plugin must be activated.

Role required: sam\_user, contract\_manager

**About this task**

The entitlements with the following license types are carried over to the new contract:

- Perpetual and maintenance
- Perpetual and software assurance
- Only perpetual

**Procedure**

1. On the Contract Renewal Request Line form, select the Software assets selection task number.
2. Create an entitlement if you don't have any entitlements carried over to the draft contract.

**a.** On the Contract Renewal Task form, select **Create Entitlement** in the **Planned Entitlements** tab.

**b.** On the Software Entitlement form, fill in the required fields.

For more information, see [Software entitlement fields](#).

**c.** Select **Save**.

You can publish this entitlement after you complete the renewal request because this entitlement is associated with an existing renewal process.

The entitlement is now listed in the Planned Entitlements list.

3. **Optional:** Update the existing entitlements for the draft contract.

Interface	Action
<p><b>Core UI</b></p>	<p><b>a.</b> Select <b>Edit</b>.</p> <p><b>b.</b> Indicate the entitlements that you want to cover by moving them to the <b>Planned Entitlements</b> or removing them.</p>
<p><b>Hardware Asset Workspace</b></p>	<p>(Optional) Add or remove entitlements to indicate the entitlements you want to cover.</p>

Interface	Action
	<ul style="list-style-type: none"> <li>To add an entitlement, select <b>Add</b> and provide the required information.</li> <li>To remove an entitlement, select it and select <b>Remove</b>.</li> </ul>

4. Select **Save**.

5. Select **Close Task**.

### What to do next

[Update terms and conditions](#)

## Update terms and conditions

Update the terms and conditions in your new contract. You can also view the terms and conditions carried over to the new contract.

### Before you begin

Role required: asset, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

### Procedure

- Open the task or contract for which you want to add terms and conditions.
  - If you are using the core UI or Hardware Asset Workspace, select the Terms and conditions task number on the Contract Renewal Request Line form. Select the **Renewal contracts terms** tab and then click **Edit**.
  - If you are using the Enterprise Asset Workspace, navigate to the Contract and lease management view and then select the **All contracts** tab. Open the enterprise asset contract that you want to add terms and conditions to and then select the **Terms and Conditions** tab.
- Update the terms and conditions in the contract.

Interface	Action
<b>Core UI</b>	Indicate the terms and conditions that you want to cover by moving them to the <b>Terms and Conditions List</b> or removing them.
<b>Hardware Asset Workspace</b>	Add or remove terms and conditions from the draft contract. <ul style="list-style-type: none"> <li>To add a term and condition, select <b>Add</b> and provide the required information.</li> <li>To remove a term and condition, select it and select <b>Remove</b>.</li> </ul>
<b>Enterprise Asset Workspace</b>	Add or remove terms and conditions from the draft contract.

Interface	Action
	<ul style="list-style-type: none"> <li>○ To add a term and condition, click <b>Add</b>. In the dialog box, select the check box for each term and condition that you want to add and then click <b>Add</b>.</li> <li>○ To remove a term and condition, select the check box for that term and condition and then click <b>Remove</b>.</li> </ul>

3. Select **Save**.

4. If you are adding terms and conditions through the Terms and conditions task on the Contract Renewal Request Line form, click **Close Task**.

**Result**

Multiple terms and conditions are displayed in the **Terms and Conditions** tab of the contract.

**What to do next**

[Add rate cards to the new contract](#)

**Add rate cards to the new contract**

Add rate card details to the new contract by using the Rate cards task to track contract expenses.

**Before you begin**

The Cost Management (com.snc.cost\_management) plugin must be active.

Role required: asset, contract\_manager

**About this task**

The rate card details aren't carried over to the new contract.

Adding rate card details to a contract isn't a required procedure. You can close this task if you do not need to add a rate card to the draft contract.

**Procedure**

1. On the Contract Renewal Request Line form, select the Rate cards task number.
2. On the Contract Renewal Task form, select the **Renewal rate cards** tab.
3. Select **New**.
4. On the Contract Rate Card form, fill in the financial details.  
For a description of the field values, see [Contract Rate Card form](#).
5. Select **Submit**.
6. Select **Close Task**.

**Result**

The rate card is attached to the draft contract.

**What to do next**

[Review contract renewal details](#)

## Review contract renewal details

Review the renewal details after completing all the details of a contract by using the Renewal confirmation task. You can then either approve them or mark the details for further review.

### Before you begin

Role required: asset, contract\_manager

### About this task

This task must be completed before the contract renewal request is eligible for approval.

### Procedure

1. On the Contract Renewal Request Line form, select the Renewal confirmation task number.
2. On the Contract Renewal Task form, verify the renewal details.
3. **Optional:** Review the list of entitlements in the draft contract by accessing the **Planned Entitlements** tab.
4. Determine whether to close this task.

Result of review	Action
The details are accurate	Select <b>Yes</b> .
The details are not accurate	<ol style="list-style-type: none"> <li>a. Select <b>No</b>.</li> <li>b. On the Renewal confirmation task form, navigate to the contract by clicking the preview icon next to the Renewal contract field.</li> <li>c. Update the contract details as necessary.</li> <li>d. Navigate to the Renewal confirmation task form.</li> <li>e. Select <b>Yes</b>.</li> </ol>

5. Select **Close Task**.

### Result

When you have closed the task, the Contract Renewal Request Line processing is complete because all the contract renewal tasks are closed. The stage of the Contract Renewal Request Line is set to Awaiting approval. After all the Contract Renewal Request Lines are processed for a contract renewal request, the Approval task is created under Contract Renewal Requests.

### What to do next

[Approve or reject a contract renewal request](#)

## Approve or reject a contract renewal request

Approve or reject a contract renewal request for all Contract Renewal Request Lines.

### Before you begin

The Renewal approver field must contain a value. If you need to change the approver, navigate to the parent contract and adjust the value there.

Role required: asset\_manager (core UI and Hardware Asset Workspace only), contract\_manager (core UI or Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

## Procedure

### 1. Verify your contract renewal details.

- If you are using the core UI or Hardware Asset Workspace, select the **Open Tasks** tab on the Contract Renewal Request form. Select the contract renewal request number to view the contract renewal details and then click **Close Task**.
- If you are using the Enterprise Asset Workspace, open the Contract and lease management view. Select the **All contracts** tab and then open the enterprise asset contract that you want to renew. View the contract renewal details in the Renewal section of the **Details** tab.

An approval request is triggered and the substate of the draft contract changes to Under review.

### 2. Open the list of contract and contract renewal requests.

- If you are using the core UI or Hardware Asset Workspace, navigate to **All > Contract > My Approvals**.
- If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **My contract approvals** tab.

### 3. Select the contract renewal request waiting for approval.

### 4. Evaluate any contract renewal request lines and contract renewal tasks.

### 5. Either approve or reject the contract renewal request.

Action	Result
<b>Approve the request by selecting Approve</b>	<ul style="list-style-type: none"> <li>○ The substate of the draft contract changes to Approved.</li> <li>○ The Renewal purchase order task or the Manual purchase order task is created.</li> </ul>
<b>Reject the request by selecting Reject</b>	<ul style="list-style-type: none"> <li>○ The renewal request gets terminated.</li> <li>○ The substate of the draft contract changes to Renewal rejected.</li> </ul>

### 6. Optional: Go to the **Approval History** tab to view the approval or rejection history of the contract and child contracts.

## What to do next

[Receive a purchase order for contract assets](#)

## Receive a purchase order for contract assets

Receive the purchase order for assets covered in the contract by using the Renewal purchase order task. This task is available if you have added at least one hardware asset, created an entitlement, or selected an existing entitlement that is in the Build state.

## Before you begin

This task is not created if you haven't selected or added any hardware assets or entitlements or the Procurement plugin (com.snc.procurement) is not active. You must instead manually track the financial expenses.

Role required: procurement\_user

**Procedure**

1. On the Contract Renewal Request form, select the **Open Tasks** tab.
2. Select the contract renewal request number.
3. Select the **Purchase orders** tab.
4. Select the purchase order number to capture the financial transactions of the contract.

For every asset record covered under a contract, a purchase order line item is created. The cost of each purchase order is the renewal cost of each asset covered.

The purchase order line items are created for the entitlements that are in the Build state. Each entitlement added in the Planned Entitlements tab corresponds to a unique purchase order line.

5. Select **Order**.
6. Select **Receive** to receive the purchase order for assets covered by the contract.  
Receiving the purchase order only updates the assets and does not create an entitlement.

**Result**

The draft entitlement is published and the status is set to In use.

The purchase order receipt is listed in the **Receiving Slips** tab.

The status of the purchase order and purchase order line items shows as Received. The state of the Renewal purchase order task automatically changes to Closed Complete. The contract renewal request flow is complete.

The substate of the old contract is set to Renewed. A contract history record is created that displays the start and end dates of the old contract and the renewed contract, and the renewal date. You can view the entire history of the contract by selecting the Contract History tab in the Related Links section.

After you receive the purchase order, the state of the renewal contract is no longer Draft and the contract becomes active. If the start date of the renewed contract has been reached but the purchase order has not been received, the status of the contract renewal request remains set to Draft. After the new contract becomes active, the old contract becomes expired and the covered assets have an end date.

**Results of canceling a contract renewal process**

Cancelling a contract renewal process results in a change in the state of Contract, Contract Renewal Request, Contract Renewal Request Lines, and Contract Renewal tasks.

**Contract cancellation results**

Canceled item	Result
Contract Renewal Request	<ul style="list-style-type: none"> <li>• The entire renewal request is canceled.</li> <li>• The substate of the contract that is being renewed is cleared.</li> <li>• All the draft contracts are canceled.</li> </ul>

**Contract cancellation results (continued)**

Canceled item	Result
Contract Renewal Request Line	<ul style="list-style-type: none"> <li>• The Contract Renewal Request Line is canceled.</li> <li>• When all Contract Renewal Request Lines are canceled, the Contract Renewal Request is canceled.</li> <li>• The renewal of immediate child draft contracts is canceled.</li> </ul>
Contract Renewal Task	<ul style="list-style-type: none"> <li>• The Contract Renewal Task and the Contract Renewal Request Line are canceled.               <ul style="list-style-type: none"> <li>○ If the Contract Renewal Request has only one Contract Renewal Request Line, the stage of the Contract Renewal Request changes to Canceled.</li> <li>○ If the Contract Renewal Request has multiple Contract Renewal Request Lines, the stage of the Contract Renewal Request doesn't change.</li> </ul> </li> <li>• The renewal of immediate child draft contracts is canceled.</li> <li>• The state of the draft contract changes to Canceled.</li> <li>• The state of the tasks that are already closed does not change.</li> <li>• The state of the open tasks changes to Closed Incomplete.</li> <li>• Rate cards are attached to the draft contract become inactive.</li> <li>• The state of the contract that was being renewed moves to the original state and the substate is cleared.</li> <li>• The associated entitlements with the Contract Renewal Task are removed.</li> </ul>
Contract	<ul style="list-style-type: none"> <li>• The renewal of immediate child contracts is canceled when child contracts are included in the Contract Renewal Request.</li> <li>• The Contract Renewal Request Line is canceled.</li> </ul>

### Contract cancellation results (continued)

Canceled item	Result
	<ul style="list-style-type: none"> <li>• Any initiated Contract Renewal Request by this contract is canceled.</li> <li>• The purchase order of the contract and immediate child contracts is canceled.</li> </ul>

## Contract Management use

Users with the `contract_manager` role can use the Contract Management application to create various types of contracts, such as leases, warranties, maintenance, and service.

You can add the following information to contracts.

- Assets covered by the contract
- Users covered by the contract
- Terms and conditions associated with the contract
- Other documents related to the contract

Track the various stages of a contract from draft to closure by viewing contract history and running reports. Adjust, extend, and renew active contracts.

## Contract life cycle

From creation until closure, contracts follow a life cycle that determines which fields can be edited.

When a contract is in **Draft** state, almost all fields on the contract record can be edited. After a contract moves past the **Draft** state, certain date, renewal, extension, and financial fields become read-only. The **State** field and **Substate** field are read-only.

The **Contract Compliance Checks** schedule job runs on the Contract [`ast_contract`] table automatically each night. For more information about the scheduled job, see [Use Condition Check Definitions](#). The scheduled job performs the following actions:

- Changes the contract state to **Active** if the contract is approved and reaches the specified start date.
- Renews the contract if the contract is approved for renewal and reaches the specified start date.
- Changes the contract state to **Expired** if the contract state is **Active** and reaches the end date.

The system property `contract_compliance_check_job.enable_override` enables the Contract Compliance Checks job to override checks in a hierarchy. By default, this system property is set to **True**. When checks are defined on the same field of the parent and child tables, the Contract Compliance Checks job performs the following:

- For the records on the parent table, the condition check on the table sets the field with the value specified in the condition.
- For the records on the child table, the condition check on the child table overrides the parent table condition and sets the field value on the child table accordingly.

For example, when a check is defined on the Description field of the Contract (parent) and Lease (child) tables, the field on the Lease table is set to the value specified in the child table condition. To disable the contract compliance check override functionality, set the system property `contract_compliance_check_job.enable_override` to **False**.

Expense lines are only generated from contracts that are active or expired.

### Contract states

State	Description
Draft	User adds information about the contract and specifies an approver.
Active	Contract was approved and has reached the specified start date.
Expired	Contract reached the specified end date. Expired contracts with an active renewal workflow that are waiting for approval have a substate of <b>Awaiting Review</b> . Expired contracts with an active renewal workflow where the renewal was approved, but the renewal date hasn't yet passed, have a substate of <b>Renewal Approved</b> . Expired contracts with no active renewal or extension pending workflow have an empty substate.
Canceled	Contract was discontinued and is no longer active.

In addition to a state, a contract can also have a substate.

### Contract substates

Substate	Description
Awaiting Review	Contract is being prepared for review.
Under Review	Contract sent to the approver and the approver is reviewing the contract.
Approved	Contract reviewed and accepted by the approver.
Rejected	Contract reviewed and declined by the approver.
Renewal Approved	Contract renewal approved by the approver.
Renewal Rejected	Contract renewal rejected by the approver.
Renewal in process	Contract renewal is in progress through the contract renewal workflow.
Renewed	Contract renewal is complete through the contract renewal workflow.
Extension Approved	Contract extension approved by the approver.
Extension Rejected	Contract extension rejected by the approver.
None	No substate is specified.

## Contracts

A contract is a binding agreement between two parties.

In the ServiceNow AI Platform, contracts contain detailed information such as contract number, start and end dates, active status, terms and conditions statements, documents, renewal information, and financial terms.

Working with contracts includes the following tasks and processes.

## Create a contract

Create a contract with various contract models, which would act as a binding agreement between the two parties.

### Before you begin

Role required:

- For Core UI and Hardware Asset Workspace: admin, contract\_manager
- For Enterprise Asset Workspace: sn\_eam.enterprise\_admin, sn\_eam.enterprise\_asset\_manager
- For Software Asset Workspace: sam\_admin, sam\_user

### About this task

If a contract has one or more associated rate cards, the fields on the Contract form can't be edited.

### Procedure

1. Open the list of contracts that are used across your deployment.
  - If you're using the Core UI, navigate to **All > Contract** and select a contract type, such as **Insurance**, **Maintenance**, or **Service**, or select **All**.
  - If you're using Hardware Asset Workspace, navigate to the **Contract management** view and then select the **All contracts** tab.
  - If you're using Enterprise Asset Workspace, open the **Contract and lease management** view and then select the **All contracts** tab.
  - If you're using Software Asset Workspace, navigate to **License operations > Contracts > Software contracts** and select **New**.
2. Select **New**.
3. On the form, fill in the fields.  
Not all fields appear on all contract type forms.

#### Contract or Create New Contract form

Field	Description
Contract model	Model the contract is assigned to.  For example <b>Lease</b> , <b>Maintenance</b> , <b>Warranty</b> , <b>Service Contract Software License</b> , or <b>Subscription</b> .
Vendor	Vendor responsible for the contract.  This field is required when <b>Purchase Agreement</b> or <b>NDA</b> is selected from <b>Contract model</b> .
Contract number	Number assigned to the contract by the vendor (required).
Name	Name of the contract.
Parent contract	Parent contract of the new contract, if applicable. You can select a parent contract from the contract lookup list.
Start date	Date on which the contract takes effect.

Field	Description
	This field is required when <b>Purchase Agreement</b> or <b>NDA</b> is selected from <b>Contract model</b> .
End date	Date on which the contract expires. Leave the end date empty to create an open-ended contract.  This field is required when <b>Purchase Agreement</b> or <b>NDA</b> is selected from <b>Contract model</b> .
State	Current state of the contract. <ul style="list-style-type: none"> <li>○ Draft</li> <li>○ Active</li> <li>○ Expired</li> <li>○ Canceled</li> </ul>
Substate	Current substate of the contract. <ul style="list-style-type: none"> <li>○ Awaiting Review</li> <li>○ Under Review</li> <li>○ Approved</li> <li>○ Rejected</li> </ul>
Contract administrator	Person responsible for managing the contract and interacting with the vendor.
Approver	User who approves or rejects the contract.  This list is filtered to only show users with the itil role.
Business owner	User who manages the contract from a business perspective.
Agreement type	Agreement type of license: <ul style="list-style-type: none"> <li>○ Enterprise</li> <li>○ SaaS</li> <li>○ Subscription</li> </ul> This field appears only when <b>Maintenance</b> and <b>Software License</b> is selected from <b>Contract model</b> .
Commitment	Amount committed to spend with this vendor during this time period, from the start to the end of the contract.  This field appears only when <b>Purchase Agreement</b> is selected from <b>Contract model</b> .
Discount	Discount the vendor has agreed to provide.  This field appears only when <b>Purchase Agreement</b> is selected from <b>Contract model</b> .

Field	Description
Process non-contractual SLAs	Option to process both contractual and non-contractual Service Level Agreements (SLAs).  This field appears only when <b>Service Contract</b> is selected from <b>Contract model</b> .
Description	Detailed description of the contract.
Financial section	
Invoice payment terms	Terms that explain how to pay the contract. For example, <b>Net Monthly Account</b> or <b>Net 30</b> .
Payment schedule	Schedule that defines when to make payments. For example, <b>Monthly</b> or <b>Annually</b> .
Payment amount	Amount that has been paid on the contract to date.
Applicable taxes	Indicates if the contract is exempt from taxes or subject to sales tax.
Effective tax rate	Effective tax rate to apply to the total cost, if applicable. Effective tax rate is usually the average tax rate charged.  This field appears only when <b>Sales</b> is selected from <b>Applicable taxes</b> .
Tax cost	Total cost of the tax.  This field appears only when <b>Sales</b> is selected from <b>Applicable taxes</b> .
Total cost	Final cost of the contract after adjustments have been applied. If a contract has one or more rate cards, this field shows the combined value of all rate cards.  This field appears only when <b>Sales</b> is selected from <b>Applicable taxes</b> .
Vendor account	Vendor account associated with the contract.
PO Number	Purchase order number assigned to the contract.
Cost center	Cost center that is financially responsible for the asset.
Has rate card	Check box to indicate whether the contract has an associated rate card.
Renewal section	
Automatically renew	Indicates if the contract can be renewed or extended at the end of its term.
Options	Duration of the contract renewal or extension. For example, 1 year.
Renewal start date	Date on which the contract renewal or extension takes effect.
Renewal end date	Date on which the contract renewal or extension ends.

Field	Description
Cost adjustment type	Type of cost adjustment applied to the contract. <ul style="list-style-type: none"> <li>○ Fixed</li> <li>○ Manual</li> <li>○ CPI (Consumer Price Index)</li> </ul>
Cost adjustment amount	Numerical increase or decrease in price of contract. To indicate a decrease in price, enter a negative number. Either a <b>Cost adjustment</b> or <b>Cost adjustment percentage</b> can be specified, but not both.
Cost adjustment percentage	Percentage increase or decrease in price of contract. To indicate a decrease in price, enter a negative percentage. Either a <b>Cost adjustment</b> or <b>Cost adjustment percentage</b> can be specified, but not both.
Terms and Conditions section	
Terms and conditions	Specific legal information in the contract.

**4. Save the form.**

- If you're using Core UI, right-click the form header and select **Save**.
- If you're using Hardware Asset Workspace, Software Asset Workspace, or Enterprise Asset Workspace, select **Save**.

**5. Continue entering information in the related lists or tabs that appear.**

**Contract form related lists or tabs**

Related list or tab	Description
Assets Covered	Lists all assets covered by this contract.
Users Covered	Lists all users covered by this contract.
Contract used by	Lists all configuration items (CI) used in this contract.
Terms and Conditions	Lists all terms and conditions of this contract.
Expense Lines	Lists all expense lines in this contract.
Contract History	Displays the changes to the start and end dates of this contract and changes to the terms and conditions.
Approval History	Lists all approvals for this contract.
Service Offerings	Lists all service offerings from this vendor. Activate Service Portfolio Management to see this related list.
Service Commitments for Contracts	Lists all service commitments for this vendor's offerings. Activate Service Portfolio Management to see this related list.

**6. Perform one of the following actions.**

- Select **Update** to save and exit the contract.
- Select **Submit for Review** to send a notification to the approver.

**Related topics**

- [Models](#)
- [Service Portfolio Management](#) ↗
- [Add a commitment to a service offering](#) ↗
- [Contract renewal workflow](#)
- [Contracts](#)

**Create a software maintenance contract example**

One common use case for the Contract Management application is creating a contract to track maintenance payments for enterprise software. You can use this example to learn how to create a software maintenance contract.

**Before you begin**

Role required: contract\_manager or admin

**About this task**

The goal of this example is to create a contract that shows the total amount of maintenance that must be paid for the software application, independent of different license purchases made over time. The Software Asset Management plugin must be activated to use this example.

**Procedure**

1. Create an [application model](#), adding a **Name** and specifying **Software License** in **Model categories**.
2. Create a [software model](#), adding a **Name** and **Model Number**, and selecting the application model created in step 1.
3. Create a new software entitlement by selecting the software model created in step 2.
4. Navigate to **Contract > Contracts > Maintenance**.
5. Click **New** and enter the following information.

Option	Description
<b>Agreement Type</b>	Select <b>Enterprise</b> .
<b>Application Model</b>	Select the application model created in step 1.

6. Right-click the form header and click **Save**.  
A number of related lists and sections appear.
7. In the **Asset Covered** related list, click **New** and enter the following information.

Option	Description
<b>Asset</b>	Select the software license created in step 3.
<b>Date added</b>	Enter the value.

8. Click **Submit**.
9. Continue completing the form with the following information.

Option	Description
<b>Payment schedule</b>	Select <b>Annually</b> .
<b>Payment amount</b>	Enter the value.

10. Complete the other fields as appropriate.

11. Click **Update**.

12. [Submit the contract for review](#).

### Related topics

[Software Asset Management](#)

### Add an asset to a contract

You can associate contracts with specific assets, including software licenses.

### Before you begin

Role required: admin, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

### About this task

Linking a contract with assets clarifies what the contract legally covers.

### Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract Management > Contract > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.

2. Select a contract.

3. Add assets to the contract.

- If you are using the core UI, use the following steps:
  - a. In the **Assets Covered** related list, click **New**.
  - b. In the **Asset** field, select a specific asset that is covered by the contract.
  - c. In the **Date added** field, select the date the asset was added to the contract.

The date can be in the past, the present, or the future.

- d. (Optional) In the **Date removed** field, select the date the asset was, or will be, removed from the contract.

Specifying the **Date added** and **Date removed** fields is useful for reporting.

- e. Click **Submit**.

- If you are using the Hardware Asset Workspace or Enterprise Asset Workspace, use the following steps:
  - a. In the **Assets Covered** tab, click **New**.
  - b. In the dialog box, select the check box for each asset that you want to add to the contract.
  - c. Click **Add**.

### Add a user to a contract

A contract can cover specific users. For example, you may use a contract to hire a group of temporary workers.

#### Before you begin

Role required: contract\_manager or admin

#### Procedure

1. Navigate to **Contract Management > Contract > All**.
2. Select a contract.
3. In the **Users Covered** related list, click **New**.
4. In the **User** field, select a specific user covered by the contract.
5. In the **Date added** field, select the date the user was added to the contract.  
The date can be in the past, the present, or the future.
6. **Optional:** In the **Date removed** field, select the date the user was, or will be, removed from the contract.  
Specifying the **Date added** and **Date removed** fields can be useful for reporting.
7. Click **Submit**.

### Add a configuration item to a contract

Contracts can be associated with configuration items. You can link a contract with configuration items to clarify what the contract legally covers.

#### Before you begin

Role required: admin or contract\_manager

#### Procedure

1. Navigate to **Contracts > All**.
2. Select a contract.
3. **Optional:** In the **CIs Covered** related list, select **New** to create a configuration item.
4. In the **CIs Covered** related list, select **Edit**.
5. In the **Collection** configuration items list on the left, double-click a configuration item name.  
The item is added to the **CIs Covered List** on the right.
6. Select **Save**.



### Add a document to a contract

Contracts can be associated with documents. Linking a contract to related documents helps keep all relevant information about a contract together and easily accessible.

## Before you begin

Role required: admin, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

## Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **All > Contract > Contracts > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract.
3. Add a document to the contract.
  - If you are using the core UI, use the following steps:
    - a. Click the Manage Attachments () icon on the form header.
    - b. In the Attachments dialog box, click **Choose file** to search for and select the document that you want to add to the contract.
  - If you are using the Hardware Asset Workspace or Enterprise Asset Workspace, use the following steps:
    - a. Click the Attachment () icon on the sidebar of the contract record.
    - b. In the Attachments window, click **Select** to search for and select the document that you want to add to the contract.

## Adjust a contract

After creating a contract, you can change the start date, end date, or payment amount for a contract.

## Before you begin

Role required: admin, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

## About this task

To adjust a contract, the **State** should be **Active**. If the end date of a contract changes, the end date of any associated assets changes to match the new end date.

## Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract > Contracts > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract in the **Active** state.

3. Click **Adjust**.

4. In the Adjust the Contract dialog box, fill in the fields.

**Adjust the contract fields**

Field	Description
Contract Start Date	Date on which the contract takes effect.
Contract End Date	Date on which the contract expires.
Contract Payment Amount	Total amount paid for the contract. If the contract has one or more rate cards, this field shows the total of all rate card base costs.

5. Click **Submit Adjustments**.

**Renew a contract**

After you have created a contract or the contract has expired, you can renew the contract.

**Before you begin**

Role required: admin, contract\_manager (core UI or Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

**About this task**

- When a contract is renewed, a new contract isn't created. Instead, the same contract is updated with renewal information.
- The changes to the start date and end date of a contract is captured in the Contract History tab.
- Contract information and history is retained when a contract is renewed. If the end date of the contract changes, the end date of any associated assets changes to match. You can renew a contract that meets the following conditions.
  - **State** is **Active** or **Expired**
  - **Substate** is **None** or **Rejected**
- If the system property *sn\_contract\_enable\_renewal\_flow* is enabled, the contract renewal workflow is available for maintenance & warranty contracts. For more information, see [Contract renewal workflow](#).

**Procedure**

1. Open the list of contracts that are used across your deployment.

- If you are using the core UI, navigate to **Contract > Contracts > All**.
- If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.

Alternatively, select the **Overview** tab of the Contract management view. In the Contract overview section, locate the Expiring contract widget to view the list of contracts that are expiring.

- If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.

Alternatively, select the **Overview** tab of the Contract and lease management view. In the Contract overview section, locate the Expiring contract widget to view the list of contracts that are expiring.

2. Select a contract in the **Active** or **Expired** state.
3. Click **Renew**.
4. On the Renew the Contract form (core UI) or dialog box (Hardware Asset Workspace and Enterprise Asset Workspace), fill in the fields.

**Renew the Contract fields**

Field	Descriptions
Approver	User who approves or rejects the contract.
Options	Length of time for the renewal, in years.
Renewal start date	Date on which the renewed contract takes effect.
Renewal end date	Date on which the renewed contract expires.
Cost adjustment type	Type of cost adjustment applied to the renewed contract: <b>None, Fixed, Manual, or CPI.</b>
Cost adjustment percentage	Percentage increase or decrease in price of the renewed contract. To indicate a decrease in price, enter a negative percentage. A <b>Cost adjustment amount</b> or <b>Cost adjustment percentage</b> can be specified, but not both.
Cost adjustment amount	Numerical increase or decrease in price of the renewed contract. To indicate a decrease in price, enter a negative number. A <b>Cost adjustment amount</b> or <b>Cost adjustment percentage</b> can be specified, but not both.

5. Perform one of the following steps.
  - To save all entered data and change the substate to **Under Review**, click **Submit for Review**. The contract is sent to the specified **Approver**.
  - To save all entered data and change the substate to **Awaiting Review**, click **Save**. The **Renew** button is available to submit the renewed contract for review later.
6. Change any information on the **Contract** form, as necessary.
7. Click **Update**.

**What to do next**

If you selected the **Save** option, ensure that you click **Renew** when you are ready to submit the contract renewal for approval.

**Cancel a contract**

You can cancel a contract when the **State** is **Active**.

## Before you begin

Role required: admin, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

## About this task

After a contract is canceled, the following process occurs.

- The contract **State** changes to **Canceled**.
- Condition checkers are changed to inactive.
- **Renew** and **Extend** buttons become inactive.
- Contract rate cards become inactive.

## Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract > Contracts > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract.
3. Click **Cancel Contract**.
4. Click **Yes** to confirm the contract cancellation.

## Verify contract administrator assignment for notification

An event runs automatically each night to send reminders to contract administrators about contract expiration dates so they can renew or renegotiate the contract. You can verify that the right contract administrator is assigned to the contract.

## Before you begin

Role required: admin, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

## About this task

When the contract.expiration event runs on the Contract [ast.contract] table each night, an email message is sent to the person identified as the contract administrator. This email is sent at the following times.

- 90 days ahead of the contract expiration date
- 60 days ahead of the contract expiration date
- 30 days ahead of the contract expiration date
- On the contract expiration date

A user with the admin role can edit the contract.expiration condition check that processes contract notifications.

## Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract > Contracts > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract.
3. Check that the **Contract administrator** field contains the correct name.  
A single name can be specified.

## Related topics

[Condition check definitions](#)

[Email and SMS notifications](#) 

## Send the contract for approval

You can send a contract that is in **Draft** state for approval.

## Before you begin

Role required: admin, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

## Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract > Contracts > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract in the **Draft** state and **Awaiting Review** substate.
3. Select an **Approver** for the contract.
4. Click **Submit For Review**.  
An email message is sent to the selected approver and the contract **Substate** changes to **Under Review**.

## Approve or reject a contract

If you are the contract manager, you can approve or reject a contract.

## Before you begin

Role required: admin, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

## Procedure

1. Open the list of contract and contract renewal requests.
  - If you are using the core UI, navigate to **All > Contract > My Approvals**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **My approvals** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **My contract approvals** tab.
2. Select a contract in the **Requested** state.
3. Approve or reject the contract.
  - Approve the contract.
    - To approve the contract in the core UI, click **Approve**. The contract **Substate** changes to **Approved**.
    - To approve the contract in the Hardware Asset Workspace or Enterprise Asset Workspace, set the **State** field to **Approved**.
  - Reject the contract.
    - To reject the contract in the core UI, click **Reject** and enter a rejection reason in the **Comments** field. The contract **Substate** changes to **Rejected**.
    - To reject the contract in the Hardware Asset Workspace or Enterprise Asset Workspace, set the **State** field to **Rejected**.
4. Click **Update** (core UI) or **Save** (Hardware Asset Workspace and Enterprise Asset Workspace).
  - A contract with the state set to **Draft** and a start date set in the future is kept in **Draft** until the start date is reached. If the contract has a **Substate** of **Approved**, the system changes the **State** to **Active** and removes the **Substate** value.
  - When a contract with a **State** of **Draft** and a **Start Date** set to a date in the past is approved, the contract **State** is automatically set to **Active** and **Substate** is left blank.

## View approval history on contracts

You can view the approval history for a contract in the Approval History related list on the Contract form.

## Before you begin

Role required: workflow\_admin, admin, or sn\_eam.enterprise\_admin (Enterprise Asset Workspace only)

## About this task

After a contract is sent to an approver for review, the approver name cannot be changed. If the approver rejects a contract, the same approver or a different approver can be specified before the contract is sent for approval again. Once the contract has been reviewed and approved, approval history records are automatically listed in the Approval History related list on the Contract form.

## Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract > Contracts > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract.
3. Select the **Approval History** tab.
4. Click a record to view the approval details.

## Terms and conditions

You can add terms and conditions to a contract to keep all documentation that is relevant to a contract in one location.

The terms and conditions can be searched and used in reports. If multiple terms and conditions records are added to a single contract, set an order for the records so they appear in a specific sequence. The terms and conditions fields become read-only after a contract is sent for approval.

Users with the contract\_manager role can read contract history and add terms and conditions.

There are three procedures involved in adding terms and conditions to a contract:

### Create a terms and conditions record

You can create a terms and conditions record to add to a contract.

### Before you begin

Role required: admin, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

## Procedure

1. Open the list of terms and conditions for your contracts.
  - If you are using the core UI, navigate to **All > Contract > Contracts > Terms & Conditions**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **Terms and conditions** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **Terms and conditions** tab.
2. Click **New**.
3. On the Terms and Conditions form (core UI) or Create New Terms and Conditions form (Hardware Asset Workspace and Enterprise Asset Workspace), fill in the fields.

### Terms and Conditions or Create New Terms and Conditions form

Field	Description
Number	Unique ID used for the terms and conditions. This field is automatically generated.

Field	Description
Name	Name for the terms and conditions.
Contract	Link to the contract.
Used	Check box to indicate if the terms and conditions are associated with contract.
Description	Details of the terms and conditions.

4. Click **Submit** (core UI) or **Save** (Hardware Asset Workspace and Enterprise Asset Workspace).

### Add terms and conditions to a contract

After you create a terms and conditions record, add the record to a contract that is in the Awaiting Review, Rejected, Renewal Rejected, or Extension Rejected substate.

### Before you begin

Role required: admin, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

### About this task

Terms and Conditions can only be added to a contract when it is being created. After the contract is approved, the terms and conditions cannot be changed.

### Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract > Contracts > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract.
3. Add terms and conditions to the contract.
  - If you are using the core UI, use the following steps:
    - a. In the **Terms and Conditions** related list, double-click **Insert a new row**.
    - b. Click the reference lookup icon and select a terms and conditions record from the list.
    - c. (Optional) Enter a number in **Order** to specify the sequence in which the record should appear in the terms and condition document.

**Note:** If you attempt to enter a duplicate terms and conditions record for a contract and save the record, an error message appears and the new duplicate record is not added.

- If you are using the Hardware Asset Workspace, use the following steps:
  - a. On the **Terms and Conditions** tab, click **Add**.
  - b. When prompted, provide the required information.
- If you are using the Enterprise Asset Workspace, use the following steps:

- a. On the **Terms and Conditions** tab, click **Add**.
- b. In the dialog box, select the check box for each term and condition that you want to add.
- c. Click **Add**.

### Build a terms and conditions document within a contract

After adding one or more terms and conditions records to a contract, you can build a terms and conditions document within the contract.

#### Before you begin

Role required: admin, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

#### About this task

The terms and conditions records are added in the sequence specified in the **Order** field.

#### Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract Management > Contract > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract.
3. Verify that one or more terms and conditions records have been added to the **Terms and Conditions** tab.
4. On the **Terms and Conditions** tab, build the terms and conditions for the contract.
  - If you are using the core UI, click the **Build Terms and Conditions** related link.
  - If you are using the Hardware Asset Workspace or Enterprise Asset Workspace, click **Build Terms and Conditions**.

All records from the Terms and Conditions list are added to the Terms and Conditions for the contract.
5. Click **Update**.

#### Create a contract rate card

You can create rate cards to track contract expenses. Rate cards help to record and allocate costs.

#### Before you begin

You must activate the Cost Management plugin to use rate cards.

Role required: financial\_mgmt\_user, asset, or contract\_manager

#### About this task

A contract rate card provides detailed price information for a contract and enables you to generate expense lines for recurring expenses automatically. There can be multiple rate cards for the same contract.

Consider the following case: an organization has a contract with a third-party company, which oversees technical operations in the organization's data centers. The contract costs to use a

specific server model in the New York data center are different from using the same server model in the Madrid data center. There are two rate cards to detail these costs separately.

**Procedure**

1. Navigate to **Contract Management > Contract > All**.
2. Select a contract.
3. In the **Contract Rate Cards** related list, click **New**.
4. On the Contract Rate Card form, fill in the fields.  
For a description of the field values, see [Contract Rate Card form](#).
5. Click **Submit**.

**Related topics**

- [Allocating expenses](#) 
- [Use business services with expenses](#) 

**Contract Rate Card form**

The Contract rate card form enables you to generate expense lines for recurring expenses automatically by providing detailed price information for a contract. There can be multiple rate cards for the same contract.

Field	Description
Number	Contract rate card number.
Contract	Internal contract number.
Summary type	Contract rate card type. Categorizing rate cards can be useful for reporting. Select <b>Grow Business, Run Business, or Transform Business</b> .
Name	Descriptive name for the contract rate card.
Active	Option that indicates whether the rate card is available for use.
Short description	Brief description of the contract rate card.
Start date	Date on which the contract rate card becomes active. Expense lines are generated for the costs incurred beginning on the date specified. For financial calculations to work, the date cannot be before the start date of the contract.
End date	Date on which the contract rate card becomes inactive. For financial calculations to work, the date cannot be after the end date of the contract. If no value is entered, the date is automatically set to the end date of the contract if the contract has an end date. No expense lines are generated for costs incurred after the end date.
Interval	The amount of time between rate card charges. For example, <b>Monthly, Quarterly, or Annually</b> .
Cost center	The cost center financially responsible for the rate card.
Last processed	The most recent date on which the rate card was charged.
Next process	The next date on which the rate card will be charged.

Field	Description
Description	Detailed information about the rate card.
Sales tax	Option that indicates whether to apply sales tax to the total cost.
Tax rate	The effective tax rate to apply to the total cost. This tax rate is usually the average tax rate charged.
Distribute cost	The method for distributing the amount listed in the <b>Base cost</b> field and generating expense lines.
Value	Type of value to use when <b>Allocate and distribute cost based on value</b> is selected in the <b>Distribute cost</b> field.
Base cost	The amount that must be paid before taxes.
Tax cost	Total cost of the tax.
Total cost	Final cost of the rate card after adjustments such as taxes have been applied.

### Create a new expense line

Typically, expense lines are automatically generated based on assets or users, but you can create a new expense line manually if needed.

### Before you begin

Role required: asset, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

### Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract Management > Contract > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract.
3. In the **Expense Lines** related list (core UI) or tab (Hardware Asset Workspace and Enterprise Asset Workspace), click **New**.
4. Complete the form.

### Expense line table

Field	Description
Number	The unique number identifying the expense line.
Date	The date on which the expense line was created.
Rate Card	The identification number of the rate card to which the expense line is associated.
Rate type	The rate type that is considered during the expense line generation. This field is read-only.

Field	Description
Source ID	The identification number of the item associated with the expense line. If this field is filled in, corresponding information is automatically added to the <b>Source</b> fields on this form.
Amount	The monetary value of the item specified in the <b>Source ID</b> field. Enter a negative value to indicate a credit.
Process date	The date the expense line is processed.
Inherited	Check box that indicates whether the expense line is on another expense line.
State	The current state of the expense line, either <b>Pending</b> or <b>Processed</b> .
Summary type	The expense line category: <b>Grow Business</b> , <b>Run Business</b> , or <b>Transform Business</b> . Categorizing expense lines can be useful for reporting.
Short description	A brief description of the expense line.
Asset	The identification number of the asset associated with the expense line, if any.
Fixed asset	Fixed asset that contains the asset in this expense line. A fixed asset is a container that holds one or more individual assets, including hardware or software assets. The system auto-populates this field with the appropriate fixed asset if the named <b>Asset</b> is contained within that fixed asset.
Contract	The identification number (not the contract number) of the contract associated with the <b>Asset</b> , if any.
User	The name of the user associated with the <b>Asset</b> , if any.
Configuration Item	The name of the configuration item associated with the expense line, if any.
Task	The identification number of the task associated with the expense line, if any.
Cost center	The cost center financially responsible for the item identified in <b>Source ID</b> , if any.

5. Click **Submit** (core UI) or **Save** (Hardware Asset Workspace and Enterprise Asset Workspace).

### Generating expense lines based on assets or users

An expense line is an expense amount at a given point in time and the record that incurred or generated the expense. You can generate expense lines based on assets or users assigned to the contract.

#### Before you begin

Role required: financial\_mgmt\_user, asset, or contract\_manager

#### About this task

Generating expense lines is a three-step procedure.

#### Procedure

##### Add a user or asset to a contract


You can add a user or asset to a contract to generate expense lines.

**Before you begin**

Role required: asset, financial\_mgmt\_user (core UI and Hardware Asset Workspace only), contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

**Procedure**

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract Management > Contract > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract.
3. Add assets or users to the contract.
  - If you are using the core UI, use the following steps:
    - a. In the **Assets Covered** or **Users Covered** related list, click **New**.
    - b. Specify an **Asset** or **User**.
    - c. Specify a **Date Added**.
    - d. Click **Submit**.
    - e. (Optional) Repeat the previous steps to add more assets or users to the contract.
  - If you are using the Hardware Asset Workspace or Enterprise Asset Workspace, use the following steps:
 

 **Note:** You cannot add users to a contract in the Enterprise Asset Workspace.

    - a. In the **Assets Covered** or **Users Covered** tab, click **New**.
    - b. In the dialog box, select the check box for each asset or user that you want to add to the contract.
    - c. Click **Add**.

**Create a rate card and assign a user or asset**

You can assign a user or asset when you create a rate card. You can only assign the user or asset that is assigned to the contract.

**Before you begin**

Role required: financial\_mgmt\_user, asset, or contract\_manager

**Procedure**

1. Navigate to **Contract Management > Contract > All**.
2. Select a contract with an assigned user or asset.
3. In the **Contract Rate Cards** related list, click **New**.
4. Specify a **Start date**.  
For financial calculations to work, the date cannot be before the start date of the contract.
5. Right-click the header bar and select **Save**.
6. In the **Asset Covered** or **Rate Card Users** related list, click **New**.

7. Select the **Asset** or **User** who is assigned to the contract.  
Only assets and users associated with the parent contract are listed.
8. Specify a **Date Added**.
9. Click **Submit**.

### Configure rate card expense generation

After assets or users are added to the rate card, you can use the **Distribute cost** field in the Financial section of the contract to generate rate card expenses.

### Before you begin

Role required: financial\_mgmt\_user, asset, or contract\_manager

### Procedure

1. Navigate to **Contract > Contracts > All**.
2. Select the contract to generate expenses.
3. In the **Contract Rate Card** related list, select a rate card.
4. In **Distribute cost**, select one of the following options to distribute the amount listed in **Base cost**.

Option	Description
<p><b>Split expense lines evenly across assets</b></p>	<p>Select <b>Allocate and distribute cost per asset</b>.</p> <p>For example, with a \$100 <b>Base cost</b> and two assets, two expense lines for \$50 are created.</p>
<p><b>Split expense lines across assets based on asset value</b></p>	<p>Select <b>Allocate and distribute cost based on value</b>.</p> <p>The <b>Value</b> field displays with <b>Cost</b> and <b>Residual Cost</b> options. The cost is derived from the <b>Cost</b> or <b>Residual Cost</b> field on an asset record. If there are multiple assets on the rate card, the cost or residual cost is distributed based on the value of the assets.</p> <p>For example, if you select the <b>Cost</b> option with a \$100.00 <b>Base cost</b>, one asset worth \$70, and one asset worth \$30, two expense lines are created, one for \$70 and one for \$30.</p>
<p><b>Split expense lines evenly across users</b></p>	<p>Select <b>Allocate and distribute cost per user</b>.</p> <p>For example, with a \$100 <b>Base cost</b> and two users on the contract, two expense lines for \$50 are created.</p>
<p><b>Allocate the cost to the contract instead of the individual assets</b></p>	<p>Select <b>Allocate cost to contract</b>.</p>

5. Select **Update**.

Expense lines are automatically generated by a scheduled job for costs incurred between the rate card **Start date** and **End date**. The scheduled job, *Process FM Costs*, runs on the Contract [ast\_contract] table once per day. This scheduled job runs forward and generates additional records from the Next Process [next\_process] time. Expense lines are only generated from contracts with the **Active** or **Expired** state. You may want to generate expense lines for expired contracts to track previous expenses.

## Related topics

[Contract life cycle](#)

## View contract expense lines

Use the **Expense Lines** related list or tab to view and audit all the expenses recorded for a given contract.

## Before you begin

Role required: asset, financial\_mgmt\_user (core UI and Hardware Asset Workspace only), contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

## Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract > Contracts > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract.
3. Select the **Expense Lines** related list (core UI ) or tab (Hardware Asset Workspace and Enterprise Asset Workspace).
4. Select an expense line record to view.

Information such as expense line details, total cost of the contract, and the contract current value is listed.

## Monitor a contract

You can monitor contracts by viewing contract history and creating contract reports.

## Before you begin

Role required: asset, contract\_manager (core UI and Hardware Asset Workspace only), sn\_eam.enterprise\_admin (Enterprise Asset Workspace only), or sn\_eam.enterprise\_asset\_manager (Enterprise Asset Workspace only)

## About this task

If changes are made to a contract start date, end date, or terms and conditions, a copy of the contract is automatically saved and placed in contract history. This is useful for tracking changes to a contract and keeping an audit trail. Configure the **Contract History** related list or tab to include columns for creation and update so you can easily see who edited the contract.

## Procedure

1. Open the list of contracts that are used across your deployment.
  - If you are using the core UI, navigate to **Contract > Contracts > All**.
  - If you are using the Hardware Asset Workspace, open the Contract management view and then select the **All contracts** tab.
  - If you are using the Enterprise Asset Workspace, open the Contract and lease management view and then select the **All contracts** tab.
2. Select a contract.
3. View the **Contract History** related list (core UI) or tab (Hardware Asset Workspace and Enterprise Asset Workspace) and perform one of the following actions.
  - If earlier versions of the contract exist, click a date in the **Contract Starts** column to view a version.
  - If an earlier version of the contract does not exist, change the contract's **Start date** or **End date**. Right-click in the header bar and select **Save**. In the **Contract History** related list, click a date in the **Contract Starts** column to view the earlier version.

## Run a contract report

A variety of contract reports are available to help track and manage contracts.

## Before you begin

Role required: contract\_manager or admin

## Procedure

1. Navigate to **All > Reports > View / Run**.
2. Select one of the following reports to run.

### Contract reports

Report	Description
Active Contracts by Cost Per Unit	All active contracts grouped in ascending order by average cost per unit.
Active Contracts by Lifetime Cost	All active contracts with an associated rate card grouped in ascending order by total cost. Total cost is measured from the beginning of the contract to the report run date.
Active Contracts by Monthly Cost	All active contracts grouped in ascending order by cost per month.
Active Contracts by Vendor	All active contracts alphabetically by vendor.
Active Contracts by Yearly Cost	All active contracts grouped in ascending order by cost per year.
All Contracts by State	Contracts grouped by state, such as <b>Draft</b> , <b>Active</b> , or <b>Expired</b> , in bar chart format

Report	Description
Asset Contracts by Type	All active contracts for assets grouped by type, in pie chart format.
Asset Contracts List	All active contracts for assets by contract number.
Contract Expenditure by Type	Total contract expenses by type, such as lease, maintenance, or warranty, in bar chart format.
Contract Expenditure by Vendor	Total costs of all contracts associated with a specific vendor, in bar chart format.
Contract Pipeline Report	All contracts with a state of <b>Draft</b> , <b>Active</b> , or <b>Expired</b> and a substate of <b>Awaiting Review</b> or <b>Under Review</b> , in bar chart format.
Expiring Contracts	All contracts expiring in the next 90 days.

## Condition check definitions

Condition check definitions enable you to define logical conditions that indicate when to change a field value in a record.

A scheduled job, called *Contract Compliance Checks* in **System Scheduler > Scheduled Jobs**, evaluates these condition check definitions daily by running the condition checker. When this job is run, the ConditionChecks Script Include is triggered that runs the Condition Check Definitions. Use this condition checker to check start dates and end dates and to set expiration levels for contracts.

For example, a contract has a start date of March 1. When the condition checker runs on March 1, it verifies that the contract **Substate** is **Approved** and sets the contract **State** to **Active** based on the **Start Date** field.

The daily condition checker sets the appropriate expiration level for active contracts based on the contract **End Date**. The expiration level can be viewed in the Contracts list. Knowing the expiration level can help contract managers renew or extend a contract before it expires.

### Define a condition check

You can define a condition check to change values in a contract when the *Contract Compliance Checks* scheduled job runs each night.

#### Before you begin

Role required: contract\_manager or admin

#### Procedure

1. Navigate to **All > Contract > Administration > Condition Check Definitions**.
2. Click **New**.
3. Complete the form.

### Condition check definition fields

Field	Description
Table	The table to which the condition applies. For a contract check definition, select <b>Contract [ast.contract]</b> .
Category	The category for the condition check. Select <b>Contract</b> or <b>None</b> . The category is used for organizing information and reporting.
Condition field	The field to be updated, typically <b>Expiration level</b> or <b>State</b> .
Event name	The name for the event to be fired when this condition changes the value of the field. Create a name using this syntax: <table_name>.<condition_field>, for example, <code>contract.validation</code> .
Order	The order in which the conditions are evaluated.

4. Right-click the header bar and click **Save**.  
The **Conditions** related list appears.
5. In the **Conditions** related list, click **New**.
6. Complete the form.

### Conditions fields

Field	Description
Name	The value the field is set to, if the expiration conditions are met.
Condition check	The associated condition check.
Table	The table associated with the condition check.
Event name	The name of the event this condition triggers.
Expiration Condition	The condition that must be true for the <b>Condition check</b> field to be set to this value (the <b>Name</b> ).  Add as many conditions as are needed.
Compliant state	System field. Do not use.
Order	The order in which the conditions are evaluated. The first condition that is found to match, where the Expiration Condition is true, is used, and no others are checked.

7. Click **Submit**.  
The Condition Checks form reopens with the new condition listed in the related list.
8. **Optional:** Continue adding conditions as needed, following the steps above.

## Domain separation and Contract Management

Domain separation is unsupported in Contract Management. Domain separation enables you to separate data, processes, and administrative tasks into logical groupings called domains. You can control several aspects of this separation, including which users can see and access data.

### Support level: No support

- The domain field may exist on data tables but there is no business logic to manage the data.
- This level is not considered domain-separated.

For more information on support levels, see [Application support for domain separation](#) .

### Related topics

[Domain separation for service providers](#) .

## Procurement

Procurement managers can use the ServiceNow<sup>®</sup> Procurement application to create purchase orders and to obtain items for fulfilling service catalog requests.

Procurement offers the ability to perform the following functions.

- Track service catalog requests
- Create and manage purchase orders
- Create and manage transfer orders
- Receive assets

## Procurement roles

The Procurement application uses the following roles.

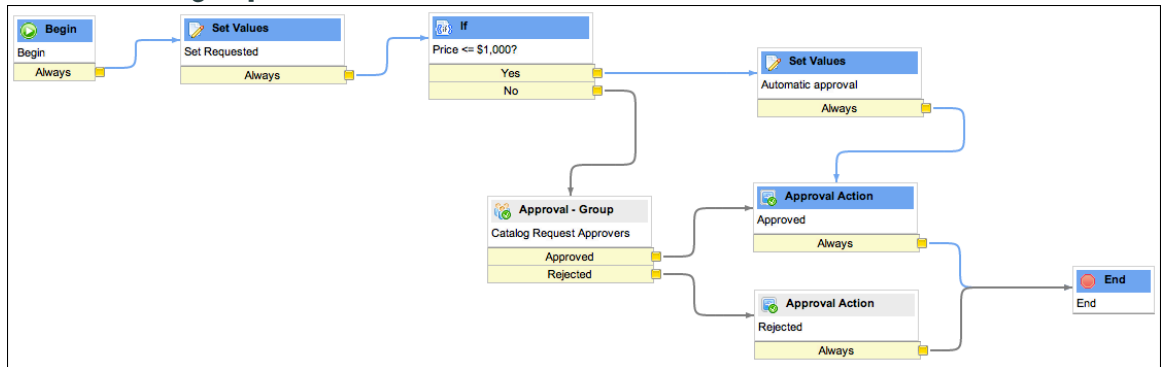
Role	Contains roles	Description
procurement_admin	procurement_user	Can create purchase orders without a request. Can view requests and requested items. Can view transfer orders. Can create a purchase order or transfer order when sourcing items for a request. Can view the vendor catalog.  Can refresh, add, delete, and rearrange gauges in the Procurement Overview module.
procurement_user	financial_mgmt_user, model_manager	Can create purchase orders without a request. Can view requests and requested items. Can view transfer orders. Can create a purchase order or transfer order when sourcing items for a request. Can view the vendor catalog. Can view and refresh gauges in the Procurement Overview module.

## Procurement workflows

Procurement uses the following workflows.

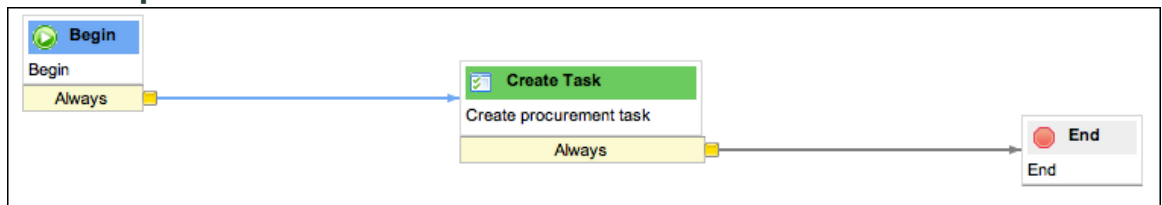
- In the Service Catalog Request workflow, items ordered from the service catalog that cost over one thousand dollars require approval.

### Service catalog request workflow



- In the Source Request workflow, catalog tasks are created so that a procurement manager can source the item by creating a transfer order or purchase order.

### Source request workflow



These workflows are provided in the base system. You can edit these workflows in the graphical Workflow Editor or create a workflow to better fit your organization's procurement needs.

### Related topics

[Workflows](#)

## Use the Procurement Overview module

Use the gauges on the Procurement Overview homepage to help you track and manage requests, purchase orders, and other important aspects of the procurement process.

### Before you begin

Role required: procurement\_admin or procurement\_user

### Procedure

1. Navigate to **All > Procurement > Overview**.
2. Click elements within the gauges to obtain more information.

### Example

For example, click a request number to view the request record.

## Activate Procurement

You can activate the Procurement plugin that provides core procurement capabilities.

### Before you begin

Role required: procurement\_admin, procurement\_user

## Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.
2. Find the Procurement plugin (com.snc.procurement) using the filter criteria and search bar.

You can search for the plugin by its name or ID. If you cannot find a plugin, you might have to request it from ServiceNow personnel.

3. Select **Install** to start the installation process.

**i Note:** When domain separation and delegated admin are enabled in an instance, the administrative user must be in the **global** domain. Otherwise, the following error appears: `Application installation is unavailable because another operation is running: Plugin Activation for <plugin name>.`

You will see a message after installation is completed. For information about the components installed with a plugin, see [Find components installed with an application](#).

## Components installed with Procurement

Several types of components are installed with Procurement.

Demo data is available with Procurement. The demo data provides sample requests, purchase orders, purchase order line items, and receiving slips.

### Business rules installed with Procurement

Procurement plugin adds the following business rules.

Business rule	Table	Description
Adjust remaining quantity	Purchase order line items [proc_po_item]	Calculates the remaining quantity of items ordered on a purchase order line items by subtracting the amount received from the amount ordered.
Can request be sourced	Request [sc_request]	Checks if a request can be sourced.
Cancel Procurement Orders	Request [sc_request]	Cancels all unreceived purchase orders and unshipped transfer order lines associated with the request's items if the request state changes to <b>Closed Cancelled</b> .
Check if req item is sourced	Requested Item [sc_req_item]	Sets the <b>Sourced</b> field on the parent request to <b>true</b> if all requested items have been sourced.
Check if request is sourceable	Requested Item [sc_req_item]	Checks if the request associated with a requested item can be sourced (obtained from a transfer order or by creating a purchase order to a vendor).
Create Assets	Receiving Slip Line [proc_rec_slip_item]	If the purchase order line item is available, creates the assets for a receiving slip line when the slip line assets are received.
Handle roll up states	Purchase order line items	Manages purchase order line items if they are canceled or received. If a purchase order line is

Business rule	Table	Description
and assets removal	[proc_po_item]	<p>canceled, this business rule deletes any pre-created assets.</p> <p>This business rule also checks the status of other purchase order lines that share the same purchase order and, if necessary, updates the status of the purchase order. For example, when the last purchase order line is received, the status of the purchase order changes to <b>Received</b>.</p>
Redirect TOL to existing TO-Procurement	Transfer Order Line [alm_transfer_order_line]	Attaches a transfer order line to an existing transfer order if the transfer order is in the <b>Draft</b> stage and has the same <b>From stockroom</b> and <b>To stockroom</b> values as the transfer order line.
Shipping Cost Changes	Purchase Order [proc_po]	Recalculates the total cost of the purchase order if the shipping rate changes.
State Change	Transfer Order Line [alm_transfer_order_line]	Marks the requested item as <b>Received</b> if the state of the associated transfer order line changes to <b>Received</b> .
State Change	Purchase order line items [proc_po_item]	Sets the time at which the purchase order line item is ordered and updates the original requested item when the purchase order line item is received.
State Change PO	Purchase Order [proc_po]	Changes the purchase order line item status when the status of the associated purchase order changes.
Total Cost	Purchase order line items [proc_po_item]	<p>Calculates the total order cost based on the cost of individual items and the quantity ordered. When you receive a purchase order line item, this business rule also takes the following steps.</p> <ul style="list-style-type: none"> <li>• Populates the <b>List price</b> field with the value from the <b>Cost</b> field unless you enter a different value.</li> <li>• Calculates the <b>Total list price</b> field value by multiplying the <b>List price</b> and <b>Ordered quantity</b> values.</li> </ul>
Update expected delivery date for PO	Purchase order line items [proc_po_item]	Sets the <b>Expected delivery date</b> for purchase orders to the latest purchase order line <b>Expected delivery date</b> .
Update expected delivery date for POLs	Purchase Order [proc_po]	Sets the <b>Expected delivery date</b> of associated purchase order lines to the purchase order's <b>Expected delivery date</b> if at least one of the following conditions is true.

Business rule	Table	Description
		<ul style="list-style-type: none"> <li>The purchase order line has no expected delivery date.</li> <li>The purchase order line's expected delivery date is later than the purchase order's expected delivery date.</li> <li>The purchase order line's expected delivery date is the same as the purchase order's previous delivery date.</li> </ul>
Update Ordered Date	Purchase Order [proc_po]	Sets the <b>Ordered date</b> field to the date and time at which the status of the purchase order is set to <b>Ordered</b> .
Update PO	Purchase order line items [proc_po_item]	Updates the purchase order if the cost of any purchase order line item changes.
Update Purchase Order Line	Receiving Slip Line [proc_rec_slip_item]	Updates the <b>Quantity received</b> field on the associated purchase order line item when a receiving slip item is received.
Update Request Item CI	Hardware [alm_hardware]	Sets the <b>Configuration item</b> field on the catalog task and requested item to the related hardware CI created during the procurement process.

**Related topics**

[Business rules](#) ↗

**Client scripts installed with Procurement**

Procurement plugin adds the following client scripts.

Client script	Table	Description
Hide request item if request is not empty	Catalog Task [sc_task]	Displays the task's <b>Request item</b> and the request item's <b>Requested for</b> value if the task is associated with a requested item and not directly with a request. Otherwise, if the task is associated with a request, the client script displays the <b>Request</b> and the request's <b>Requested for</b> value.
Purchase Order Line Mandatory	Receiving Slip Line [proc_rec_slip_item]	Changes the <b>Purchase Order Line</b> field on the Receiving Slip Line form to mandatory if the associated receiving slip has a listed purchase order.

**Related topics**

[Client scripts](#) ↗

**Script includes installed with Procurement**

Procurement plugin adds the following script include.

Script include	Description
ProcurementUtils	Provides utilities for Procurement.

### Tables installed with Procurement

Procurement plugin adds the following tables.

Table	Description
Purchase Order [proc_po]	Stores information about items ordered, cost of items ordered, and users that require the items for orders placed with a vendor.  <b>Note:</b> The asset, procurement_user, inventory_admin, or contract_manager role can only access the reports. You must activate the Hardware Asset Management Professional (com.sn_hamp) plugin for the contract_manager and inventory_admin role.
Purchase order line items [proc_po_item]	Stores information about items and quantity ordered on purchases orders.  <b>Note:</b> The asset, procurement_user, inventory_admin, or contract_manager role can only access the reports. You must activate the Hardware Asset Management Professional (com.sn_hamp) plugin for the contract_manager and inventory_admin roles.
Receiving Slip [proc_rec_slip]	Stores receiving information for items ordered with a purchase order. Can reference multiple receiving slip lines.
Receiving Slip Line [proc_rec_slip_item]	Stores receiving information for items ordered on a specific purchase order line, such as the items ordered, quantity ordered, and who ordered them.

### User roles installed with Procurement

Procurement plugin adds the following user roles.

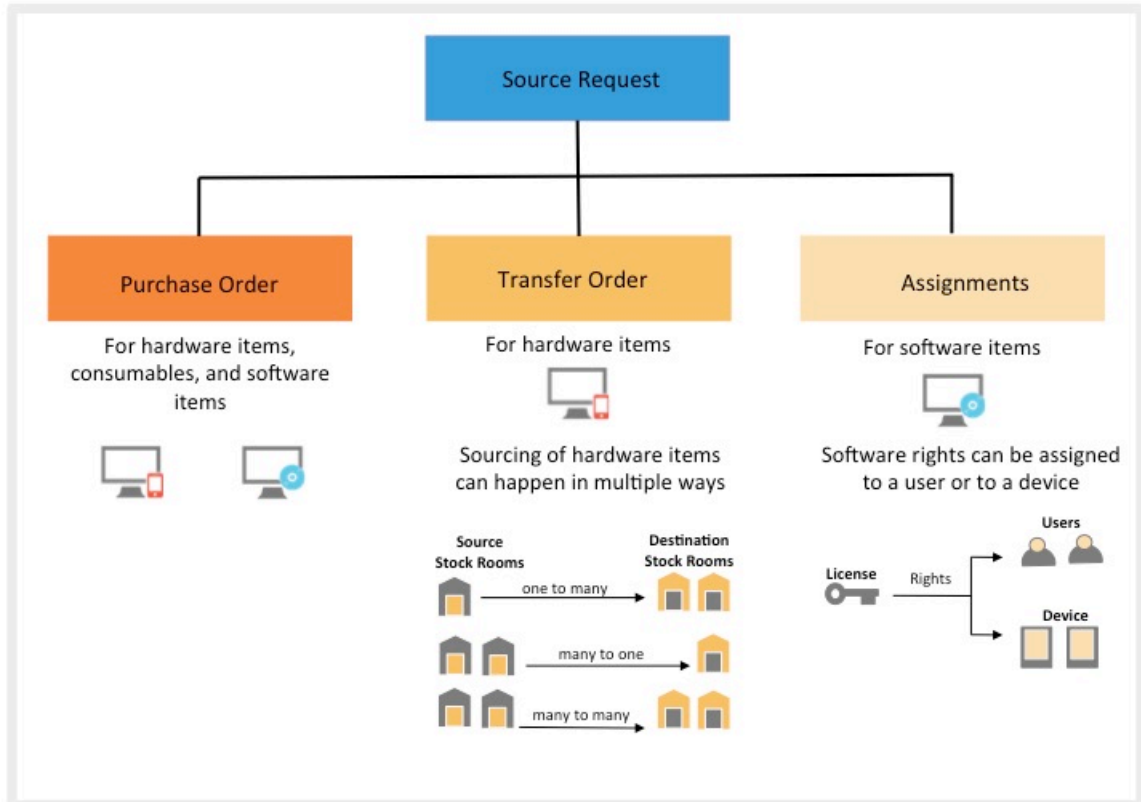
Role	Contains roles	Description
procurement_admin	procurement_user	Can create purchase orders without a request. Can view requests and requested items. Can view transfer orders. Can create a purchase order or transfer order when sourcing items for a request. Can view the vendor catalog.  Can refresh, add, delete, and rearrange gauges in the Procurement Overview module.
procurement_user	financial_mgmt_user, model_manager	Can create purchase orders without a request. Can view requests and requested items. Can view transfer orders. Can create a purchase order or transfer order when sourcing items for a

Role	Contains roles	Description
		request. Can view the vendor catalog. Can view and refresh gauges in the Procurement Overview module.

## Sourcing items in a service catalog request

A service catalog request can contain multiple items that must be sourced.

### Methods of sourcing requested items



**Note:** Only items with an assigned model can be sourced. You can't source bundles.

### Sourcing requested items from local stockrooms

You can use the assets available in the requester's local stockroom to fulfill a service catalog request. The assets that are in stock are reserved and a fulfillment task is created to source and fulfill the request.

### Sourcing requested items from other stockrooms

When the requested items aren't in stock, you can create a purchase order to deliver the items from other source stockrooms to your local stockroom. You can request multiple items in a purchase order.

After creating a purchase order, you can create hardware assets and reserve it for the requester either before or after you receive the requested items. You can't create or assign software licenses to the requester before you receive the software licenses.

## Sourcing requested hardware items

You can source requested hardware items by creating a transfer order. You can transfer hardware assets from a source stockroom to multiple destination stockrooms.

When a source stockroom doesn't have enough items in stock, you can specify multiple source stockrooms in the transfer order so that the hardware items can be transferred to the destination stockrooms.

**i Important:** If the Field Service Management application is also activated on your ServiceNow instance, then a workflow in this application processes the transfer orders. For more information, see [Move an asset through the transfer process](#).

## Sourcing requested software licenses

To source a requested software license, you must assign the rights of the software license to a user or a device so that they're authorized to use the software.

### Related topics

[Manage transfer orders](#)

[Track a request from the service catalog](#)

[Models](#)

[Bundled models](#)

[Source requests from local stockrooms](#)

## Create a purchase order from a request

You can create a purchase order directly from a request. This enables procurement managers to obtain items and fulfill requests from the Service Catalog. You can create multiple purchase orders from a request.

### Before you begin

Role required: `procurement_admin` or `procurement_user`

### Procedure

1. Navigate to **All > Procurement > Requests > Requests**.
2. Select the **Number** of a request that has been approved but not sourced. Look in the **Request State** and **Sourced** columns.
3. In the **Catalog Tasks** related list, select a Source Request Items number.
4. Select **Source Request**. The Source Request screen is displayed with a list of all the requested items.
5. Select **Purchase** in the requested item section.
6. In the **Vendor** list, select the vendor from which the requested item or items should be delivered.
7. Verify if the **Out of Stock** field is set to **false**. If the vendor doesn't have stock, the field value will be **true**.
8. In the **Quantity** field, specify the quantity you want to order.
9. In the **Destination Stockroom** list, select the destination to which the requested item or items should be delivered.

**10. Optional:** Select the **Consolidate PO** check box to combine the listed items with existing purchase orders.

(Optional) When you check Consolidate Purchase Orders, all items sourced from the same vendor on the same request are placed on the same purchase order. When you select a vendor, the system automatically searches for purchase orders that have been created for the same request, have the same **Vendor** selected, and have the **Requested** status. If the system finds a match, all items are placed on the same purchase order and can be ordered together. If the system does not find a match, a new purchase order is created.

For example, if you are purchasing 25 phones from Apple and an open purchase order already exists for Apple, the 25 phones are added to the open purchase order. If there are no open purchase orders for the selected vendors, new purchase orders are created. Items ordered from the same vendor are grouped together. Different items are shown on separate lines on the purchase order.

**11. Select Submit.**

**Result**

- Purchase order is created.
- On the request, the **Sourced** check box is selected

**Create a transfer order from a request**

You can create a transfer order directly from a request to source hardware items and consumables from stockrooms.

**Before you begin**

Role required: procurement\_admin or procurement\_user

**i Important:** If the Field Service Management application is also activated on your ServiceNow instance, then a workflow in this application processes the transfer orders. For more information, see [Move an asset through the transfer process](#).

**Procedure**

**1.** View procurement requests.

UI	Action
<b>Core UI</b>	Navigate to <b>All &gt; Procurement &gt; Requests &gt; Requests.</b>
<b>Hardware Asset Workspace</b>	<p><b>a.</b> Navigate to <b>All &gt; Hardware Asset Work space &gt; Asset operations.</b></p> <p><b>b.</b> In the Procurement list, select <b>Requests.</b></p>

**2.** Select a request that has been approved but not sourced.  
Check the **Request State** and **Sourced** columns.

**3.** In the **Catalog Tasks** related list, select a sourcing task.

**4.** Select **Source Request.**

The Source Request or Sourcing page appears with a list of all the requested items.

**5.** Create a transfer order.

UI	Action
Core UI	Select <b>Add Transfer Order</b> .
Hardware Asset Workspace	Select <b>Transfer</b> .

6. **Optional:** On the Sourcing page of the Hardware Asset Workspace, select the **Source through distribution channel** check box to source the assets from the inbound distribution channels that support the destination stockrooms.

**Note:** The **Source through distribution channel** check box that enables you to source through a distribution channel for Transfer orders appears only in the Hardware Asset Workspace. Your preference of selecting or clearing this check box is saved and is shown when you open the Sourcing page again.

You can associate the location of the requester as a service location with multiple stockrooms for better location coverage. Also, these stockrooms can be associated with multiple inbound stockrooms or distribution channels for optimized transfer of assets between the stockrooms. Distribution channels enable you to source the assets from the stockrooms that you prefer for sourcing based on the rank that you provide to the stockrooms.

For more information, see [Associate a stockroom with service locations](#) and [Link stockrooms into a distribution channel](#).

7. In the **Source stockroom** list, select a stockroom from which the hardware item should be sourced.

**Note:** In the Hardware Asset Workspace, the Source stockroom list shows only the inbound distribution channels of the stockrooms that support the location of the requester under the following conditions:

- When you've selected the **Source through distribution channel** option.
- When the inbound distribution channels are added to the stockrooms that support the location of the requester.

8. In the **Transfer Quantity** field, specify the quantity you want to transfer.  
The **In stock** column, displays the total stock available with the selected source stockroom.

9. In the **Destination stockroom** list, select the destination to which the requested item or items should be delivered.

**Note:** In the Hardware Asset Workspace, the Destination stockroom list shows only the stockroom that supports the location of the requester under the following conditions:

- When you've selected the **Source through distribution channel** option.
- When the location of the requester is added as a service location of one or more stockrooms.

10. Select **Submit**.

A transfer order is created to move the item or items from the **Source stockroom** location to the **Destination stockroom** location. When you view the request, the **Sourced** check box is selected.

## Related topics

[Manage transfer orders](#) 

## Source requests from local stockrooms

Get visibility into local stockrooms at the time of sourcing requests.

### Before you begin

You can source a request by using assets from the requester's local stockroom.

- If stock is available in the local stockroom, the asset is reserved and follows the fulfillment task to source the request.
- If the requester's location is supported by another stockroom as part of service locations, the asset can also be sourced from this stockroom.
- If stock in the local stockroom is unavailable, you can get the assets transferred from other stockrooms or create a purchase order.

The Workflow Studio application is used to create the Asset Local Stock subflow to take you through the process of using assets from your local stockroom to source your request. As the subflow takes you through the various stages, the asset details are automatically updated. You can open the Asset Local Stock subflow to view the status of the stages in the subflow.

**Note:** Use decision tables to customize the Asset Local Stock subflow. For more details, see [Hardware Asset Management flow customization](#).

Role required:

- procurement\_user or procurement\_admin
- inventory\_user or inventory\_admin

### Procedure

1. Log in with credentials for the role of procurement\_user or procurement\_admin.
2. Navigate to **All > Service Catalog** and select **Hardware**.
3. Select the hardware item that you want to source and select **Order Now**  
Your request is submitted and the Order Status form layout appears.
4. Select the request number.
5. On the Request form layout, select the **Catalog Tasks** related list to view the sourcing task for the request.
6. Select the sourcing task and select **Source Request**.

Sourcing - SCTASK0010007

Submit

Source through distribution channel  Consolidate PO line with open POs

Apple MacBook Pro 15"  
 R7M00010002  
 Total requested: 2  
 Requested for: Abel Tuter  
 Location: 615 North Bush Street, Santa Ana, CA

To be sourced: 2

Local stock: 6 (Consume)

Transferable stock: 3 (Transfer)


Vendor purchase: 2 (Purchase)

Local order			
Source stockroom	In stock	Consume quantity	Reserved for
<input type="checkbox"/> Southern California Warehouse	5	<input type="text" value="1"/>	Abel Tuter
<input checked="" type="checkbox"/> Santa Monica Warehouse	1	<input type="text" value="1"/>	Abel Tuter

The Sourcing form shows the following hardware sourcing request details:

- **Total requested**- Quantity of the hardware requested.
- **Requested for**- Name of the person for whom the hardware is requested.
- Location- Place where the hardware should be deployed.

### Trouble?

If the Source Request functionality or button isn't functioning as expected, confirm that the catalog task has both the **Parent** and **Request** fields populated. For more information, see [View and edit a catalog task](#). The Request ID, which is required for the Source Request page to function correctly is derived from the Parent field of the catalog task. If the Parent field is missing and the catalog task was created using Flow Designer, refer to the relevant [Set Parent field when creating Catalog Task from Flow Designer](#)  for further details.

7. Select **Consume** to source the available stock from the local stockroom and from the stockroom that supports your location.

If stock isn't available in your local stockroom and the stockroom that supports your location, select **Transfer** or **Purchase** to source the request via a transfer order or a purchase order. If you create a transfer order and want the local stockroom to be included in the list of stockrooms to choose from, the admin must turn on the `glide.asset.procurement.sourcing.local_stock_transfer` property.

8. Select **Source Stockroom** to select the stockroom from where you want to source the assets. If your location is associated with a stockroom as a service location, you can source from this stockroom along with the local stockroom. Service location capabilities enable a single stockroom to support multiple locations and consume the local stock efficiently. For more information on Service locations, see [Associate a stockroom with service locations](#).

If the Asset pick task is enabled for the source stockroom, then this task is added to the Hardware Asset Refresh Request and Hardware Asset Request flows.

9. In the **Consume Quantity** field, specify the quantity of assets that you want to consume from the stockroom that you selected.
10. Select **Reserved for** to specify a user for whom you want to source the request.
11. To source from multiple stockrooms, repeat steps 7–9.

12. Select **Submit**.

A consume asset task is created. Assets are selected from the stockrooms and are reserved for the user who you selected in the **Reserved for** list. The state of the selected asset moves to in stock and the substate to reserved.

13. Log in with credentials for the role of `inventory_admin` or `inventory_user`.
14. Select the **Requested Items** related list and then select the request item.
15. Select the **Asset Tasks** related list and then select a task to select and assign an asset to the sourcing task.

The Consume Asset Task form layout appears in the Asset Tasks module. Based on the type of asset (hardware or consumable) that is being sourced, fields in the form layout differ. The Assets Tasks module lists all the asset task records.

16. Change that you need and then close the task when you're done.
  - For hardware assets: Assets are auto-assigned to sourcing tasks but you can change an asset by selecting the **Asset** list. After you're done, select **Close Task**.
  - For consumable assets: The model for the asset appears on the form layout instead of the asset. Select **Close Task** or **Consume and Close**. If you select **Consume and Close**, the reserved asset is automatically picked up and assigned to the user. If you select **Close Task**, you must go to the Consumable form layout and assign an asset to the user manually.

## Add an assignment from a request

You can add assignments directly from a request to source rights from software licenses.

### Before you begin

Role required: procurement\_admin or procurement\_user

### Procedure

1. Navigate to **All > Procurement > Requests > Requests**.
2. Select the request that has been approved but not sourced.  
Check the **Request State** and **Sourced** columns.
3. In the **Catalog Tasks** related list, select a number.
4. Select **Source Request**.
5. Select **Add assignments** in the requested software item section.
6. In the **License Name** list, select a license from which the software rights should be sourced.  
The **Available Rights** column, displays the total rights available with the selected license.
7. In the **Rights** field, specify the rights you want to assign.
8. From the **Type** list, select whether to assign the rights to a user or device.
9. In the **Assigned\Allocated** list, select the user or device to whom the requested item should be assigned.
10. Select **Submit**.  
An assignment is created to assign rights from the **License Name** location to the **Assigned \Allocated** user or device. When you view the request, the **Sourced** check box is selected.
11. Run the counter to make sure that you are in compliance.  
You are prompted to run the software counter if the Software Asset Management is active.
12. Select **OK**.  
For auditing, the **Assigned Licences** related list in the Request form will provide the details of all the assignments done as part of this request.

## Procurement purchase order management for assets

Accurate purchase order information is important for invoice tracking, receiving, and reporting in the ServiceNow platform.

The Procurement application enables users with an appropriate procurement role to manage purchase order information for assets. It also provides direct access to service catalog requests. You can create purchase orders and transfer orders directly from requests.

Before using the Procurement application, create assignment groups for catalog tasks. Assignment groups are sets of users, filtered by location, who can perform catalog tasks.

### Related topics

[Manage transfer orders](#) 

[Create a group](#) 

### Consumable assets

A consumable asset is one that is purchased in quantity and distributed. It is assigned to the consumable model category, and the asset record tracks the quantity that is available and total cost. When consumable assets are received, they are merged into an existing consumable record, if available.

For the records to merge, the consumable cannot be listed on an active transfer order and the **Model**, **Location**, **Model Category**, **Stockroom**, **Status**, and **Substatus** fields on the asset record must match.

If consumables are merged into an existing consumable record, the cost of the additional consumables received is added to that of the existing consumables in the record. For example, if 50 computer keyboards arrive and 20 keyboards of the same model exists in the receiving stockroom, the two records are merged showing 70 keyboards in the stockroom with a combined total cost.

If no matching consumable record exists in the receiving stockroom, a record is created. After the consumables are received, the quantity is updated, but individual consumables are no longer tracked within the Procurement application and are not displayed on receiving slip lines.

**Note:** The related list of a purchase order doesn't display consumable asset details. This means that you can't track consumables through a purchase order.

For more details on creating consumable assets, see [Create consumable assets](#).

## Track a request from the service catalog

The Procurement application lets you track a request that was ordered from the service catalog.

### Before you begin

Role required: procurement\_admin or procurement\_user

### About this task

When a user places an order from the service catalog, a request record is created to track the order. Each ordered item becomes a requested item that is listed on the request record. For example, a single request for one laptop, two monitors, and one keyboard creates the following records.

Request REQ0000001: 4 items

- Requested Item RITM0000001: 1 laptop
- Requested Item RITM0000002: 2 monitors
- Requested Item RITM0000003: 1 keyboard

### Procedure

1. Navigate to **All > Procurement > Requests > Requests**.

2. Click a request **Number**.

The **Requested Items** related list displays the items that were ordered. You can view the requested item, or view associated **Purchase Orders**, **Transfer Orders**, and **Assignments** on other related lists. A catalog task is automatically generated for each requested item to identify the source of the item, whether it must be purchased or transferred from a stockroom.

## Cancel a request from the service catalog

You can cancel a request from the service catalog if, for example, the item is no longer needed or the request was not approved.

### Before you begin

Role required: catalog\_admin, procurement\_admin, or procurement\_user

### About this task

When a service catalog request is canceled, the following actions occur automatically.

- Associated purchase orders that have not been received are canceled.
- All procurement tasks are canceled.
- Associated transfer orders are canceled, if all transfer order lines related to the transfer order are also associated with the service catalog request and the transfer order lines have all been canceled. If the transfer order contains transfer order lines that are not related to the service catalog request and those lines have not been canceled, the transfer order is not canceled.

Associated transfer order lines that are in the **In Transit** or **Delivered** stages are not canceled.

**Procedure**

1. Navigate to **All > Procurement > Requests > Requests**.
2. Click a request **Number**.
3. Click **Cancel Request**.

**View and edit a catalog task**

Catalog tasks are used to source items and fulfill requests. You can view and edit catalog tasks from a request.

**Before you begin**

Role required: procurement\_admin or procurement\_user

**About this task**

If a request requires approval, a catalog task is created automatically when the request is approved. If a request doesn't require approval, a catalog task is created automatically when the request is created.

- Note:** If a request contains one requested item and the item has no model specified, a catalog task isn't created automatically. If a request includes multiple items and only some have a specified model, catalog tasks are automatically created, but only for those items with a model.

**Procedure**

1. Navigate to **All > Procurement > Requests > Tasks**.
2. Open a catalog task.
3. Edit the fields as necessary.

**Catalog task fields**

Field	Description
Number	The unique number identifying the catalog task.
Request	The number of the request to which the catalog task is associated. The information in this field is derived from the <b>Number</b> field on the Request form.
Request item	The number of the requested item to which the catalog task is associated. The information in this field is derived from the <b>Number</b> field on the Requested Item form.
Requested for	The name of the person for whom the associated item was requested. The information in this field is derived from the <b>Request</b> or <b>Request item</b> field.
Due date	The date by which the catalog task should be completed.

Field	Description
Configuration item	The configuration item associated with the <b>Request Item</b> .
Approval	The status of catalog task approval: <b>Not Yet Requested, Requested, Approved, or Rejected</b> .
State	The current state of the catalog task: <b>Pending, Open, Work in Progress, Closed Complete, Closed Incomplete, or Closed Skipped</b> .
Assignment group	The group from which an individual is selected to complete the catalog task.
Assigned to	The individual assigned to complete the catalog task is selected from the <b>Assignment group</b> .
Work notes list	The list of users to receive email notifications when the work notes on the catalog task are updated.
Short description	A brief description of the catalog task.
Description	A detailed description of the catalog task.
Work notes	Information about how the catalog task is resolved.
Parent	The parent record associated with the task.
Additional comments	Additional information about the catalog task.

#### 4. Select **Update**.

#### Related topics

[Models](#)

### Create a purchase order

You can create a purchase order. Purchase orders specify assets to order from a single vendor.

#### Before you begin

Role required: procurement\_admin or procurement\_user

#### About this task

For example, an organization can create a purchase order to buy 20 laptop computers or 10 servers. Information on a purchase order enables physical and financial tracking of the assets that were ordered.



You can also use a transfer order if an asset is already owned by an organization. A transfer order is used to internally transfer assets from one stockroom to another instead of purchasing the assets. For example, a company stockroom in New York has five laptops that are needed in Boston. You create a transfer order to move the laptops from the New York stockroom to the Boston stockroom.

After you create a purchase order, the **Receiving Slip** related list is available on the Purchase Order form. A receiving slip is created manually or automatically when the item is received. The **Receiving Slip** related list shows all receiving slips related to the purchase order. After a receiving slip is added to a purchase order, all fields on the purchase order record become read-only.

**Procedure**

1. Navigate to **All > Procurement > Orders > Purchase Orders**.
2. Click **New**.
3. Complete the form.

**Purchase order fields**

Field	Description
Number	The unique number identifying the purchase order.
Due by	The date by which the purchase order <b>Total cost</b> must be paid.
Vendor	The supplier to which the purchase order was issued.
Ship to	The stockroom to which the items on the purchase order should be shipped.   <b>Note:</b> This field is required but doesn't affect creating requisitions for software on Coupa.
PO date	The date on which the purchase order was created.
Status	The status of the purchase order: <b>Canceled, Ordered, Received, Requested, or Suspended</b> .
Assigned to	The user to whom the purchase order is assigned.
Bill to	The location responsible for paying the purchase order <b>Total cost</b> .
Short description	A brief description of the purchase order.
General section	
Shipping	The delivery method to be used when shipping the items on the purchase order.
Terms	The purchase order payment terms: <b>Credit, Net 30 days, or Net 90 days</b> .
Ship rate	The amount that must be paid for the delivery method specified in the <b>Shipping</b> field.
Total cost	The sum of all item costs on the purchase order and the shipping costs.
Description	A full description of the purchase order contents.
Details section	
Initial request	The record number of the request that requires the items on the purchase order.
Requested by	The user requesting the items on the purchase order.   <b>Note:</b>  The email ID or email address of the user requesting the items on the purchase order must be the same on both Coupa and ServiceNow ServiceNow application.
Requested	The date the user in the <b>Requested by</b> field requested the items on the purchase order.

Field	Description
Ordered	The date and time of clicking the <b>Order</b> button on the Purchase Order form.
Expected delivery	The date the items associated with the purchase order are expected to arrive in the stockroom identified in the <b>Ship to</b> field. This field can't be edited when the purchase order has a <b>Status</b> of <b>Received</b> or <b>Canceled</b> . (For more information about this field, see <a href="#">Purchase order expected delivery date</a> .)
Received	The date and time at which the purchase order status changed to <b>Received</b> .
Contract	The record number of the contract with the vendor from which the items on the purchase order are ordered.
Department	The department responsible for paying for the purchase order.
Budget number	The budget number related with the purchase order.
Vendor account	The vendor account related with the purchase order.

**4. Click **Submit**.**

**What to do next**

Add purchase order line items to specify what you are ordering from this vendor.

**Related topics**

[Manage transfer orders](#) 

**Create a purchase order line item**

After you save a new purchase order, you create purchase order line item records to specify the individual items to order.

**Before you begin**



Role required: procurement\_admin or procurement\_user

**Procedure**

1. Navigate to **All > Procurement > Orders > Purchase Orders**.
2. Open a purchase order.
3. In the **Purchase order line items** related list, click **New**.
4. Complete the form.

**Purchase order line item fields**

Field	Description
Number	The unique number identifying the purchase order line item.
Vendor	The supplier from which this product should be ordered.
Product Model	The model of the purchase order line item.
Product Catalog	The product catalog category to which the product model is assigned. For example, <b>Hardware</b> , <b>Software</b> , or <b>Supplies</b> .

Field	Description
Part number	The identification number assigned to the product model.
Metric group	Each metric group has a set of license metrics that are specific to the software publisher.   <b>Note:</b> If you select only a software model in the Product model field, this field gets displayed on the form.
License metric	License metric for the license group that the software license is counted against when reconciliation is run. The options for license metric change based on the <b>Metric group</b> field.   <b>Note:</b> <ul style="list-style-type: none"> <li>○ If you select only a software model in the Product model field, this field gets displayed on the form.</li> <li>○ If you choose a license metric that isn't available on Coupa, the license metric value is defaulted as <b>each</b>.</li> </ul>
Request line	The identification number of the requested item record associated with this purchase order line item.
Ordered	The date and time at which this purchase order line item was ordered.
Expected delivery	The date the purchase order line item is expected to arrive in the stockroom identified in the <b>Ship to</b> field on the purchase order record. This field is automatically filled with the value in the <b>Expected delivery</b> field on the purchase order record. This field can be edited when the purchase order line item has a <b>Status</b> of <b>Requested</b> .  For more information about this field, see <a href="#">Purchase order expected delivery date</a> .
Received	The date and time at which the purchase order line item status was changed to <b>Received</b> .
Purchase order	The purchase order record number associated with this purchase order line item.
Rights per license pack	Rights associated with each pack that is purchased for Microsoft Per Core or Microsoft Per Core with CAL licenses.
Number of packs	Number of packs for Microsoft Per Core or Microsoft Per Core with CAL licenses.
Status	The current status of the purchase order line item: <b>Canceled, Ordered, Pending Delivery, Received, or Requested</b> .
Ordered quantity	The number of product models that were ordered.
Received quantity	The number of product models that were shipped and received. The vendor may have sent multiple shipments.  The received quantity can be larger or smaller than the <b>Ordered</b> quantity. For example, you may have ordered five laptops but the vendor sent six.

Field	Description
Remaining quantity	The number of product models that still need to be received to fulfill the <b>Ordered</b> quantity.
List price	The price at which the item retails, not including discounts. If the system creates the purchase order from the service catalog ordering process, the purchase order line item inherits the list price from the associated vendor catalog item. If the vendor catalog item does not have a list price value and you have not entered a value, this field is automatically populated with the value from the <b>Cost</b> field.
Cost	The cost of a single product model, including discounts. If the system creates the purchase order from the service catalog ordering process, the purchase order line item inherits the cost from the associated vendor catalog item <b>Vendor Price</b> .
Total cost	The cost of a single product model multiplied by the value specified in <b>Quantity</b> .
Non-catalog request	Select this check box to create a requisition for an item that is not present in the product catalog of the organization.  <b>i Note:</b> <ul style="list-style-type: none"> <li>This field isn't visible on the form if you haven't published a procurement integration profile. For more information, see <a href="#">Integrating with external procurement applications</a>.</li> <li>If you select only a software model in the Product model field, this check box gets displayed on the form.</li> <li>If you select an item in the Product Catalog field, the check box gets automatically unchecked.</li> <li>If you haven't selected any item in the Product Catalog field, this check box is automatically checked, which indicates you are submitting a non-catalog request.</li> </ul>
Stock Order	Read only and selected if the related request is using the bulk stock order workflow.  <b>i Note:</b> Appears for all purchase order line items when the Hardware Asset Management application is installed from ServiceNow Store.
Short description	A few words or short phrase describing the purchase order line item.

**5. Click **Submit**.**

The purchase order reopens with the line item listed. The purchase order and line item are in **Requested** status.

**6. Optional:** Continue adding purchase order line items for this vendor, as needed.

**7. After you initiate the order with the vendor and are ready to show that the order was placed, click **Order**.**

The status of the purchase order and line items change to **Ordered**.

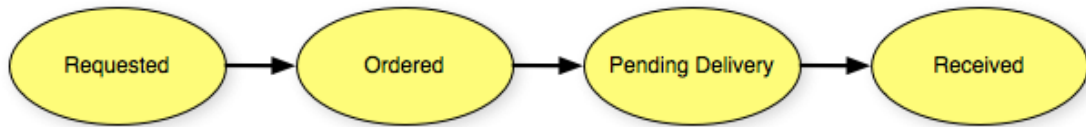
**Related topics**

[Vendor catalog items](#)

### Purchase order status

Purchase orders follow a specific life cycle. The **Status** field on the purchase order record is always read-only.

#### Purchase order status



#### Status life cycle

Status	Description
Requested	The status is <b>Requested</b> when you create a purchase order.
Ordered	The status changes to <b>Ordered</b> when you add <a href="#">purchase order line items</a> , and click <b>Order</b> .
Pending Delivery	When you <a href="#">create assets before receiving them</a> as a purchase order line item, the status of purchase orders and purchase order line items changes to <b>Pending Delivery</b> status.
Received	When ordered assets arrive in the specified stockroom and you click <b>Receive</b> , the status of purchase orders and purchase order line items changes to <b>Received</b> .
Canceled	You can cancel a purchase order if its status is <b>Requested</b> , <b>Ordered</b> , or <b>Pending Delivery</b> . For more information, see <a href="#">Cancel a purchase order</a> .

#### Purchase order expected delivery date

The purchase order record and the purchase order line item record both contain the **Expected delivery** date field.

The **Expected delivery** field can be edited on both records. Editing the field on one record can change the field on the other record.

- If you add an expected delivery date to the purchase order and the expected delivery date field on the purchase order line item is blank, the date on the purchase order is added automatically to the purchase order line item.
- If you add an expected delivery date on the purchase order line item and the expected delivery date field on the purchase order is blank, the date on the purchase order line item is added automatically to the purchase order.
- If the purchase order and the purchase order line item have the same expected delivery date and you change the date on the purchase order, the date is changed automatically on the purchase order line item.
- If you change the date on the purchase order line item to a date that is later than the one specified on the purchase order, the date on the purchase order is changed to the new date. The expected delivery date of a purchase order line item cannot be later than the expected delivery date on the associated purchase order.
- If you change the date on the purchase order line item to a date that is earlier than the date specified on the purchase order, the date on the purchase order remains the same.

#### Cancel a purchase order

You can cancel purchase orders with a status of **Requested**, **Ordered**, or **Pending Delivery**.

### Before you begin

Role required: procurement\_admin or procurement\_user

### About this task

Purchase order line items can also be canceled from a purchase order.

### Procedure

1. Navigate to **All > Procurement > Orders > Purchase Orders**.
2. Open a purchase order to cancel.
3. Click **Cancel**.  
All associated purchase order line items that have not been received are canceled. Any assets created for the purchase order are deleted.

### Cancel a purchase order line item

You can cancel a purchase order line items with a status of **Requested**, **Ordered**, or **Pending Delivery**.

### Before you begin

Role required: procurement\_admin or procurement\_user

### About this task

Keep the following in mind when you cancel a purchase order line item.

- When a purchase order line item is canceled, if all other line items are also canceled, the purchase order is canceled.
- After a purchase order line item is canceled, it can be reordered if the associated purchase order has not been canceled or received.
- If you cancel a purchase order line item for which assets were created, the assets are deleted from the system and removed from the purchase order.
- If you reorder the same purchase order line item, the assets are recreated for that line if the line has a status of **Pending Delivery**.

### Procedure

1. Navigate to **All > Procurement > Orders > Purchase Orders**.
2. Open a purchase order.
3. In the **Purchase order line items** related list, select a line item to cancel.
4. Click **Cancel**.

### Reorder a purchase order

You can reorder a purchase order that was canceled.

### Before you begin

Role required: procurement\_admin or procurement\_user

### Procedure

1. Navigate to **All > Procurement > Orders > Purchase Orders**.
2. Open a purchase order with a status of **Canceled**.

### 3. Click **Order**.

The status changes to **Ordered** for the purchase order and all associated purchase order line items.

### Reorder a purchase order line item

You can reorder a purchase order line item that was canceled.

### Before you begin

Role required: procurement\_admin or procurement\_user

### Procedure

1. Navigate to **All > Procurement > Orders > Purchase Orders**.
2. Open a purchase order.
3. In the **Purchase order line items** related list, select a line item with a status of **Canceled**.
4. Click **Order**.  
The purchase order line item **Status** field changes based on the **Status** field of the associated purchase order. For example, if the purchase order has a status of **Pending Delivery**, the purchase order line item status changes to **Pending Delivery** and the assets for the purchase order line item are created automatically.

### Create an asset and reserve it for the requester

Create the asset before they're delivered so that you can create the asset record with an asset tag and serial number early in the process and reserve the asset for the user who requested it. The receiver can only select the assets to be received as assets are pre-created.

### Before you begin

Role required: procurement\_admin or procurement\_user

### About this task

Some requests must be approved before items on the request can be sourced. In the base system, requests over \$1,000 require approval. To change the \$1,000 approval threshold and other workflow attributes, edit the Service Catalog Request workflow.

When the asset state is **In stock**, the **Reserved for** field is maintained as the asset is received and placed in a stockroom. When the asset state changes to **In use**, the **Reserved for** field is relabeled **Assigned to**. If there is a name in the **Reserved for** field, the name is retained when the field is relabeled. A user with the asset role can change the name in the **Assigned to** field. Changing the name is helpful, for example, if an IT technician orders 10 laptops and must assign them to individual users.

- Note:** If assets are not created prior to delivery, they are automatically created from line items when purchase orders are received. Also you can enter the asset details and receive them when the purchase orders are received.

### Procedure

1. Navigate to **All > Procurement > Requests > Tasks**.
2. Open a task with a **State** of **Open** and a **Short description** of **Source Request Items**.
3. Click **Source Request**.

- If the request is already fulfilled or the items in the request are not sourceable, the **Source Request** button is hidden.
- If the requested item does not have an assigned model, the item is not listed on the Source the Request dialog box.
- Any items on the purchase order that have a remaining quantity of **0** are not listed on the Source the Request dialog box.

**4. Select a Destination Stockroom.**

**5. Select the Create PO option for one or more listed items.**

**6. For each item requiring a purchase order, select a Vendor.**

**7. Click OK.**

**8. Navigate to Procurement > Orders > Purchase Orders.**

**9. Open the purchase order you just created.**

If you created a purchase order for more than one item, multiple purchase orders may have been created.

**10. Select Order.**

After the items are ordered, no additional purchase order line items can be added to the purchase order.

The status of all purchase order line items changes to **Ordered**.

**11. Click the Create hardware assets prior to delivery related link to automatically create hardware assets for all purchase order line items.**

Hardware assets are listed in the **Assets** related list. Click an asset in the list to view the asset record. Except for consumables, the **Reserved for** field contains the name of the user who made the original request.

You can also create assets for individual purchase order line items. On a purchase order, go to the **Purchase order line items** related list and click a specific purchase order line item number. Then, click the **Create hardware assets prior to delivery** related link. Only the hardware assets included on the purchase order line item are created.

## Related topics



[Set asset states and substates](#)

[Models](#)

## Receive assets

Assets can be received and added to the system when they are delivered to a stockroom.

Users with an appropriate procurement role can receive assets. If one purchase order contains multiple purchase order lines, the lines can be received at different times. This is useful if items arrive at the stockroom in different shipments. The purchase order status does not change to **Received** until all purchase order lines are received.

As an alternative to receiving assets when they arrive, you can create assets [before they arrive](#) and reserve them for the requester.

## Receive an asset

When assets are received and delivered to a stockroom, they're added to the system.

### Before you begin

Role required: procurement\_admin or procurement\_user

### About this task

When you receive assets:

- If you haven't pre-created hardware assets, you can enter asset details and reserve them for users.
- You can over receive an order wherein, the received quantity can be higher than the ordered quantity.
- If you have ordered multiple items with different receiving stockrooms, you can receive them at the same time.

### Procedure

1. View purchase orders.

UI	Action
Core UI	Navigate to <b>All &gt; Procurement &gt; Orders &gt; Purchase Orders</b> .
Hardware Asset Workspace	<p>a. Navigate to <b>All &gt; Hardware Asset Workspace &gt; Procurement</b>.</p> <p>b. Select the <b>Purchase orders</b> tab.</p>

2. Select a purchase order with a **Status** of **Ordered** or **Pending Delivery**.

3. Select **Receive**.

The Receive Purchase Order screen appears with the list of the products ordered.


4. Select the **Received** check box for the line items that you're receiving.

5. To receive software assets:

- Edit the **Receiving Stockroom** if the items arrived at a different stockroom than the one specified on the purchase order.
- Edit the **Receiving Quantity** if the number of items delivered doesn't match the number ordered.
- Edit the **Unit Cost** if the price changed between the time the item was ordered and the time it arrived at the stockroom.  
Enter a number. The number can include decimals.
- Select **Capture Asset tags** to enter asset details.  
You can't enter details for assets more than the received rights.
- In the **Capture Asset Tag** dialog box, select **Insert a new row**.
- Enter the asset tag, serial number, rights, and License key.

6. To receive hardware and consumables assets:

- a. Edit the **Receiving Stockroom** if the items arrived at a different stockroom than the one specified on the purchase order.

 **Note:** The asset bundle when received creates the asset bundle with the status as **Bundle**. You must add the individual assets under the asset bundle.

- b. Edit the **Receiving Quantity** if the number of items delivered doesn't match the number ordered.

- c. Select the **Reserve** toggle button to reserve the item.

When a reserved item is received, the **State** and **Substate** fields on the corresponding asset record are automatically set to **In stock** and **Reserved**, respectively. If the **Reserve** button isn't selected for an item, the **State** and **Substate** fields on the corresponding asset record are set to **In stock** and **Available**.

 **Note:** You can't reserve consumables.


- d. From the **Reserved for** list, select a user you want reserve the asset for.

If a name was specified in the **Requested for** field on the Purchase order line item form, the name is added automatically but can be changed.

You can add multiple users in the **Capture Asset tags** dialog box.

- e. Select **Capture Asset tags** to enter asset details.

You can't enter details for assets more than the received quantity. You can also reserve assets for a user.

 **Note:** If you've pre-created the assets, you must select the ones you want to receive.

- f. On the **Capture Asset Tag** dialog box, select **Insert a new row**.

- g. Enter the asset tag and serial number.

- h. From the **Reserved for** list, select the user for whom the item was ordered.

If a name was specified in the **Requested for** field on the Purchase order line item form, the name is added automatically, but you can change it.

- i. Edit the **Unit Cost** if the price changed between the time the item was ordered and the time it arrived at the stockroom.

Enter a number. The number can include decimals.

7. Select **Submit**.

A confirmation message displays with the details of assets received.

8. Select **OK**.

A receiving slip is automatically created and can be viewed in the **Receiving Slips** related list. If items on a purchase order are received at different times, a new receiving slip is created each

time any item on the purchase order is received. For example, if 30 laptop computers were ordered and arrived in three separate shipments, three receiving slips are created.

Different assets are created for each hardware item. If it's a software asset, one single asset is created for each license if you don't split the rights. For consumables, if an asset exists, it's updated, or else, new assets are created.

## Create a receiving slip

Receiving slips are created automatically during the process of receiving assets. You can also create receiving slips manually.

### Before you begin

Role required: `procurement_admin` or `procurement_user`

### About this task

After a receiving slip has been created for a purchase order, all fields on the purchase order record are changed to read-only.

### Procedure

1. Navigate to **All > Procurement > Receiving > Receiving Slips**.
2. Click **New**.

A **Number** is assigned automatically. The current date and time is added automatically to the **Received** field.

3. Select a **Purchase Order**.

Only purchase orders with a status of **Ordered**, **Pending Delivery**, or **Requested** are listed in the selection window. The **Vendor** column lists the vendor specified on the purchase order. The **Ship to** column lists the destination stockroom specified on the purchase order.

4. Select a **Receiving Stockroom**.
5. Click **Submit**.

### What to do next

Add a receiving slip line to the receiving slip to identify the items from the purchase order that were received.

## Create a receiving slip line

When assets arrive at a stockroom and you receive them, a receiving slip is created on the purchase order. You create a receiving slip line to identify the specific assets and quantities that were received.

### Before you begin

Role required: `procurement_admin` or `procurement_user`

### About this task

If the asset already exists, the asset record is updated when you save the receiving slip line. If the asset does not already exist, a new hardware or software asset record is created. The **Model category** and **Configuration item** fields are automatically filled in on the new asset record based on information in the request, purchase order, or receiving slip. If **Asset Tag** and **Serial Number** information exists, it is not overwritten.

## Procedure

1. Navigate to **All > Procurement > Receiving > Receiving Slips** and open a receiving slip.
2. In the **Receiving Slip Lines** related list, select **New**.  
The following fields are completed automatically.
  - A **Number** is assigned.
  - In **Received**, the current date and time are added.
  - In **Received by**, the currently logged in user is added.
3. In **Purchase Order Line**, select the reference lookup icon and select a purchase order line.  
The **Purchase Order Line** field is required if the parent receiving slip has an associated purchase order. Only purchase order lines that are associated with the same purchase order linked to the parent receiving slip are available for selection.
4. In **Quantity**, enter the number of items received.  
For example, five items were ordered, but only two are being received.
5. **Optional:** Edit the **Received by**, **Requested for**, and **Unit cost** fields, as needed.
6. Select **Submit**.

## Result

The **Receiving stockroom** field on the Receiving Slip record becomes read-only.

## Integrating with external procurement applications

Manage an end-to-end procurement process by integrating external procurement applications with Software Asset Management and create software requisitions directly on the external procurement applications. Software Asset Management tracks these requisitions and automatically generates entitlements or entitlement import errors after these requisitions are received on the external procurement application.

Integrating Software Asset Management with external procurement applications help you to:

- Gain end-to-end visibility of the entire purchase request to entitlement creation.
- Automate the complete process of creating software requisitions to entitlement creation.
- Reduce errors in entitlement creation.

## Before you begin

- Activate the Procurement plugin (com.snc.procurement). For more information, see [Activate Procurement](#).
- Install the Asset Management - Procurement Integration (app-itam-procurement-integration) store application from ServiceNow Store. For more information, see [Install Asset Management - Procurement Integration](#).

## Install Asset Management - Procurement Integration

You can install the Asset Management - Procurement Integration application (app-itam-procurement-integration) from the ServiceNow Store.

## Before you begin

- Ensure that the application and all of its associated ServiceNow Store applications have valid ServiceNow entitlements. For more information, see [Get entitlement for a ServiceNow product or application](#).
- Review the [Asset Management - Procurement Integration](#) application listing in the ServiceNow Store for information on dependencies, licensing or subscription requirements, and release compatibility.

Role required: Now Support

After the Asset Management - Procurement Integration has been entitled, you can reach out to [Now Support](#) to install this application.

## About this task

Scheduled jobs and tables are installed with Asset Management - Procurement Integration:

For more information, see [Components installed with Asset Management - Procurement Integration](#).

## Procedure

1. Navigate to **All > System Applications > All Available Applications > All**.
2. Find the Asset Management - Procurement Integration application (app-itam-procurement-integration) using the filter criteria and search bar.

You can search for the application by its name or ID. If you can't find the application, you might have to request it from the ServiceNow Store.

In a list next to the **Install** button, you see the versions that are available to you.

3. Select a version from the list and select **Install**.

In the Review Installation Details dialog box, any dependencies installed with your application are listed.

4. If you're prompted, follow the links to the ServiceNow Store to get any additional entitlements for dependencies.
5. Select **Install**.

## Components installed with Asset Management - Procurement Integration

Several types of components are installed with activation of the Asset Management - Procurement Integration application, such as tables and scheduled jobs.

## Scheduled jobs installed

Scheduled job	Description
ITAM - Sync <procurement_integration_profile_name> purchase orders	Fetches the status of the already created requisitions daily.  This scheduled job is automatically created when you publish the integration profile.

## Tables installed

Table	Description
Procurement Integration Profile [itam_procurement_integration_profile]	Includes the details of the third-party procurement integrations that are connected to the Procurement application in ServiceNow.
Procurement Integration Jobs [itam_procurement_integration_job]	Includes the mapping information of a procurement integration profile with its associated scheduled jobs.
Integration Scheduled Job Results [itam_procurement_integration_job_log]	Includes the details of the failure of the scheduled job execution.

## Domain separation and Asset Management - Procurement Integration

Domain separation is supported for Asset Management - Procurement Integration. Domain separation enables you to separate data, processes, and administrative tasks into logical groupings called domains. You can control several aspects of this separation, including which users can see and access data.

### Support level: Enhanced

- Includes **Basic** and **Standard** levels.
- Data-driven process enables service provider customers to modify business logic that is based on defined use cases. These configurations are UI-based and fail-safe so that configurations by one customer can't affect another.
- Tenants of the instance must be able to configure minimum viable product (MVP) business logic and data parameters for themselves. This logic and parameters would be expected for the application's normal function.

Sample use case: Tenant-customers of a shared environment must be able to change the impact, urgency, or priority matrix to set priority within their domain.

For more information on support levels, see [Application support for domain separation](#) .

## Asset Management - Procurement integration overview

Domain separation is present in all aspects of the Asset Management - Procurement Integration application.

## How domain separation works in Asset Management - Procurement Integration

- You can create multiple procurement integration profiles in each domain. You must have only one published and active profile in each domain, including the parent domain.
- For the Purchase Order to create a requisition in your external purchasing application, a published procurement integration profile must exist in the domain of the purchase order.
- All Purchase Orders, Purchase Order Lines, Receiving Slips, Receiving Slip Lines, entitlements, entitlement import errors, and expense line records that you created are stamped with the respective domain of the purchase order.

The Procurement Integration Job [itam\_procurement\_integration\_job] table isn't domain separated.

However, each procurement integration job is associated with a procurement integration profile. The job execution only synchronizes the updates from the external purchasing application to the purchase orders that are stamped with the corresponding procurement integration profile.

### Domain separated tables

- Procurement Integration Profile [itam\_procurement\_integration\_profile]
- Procurement Integration Job Log [itam\_procurement\_integration\_job\_log]

### Required plugins

- Domain separation extension (com.glide.domain.msp\_extensions.installer)
- SAMP (com.sn\_samp\_master)
- Procurement (com.snc.procurement)

### Other supported plugins

Service Catalog – Domain Separation (com.glideapp.servicecatalog.domain\_separation)

### Integrating with Coupa

Integrating Coupa with Software Asset Management helps you create software requisitions directly on Coupa. Software Asset Management tracks these requisitions and automatically generates entitlements or entitlement import errors after these requisitions are received on Coupa.

- **Note:** This integration doesn't pull requisitions created on Coupa to Software Asset Management.

### Before you begin

- Install the Asset Management - Procurement Integration (app-itam-procurement-integration) store application from ServiceNow Store. For more information, see [Install Asset Management - Procurement Integration](#).
- You must have the Software Asset Management Enterprise license.
- Activate the Coupa spoke. For more information, see [Coupa Spoke](#).
- Activate the Procurement plugin (com.snc.procurement). For more information, see [Activate Procurement](#).

### Synchronize reference data

Both ServiceNow Procurement and Coupa have their own set of tables and reference data types. For a smooth and successful integration, you must synchronize the data you would refer. For more information, see [Reference data synchronization](#).

- **Warning:** If you don't synchronize data, you might encounter a few issues while creating a requisition on Coupa.

### Create a Coupa integration profile

Create a Coupa integration profile to verify the status of the procurement-scheduled jobs, entitlements, and entitlement import errors created through this profile.

## Before you begin

Role required: sam\_admin

Create an OAuth 2.0 connection with Coupa to get the Client ID and Client Secret. For more information, see [OAuth 2.0 Getting Started with Coupa API](#). Save the Client ID and Client Secret in a secure location for later use.

You must set the following scopes while creating an OAuth 2.0 connection with Coupa.

- core.approval.configuration.read
- core.approval.read
- core.approval.write
- core.catalog.read
- core.common.read
- core.contract.read
- core.contract.write
- core.inventory.adjustment.read
- core.inventory.adjustment.write
- core.inventory.asn.read
- core.inventory.common.write
- core.inventory.consumption.read
- core.inventory.consumption.write
- core.inventory.receiving.read
- core.inventory.receiving.write
- core.inventory.return\_to\_supplier.read
- core.inventory.transfer.read
- core.inventory.transfer.write
- core.invoice.delete
- core.invoice.read
- core.invoice.write
- core.item.read
- core.item.write
- core.legal\_entity.read
- core.purchase\_order.read
- core.purchase\_order.write
- core.requisition.read
- core.requisition.write
- core.sourcing.pending\_supplier.read
- core.sourcing.pending\_supplier.write
- core.sourcing.read
- core.sourcing.response.award.write
- core.sourcing.response.read

- core.sourcing.response.write
- core.sourcing.write
- core.supplier.read
- core.supplier.write
- core.user.read
- core.user.write

**Note:** If these scopes aren't associated with the Client ID and Client Secret, the OAuth token flow fails on ServiceNow.

**Procedure**

1. Navigate to **Software Asset Workspace > License operations > Purchasing > Procurement integrations**.
2. Select **New**.
3. On the form, fill in the fields.

**Create New Procurement Integration Profile**

Field	Description
Display name	Name of the procurement integration profile. For example, Coupa integration.
Connection & Credentials	Connection and credential alias for Coupa. This field gets automatically populated to <b>sn_coupa_spoke.Coupa_OAuth</b> .
Profile type	Type of integration profile.  Select <b>Coupa integration</b> .
Status	Status of the integration profile. <ul style="list-style-type: none"> <li>○ If you haven't published the integration profile, this field is automatically set to Draft.</li> <li>○ If you've already published the integration profile, this field is automatically set to Published.</li> </ul>
Active	This field is visible and set to true only when the integration profile is published.  If you set this field to false, the associated requisitions with this integration profile aren't created and tracked.

4. Select **Save**.
5. Select the Preview icon ⓘ next to the Connection & Credentials field. You get redirected to the Connection & Credential Aliases form.

6. Select **Create New Connection & Credential** in the Related Links section to create connection credential.
7. In the dialog box, fill in the fields.

**Create Connection and Credential**

Field	Description
Name (Connection)	Name to identify the connection uniquely. For example, Coupa OAuth connection.
Connection URL	URL to make a connection to Coupa. Use the <code>https://&lt;coupa-instance-url&gt;</code> format. <ul style="list-style-type: none"> <li>○ For customer instances, use the <code>https:// {organization_name}.coupahost.com</code> format.</li> <li>○ For partner and demo instances, use the <code>https:// {organization_name}.coupacloud.com</code> format.</li> </ul>
Name (Credential)	Name to identify the credential uniquely. For example, Coupa OAuth credential.
Token URL	URL used to generate OAuth token. Use the <code>https://&lt;coupa-instance-url&gt;/oauth2/token</code> format.
OAuth Client ID	Identifier (Client ID) generated in Coupa.
OAuth Client Secret	Secret (Client Secret) generated in Coupa.

8. Select **Create and Get OAuth Token**.  
Your ServiceNow instance creates an OAuth for Coupa and then automatically returns you to the Integration Profile form.
9. **Optional:** Create a child alias that can uniquely identify the connection and credentials for this integration profile.  
The first Coupa integration profile that you create uses the default (parent) connection and credential alias for Coupa. Each additional Coupa integration profile that you create needs a unique child alias that helps differentiate the connection and credentials between each integration profile.
  - a. On the Connection & Credential Aliases form, select the link under **Child Aliases > Parentalias=\*\*\*** to add child aliases.
  - b. Select **New**.
  - c. Enter a name for the child alias in the Name field.
  - d. Right-click the form header and then select **Save**.
  - e. After the form reloads, select the **Create New Connection & Credential** related link.

f. Repeat steps 7 and 8.

- g. In the Connection & Credential field of the Integration Profile form, select the lookup icon to locate and select the child alias that you created.  
Selecting the child alias associates the alias with the integration profile. Your ServiceNow instance uses this alias to identify the connection and credentials for this integration profile.

## 10. Select **Publish**.

### Result

After you publish the integration profile, the scheduled job *ITAM - Sync Coupa purchase orders* runs daily and fetches the status of the already created requisitions.

**Note:** If you haven't created any requisition, the scheduled job doesn't run.

You can view this information by clicking the **Procurement Integration Jobs** tab.

### What to do next

Verify if the scheduled job *ITAM - Sync Coupa purchase orders* has run successfully by selecting the **Integration Scheduled Job Results** tab. If the job has failed, you can view the list of errors by following these steps:

1. On the Procurement integration profile form, select the **Procurement Integration Job Log** related list.
2. Open the job log record where the displayed status shows as failed.
3. Select the related list **Asset Job Log Details** to find out the reason for the job failure.

Create software requisitions directly on Coupa through the ServiceNow Procurement application to purchase software.

If you want to delete the Coupa integration profile, see [Deleting an external procurement application integration profile](#).

### Create a requisition on Coupa through Procurement application

Create software requisitions directly on Coupa through the ServiceNow Procurement application to purchase software.

### Before you begin

To create a requisition on Coupa through ServiceNow Procurement application, you must perform the following tasks.

- Create and publish a Coupa integration profile. For more information see, [Create a Coupa integration profile](#).
- Ensure that the Purchase Order you create has at least one Purchase Order Line, and all Purchase Order Lines must be for software products.
- Synchronize reference data types on both ServiceNow Procurement and Coupa applications. For more information, see [Reference data synchronization](#).

If all these conditions are met, you can create a requisition in Coupa.

If the conditions aren't met, requisitions aren't created on Coupa, and the legacy procurement flow continues on the Procurement application.

Role required: sam\_admin and procurement\_integrator

**Note:** The procurement\_integrator role is added to the sam\_admin role. The procurement\_integrator role enables the SAM admin to view the connections and aliases.

**About this task**

You can create a requisition on Coupa through the following ways:

- When a user requests software through Service Catalog. For more information, see [Request a catalog item from Service Portal](#).
- If a procurement\_user or sam\_admin directly creates a Purchase Order on the Procurement application. For more information, see [Create a Purchase Order](#).
- When a sam\_user creates a Purchase Order directly from the Remediation Options form. For more information, see [View software model results](#).

Requisitions are of the following types:

- **Catalog request:** A requisition created for an item that is already present in the external purchasing application.
- **Non catalog request:** A requisition created for an item that isn't present in the product catalog of the organization.

For more information about creating a Purchase Order, see [Create a purchase order](#).

**Procedure**

1. Navigate to **All > Procurement > Orders > Purchase Orders**.
2. Select **New**.
3. On the form, fill in the fields.

**Purchase order fields**

Field	Description
Number	The unique number identifying the purchase order.
Due by	The date by which the purchase order <b>Total cost</b> must be paid.
Vendor	The supplier to which the purchase order was issued.
Ship to	The stockroom to which the items on the purchase order should be shipped.  <b>Note:</b> This field is required but doesn't affect creating requisitions for software on Coupa.
PO date	The date on which the purchase order was created.
Status	The status of the purchase order: <b>Canceled, Ordered, Received, Requested, or Suspended</b> .
Assigned to	The user to whom the purchase order is assigned.
Bill to	The location responsible for paying the purchase order <b>Total cost</b> .
Short description	A brief description of the purchase order.
General section	
Shipping	The delivery method to be used when shipping the items on the purchase order.

Field	Description
Terms	The purchase order payment terms: <b>Credit, Net 30 days</b> , or <b>Net 90 days</b> .
Ship rate	The amount that must be paid for the delivery method specified in the <b>Shipping</b> field.
Total cost	The sum of all item costs on the purchase order and the shipping costs.
Description	A full description of the purchase order contents.
Details section	
Initial request	The record number of the request that requires the items on the purchase order.
Requested by	The user requesting the items on the purchase order.  <b>i Note:</b>  The email ID or email address of the user requesting the items on the purchase order must be the same on both Coupa and ServiceNow ServiceNow application.
Requested	The date the user in the <b>Requested by</b> field requested the items on the purchase order.
Ordered	The date and time of clicking the <b>Order</b> button on the Purchase Order form.
Expected delivery	The date the items associated with the purchase order are expected to arrive in the stockroom identified in the <b>Ship to</b> field. This field can't be edited when the purchase order has a <b>Status</b> of <b>Received</b> or <b>Canceled</b> . (For more information about this field, see <a href="#">Purchase order expected delivery date</a> .)
Received	The date and time at which the purchase order status changed to <b>Received</b> .
Contract	The record number of the contract with the vendor from which the items on the purchase order are ordered.
Department	The department responsible for paying for the purchase order.
Budget number	The budget number related with the purchase order.
Vendor account	The vendor account related with the purchase order.

**4. Right-click on the form and select **Save**.**

You can add purchase order line items to specify what you are ordering from this vendor. For more information about creating a purchase order line item, see [Create a purchase order line item](#). A requisition line is created with a unique ID in Coupa.

**5. After you've added at least one purchase order line item, select **Order**.**

A requisition ID is displayed on your Purchase Order and the corresponding requisition line IDs are displayed on your Purchase Order Lines.

**i Note:** Wait for some time and then reload the Purchase Order form to view the generated IDs or errors.

**Result**

After the status of the Purchase Order is **Received** on Coupa, the following activities occur:

- **Assets** and **Receiving Slips** get created and you can find the **Purchase Order Number** on the Purchase Order form.
- The Asset Management - Procurement Integration application automatically generates entitlements.
- On receipt of the assets, the scheduled job *ITAM - Sync Coupa purchase orders* creates a Receiving Slip and Receiving Slip Lines on the ServiceNow Procurement application. This job also pulls the Coupa fields such as Manufacturer part number, Status, and Receiving quantity. The values returned from Coupa through the receiving transactions are used to populate the created entitlements. However, if these values are not available from the receiving slips, then the Asset Management - Procurement Integration application uses the values populated in the Purchase Order of the Procurement application.
- If any discrepancy exists on the Purchase Order, Asset Management - Procurement Integration creates entitlement import errors. You can view the errors by selecting the **Entitlement Import Errors** tab under a Purchase Order, Purchase Order Line item, and Receiving Slip line.

### Reference data synchronization

For a successful integration of Coupa with Software Asset Management, you must synchronize the following reference data types on both the ServiceNow Procurement application and Coupa.

#### Requisition or Purchase Order form

Coupa Requisition field	ServiceNow Procurement Purchase Order field	Description
Requested by	Requested by	The email address that is associated with the Requested by record is used to find the corresponding reference record in Coupa.

#### Requisition Line or Purchase Order Line Item fields

Coupa Requisition Line fields	ServiceNow Procurement Purchase Order Line Item fields	Description
Supplier	Vendor	The supplier or vendor from which the software product should be ordered.
unit-price	Cost	The cost or price of a single product model, including discounts.
Currency	Cost	Currency is a reference field on Coupa. For a successful integration, verify that the currency codes on Coupa and ServiceNow match.
Item	Catalog Item	The Coupa items and ServiceNow Procurement catalog items must share the same display name.

**Requisition Line or Purchase Order Line Item fields (continued)**

Coupa Requisition Line fields	ServiceNow Procurement Purchase Order Line Item fields	Description
		<p><b>Note:</b> This field is only used for catalog requests.</p>
Description	Product Model	<p>The model of the purchase order line item.</p> <p><b>Note:</b> This field is only used for non-catalog requests.</p>

**Deleting an external procurement application integration profile**

If you want to stop using an external procurement application for creating software requisitions through Software Asset Management, you can delete the integration profile.

A sam\_admin can delete an integration profile by selecting **Delete** on the integration profile record.

When you delete a direct integration profile, all scheduled jobs and the job results associated with the profile gets deleted. The integration profile references are also removed from the Purchase Order records on ServiceNow.

After you delete the integration profile, Software Asset Management doesn't consider any in progress requests. Ensure that all the requests in progress are completed before you delete the integration profile.

**Domain separation and Procurement**

Domain separation is supported in Procurement processing. Domain separation enables you to separate data, processes, and administrative tasks into logical groupings called domains. You can control several aspects of this separation, including which users can see and access data.

**Support level: Standard\***

The support level is Standard but has some exceptions or special conditions.

- Includes all aspects of **Basic** level support.
- Business logic: The service provider (SP) creates or modifies processes per customer. The use cases reflect proper use of the application by multiple SP customers in a single instance.
- The instance owner must be able to configure minimum viable product (MVP) business logic and data parameters. This configuration is done per tenant, as expected for the specific application.

Sample use case: An admin must be able to make comments required when a record closes for one tenant, but not for another.

For more information on support levels, see [Application support for domain separation](#).

## How domain separation works in Procurement

To create or edit Purchase Orders (POs) or PO line items that distinguish the domain, customers must be working in the proper domain. When adjusting any configuration, you should be in the domain where you're doing the work. Use the domain picker to choose the correct domain to work in.


### Related topics

[Domain separation for service providers](#) 

## Product Catalog

The product catalog is a set of information about individual models. Models are specific versions or various configurations of an asset. Asset managers use the product catalog as a centralized repository for model information.

A detailed and well-maintained product catalog can coordinate with service catalog, asset, procurement, request, contract, and vendor information.

Models published to the product catalog are automatically published to the [Service Catalog](#) . The service catalog includes information about goods (models) and services. If the model is available from multiple vendors, a model can be listed more than once. Models are included with the Asset Management application.

Keep the following in mind when working with the product catalog.

- A product catalog item can be linked to multiple vendor catalog items or to a single model.
- A model can only have one product catalog item.
- A vendor catalog item can only have a single product catalog item.

### Related topics

[Asset and CI management](#)

## Components installed with Product Catalog

The following components are installed with the Product Catalog plugin.

Demo data is available with the product catalog. The demo data provides various models, model categories, product catalog items, vendor catalog items, and vendors.

### Tables installed with Product Catalog

Product Catalog plugin adds the following tables.

Table	Description
Hardware Catalog [pc_hardware_cat_item]	Stores all hardware catalog items that have been published from the Product Model [cmdb_model] base table. Extends the Product Catalog Item [pc_product_cat_item] table.
Product Catalog Item [pc_product_cat_item]	Stores all information for the product catalog. This table extends the Catalog Item [sc_cat_item] table.

Table	Description
Software Catalog [pc_software_cat_item]	Stores all software catalog items that have been published from the Product Model [cmdb_model] base table. Extends the Product Catalog Item [pc_product_cat_item] table.
Vendor Catalog Item [pc_vendor_cat_item]	Stores all vendor catalog item information.

### Roles installed with Product Catalog

Product Catalog plugin adds the following roles.

Role	Description	Contains roles
model_manager	Can create CMDB models.	none
category_manager	Can do everything that model managers can do and can administer model categories.	model_manager

### Script includes installed with Product Catalog

Product Catalog plugin adds the following script include.

Table	Description
ProductCatalogUtils	Utilities for creating and maintaining product catalog items derived from vendor catalog items and models.

### Client scripts installed with Product Catalog

Product Catalog plugin adds the following client script.

Client script	Table	Script contents
Set Model Fields	[pc_vendor_cat_item]	Adds the description and price, if they do not exist, when a vendor catalog item is added to the product catalog.

### Related topics

[Client scripts](#) 

### Business rules installed with Product Catalog

Product Catalog plugin adds the following business rules.

Business rule	Table	Description
Clear model	[pc_product_cat_item]	Clears the link on a model when the link is cleared from the product catalog.

Business rule	Table	Description
Create child product catalog entries	[cmdb_hardware_product_model]	Creates entries in the product catalog for all items in a bundled model when the bundled model is created.
Sync to Product catalog item	[pc_vendor_cat_item]	Updates the corresponding field in the product catalog when a field is updated.
Sync to Product catalog item	[cmdb_model]	Updates the corresponding field in the product catalog when a field is updated.

**Related topics**

[Business rules](#) 

**Models**

Models are specific versions or various configurations of an asset. Models are used for managing and tracking assets through various ServiceNow platform asset applications, including Product Catalog, Asset Management, and Procurement.

Model definitions can be based on vendor-provided criteria, for example, the manufacturer name Apple MacBook Pro, or on a custom abstraction, for example, Graphic Designer Workstation. All model information is located in the Product Catalog application.

A model can be in one or more [model categories](#). For example, a laptop can be a computer and a server. Model definitions specify whether the model creates an asset, a configuration item, or both. On a hardware model record, compatible hardware models can be added.

Unless otherwise noted, working with product models requires the model\_manager role. This role is contained by other roles, such as sam, category\_manager, and asset.

**Creating models**

Models are created in the **Product Catalog > Product Model > All Models** module.

See [Model form fields](#) for a list of the fields that appear on all models, regardless of the type of model.

**Related topics**

[Asset Management](#) 

[Procurement](#)

**Model form fields**

There are fields on the Model form that apply to all types of models.

Field	Description
Display name	Name of the model. A system property called <i>glide.cmdb_model.display_name.shorten</i> controls how software model display names are generated.
Manufacturer	The company that built the model.

Field	Description
Name	Field that Discovery uses to create a model with the value discovered. Model managers can specify a name of their choice when creating a model and can also edit the name of an existing model.
Edition	The edition of the software model, such as <b>Professional</b> .
Short description	A brief description of the model.
Model categories	The categories to which the model is assigned. This field is a glide list and cannot be used to create reports.
Asset tracking strategy	The process by which the model can be tracked. Choose from the following: <ul style="list-style-type: none"> <li>• <b>Leave to Category:</b> model is transparent and the category defines the asset class.</li> <li>• <b>Create Consumable Asset:</b> model forces the asset class to be consumable, regardless of what the category defines as the asset class.</li> <li>• <b>Don't create assets:</b> model blocks asset instantiation, regardless of what the category defines as the asset class.</li> </ul>
Acquisition method	The method for purchasing the model. Options are <b>Both, Buy, or Lease</b> .
Cost	The cost of a single unit of the model.
Depreciation	The <a href="#">depreciation scheme</a> for the model.
Salvage value	The estimated value that an asset realizes upon its sale at the end of its useful life. This value must be less than or equal to the cost of the asset.
Model number	The specific model number assigned to the item by the manufacturer. Setting the system property <code>glide.cmdb.makeandmodel.use_model_number_lookup</code> to true enables you to lookup the model number of hardware models through the MakeAndModelJS script.
Barcode	The barcode number assigned to the model. Barcodes are assigned by the manufacturer.
Owner	The person responsible for the model.
Status	The status of the model. Options are <b>In Production, Retired, and Sold</b> .
Expenditure type	The type of expenditure. Choose from the following: <ul style="list-style-type: none"> <li>• <b>Capex:</b> Capital expenditure is a one-time expenditure, where the value is realized over the years. For example, a photocopier.</li> <li>• <b>Opex:</b> Operational expenditure is an on-going expenditure. For example, toners for the photocopier.</li> </ul>
Certified	The option that determines whether the model is approved for use.
Comments	Information about the model that would be helpful for others to know.
Assets	The assets created from this model. This creation can have any combination of assets and configuration items. For example, with a single hardware model you can have assets and no configuration items, configuration items and no assets, or have both.

Field	Description
Configuration Items	The configuration items created from this model. Can have any combination of assets and configuration items.
Product Catalog	The information about the model as it appears in the product catalog and service catalog. Information only appears if the model has been published to the product catalog.

## Create hardware models

Use hardware models to track equipment assets such as servers and racks. You can create a new hardware model.

### Before you begin

Role required: model\_manager

### Procedure

1. Navigate to **All > Product Catalog > Product Model > Hardware Models**.
2. Click **New**.
3. Complete the form.  
For general field descriptions, see [Model form fields](#). The hardware model fields listed are found in the Information section of the form.

#### Model form fields for hardware models

Field	Description
Height (U)	The total height of the hardware item, in inches.
Flow Rate (cfm)	The flow rate of the hardware model, expressed in cubic feet per minute.
Sound Power (bels)	The noise measurement, in bels (1 bel=10 decibels).

4. Click **Update**.

### Add compatible models to a hardware model

On a hardware model record, you can add compatible hardware models, giving you a good method for tracking hardware assets that can work together.

### Before you begin

Role required: model\_manager

### About this task

**Note:** Hardware models included in bundled models cannot be added as compatibles.

### Procedure

1. Navigate to **All > Product Catalog > Product Model > Hardware Models**.
2. Click a hardware model **Name**.
3. Click **Add Compatible**.
4. Select a compatible model.

**5. Click **Submit**.**

The selected model is listed in the **Compatibles** related list.

**Related topics**[Models](#)[Bundled models](#)**Add substitute models to a hardware model**

On a hardware model record, you can add substitutes to track what hardware models can be substituted for another hardware model.

**Before you begin**

Role required: model\_manager

**About this task**

For example, a 19" monitor can be a valid substitute for a 17" monitor. Note that substitutions are directional so, in this case, a 17" monitor is not a substitution for a 19" monitor. Information about valid substitute models is useful when you select models while creating transfer orders.

When you select substitute models, note the following conditions.

- Substitute models can be used with work management transfer orders. Substitute models are not used in procurement part sourcing.
- Hardware models included in bundled models cannot be added as substitutes.

**Procedure**

1. Navigate to **All > Product Catalog > Product Model > Hardware Models**.
2. Click a hardware model **Name**.
3. Click **Add Substitution**.
4. In the **Collection** list on the left, double-click a hardware model.  
The hardware model is added to the **List** on the right.
5. Click **Save**.  
The model is listed in the **Substitutes** related list.

**Related topics**[Models](#)[Bundled models](#)[Manage transfer orders](#) [Procurement](#)**Create consumable models**

Consumables are items that are tracked as a group, not individually. An example of consumable items is computer keyboards.

**Before you begin**

Role required: model\_manager

## Procedure

1. Navigate to **All > Product Catalog > Product Model > Consumable Models**.
2. Click **New**.
3. Complete the form.  
For general field descriptions, see [Model form fields](#). There are no fields specific to consumable models.  
Any consumable assets you create and assign to the new model are displayed in the **Consumables** related list on the model record.
4. Click **Submit**.

## Bundled models

A bundled model is a single model comprised of individual models. For example, a laptop, printer, keyboard, and mouse can be combined into a single bundled model. If you assign any one asset from the bundled model to an individual, that person receives all the components in the bundle.

Bundled model is a template to define the kind of assets that would be a part of asset bundles. To maintain the integrity between asset bundles and bundled models, select the **Bundle assets** check box in the Product Model form layout. Once you select the check box, the status of the bundled model defaults to **Build**. While the status is in build, you can add make changes to the bundled model. Once you change the status to **In Production**, no changes can be made to the bundled model. Now that the bundled model is read-only, you can create asset bundles out of this bundled model. You can change the status of the bundled model back to **Build** only if there are no asset bundles associated with the bundled model.

**Note:** The **Bundle assets** check box functionality is available only with the Hardware Asset Management licensable application. Hardware Asset Management is available in the ServiceNow Store. To view more information on the asset bundle functionality, see [asset bundles](#).

Bundled models can be abstract or concrete.

### Abstract

Permits use of one model in multiple bundles. The abstract bundle is created as a container. One asset in the bundle is specified as the main component. Model categories define which assets can be included in a bundle. Model categories also define what can be the main component of a bundle.

Add a main component to make it easier to track the bundle components. For example, create an abstract bundle adding a computer as the main component and a mouse and keyboard as additional components. When the bundle is assigned to a user, the asset record for the computer shows the computer, mouse, and keyboard all assigned to the user. Abstract bundles are used more often than concrete bundles.

### Concrete

Is a fixed bundle where the main component is an asset. Specify the main component and the other components to create an exact bundle. Concrete bundles do not allow for a many-to-many relationship with models.

Keep the following tips in mind when creating and using bundled models.

- Bundles can be nested inside bundles.
- Any type of model can be used in a bundle.

- When a parent link is defined, the fields related to assignment and state of the child assets are read-only. They are populated based on the parent's assignment and state fields.
- If you make a change to the parent bundle, the children in the bundle are affected. For example, if you assign a bundle to an individual, all child asset records show that same individual as the person assigned.
- You cannot pre-allocate bundles.
- In a bundle, consumables are consumed and assets are set to the same state as the main component.
- Only the bundle, not individual components, can be part of a transfer order.
- You control what can go into a bundle through the model category. For example, the model category **Servers** could be set to never allow servers in bundles.
- To create a collection of software, you must create a suite instead of a bundled model.
- A software license cannot be the main component of a bundle.

To create an abstract model, set the model category to **Bundle** and add the components. To create a concrete model, create a model in the **Product Catalog > Product Model > Bundled Models** module and add components.

### Related topics

[Create pre-allocated assets](#)

[Consume consumable assets](#)

[Model categories](#)

### Add model components to a bundle

Add model components to a model as needed, for example, when you upgrade a bundle to include additional assets.

### Before you begin

Role required: model\_manager and asset

### Procedure

1. Navigate to **All > Product Catalog > Product Model > Bundled Models**.
2. Open a bundle record.
3. In the **Model Components** related list, click **New**.
4. Select the **Model category** of the component, such as **Computer**.
5. Select the **Component**, such as **Apple Computer MacBook Pro 17"**.
6. Select the **Is main component** check box if this component is the one that other components are attached to.
7. Click **Submit**.
8. Repeat steps 3–7 to add more components to the bundle.

Any components you add to the bundled model are displayed in the **Model Components** related list.

### Bundled model components

The screenshot shows the configuration page for a 'Developer workstation bundle' in the Hardware catalog. The 'General' tab is active, displaying fields for 'Display name', 'Manufacturer', 'Name', 'Short description', 'Model categories', 'Asset tracking strategy', 'Acquisition method', 'Cost', 'Depreciation', 'Comments', 'Model number', 'Barcode', 'Owner', 'Status', and 'Certified'. Below the configuration is a 'Related Links' section with a link to 'Publish to Hardware Catalog'.

The 'Model Components' related list is highlighted with a red box. It shows a table with the following data:

Is main component	Component	Model category of component
true	Apple MacBook Pro 15"	Computer
false	Standard input bundle	Bundle
false	Samsung SyncMaster 22" Class BackLight LED	Monitor
false	Samsung SyncMaster 22" Class BackLight LED	Monitor

### Related topics

[Models](#)

### Remove model components from a bundle

Remove a component from a bundled model, for example, when you want to replace it with a different component.

### Before you begin

Role required: model\_manager

### About this task

No component history is retained. If you remove a component from a bundled model, no record is saved showing that the component was ever part of a bundle.

### Procedure

1. Navigate to **All > Product Catalog > Product Model > Bundled Models**.
2. Open a bundle record.
3. In the **Model Components** related list, select the component you want to remove.

4. In the **Actions** choice list below the list, select **Delete**.

5. Click **OK**.

### **Publish bundled models to product catalog**

You can publish bundled models to the product catalog to make the bundled models available in the service catalog.

#### **Before you begin**

Role required: catalog\_admin or catalog\_manager

#### **About this task**

You can publish a bundled model only under the following conditions:

- The model should be created in the cmdb\_model table.
- The model shouldn't have an existing catalog item.

#### **Procedure**

1. Navigate to **All > Product Catalog > Product Models > Bundled Models**.
2. Open a product model.
3. In **Related Links**, select **Publish to product catalog**.
4. Select a category.
5. Select **OK**.

### **Software models**

Software models are created as part of the asset management process. You can create product models for software from the product catalog, but you cannot administer all aspects of the software models.

Software models are used in software counters. For more information about creating software model, see [Create software models](#).

### **Create application models**

You can create application models that can be managed and tracked within a Scrum development process.

#### **Before you begin**

Role required: model\_manager

#### **Procedure**

1. Navigate to **All > Product Catalog > Product Model > Application Models**.
2. Click **New**.
3. Complete the form.  
For general field descriptions, see [Model form fields](#). There are no fields specific to application models.
4. Click **Submit**.

#### **Related topics**

[Agile Development 2.0](#) 

## Work order models

When work management is activated, the ServiceNow platform adds the Work Order Models and Work Task Models modules to the product catalog.

Users with the `wm_admin` role can define new model records, which can be used as templates to create work orders for common procedures.

## Models created for VMware support and Amazon EC2

When you activate Orchestration for VMware and Amazon EC2, the system creates models automatically.

The system creates the following models:

- A vmware instance for VMware
- An ec2 instance for Amazon

When the virtual machine is terminated, the asset state changes to **Retired**.

## Add skills to a model

You can associate skills with any model. Creating associations between skills and models is helpful if you are using work management and want to assign tasks to agents based on their skills with specific models.

### Before you begin

Role required: `skill_admin` or `model_manager`

### Procedure

1. Navigate to **All > Product Catalog > Product Model > All Models**.
2. Open a product model.
3. In the **Skills** related list, click **Edit**.
4. Add items from the **Collection** list to the **Skills List**.
5. Click **Save**.

## Publish models to the hardware or software catalog

You can publish models to the hardware or software catalog to make the models available in the service catalog.

### Before you begin

Role required: `catalog_admin`

### Procedure

1. Navigate to **All > Product Catalog > Product Model > All Models**.
2. Open a product model.
 

When you publish a catalog item from a model, the property `glide.model.catalog.item.currency` decides the currency on the catalog item. This property is set to false by default and the value is set to user session currency. If you set this property to true, the value is set to model currency.
3. In **Related Links**, click **Publish to Hardware** or **Publish to Software Catalog**.

4. Select a category.

5. Click **OK**.

## Delete models

If a model is no longer needed, you can delete it as long as no assets or configuration items use the model.

### Before you begin

Role required: model\_manager

### Procedure

1. Navigate to **All > Product Catalog > Product Model > All Models**.
2. Select the check box beside the product model.
3. From the **Actions** choice list below the list, select **Delete**.
4. Click **OK**.

## Vendor catalog items

The vendor catalog is a list of goods available from different vendors.

An accurate and complete vendor catalog can make it easier to keep items in stock at the best possible price.

You can link multiple vendor catalog items to a single [product catalog item](#), which allows you to track information about a single item at different vendors.

For example, for an iPhone 5 product catalog item, you can create separate vendor catalog items from Apple and from Amazon. Select the vendor with the best price when you [source](#) an item. Users need the model\_manager role to work with vendor catalog items.

## Synchronize information

Certain information is synchronized between models, product catalog items, and vendor catalog items.

When working with models, product catalog items, and vendor catalog items, keep the following in mind:

- Changes to model record update vendor catalog items automatically only if the vendor catalog items are published, not linked.
- If a model is linked to a vendor catalog item, any changes to the model do not update the vendor catalog item.
- After publishing a vendor catalog item or model to the hardware or software catalog, some fields become read-only on the vendor catalog item or product catalog item record. Information can only be updated on the model record.

List of synchronized fields:

- Description
- Short description
- Name
- Product ID

- Price
- Vendor
- Specs
- Features
- Model
- UPC
- Model number
- Cost
- Manufacturer

## Create a vendor catalog item

Create a vendor catalog item to associate product models with a vendor.

### Before you begin

Role required: model\_manager

### Procedure

1. Navigate to **All > Product Catalog > Catalog Definition > Vendor Items**.
2. Click **New**.
3. Complete the form.

#### Vendor Catalog Item fields

Field	Description
Name	The name of the item is built from information in the <b>Product Model, Vendor, and Product ID</b> fields.
Vendor	The supplier that provides the item.
Product model	The specific version or configuration of the item.
Out of stock	The option that indicates whether the item is unavailable for order. This field is important if you are <a href="#">sourcing request items</a> . Clear this check box if the item is available to order.
Product ID	The item identification number assigned by your organization.
List price	The price at which the item retails, excluding vendor discounts.
Vendor price	The price at which the item is available in the vendor catalog. If the vendor offers a discount, the vendor price reflects the discounted price.
Rank tier	Displays the overall ranking for this vendor's products and services, such as Valued Partner or Tactical Supplier. Rank tier expresses your organization's opinion of this vendor's performance. It can be used to decide if the vendor's products should be promoted or discontinued. Users with the vendor_manager role can edit this field.
Short description	A brief description of the item.
General section	

Field	Description
Product catalog item	Name of the product catalog item, if the item has been added to the product catalog. Leave this field empty if you are going to link a vendor catalog item to the hardware catalog.
UPC	The barcode number used to uniquely identify and track items for sale.
Active	Select the check box to list the item in the vendor catalog. Clear this check box to hide the item in the vendor catalog.
Description	A detailed description of the item.
Information section	
Specifications	Facts about the item such as size, weight, version, or speed.
Features	Distinct properties or distinguishing characteristics of the item.

**4. Click **Submit**.**

**Link an item to the hardware catalog**

After you create a vendor catalog item, link the item to the hardware catalog for viewing.

**Before you begin**

Role required: model\_manager

**About this task**

To see the **Link to Hardware Catalog Item** related link on the Vendor Catalog Item form, add a hardware model or a consumable model to the **Product Model** field, and leave the **Product Catalog Item** field blank.

**Procedure**

1. Navigate to **All > Product Catalog > Catalog Definition > Vendor Items**.
2. Open a vendor catalog item.
3. In **Related Links**, click **Link to Hardware Catalog Item**.
4. Select a **Catalog Item**.
5. Click **OK**.  
The page refreshes to the selected hardware catalog item. The vendor catalog item is listed in the **Vendor Catalog Items** related list.

**Link an item to the software catalog**

After you create a vendor catalog item, link the item to the software catalog for viewing.

**Before you begin**

Role required: model\_manager

**About this task**

To see the **Link to Software Catalog Item** related link on the Vendor Catalog Item form, add a software model or a consumable model to the **Product Model** field, and leave the **Product Catalog Item** field blank.

**Procedure**

1. Navigate to **All > Product Catalog > Catalog Definition > Vendor Items**.
2. Open a vendor catalog item.

**3.** In **Related Links**, click **Link to Software Catalog Item**.

**4.** Select a **Catalog Item**.

**5.** Click **OK**.

The page refreshes to the selected software catalog item. The vendor catalog item is listed in the **Vendor Catalog Items** related list.

### **Publish an item to the hardware catalog**

After you create a hardware item for the vendor catalog, publish it to the hardware catalog for viewing. The hardware catalog is a section within the service catalog.

#### **Before you begin**

Role required: catalog\_admin

#### **About this task**

To see the **Publish to Hardware Catalog Item** related link on the Vendor Catalog Item form, add a hardware model or a consumable model to the **Product Model** field, and leave the **Product Catalog Item** field blank.

After you publish a vendor catalog item to the hardware catalog, the **Publish to Hardware Catalog** related link is no longer available. Any changes made on the vendor catalog item record are synchronized with the information in the hardware catalog.

#### **Procedure**

**1.** Navigate to **All > Product Catalog > Catalog Definition > Vendor Items**.

**2.** Open a vendor catalog item.

**3.** In **Related Links**, click **Publish to Hardware Catalog**.

**4.** Select a **Category**.

**5.** Select **OK**.

The published item is listed in the **Vendor catalog Items** related list of the Hardware Catalog form.

### **Publish an item to the software catalog**

After you create a software item for the vendor catalog, publish it to the software catalog for viewing. The software catalog is a section within the service catalog.

#### **Before you begin**

Role required: model\_manager

#### **About this task**

To see the **Publish to Software Catalog Item** related link on the Vendor Catalog Item form, add a software model or a consumable model to the **Product Model** field, and leave the **Product Catalog Item** field blank.

After you publish a vendor catalog item to the software catalog, the **Publish to Software Catalog** related link is no longer available. Any changes made on the vendor catalog item record are synchronized with the information in the software catalog.

#### **Procedure**

**1.** Navigate to **All > Product Catalog > Catalog Definition > Vendor Items**.

**2.** Open a vendor catalog item.

**3.** In **Related Links**, select **Publish to Software Catalog**.

4. Select a **Category**.

5. Select **OK**.

The published item is listed in the **Vendor catalog Items** related list of the Software Catalog form.

## View a vendor list

You can view a list of vendors from the product catalog.

### Before you begin

Role required: model\_manager

### About this task


The list includes every company that has the **Vendor** option selected on its record.

### Procedure

1. Navigate to **All > Product Catalog > Catalog Definition > Vendors**.
2. Click any vendor **Name** for more information.

## Product catalog items

Product catalog items are hardware and software that you can track and offer in the service catalog.

The product catalog is an extension of the [Service Catalog](#)  that contains a list of available [Models](#). Users with the catalog\_admin role can create, activate, and deactivate product catalog items.

### Create a product catalog item

Create hardware and software product catalog items to include in the product catalog and the service catalog.

### Before you begin

Role required: catalog\_admin

### About this task

You must [activate](#) the items separately before they appear in the product catalog or service catalog.

### Procedure

1. Navigate to **All > Product Catalog > Catalog Definition > Hardware & Software Items**.
2. Select **New**.
3. Complete the form.  
Some of the fields listed do not appear until you save the product catalog item.

#### Product catalog item fields

Field	Description
Name	Name of the item as you want it displayed in the product catalog.
Catalogs	Catalog this item is listed in.

Field	Description
Vendor	Vendor that supplies the item. If the item is purchased from multiple vendors, use the vendor catalog and leave this field empty.
Rank tier	Overall ranking for the selected vendor's products and services. This field is shown in a Product Catalog Item record when the CI class is <b>Hardware Catalog</b> or <b>Software Catalog</b> .
Model	Specific version or configuration of the item.
Product ID	Item identification number assigned by your organization.
Price	Price at which the item is available in the product catalog. Enter a numerical value and select the appropriate currency.
Recurring price	Item's recurring price. For example, a subscription to a mobile phone contract could cost \$500.00, with an \$30.00 monthly recurring price.
Recurring price frequency	Interval at which the recurring price is accrued.
List Price	Price at which the item retails. This field is shown only when the <b>Class</b> is <b>Hardware Catalog</b> or <b>Software Catalog</b> .
Cost	Price at which the item was purchased from the vendor. The cost could be less than the <b>List Price</b> if your organization received a discount from the vendor. This field is shown in a product catalog item record only when the CI class is <b>Hardware Catalog</b> or <b>Software Catalog</b> .
Omit price in cart	When selected, hides the price when the item is displayed in the service catalog. Clear the check box to show the price in the service catalog. This field is only visible in a product catalog item record when the CI class is <b>Hardware Catalog</b> .
Workflow	Workflow associated with this item.  You can view the activities, the conditions, and the stages associated with the workflow by selecting <b>Show Workflow</b> .
Execution plan	Execution plan associated with this item.
Short description	Brief description of the item.
Ordered item link	List of links containing more information about items. The links can be reused across multiple items.
Class	Catalog item class this item belongs to. Select <b>Hardware Catalog</b> or <b>Software Catalog</b> . This field is visible by default. When you save the record as a hardware or software catalog item, the form is retitled Hardware Catalog or Software, respectively.
General section	
Category	Named group of items to which the item belongs.
Delivery time	Amount of time it takes to deliver the item, starting from when it is ordered from the product catalog.
UPC	Barcode number used to identify and track items.

Field	Description
Description	Detailed description of the item. The description is displayed in the product catalog listing.
Product Information section	
Cost	Price at which the item was purchased from the vendor. This field is only visible when the <b>Class</b> is <b>Software Catalog</b> .
Specifications	Facts about the item, such as size, weight, version, or speed.
Features	Distinct properties or distinguishing characteristics of the item.
Images section	
Icon	Small image that appears next to the name when the item is displayed in the service catalog. Supported file types are jpg, png, bmp, gif, and jpeg.
Picture	An image showing the item. Supported file types are jpg, png, bmp, gif, and jpeg.
Related lists	
Includes	More catalog items provided with this item. This related list is for informational purposes only.
Variables	Service catalog variables associated with this item. A service catalog variable captures and passes on information about choices a customer makes when ordering an item from the service catalog.
Vendor Catalog Items	Vendor catalog items associated with this item. Vendor catalog items allow you to track information about this item by its specifications for each vendor.

**Example**

Hardware catalog item record with an icon and picture of the item.

**Hardware catalog item**

The screenshot displays the ServiceNow interface for a hardware catalog item. The top navigation bar includes 'servicenow', 'All', 'Favorites', 'History', and 'Admin'. The current page title is 'Hardware Catalog - Canon imageCLASS Laser Printer'. The record details are as follows:

- Name:** Canon imageCLASS Laser Printer
- Product ID:** LBP-6650DN
- Price:** \$ 499.99
- Recurring price:** \$ 0.00
- Recurring price frequency:** -- None --
- List Price:** \$ 0.00
- Cost:** 499.99
- Omit price in cart:**
- Category:** Printers
- Vendor:** Canon
- Rank tier:** Strategic Partner
- Model:** Canon imageCLASS LBP-6650DN
- Short description:** Canon - imageCLASS LBP-6650DN Laser Printer - Monochrome - 2400 x 600dpi Print - Plain Paper Print -

The 'Images' section contains two fields:

- Icon:** A small printer icon with '[Update][Delete]' links.
- Picture:** A larger image of the Canon imageCLASS Laser Printer with '[Update][Delete]' links.

**4. Optional:** Select **Try It** to preview the item as it appears in the service catalog.

**5.** Select **Submit** or **Update**.

**Related topics**

[Create a vendor catalog item](#)

[Create an execution plan](#) 

[Service catalog variables](#) 

**Activate a product catalog item**

Activate a product catalog item to make it available in the product catalog and the service catalog.

**Before you begin**

Role required: catalog\_admin

**About this task**

You can activate the item from either the list view or the record.

**Procedure**

1. Navigate to **All > Product Catalog > Catalog Definition > Hardware & Software Items**.
2. Complete one of the following actions.

Option	Description
<b>Activate one or more items from the list view</b>	Select the check box next to one or more items in the record list and select <b>Activate</b> below the list.
<b>Activate from the record</b>	Select <b>Activate</b> under <b>Related Links</b> .

**Deactivate a product catalog item**

Deactivate a product catalog item to remove it from the product catalog and the service catalog.

**Before you begin**

Role required: catalog\_admin

**About this task**

You can deactivate the item from either the list view or the record.

**Procedure**

1. Navigate to **All > Product Catalog > Catalog Definition > Hardware & Software Items**.
2. Complete one of the following steps.

Option	Description
<b>Deactivate from the list view</b>	Select the check box next to one or more items in the record list and click <b>Deactivate</b> below the list.
<b>Deactivate from the record</b>	Select <b>Deactivate</b> under <b>Related Links</b> .

## Import a Product Catalog item

Import a hardware and software product catalog item from one ServiceNow instance to another ServiceNow instance to include it in the product catalog.

### Before you begin

Role required: admin



### About this task

To import hardware or software product catalog items from one ServiceNow instance to another, use the product model and update sets XML file exported from the source ServiceNow instance.

**Note:** Product model records aren't included in update sets. When you import an update set into the target instance, only the catalog item records are transferred. To avoid validation errors, first import the product model records, and then import the catalog item's update set into the target ServiceNow instance.

### Procedure





1. In the source ServiceNow instance, export the hardware or software product model record XML file.

Option	Description
<p><b>To export hardware product model record XML file</b></p>	<ul style="list-style-type: none"> <li><b>a.</b> Navigate to <b>All &gt; Product Catalog &gt; Product Models &gt; Hardware Models</b>.</li> <li><b>b.</b> Select the required hardware model name link.</li> <li><b>c.</b> On the hardware model form, select the Additional actions  icon and then select <b>Export XML (This record)</b>.</li> <li><b>d.</b> Save the exported hardware model XML file on your local system.</li> </ul>
<p><b>To export software product model record XML file</b></p>	<ul style="list-style-type: none"> <li><b>a.</b> Navigate to <b>All &gt; Product Catalog &gt; Product Models &gt; Software Models</b>.</li> <li><b>b.</b> Select the required software model name link.</li> <li><b>c.</b> On the software model form, select the Additional actions  icon and then select <b>Export XML (This record)</b>.</li> <li><b>d.</b> Save the exported software model XML file on your local system.</li> </ul>

2. In the source ServiceNow instance, perform these steps to export the local update set containing the catalog item.

- a.** Navigate to **All > System Update Sets > Local Update Sets**.
- b.** Select the local update set name to open the update set record.
- c.** In the Related Links section, select **Export to XML**.
- d.** Save the exported update set XML file on your local system.

3. In the target ServiceNow instance, import the hardware or software product model record XML file.

Option	Description
<p><b>To import hardware model record XML file</b></p>	<ul style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Product Catalog &gt; Product Models &gt; Hardware Models</b>.</li> <li>b. Hover over any column header in the Hardware Models list to display the Column Options  icon.</li> <li>c. Select Column options  and then select <b>Import XML</b>.</li> <li>d. Select <b>Choose File</b> and select the hardware model record XML file saved previously in Step 1.</li> <li>e. Select <b>Upload</b>.</li> </ul>
<p><b>To import software model record XML file</b></p>	<ul style="list-style-type: none"> <li>a. Navigate to <b>All &gt; Product Catalog &gt; Product Models &gt; Software Models</b>.</li> <li>b. Hover over any column header in the Software Models list to display the Column Options  icon.</li> <li>c. Select Column options  and then select <b>Import XML</b>.</li> <li>d. Select <b>Choose File</b> and select the software model record XML file saved previously in Step 1.</li> <li>e. Select <b>Upload</b>.</li> </ul>

The product model has been successfully imported into the target ServiceNow instance and appears on the models page.

4. In the target ServiceNow instance, perform these steps to import the update set XML file that contains the catalog item.

- a. Navigate to **System Update Sets > Retrieved Update Sets**.
- b. In the Related Links section, select **Import Update Set from XML**.
- c. Select **Choose File** and select the update set XML file saved previously in Step 2.
- d. Select **Upload**.  
The imported update set record is available as a retrieved update set with state **Loaded**.
- e. Open the retrieved update set and select **Preview Update Set**.  
Review updates and resolve any errors.

**Result**

The catalog items are imported into the target ServiceNow instance.

### What to do next

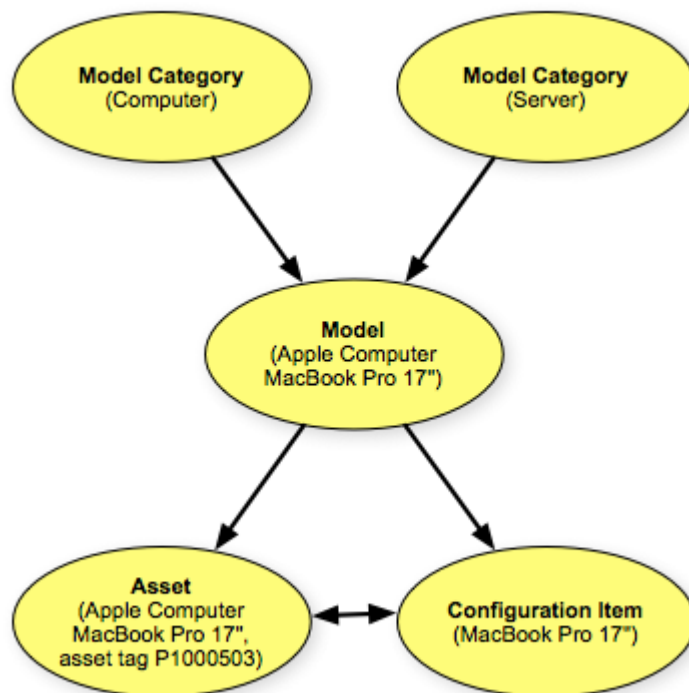
Navigate to the Hardware Models or Software Models page in the target ServiceNow instance, View the imported hardware or software model record, along with its catalog items that are published.

## Model categories

Model categories associate CI classes with asset classes. Model categories are part of the Product Catalog application.

The model category configuration determines if the ServiceNow platform creates an asset from a CI, and, if so, what class of asset. Asset classes in the base system are **Hardware**, **Software License**, and **Consumable**. You can associate a model category to many models and a model to many model categories. For example, a specific model of a computer can be a **Computer** and a **Server**.

### Models diagram



Any item that is provided as a service or sold to your customer is tracked as an Install Base Item (IBI). The Model category table associates Asset class, CI class, and Install Base Item (IBI) class.

**Note:** The Install Base Item class field is available on the Model category form only when the Customer Service Install Base Management [com.snc.install\_base] plugin is installed. Currently, only the Medical device install base item [sn\_hcls\_medical\_device\_install\_base\_item] is supported when the Healthcare and Life Sciences Service Management Core application is installed. For more details, see [Medical device install base item table](#). When an IBI class is created, it associates with an asset when the asset exists, otherwise an asset is created.

The fields in the Asset class and the IBI class are synchronized as follows:

1. When an IBI class is updated, the Account, Consumer, Location, and Install date field changes are synchronized with the corresponding fields of the Asset class.
2. When an Asset class is updated, the Location and Install date field changes are synchronized with the corresponding fields of the IBI class.

### Related topics

[CMDB classifications and class dependency](#) 

[Create an asset class](#)

## View model categories

Default model categories are included with product catalog. You can view a list of default categories and the categories that you created.

### Before you begin

Role required: model\_manager

### Procedure

1. Navigate to **All > Product Catalog > Product Model > Model Categories**.
2. Open a model category to view its details.

## Create model categories

You can add custom model categories for your instance.

### Before you begin

Role required: model\_manager

### About this task

When you create model categories, keep the following in mind:

- The base system provides a model category for each CI class in the CMDB. As you create *cmdb\_ci* classes, create a corresponding row in the model category table for the model table to be used.
- If you select an **Asset class** on any existing model category, the system automatically creates assets for all configuration items associated with the model category, if configured to do so. If an asset is not created automatically, you can create the asset manually. After an asset class is selected for a model category, the asset class cannot be changed.
- The **Allow pre-allocated**, **Allow in bundle**, and **Allow as main** options are only available if an asset class is specified for the model category.
- If you select **Consumable** or **Software License** for the asset class, the **Allow in bundle** option is available, but not **Allow pre-allocation** or **Allow as main**.
- When a CI is created from a model category that requires asset tracking, the system automatically creates an asset record for the asset class specified in the model category. It then links that asset record to the CI. If a model is specified, the model category of the CI is determined by a combination of the CI class and the list of categories supported by the model. Asset tracking is specified on the model record.
- When an asset is created from a model category that requires CI tracking, the system automatically creates a CI record of the class specified by the category and links it to the asset.
- The Model Categories list (**Product Catalog > Product Model > Model Categories**) shows all the CI classes and what asset class is generated on the asset side.

**Procedure**

1. Navigate to **Product Catalog > Product Model > Model Categories** and select **New**.
2. On the form, fill in the fields.

**Model Category fields**

Field	Description
Name	A descriptive name for this category.
CI class	If a CI class is needed, it must be specified when you create the model category. You can't add the CI class the model category later.
Asset class	<p>Default options and any new asset classes you've created. Setting the asset class triggers the creation of assets depending on the model category selected. You can add an asset class to the model category later, but can't be changed after it's added. If you select <b>Consumable</b> or <b>Software License</b>, the <b>CI class</b> field becomes read-only because consumables and software licenses don't create CIs. If you specify a CI class and then select <b>Consumable</b> or <b>Software License</b>, the <b>CI class</b> field is changed to <b>None</b> automatically.</p> <ul style="list-style-type: none"> <li>○ Asset: An item that can be tracked individually.</li> <li>○ Consumable: An asset not tracked individually, such as keyboards.</li> <li>○ Hardware: A physical piece of computer equipment, such as a laptop or server.</li> <li>○ Software License: A legal statement defining the uses of software, such as the number of installations allowed or the terms of distribution.</li> </ul>
Install base item class	<p>Class to track the asset as an Install base item.</p> <p><b>Note:</b> This field is available only when the Customer Service Install Base Management [com.snc.install_base] plugin is installed. Also, currently, only the Medical device install base item [sn_hcls_medical_device_install_base_item] is available when the Healthcare and Life Sciences Service Management Core application is installed.</p>
Product model class	<p>Class table where the models are stored. The default values are:</p> <ul style="list-style-type: none"> <li>○ Application</li> <li>○ Consumable</li> <li>○ Contract</li> <li>○ Facility</li> <li>○ Hardware</li> <li>○ Service</li> <li>○ Software</li> </ul> <p>After you select a value, the table content, form views, and overall functionality of the models created in the model category gets impacted.</p>
Is product instance	Identifies whether the model category is associated with Product Instance, which is a logical grouping of asset, CI, and IBI class.

Field	Description
	<p><b>Note:</b> This check box is read-only and is supported only for Medical device model category. After you select this option, Product Instance Identifier (PID), a unique identifier for asset, CI, and IBI class is generated whenever you create an asset of that model category. However, for the existing assets, the PID is generated only when any of the asset fields such as Serial number, Model component ID, or Parent is updated.</p>
Allow pre-allocation	Add and track items in this category as <a href="#">pre-allocated assets</a> .
Allow in bundle	Use items in this category in <a href="#">bundles</a> .
Allow as main	Use items in this category as the main component in a bundle.
Enforce CI verification	Prevents the system from automatically creating assets in a specific model category when CIs are added manually or found with Discovery. This option enables an administrator to review and verify new CIs before adding them as assets.

**3. Select Submit.**

**Related topics**

[Discovery](#) 

**Create assets manually**

The ServiceNow AI Platform does not create an asset automatically under certain conditions. You can create an asset manually as needed.

**Before you begin**

Role required: model\_manager

**About this task**

The conditions under which an asset is not automatically created include the following.

- **Forced CI verification:** If you select the **Enforce CI verification** check box in the **Model Category** form, the system does not create an asset automatically when a CI is created or discovered. When **Enforce CI verification** is enabled, newly created CIs do not trigger an automatic creation of an asset. Instead, these newly created CIs have their **Requires verification** field automatically set to true, which displays the following UI actions for the CI:
  - *Create Asset:* Creates an asset and sets *Requires verification* to false.
  - *Merge CI:* Merges duplicates of a CI. This action is useful if an asset for the CI was created in a separate process, which created an associated CI. Then a second CI was created either manually or via the discovery source - and the duplicate CIs did not properly coalesce.
- **Configuration errors:** In rare cases, the system can fail to create the asset automatically. This failure can occur if you assign the model and model category to the CI in the wrong sequence.

Follow these steps to create an asset manually.

## Procedure

1. Navigate to **All > Product Catalog > Product Model > Model Categories**.
2. Open a model category that has no assigned CI class.
3. Click **Create Assets**.  
This action creates assets from all CIs deferred for verification in this model category. This option is only available for users with the admin role.

## Edit model categories

All default model categories can be edited, except for the Contract model category. You can edit any custom model categories that you created at any time.

### Before you begin

Role required: model\_manager

## Procedure

1. Navigate to **All > Product Catalog > Product Model > Model Categories**.
2. Open a model category record.
3. Edit the fields as needed.

**Note:** If a CI class is needed, you must specify it when you create the model category. You can't add the CI class to the model category later.

4. Click **Update**.

## Delete model categories

If a model category is no longer needed, you can delete it.

### Before you begin

Role required: model\_manager

### About this task

Only model categories that are not referenced by any models can be deleted.

## Procedure

1. Navigate to **All > Product Catalog > Product Model > Model Categories**.
2. Select the check box beside the model category **Name**.
3. From the **Actions on Selected Rows** menu below the list, click **Delete**.
4. Click **Delete**.

## Domain separation and Product Catalog

Domain separation is supported in the Product Catalog. Domain separation enables you to separate data, processes, and administrative tasks into logical groupings called domains. You can control several aspects of this separation, including which users can see and access data.

## Support level: Standard

- Includes all aspects of **Basic** level support.
- Application properties are domain-aware as needed.
- Business logic: The service provider (SP) creates or modifies processes per customer. The use cases reflect proper use of the application by multiple SP customers in a single instance.
- The instance owner must configure the minimum viable product (MVP) business logic and data parameters per tenant as expected for the specific application.

Sample use case: An admin must be able to make comments required when a record closes for one tenant, but not for another.

For more information on support levels, see [Application support for domain separation](#) .

## How domain separation works in Product Catalog

The domain owner's employees and tenants can use the same processes if the work is done in the correct domain. When adjusting any configuration, you should be in the domain where you're doing the work. Use the domain picker to select the correct domain to work in.

### Related topics

[Domain separation for service providers](#) 

## IT Asset Management content request process


The IT Asset Management content services team manages and supports content requests from IT Asset Management customers.

The ITAM Content team reviews content requests and delivers them through the regular weekly content updates.

Examples of content requests include but are not limited to the addition of or update to Publishers, Products, Publisher Part Numbers, Discovery Maps and Lifecycle Dates. While you have the ability to add Custom Data (Publishers, Products, etc.) to your instance, it is recommended that you leverage out-of-box content for ITAM use cases. If you were to create custom data that has since been delivered through the Content Service, references should be updated to the out of box content, and custom data should be deleted.

Content requests fall into the following categories:

- New content: you require content that is not currently in the Content library. You can request new content by [submitting a catalog request](#) through the Now Support portal
- Content correction: you require previously delivered content to be corrected. You can request content update by filing a case with ServiceNow Customer Support through the Now Support portal.

For more details on content requests, see this Knowledge base article on the ServiceNow Now Support [https://support.servicenow.com/kb?id=kb\\_article\\_view&sysparm\\_article=KB0790305](https://support.servicenow.com/kb?id=kb_article_view&sysparm_article=KB0790305) .

## Create IT Asset Management content request

Create request for new content via the Service Catalog application for the IT Asset Management content service.

### Before you begin

Content request can be made for the Software Asset Management content service and the Hardware Asset Management content service.

Role required: customer user or partner user

### Procedure

1. Login to the ServiceNow Now Support portal.
2. Navigate to **Automation Store > Service Catalog**.
3. Search and select the catalog item **Asset Management Content Request**.  
On the Catalog Item form, the **Catalog Request number (CR)**, **Requested by**, and the **Company** fields populate automatically.
4. Fill in the details on the form.

Field	Description
Title	Summary of your request.
Description	Details of your request.
Selected instance	Instance you are requesting the content for.
Watch list	Add individuals within your organisation to view the progress of this request.
Content category	The content category for your request. You can select the Software Asset Management content service or the Hardware Asset Management content service.
Attachment	Attach an excel sheet with the needed information about the content requested.

5. Click **Submit**.
6. You can view your current content requests by navigating to **Automation Store > Service Catalog > My Content Requests**  
The default filter only shows your active requests. If you want to see all your requests (including closed ones), you need to adjust the filter.

## Licensing for IT Asset Management

The ServiceNow platform uses a new licensing method where your organization is charged for using the IT Asset Management applications: ServiceNow® Software Asset Management application and ServiceNow® Hardware Asset Management application.

For licensing purposes, CI types are assigned to CI categories. The customer contract for your organization determines the ratios of CI allocation for each CI category. Information from the customer contract is synchronized with the ServiceNow platform. These are the following CI categories:

- Network Gears
- Servers
- End User Computers

**Note:** CI types are the same as CI classes.

Depending on the needs of your organization, you can purchase subscriptions for the application separately (a la carte) or together (in bundles). When you purchase subscriptions in bundles, you get the same number of subscriptions for all applications covered by the bundle. For example, for a bundle of 500 that covers the Software Asset Management and Hardware Asset Management applications, your organization receives 500 subscriptions for Software Asset Management and 500 subscriptions for Hardware Asset Management.

Bundle subscriptions cover specific applications. You cannot use bundle subscriptions for other applications, even if these other applications are part of the same bundle. For example, you purchased a bundle of 500 covering Software Asset Management and Hardware Asset Management, and you used up all 500 Software Asset Management subscriptions. You cannot use the spare Hardware Asset Management subscriptions for Software Asset Management.

If your organization consumes more subscriptions than you initially estimated, you can purchase a larger bundle that better suits the needs of your organization. Your organization may consume subscriptions of IT Asset Management applications at different levels. If so, you can purchase a bundle that sufficiently covers most of the required applications and also purchase a la carte subscriptions for the application that consumes more subscriptions.

## Subscription summary for IT Asset Management application

You can view how many subscriptions for IT Asset Management applications your organization purchased and allocated.

Review the configuration item (CI) allocation and allocation level to see how your organization uses IT Asset Management application subscriptions and plan upcoming subscription needs.

Navigate to **ITAM Licensing > ITAM Subscription Summary** to view the subscription summary.

View the following statistics on subscriptions purchased a la carte and by bundles:

### Name

The name of either subscription bundle or IT Asset Management application, if your organization purchased subscriptions per application separately (a la carte).

### Purchased

The number of purchased subscriptions per bundle or application (a la carte).

### Allocated

The number of consumed subscriptions from a bundle or application (a la carte). For bundles, this field shows the highest number of consumed subscriptions by applications that are part of the bundle. For example, if Software Asset Management consumed 300 subscriptions and Hardware Asset Management consumed 200 subscriptions, this field shows 300 for the bundle covering these applications.

The color code indicates the percentage of the subscriptions that your organization consumed. By default, the color code threshold is 90%.

- Green – Your organization has used less than 90% of purchased subscriptions.
- Yellow – Your organization has used more than 90%, but less than 100% of purchased subscriptions.
- Red – Your organization has used 100% or more and exceeded the number of purchased subscriptions. Purchased subscriptions are overdrawn.

### Start date/End date

The dates for which this subscription is valid.

The licensing module calculates and displays subscription consumption as follows:

### **Subscriptions by bundle only**

When you purchase subscriptions in bundles, you get the same number of subscriptions for all IT Asset Management applications covered by the bundle. For example, for a bundle of 500 that covers Software Asset Management and Hardware Asset Management, your organization receives 500 subscriptions for Software Asset Management and 500 subscriptions for Hardware Asset Management.

The licensing module subtracts the number of consumed subscriptions from the bundle subscriptions for the relevant application. Bundle subscriptions cover specific applications. You cannot use bundle subscriptions for other applications, even if these other applications are part of the same bundle. For example, you purchased a bundle of 500 covering Software Asset Management and Hardware Asset Management, and you used up all 500 Software Asset Management subscriptions. You cannot use the spare Hardware Asset Management subscriptions for Software Asset Management.

If your organization exceeds the number of purchased subscriptions, the bundle size is automatically adjusted to the number of consumed subscriptions. When that happens, the licensing module recalculates levels of consumption for all applications covered by the same bundle.

The Subscriptions window displays the actual number of consumed subscriptions under **Allocated**. The red color dot in **Allocated** indicates that the bundle is overdrawn.

### **Subscriptions a la carte only**

The licensing module subtracts the number of consumed subscriptions from the a la carte subscriptions for the relevant application. The Subscriptions window displays the information for purchased and allocated subscriptions for IT Asset Management applications.

If your organization exceeds the number of purchased subscriptions for an IT Asset Management application, you cannot use unconsumed subscriptions for another application.

If your organization exceeds the number of subscriptions, the Subscriptions window shows the relevant a la carte subscription is overdrawn.

### **Subscriptions for the same applications both in bundle and a la carte**

If you purchased IT Asset Management subscriptions both in bundle and a la carte, the licensing module always subtracts the number of consumed subscriptions from the bundle before deducting from the number of subscriptions purchased a la carte. For example, there is a bundle of 500 subscriptions covering Software Asset Management and Hardware Asset Management. In addition, there are 250 subscriptions for Software Asset Management purchased a la carte. The first 500 subscriptions consumed by Software Asset Management are consumed by the bundle. Only when Software Asset Management exceeds the number of subscriptions in the bundle, the licensing module starts deducting from subscriptions purchased a la carte and shows them as subscriptions allocated to Software Asset Management.

If your organization exceeds the number of subscriptions purchased in bundle and a la carte, the licensing module considers it as overdrawn from the a la carte subscriptions. In this case, the Subscriptions window indicates that the a la carte subscriptions are overdrawn.

## View license report for the IT Asset Management application

Resources that the IT Asset Management applications discover, monitor, and provision are configuration items (CIs) stored in the CMDB. The ITAM licensing module combines this information on CIs with the information on subscriptions your organization purchased to produce statistics on subscription use by IT Asset Management applications.

### Before you begin

The process of collecting and aggregating information for licensing purposes consists of the following interactions. As a result, you can view the statistics on how your organization uses purchased subscription units.

1. The IT Asset Management applications count CIs and assign them to CI categories daily.
2. The IT Asset Management applications daily report CI count by CI category to the IT Asset Management licensing module. If features of the same application report the same CIs as their resources, the CI count is manipulated to remove the duplication.
3. The licensing module correlates the daily average CI counts for IT Asset Management applications with the licensing information from the customer contract to produce license statistics.

Role required:

- admin
- usage\_admin

### Procedure

1. Navigate to **All > ITAM Licensing > ITAM License Report**.
2. Select an application to view the subscription for a particular CI category.

Application	Resource Category	Resource Total Count	Subscription Unit Ratio	Total Subscription Units Consumed
Application: Hardware Asset Management (3)				
Hardware Asset Management	Servers	4	1:1	
Hardware Asset Management	End User Computers	27	4:1	
Hardware Asset Management	Network Gear	5	5:1	
				Sum
Application: Software Asset Management (3)				
Software Asset Management	Subscription Users	30	15:1	
Software Asset Management	Servers	1	1:1	
Software Asset Management	End User Computers	18	4:1	
				Sum
				Sum

You can view the following information on CI count and subscriptions purchased for each IT Operations Management application separately (a la carte):

- **Resource Category:** CI categories for IT Asset Management applications.
- **Resource Total Count:** CI count for CIs organized by CI categories, for each IT Asset Management application.
- **Subscription Unit Ratio:** Ratios define how many CIs of a certain CI category require a subscription. The Software Asset Management application has pre-defined values for End User Computers (4:1), for Servers (1:1), for Storage Volumes (3:1), for Databases (3:1), and for Subscription Users (15:1).

- **Total Subscription Units Consumed:** The number of subscriptions per CI category for each IT Asset Management application that your organization consumed. The licensing module calculates this number by applying the subscriptions ratio to the CI count number for each application's CI category.

For licensing purposes, the Software Asset Management application only considers CIs with software installs discovered within the last 90 days or those where the last discovered as empty. Additionally, all CIs are excluded that have a column added to the `cmdb_ci_hardware` table and that column name is referenced in the property labeled *Enter the name of the true/false field added to cmdb\_ci\_hardware table to exclude software installed on selected devices from Software Asset Management*. For more information on excluding CIs, see [Exclude software assets on CIs](#).