Qualys CMDB Sync Service Graph Connector App

User Guide
Version 1.6.3

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About this guide

Welcome to Qualys Cloud Platform! We'll show you how to use the Qualys CMDB Sync Service Graph Connector App to synchronize Qualys IT asset discovery and classification with the ServiceNow Configuration Management Database (CMDB) system.

About Qualys

Qualys, Inc. (NASDAQ: QLYS) is a pioneer and leading provider of cloud-based security and compliance solutions. The Qualys Cloud Platform and its integrated apps help businesses simplify security operations and lower the cost of compliance by delivering critical security intelligence on demand and automating the full spectrum of auditing, compliance and protection for IT systems and web applications.

Founded in 1999, Qualys has established strategic partnerships with leading managed service providers and consulting organizations including Accenture, BT, Cognizant Technology Solutions, Deutsche Telekom, Fujitsu, HCL, HP Enterprise, IBM, Infosys, NTT, Optiv, SecureWorks, Tata Communications, Verizon and Wipro. The company is also a founding member of the Cloud Security Alliance (CSA). For more information, please visit www.qualys.com

Qualys Support

Qualys is committed to providing you with the most thorough support. Through online documentation, telephone help, and direct email support, Qualys ensures that your questions will be answered in the fastest time possible. We support you 7 days a week, 24 hours a day. Access support information at www.qualys.com/support/

Welcome to Qualys CMDB Sync Service Graph Connector

The Qualys CMDB Sync Service Graph Connector App for Configuration Management Database (CMDB) automatically synchronizes comprehensive information about your global IT resources that are continuously monitored by Qualys Asset Inventory. This leverages Qualys' highly distributed and scalable cloud platform, and various data collection tools, including Qualys' groundbreaking Cloud Agents, to compile and continually update a full inventory of your IT assets everywhere: on premises, in elastic clouds and mobile endpoints.

Key Features

- Support for third party asset import using Asset Identification Service (Beta)

- Your global IT asset inventory is collected with Qualys sensors (scanners, agents, cloud connectors, passive sensors) and then synchronized into the CMDB.

- Asset information is automatically normalized for hardware and software.

- Asset information is automatically enriched with additional contexts, such as lifecycle, support information, and license category.

- Preconfigured default mapping for all major CI classes.

- Preconfigured reports and dashboards.

- For assets that already exist in your CMDB, only additional metadata is added.

- You can configure filters based on Qualys QQL to select which group of assets gets synchronized to the CMDB.

- Multiple synchronization schedules can be con-figured.

- Support for multiple Qualys subscriptions/API sources.

- Optionally, asset information can be staged for user approval before being written to CMDB.

- Using the ServiceNow-to-Qualys schedule option, you can export missing CIs/IPs into the Qualys subscription.

- For CIs that are already present in the Qualys platform, you can enrich the information in Qualys with Asset and Business Metadata and create Dynamic tags based on the business information.

- SSL certificates information can be synced to ServiceNow for the assets imported from Qualys.

What's New

Here's what's new in Qualys CMDB Sync Service Graph Connector 1.6.3

- In this release an issue is fixed for third party asset import.

- Introduced the "Custom Attributes" feature added for ServiceNow to Qualys schedule.

- Introduced the "Asset Identification Service" (BETA) feature added for ServiceNow to Qualys schedule.

- Added Sync Queue Types for different API calls.

Pre-requisites

You must have a valid Qualys Account subscription with API Access and access to following modules:

- Qualys Subscription with CyberSecurity Asset Management (Qualys to ServiceNow Sync)

- Asset Inventory CMDB Sync enabled within your Qualys subscription (Qualys to ServiceNow Sync)

- Vulnerability Management (ServiceNow to Qualys Sync)

- The user's role must have the "**Update Asset**" permission for the CSAM module. (ServiceNow to Qualys Sync - Business Information Sync)

- To sync from ServiceNow to Qualys, you need a Qualys account with a Manager role.

- Qualys Certificate View subscription is needed for syncing SSL certificates from Qualys to ServiceNow.

- You need to enable the option "Enable ServiceNow integration" from BO to allow business metadata sync.

- For ServiceNow to Qualys sync user requires specific tagging permission: Create User Tag, Edit User Tag, Delete User Tag, and Modify Dynamic Tag Rules.

Pre-requisite Plugins

The following plugins must be installed before you proceed with the installation.

- Identification Engine uses the "Configuration Management for Scoped Apps" plugin (**com.snc.cmdb.scope**) which must be installed before you start using the app. Refer to the ServiceNow documentation for detailed installation steps.

- The Qualys CMDB Sync Service Graph Connector App uses Integration Commons for CMDB'(**sn_cmdb_int_util**) plugin which must be installed before using the app. The plugin is used for transforming clean values into CMDB.

- **sn_cmdb_ci_class** - CMDB CI Class Models: H/W Devices Mapping

Note: For plugins listed below, you may require hi-ticket from ServiceNow.

- **sn_itom_pattern** - Discovery and Service Mapping Patterns: Cloud Data

- **com.snc.discovery.core** - Discovery Core - you may require hi-ticket from ServiceNow for this plugin.

Get Started

Here we'll help you with the initial configuration and setup needed to get started.

Quick Steps

Install the App - You'll get the app from the ServiceNow app store.

Add API Source - Provide the API Source details and use Test Connection to know if the connection between ServiceNow and the defined source is working fine.

Create Schedules - Provide details to create a schedule. Once a schedule is successfully created, the sync between the source and CMDB gets working as per the schedule.

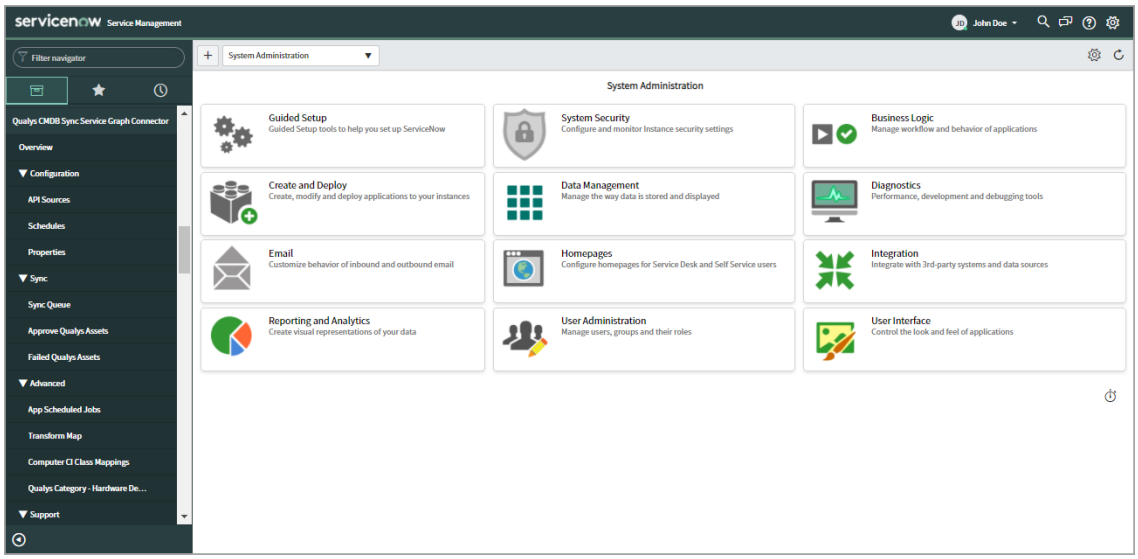
Update Properties - The Properties have pre-defined values, however you can always update a property to better suit your needs.

Install the App

Visit the ServiceNow Online Store.

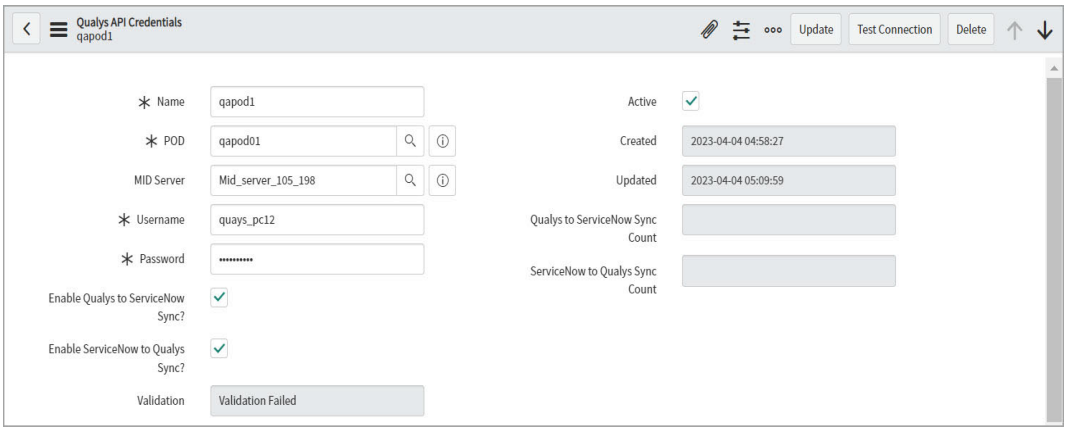
Search for Qualys CMDB Sync Service Graph Connector App, and click Contact Seller. Your Technical Account Manager (TAM) will contact you, and then ServiceNow provisions the app into an instance of your choice. The app then appears in the "Downloads" list of your instance. Click "Install" to start using the app.

In the Search field, type Qualys CMDB, and then select Qualys CMDB Sync Service Graph Connector App from the left pane. After you are done, new module appears in your ServiceNow instance that looks like this:



Add API Source

Once you install the Qualys App, you need to add the API source. Go to Qualys CMDB Sync Service Graph Connector App > Configuration > API Sources, and click New.



Enter required details to create the source:

Name - Provide a name for the API source.

POD - Click and select the valid Qualys POD.

MID Server - The MID server can work as a proxy server/middleman between ServiceNow and Qualys pod, wherein the ServiceNow instance work with limited reachability to outside sources.

Note: The MID server user requires role x_qual5_itam_nwapp.common_queue.

Username and **Password** - Enter valid Qualys Cloud Platform credentials with API access enabled for the account on the selected POD.

Enable Qualys to ServiceNow Sync and **Enable ServiceNow to Qualys Sync** - Select these options to allow uninterrupted sync between Qualys and ServiceNow.

Validation -Reflects the status of usage of Test Connection button. When you create a new API source, the field is automatically set to Not Validated, by default indicating the API source is not yet tested. Once you click Test Connection (after completion of API source creation) the value changes to validated or validation failed depending on the test result.

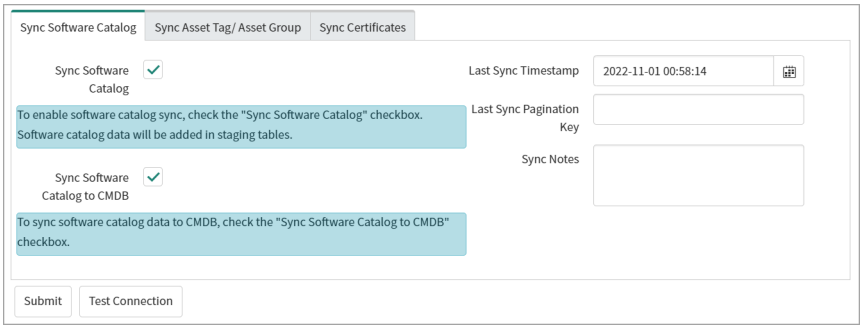
Note: The Validation field is auto-populated and is not editable.

Active - Select this option to tell us the source is active and assets should be synced from the active source. In case of multiple sources, you can use this option to activate or deactivate a source.

Sync Software Catalog

Using Sync Software Catalog option, you can sync the software-related information separately. It can sync all the software information into Qualys App OOB tables or CMDB tables. You can see the two checkboxes i) Sync Software Catalog ii) Sync Software Catalog to CMDB.

By default, these checkboxes are disabled. Enable these checkboxes to sync the software catalog data to the CMDB tables.



If you enable the Sync Software Catalog checkbox, software catalog data can added in staging tables. Disable this checkbox if you don't want to sync software catalog data to the staging tables.

If you enable the Sync Software Catalog to CMDB checkbox, it can sync software catalog data to the CMDB Software Package table. Disable this checkbox if you don't want to sync data directly to the CMDB tables..

Click **Submit** to create the API source.

Then, after configuring and saving the API source, choose the record you just created from the API source list, open the record and click **Test Connection**.

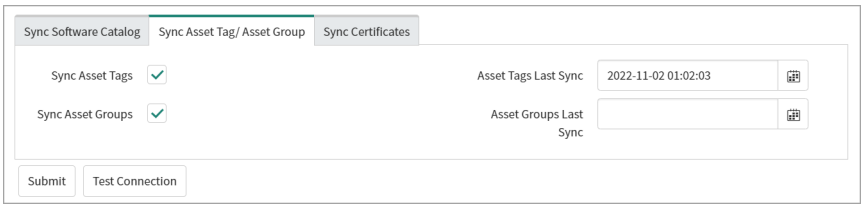
Sync Asset Tag/Asset Group

Using Sync Asset Tag/Asset Group, you can sync asset tag or asset group from Qualys to ServiceNow. In this option, you can see the two checkboxes i) Sync Asset Tags and ii) Sync Asset Groups.

If you want to sync the Asset Tags from Qualys to ServiceNow, enable the Sync Asset Tags checkbox.

If you want to sync the Asset Groups from Qualys to ServiceNow, enable the Sync Asset Groups checkbox.

Note: By default, these checkboxes are enabled. Refer the following screenshot.

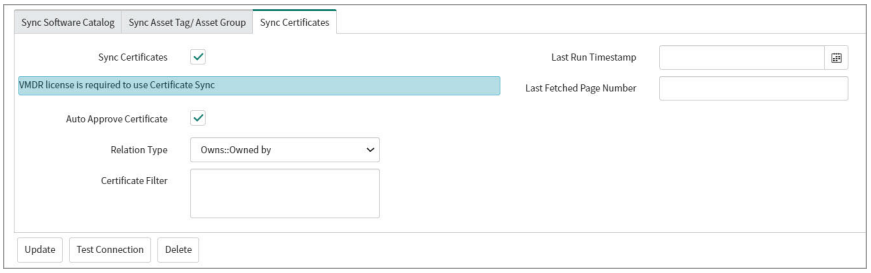


Sync Certificates

Using Sync Certificates, you can sync certificates from Qualys to ServiceNow. In this option, you can see the Sync Certificates checkbox. Enable this checkbox If you want to sync Certificates from Qualys.

You can also set up a relationship between CI record and certificates using the relation type listed in the Relation Type dropdown.

Note: By default, the relation type is Owns::Owned by.



Certificate Filter - Using this field, you can search the results using the QQL search tokens. Follow Qualys VMDR OT Online Help for how to create or use the Qualys QQL search token.

Click Submit to create the API source.

After configuring and saving the API source, choose the record created from the API source list, open it, and click Test Connection.

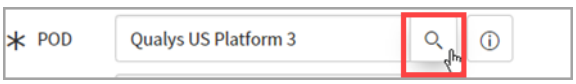
Add Custom Pod (PCP)

Qualys provides you with pre-defined pod details for Qualys platforms. If you are a PCP user, we also give you the option to create and add details of your PCP environment.

Here are the steps to add new POD entry/PCP URLs:

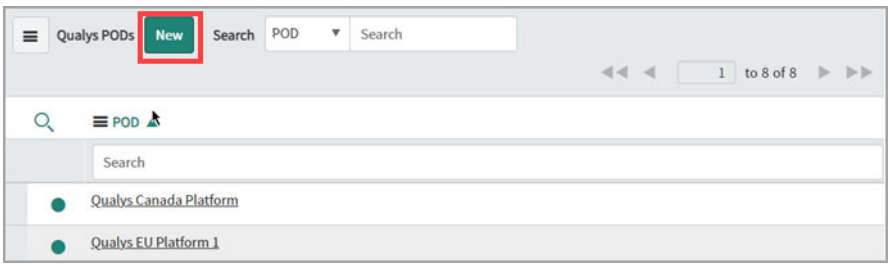
1. Go to **Qualys CMDB Sync Service Graph Connector App** > **Configuration** > **API Sources**, and click **New**.

2. Click the  search icon in the POD field.



The list of PODs - 'Qualys PODs' table is displayed.

3. Click New to add POD information.



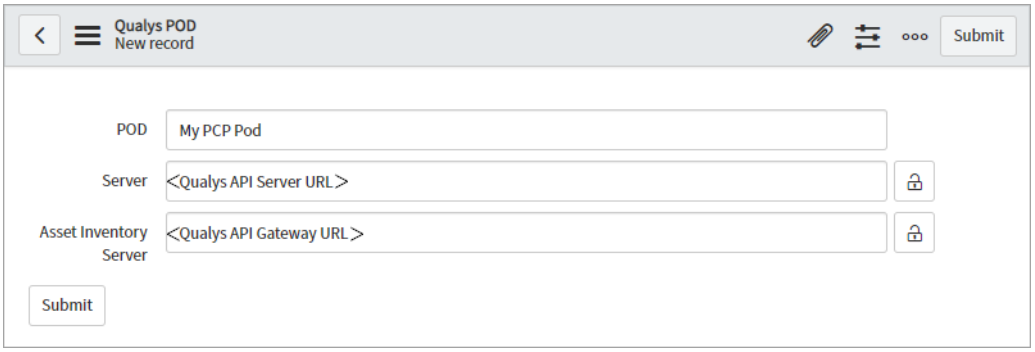
4. Provide the following information and save the custom record.

a. POD: Name for the custom POD record.

b. Server: Click the unlock icon to provide the Server URL.

c. Asset Inventory Server: Click the unlock icon to provide the Qualys API Gateway URL.

The Qualys API URL you should use for Server and Asset Inventory Server fields depends on the Qualys platform where your account is located. For more information on Qualys platform URLs, see Qualys Platforms.

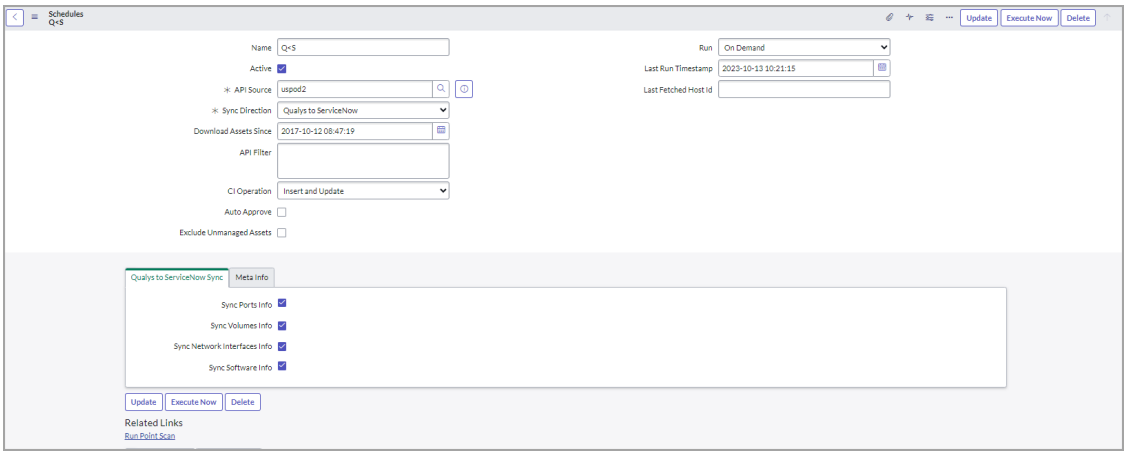


Create Schedules

You need to set up at least one schedule. You may eventually want many more. Once a schedule is successfully created, the sync between the source and CMDB gets working as per the defined schedule.

Qualys to ServiceNow Scheduling

Go to **Qualys CMDB Sync Service Graph Connector App** > **Schedules** and select "**Qualys to ServiceNow"** for Sync Direction.



Enter required details to configure the schedule:

Name - Provide a unique name for your schedule that helps you identify your schedule.

Active - Select to enable and activate the schedule you create. If you want to activate a schedule sometime later, you can disable this checkbox.

API Source - Select the API Source.

Sync Direction - Select Qualys to ServiceNow.

Download Assets Since: Define the date and time to sync assets from Qualys to ServiceNow. The schedules will download the assets after the defined time. The number of assets to be downloaded depends on the **Size of Download batch** property. For more information on changing the number of assets to be downloaded, refer to the Update Properties section.

API Filter: Use search tokens to filter the assets as per the requirement.

Example: operatingSystem.category1:'Linux'

This token will list all the assets with the Linux operating system.

Click here for help on using the search tokens.

Run, Starting, Repeat Interval - Tell us the frequency of the schedule to be executed. For example, you could schedule it periodically every 15 minutes.

Auto Approve - Select this to enable auto-approval of assets. This will save the effort of manually approving the assets to be staged on the production tables.

Exclude Unmanaged Assets - Enable this checkbox if you want to exclude unmanaged assets or do not want to sync unmanaged assets from Qualys to ServiceNow.

CI Operation - This field provides three CI operations on target CI Class.

Insert - Inserts new records if CI is absent.

Update - Updates the CI record if a CI is present.

Insert and Update - Updates existing CI records and creates a new record if it is absent.

Qualys to ServiceNow Sync - Select the information we should fetch for each asset: Sync Ports Info, Sync Volumes Info, Sync Network Interfaces Info, Sync Software Info.

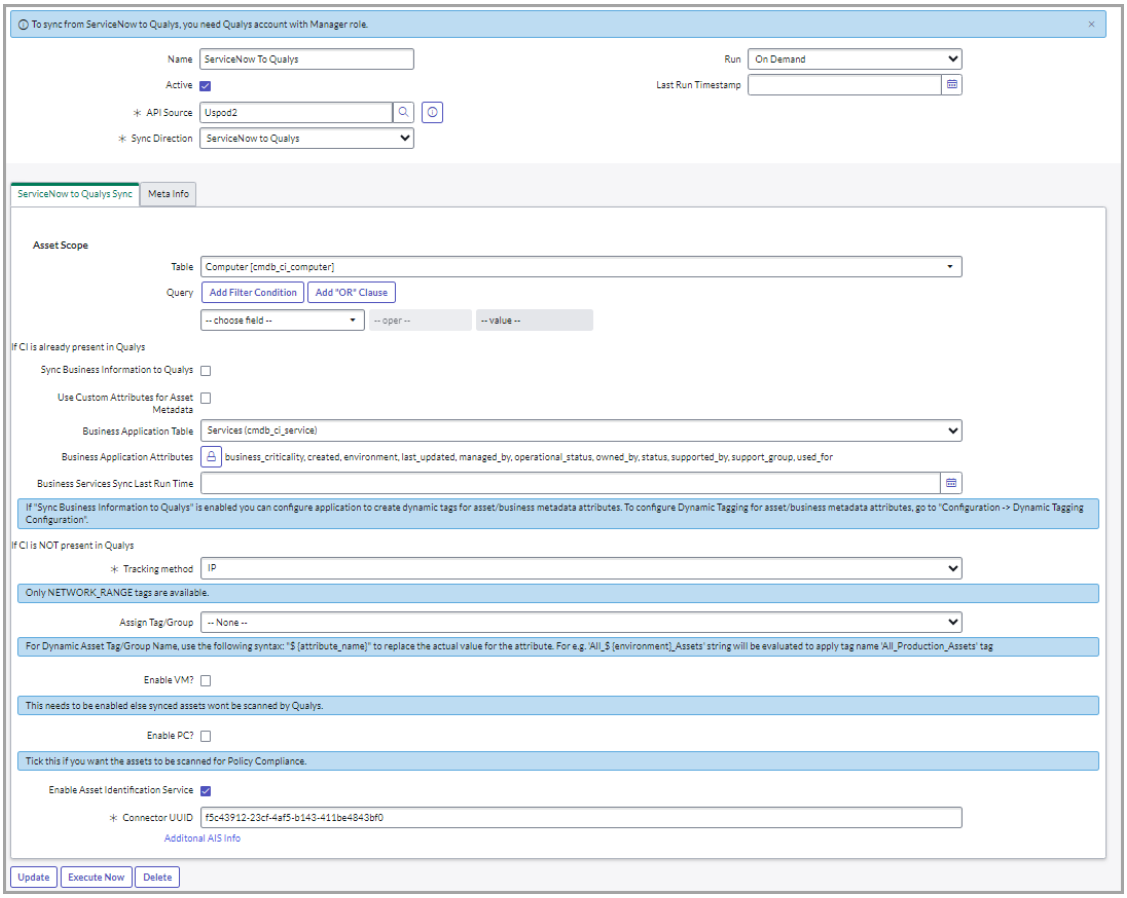
For initial sync from Qualys to ServiceNow, we recommend that you plan your schedules at an interval of every ten minutes.

Once you configure your selections, click Submit to create the schedule.

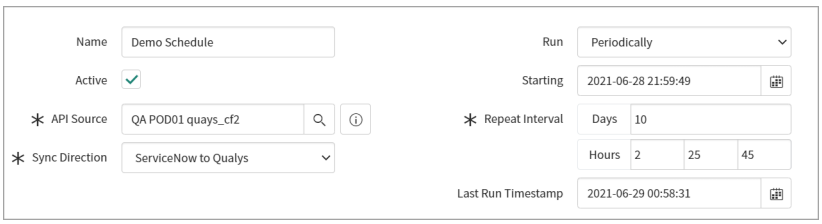
Note: The Meta Info fields and few other blank fields such as Last Run Timestamp, Last Fetched Host Id are populated with information only after the schedule is executed.

ServiceNow to Qualys Scheduling

Go to **Qualys CMDB Sync Service Graph Connector App** > **Schedules** and select "**ServiceNow to Qualys**" for Sync Direction.



Enter required details to configure the schedule:



Name - Provide a unique name for your schedule that helps you identify your schedule.

Active - Select to enable and activate the schedule you create. If you want to activate a schedule sometime later, you can disable this option.

API Source - Select the API source.

Sync Direction - Select ServiceNow to Qualys.

Run, Starting, Repeat Interval - Tell us the frequency of the schedule to be executed. For example, we could configure to execute schedule only on-demand.

ServiceNow to Qualys Sync - You can sync the IPs and Asset Metadata from ServiceNow to Qualys.

For initial sync from ServiceNow to Qualys, we recommend that you plan your schedules at an interval of every ten minutes.

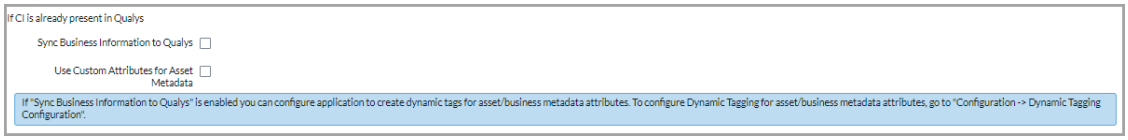
Asset Scope: - Define the scope of assets to be synced.

The **Table** and **Query** components allow you to select the asset metadata table as per your requirement.

Filter the query by choosing from the default fields to sync asset metadata to Qualys.

If CI is already present in Qualys

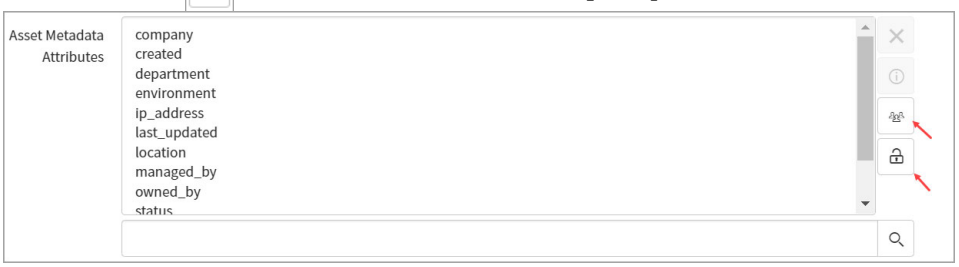
Configuration Item (CI) includes the base configuration for all the assets in the CMDB table.



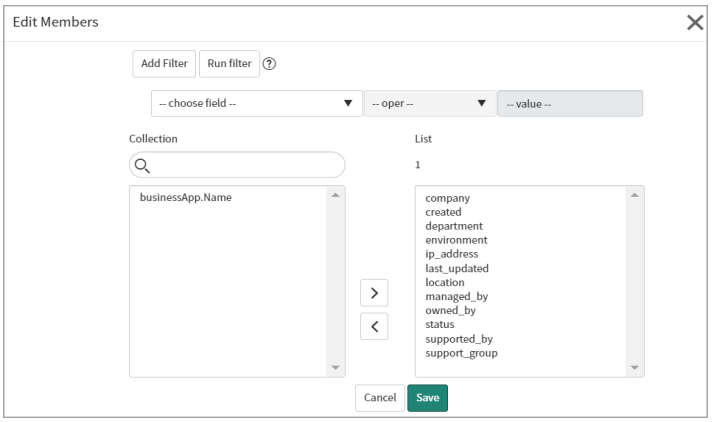
You can sync business information along with asset metadata to Qualys then enable the **Sync Business Information to Qualys** checkbox.

Note: If you do not enable the checkbox then the asset metadata will not get synced. Only the asset with new IP addresses will get synced to Qualys.

Asset Metadata Attributes: Unlock the **Asset Metadata Attributes** option by clicking the unlock button > Click **Add/Remove multiple** option.



A new pop-up window appears, and you can select the attributes from the list. Use **Add Filter** and **Run Filter** options to isolate the records > click **Save** > Click the lock button to lock your selected attributes.

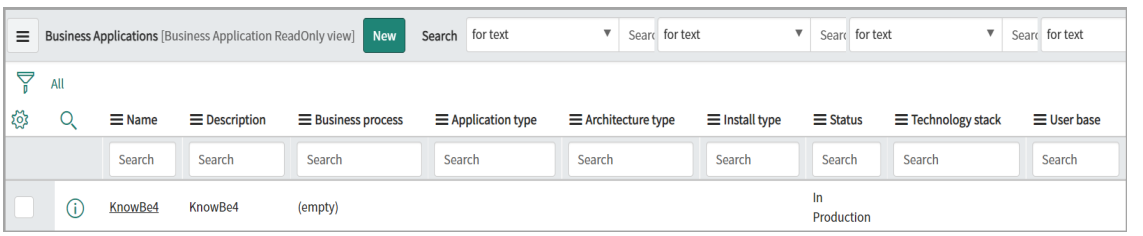


All of the selected attributes from the list can sync asset metadata from ServiceNow to Qualys.

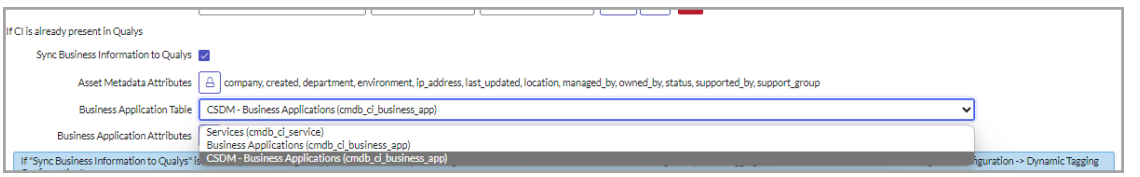
Appendix to view the mapping of the fields for asset and business application metadata.

Business Application Table: All of the selected table for business applications or services can get synced from ServiceNow to Qualys.

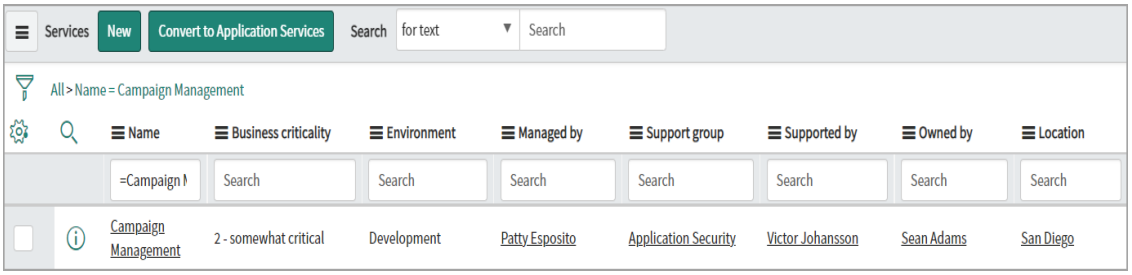
- Business applications: Use to sync the CMDB configuration item application data.



- CSDM: Use to sync the Business application data which are linked to services of CMDB configuration item.



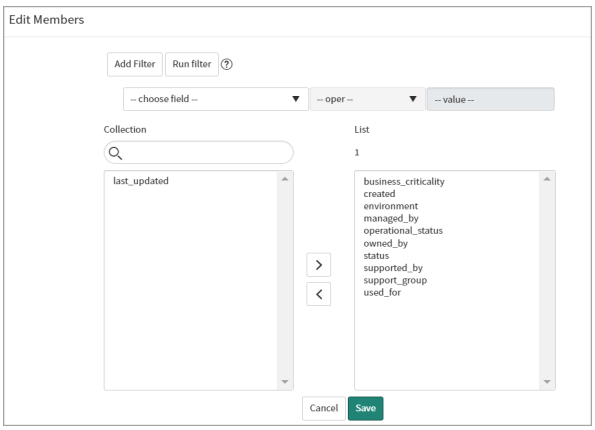
- Services: Use to sync the CMDB configuration item services data.



Business Application Attributes: Unlock the **Business Application Attributes** option by clicking the unlock button > Click **Add/Remove multiple** option.

A new pop-up window appears, and you can select the attributes from the list. Use **Add Filter** and **Run Filter** options to isolate the records > click **Save** > Click the lock button to lock your selected attributes.

All of the selected attributes for the business applications or services can get synced from ServiceNow to Qualys.



Note: For Business Metadata sync, if CI is present in Qualys, then it must be synced into ServiceNow and transformed to CMDB tables at least once. That CI will be associated with a Qualys Asset ID, and it will be used to sync Business Metadata from ServiceNow to Qualys.

Note: For Asset Metadata and Business Applications, 'created' and 'last updated' fields are mandatory for asset metadata sync and should not be removed; if these fields are removed, API calls to sync data will fail.

Use Custom Attributes for Asset Metadata

A custom attribute is a piece of information about the asset you wish to discover in the Qualys CSAM Inventory. You can specify any custom attributes from a list or fetch them with your script. The value is visible in **Asset System information** > **Custom attributes**. You can further filter assets or perform operations based on the custom attributes

1) SET: When **Use Custom Attributes for Asset Metadata** value is 'SET', the application deletes previously created custom attribute and will SET new attribute

2) ADD : When **Use Custom Attributes for Asset Metadata** value is 'ADD', the application adds a new attribute.

How to Add a Custom Attribute

1) Click **New** on the Custom Attributes section. A new record screen opens up. The **source table** field is auto-populated with the asset scope table configured when selecting the **ServiceNow to Qualys** schedule.

2) Provide the **Target key**. The **Target key** is the custom attribute key displayed on the Qualys Portal once the custom attribute is synced from ServiceNow to Qualys.

3) Select the **Source Type** as Source Field to sync the value in the source table field below or select Script to sync the output of the custom script.

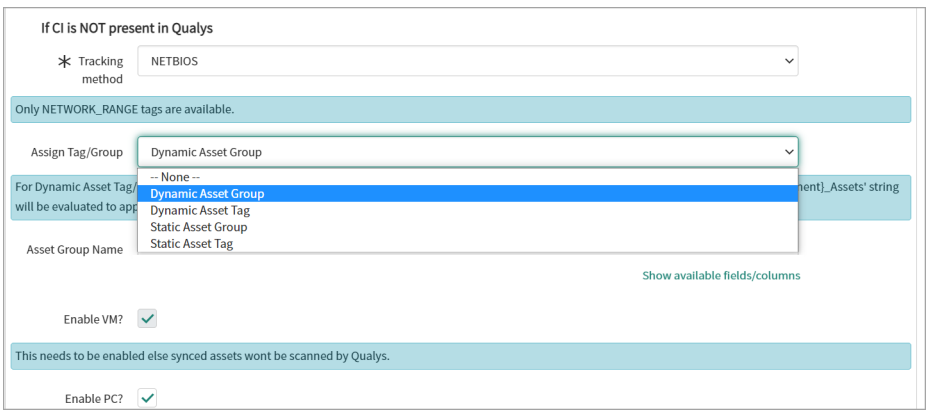
a) For **Source Field**, select from the list of available source types, and the selected value is synced with Qualys Asset Inventory.

b) For **Script**, provide the script to fetch the attribute data from a desired table.

4) Click **Submit** to create your Custom Attribute.

If CI is NOT present in Qualys

If CI configuration does not exist in the Qualys configuration environment then you will get only IPs from ServiceNow to Qualys.



Tracking Method - Choose the tracking method from IP, DNS, or NETBIOS for assets when syncing from ServiceNow to Qualys.

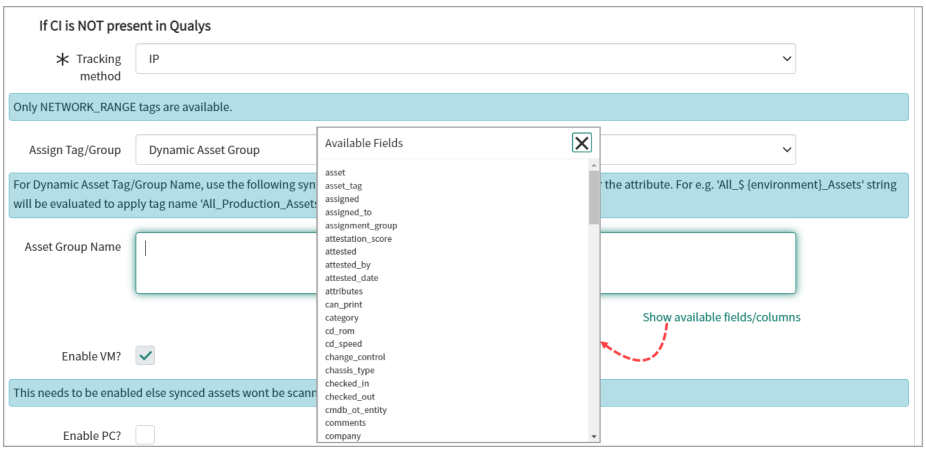
Assign Tag/Group (Optional) - We modified this functionality by adding a dropdown that includes Dynamic Asset Group, Dynamic Asset Tag, Static Asset Group, and Static Asset Tag.

When you select Dynamic Asset Group from the dropdown, an empty text box appears, which you can use to create the asset group on the runtime to sync the assets or CI with the Qualys.

When you select the Dynamic Asset Tag, an empty text box appears, which you can use to create a dynamic asset tag on the runtime to sync the assets or CI with the Qualys.

- To create the dynamic asset group name or tag name, a plain string and attributes name can be used. The attribute name can be used in format ${attribute name} e.g., ${environment}

You can use the **Show available fields/columns** option to add the attributes from the target table. It is a read-only list of available attributes from the target table, where you can copy the available attributes and paste them into the dynamic group or tag name field using the format ${attribute_name}



- If the dynamic tag name or group name is already present in staging tables, i.e., x_qual5_itam_nwapp_qualys_asset_groups or x_qual5_itam_nwapp_qualys_asset_tags - in that case, the Service graph connector will not initiate to create a call for another duplicate group or tag name. Instead, it will fetch and use the tag id or group id of the existing tag/group from staging tables.

When you select Static Asset Group, an empty text box appears, which you can use to search and enter the existing qualys asset group. Click the **Search** button to select the qualys asset group from the list.

When you select Static Asset Tag, an empty text box appears, which you can use to search and enter the existing qualys asset tag. Click the Search button to select the qualys asset tag from the list.

A Static Asset Tag or Static Asset Group. The "Static Asset Tag" or "Static Asset Group" box will assign that tag in Qualys Cloud Platform to any assets synced from ServiceNow.

Note: The Asset Tags that belong to only the NETWORK_RANGE type are populated. All other asset tags are ignored.

We also highly recommend adding filter conditions (at minimum IP Address) to assets to be synced. When selecting a TABLE, ensure that the table has a column with the "ip_address" name; otherwise, the ServiceNow > Qualys sync may not function.

VM (Vulnerability Management) is optional but disabled by default to scan the assets you sync. We recommend that you enable this option. It is optional to enable PC (Policy Compliance).

Once you configure your selections, click **Submit** to create the schedule.

Note: The Meta Info fields and few other blank fields such as Last Run Timestamp are populated with information only after the schedule is executed.

Note: If both VM and PC options are disabled, the Add IP flow will not work.

Enable Asset Identification Service

Asset Identification service discovers unmanaged assets based on the identification rules of the ServiceNow connector. An Unmanaged asset is the externally exposed asset that is unknown to you. As Qualys VMDR does not scan these assets, they are classified as unmanaged assets.

ServiceNow Configuration

To enable Asset Identification service for Unmanaged/Managed Asset, set the **Enable Enable AIS (Beta) - Asset Identification Service to sync managed and unmanaged Asset to Qualys** sync option to true on the **Properties** page.

1. Next, go to **Schedule** and click **New**.

2. Create a ServiceNow to Qualys Schedule.

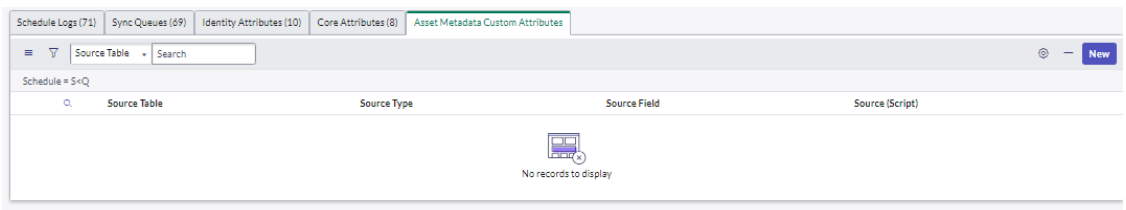
3.. Add **Configuration** in schedule.

4. Check option **Enable Asset Identification Service** to sync asset through **Asset Identification Service**.

5. Add **Connector UUID** - Provide the unique identifier of the Qualys ServiceNow Connector.

Add a Custom Attribute

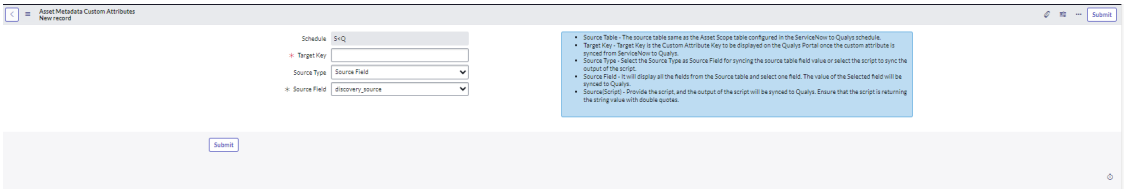
1. In Asset Metadata Custom Attributes related list, click **New**. A new record screen opens up. The source table field is auto-populated with the asset scope table configured when selecting the **ServiceNow to Qualys schedule**.



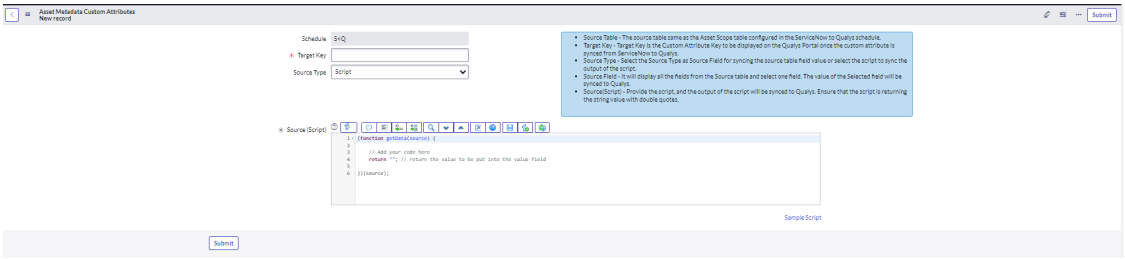
2. Provide the **Target Key**. The target key is the custom attribute key displayed on the Qualys Portal once the custom attribute is synced from ServiceNow to Qualys.

3) Select the **Source Type** as **Source Field** to sync the value in the source table field below or select **Script** to sync the output of the custom script.

a. For Source Field, select from the list of available source types, and the selected value is synced with Qualys Asset Inventory.



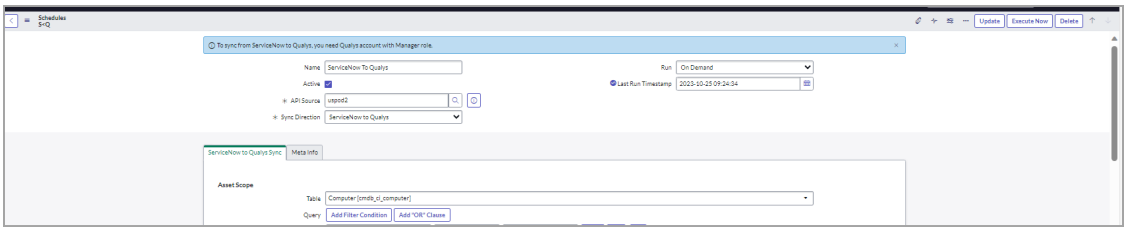
b. For Script, provide the script to fetch the attribute data from a desired table.



4) Click **Submit** to create your **Custom Attribute**.

Run Schedules

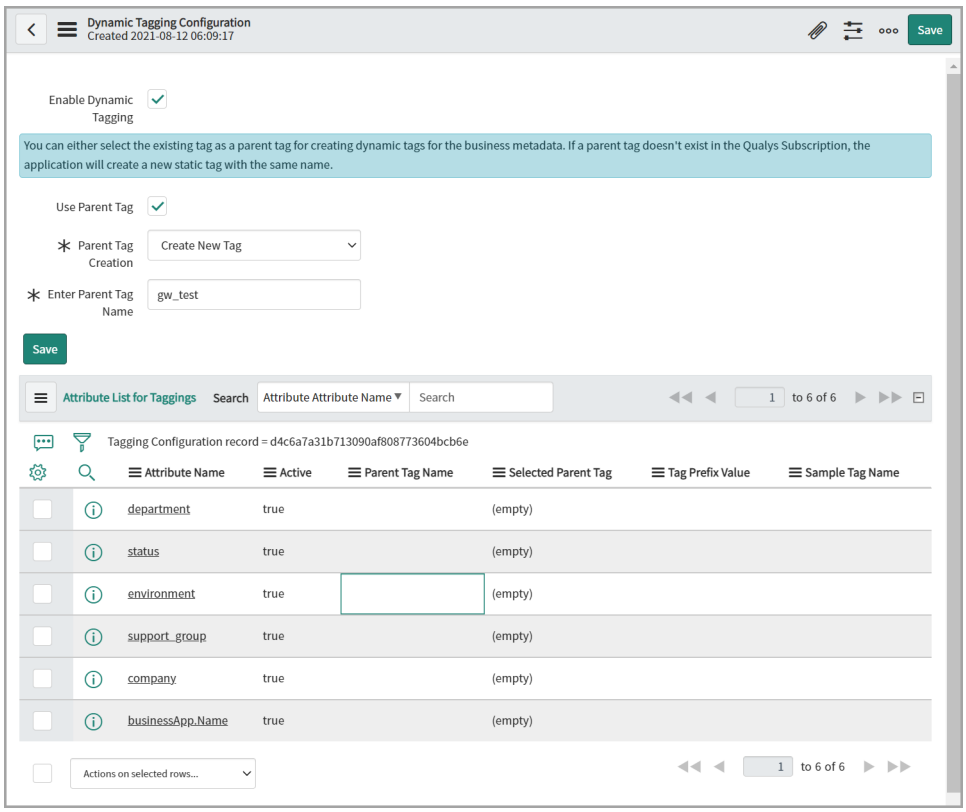
Navigate to **Schedules** > **ServiceNow to Qualys** to run your schedule. Click **Execute Now** from the top right.



Navigate to the bottom of the screen to view the **Sync Queues** tab, which lists your current execution status. If the execution succeeds, you can see the changes on the Asset Inventory.

Dynamic Asset Tagging Configuration

We've added a new dynamic asset tagging configuration feature that allows you to automatically create and maintain tags based on CMDB business information (Status, Organization, Environment, Business Criticality, Business Application Attributes) and use them across all Qualys solutions/apps for VMDR prioritization, asset scoping, and organizing vulnerability scans and reports.



Enter required details to configure the dynamic asset tagging:

Enable Dynamic Tagging - Select the checkbox to enable the dynamic tagging configuration.

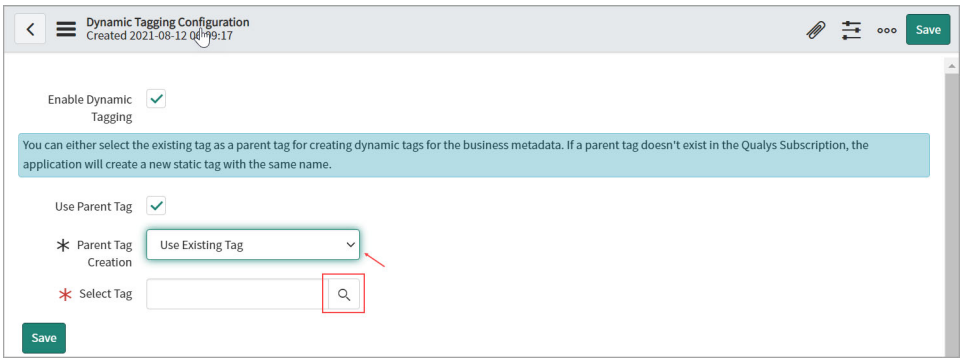
Once you enable the dynamic tagging configuration, a new option, Use Parent Tag will appear, and it will help you to set the Parent Tag.

Use Parent Tag - Select the checkbox to enable the options to create or use any existing tag.

Note: If you don't enable the parent tag, then the dynamic tag will be created without any hierarchy.

Parent Tag Creation - Use this option to create a new tag or select any existing tag.

Enter Parent Tag Name - Use this option to provide and set the name of your parent tag.



The Select Tag will appear on the page if you select the “Use Existing Tag” option from the Parent Tag Creation field. It will make it easier for you to choose the appropriate tag.

Select Tag - Use this option to select an existing tag. Select any existing tag from the Asset Tag List by using the Search button.

Note: You can select the existing tag as a parent tag to create dynamic tags for the business metadata. If a parent tag doesn't exist in the Qualys Subscription, the application will create a new static tag with the same name.

Save - Click save to save your parent tag configuration.

Note: If you don't want to tag to be created for any attribute, then make that attribute active false.

Once the tags for the attributes have created, the business metadata will get synced.

When the business metadata get synced, Qualys automatically generates the tags for the asset's attributes in the backend.

You can select or deselect attributes from the attribute list to create the tag according to your preferences.

Note: Before syncing the Asset Metadata, you need to configure the Dynamic Asset Tagging configuration. These steps are essential to apply Dynamic tagging automatically to your assets after syncing the Asset Metadata to Qualys.

Perform following steps to configure **Dynamic Asset Tagging configuration**:

1. Go to dynamic tagging configuration and enable it.

2. Then create the schedule ServiceNow to Qualys and configure asset metadata configuration in the schedule.

3. Save schedule

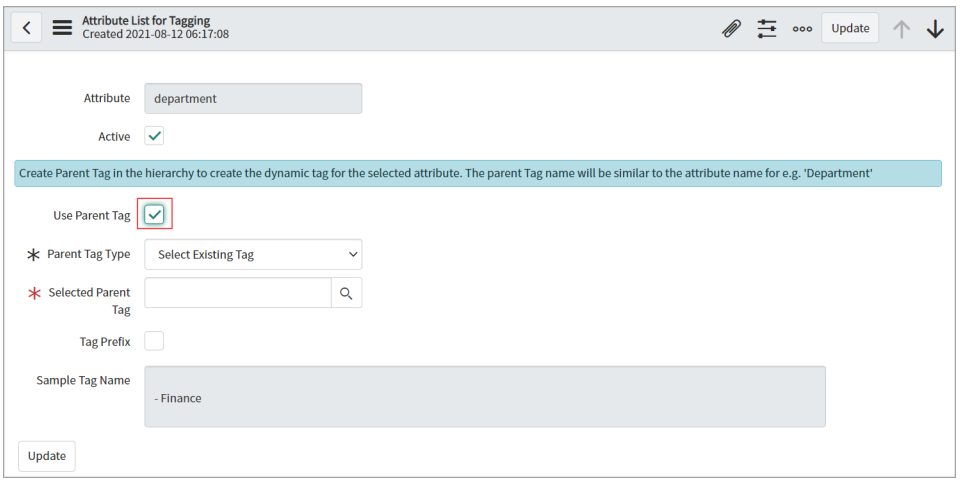
4. Execute schedule

Attribute List for Tagging

In the attribute list for tagging section, you can create and add the parent tag.

Attribute - This field shows the attribute name and will be similar to the parent tag name e.g. 'Department'

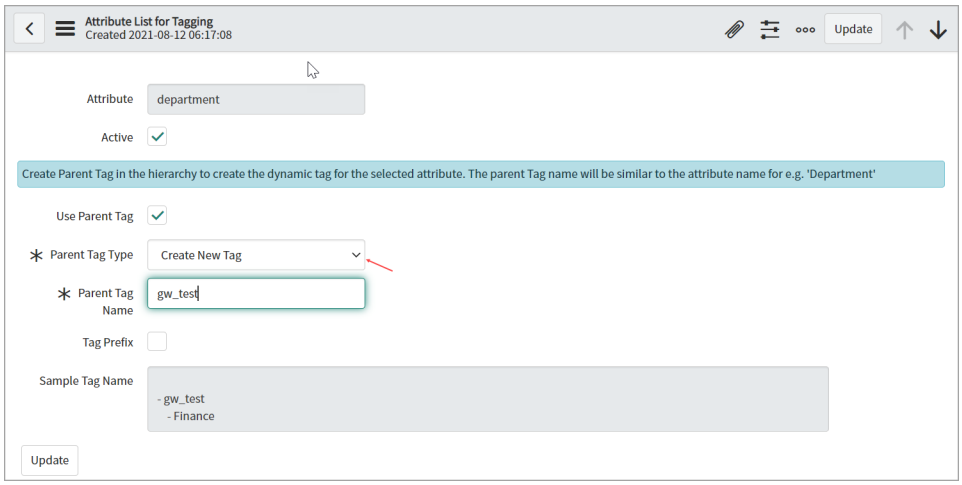
Active - Select the checkbox to activate the dynamic tag for the by default selected attribute.



Use Parent Tag - Select the checkbox to appear the new options on the page - It will help you to create a new tag or select any existing parent tag.

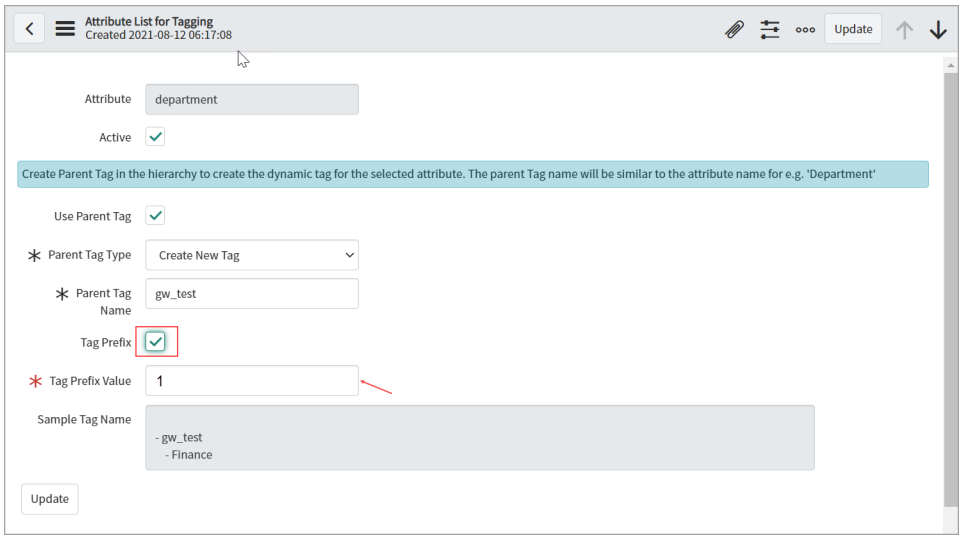
Parent Tag type - Use this option to create a new tag or select any existing parent tag.

Selected Parent Tag - Use this option to select any existing parent tag. Use the Search button to find and select any existing parent tag from the Asset Tag List.



The Parent Tag Name will appear on the page if you select the “Create New Tag” option from the Parent Tag Type field. It will make it easier for you to give the appropriate name to your tag.

Parent Tag Name - Use this option to provide and set the name of your parent tag.



Once you enable the Tag Prefix checkbox then Tag Prefix Value text-box will appear on the page.

Tag Prefix - Select the checkbox and enable the tag prefix to add a prefix to your tag.

Tag Prefix Value - Use this field to enter your tag prefix value.

The prefix will be appended to that specific attribute tag once you enter it.

Sample Tag Name - This text box displays the details of your attribute tag.

Update - Click update to update your newly created parent tag attribute configuration.

Business Criticality Mapping

The mapping of business capabilities is an important step in calculating the Qualys Asset Criticality Score from App/Services Business Criticality. The business criticality mappings provide a connection between the Business Applications Criticality and the Qualys Criticality.

All — 7 total Business Criticality Mappings

Business Application Table ▲	Qualys Asset Criticality Score	Source Criticality
Business Application Table: Business Applications (cmdb_ci_business_app) (3)		
Business Applications (cmdb_ci_business_...	5	High
Business Applications (cmdb_ci_business_...	2	Low
Business Applications (cmdb_ci_business_...	3	Medium
Business Application Table: Services (cmdb_ci_service) (4)		
Services (cmdb_ci_service)	5	1 - most critical
Services (cmdb_ci_service)	2	4 - not critical
Services (cmdb_ci_service)	3	3 - less critical
Services (cmdb_ci_service)	4	2 - somewhat critical

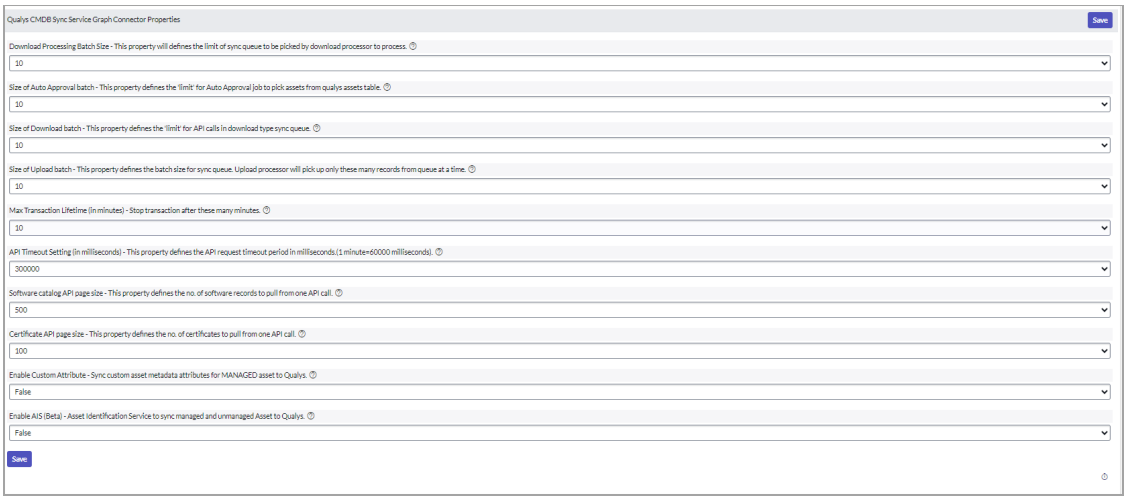
The business criticality mapping will be used while creating the tags for the asset criticality score. Asset criticality will be mapped to Business Name tags only.

For business applications records, we currently support two tables (Business Applications and Services). The criticality score field in both of these tables has a different value. Each application has a level of criticality, which must be synced to Qualys. You can see the Source Criticality (Low, Medium, High, etc.) and its Qualys Severity Values in numbers. You can add new mapping or update existing once as required.

Note: Except for the business app.name, we do not create all the tags with criticality scores.

Update Properties

The Asset Sync Properties have pre-populated values. However, you can always change the values to suit your needs. To view the existing properties or update the values, go to **Qualys CMDB Sync Service Graph Connector App** > **Configuration** > **Properties**.



Let's take a look at how each property functions.

Size of Auto Approval batch - It defines the Number of assets to be approved in one scheduled job and the limit for the Auto approval job to pick assets from the qualys assets table.

Download Processing Batch Size - It defines the limit of sync queue to be picked by download processor to process.

Size of Download batch - Configure two properties using this setting:

- The maximum number of assets to be fetched in a single API request call made by the scheduler.

- The maximum number of records to be fetched and processed at one go from the queue by the download processor.

Size of Upload batch - Maximum number of records to be picked by the upload processor from the queue to be uploaded to Qualys.

Max Transaction Lifetime (in minutes) - The Qualys App has time restrictions on schedule run time. Although by default the time restriction is set to 10 minutes, you can change the time restriction to any time between 10 and 60 minutes. If you configure the schedule time to 20 minutes, the schedule is stopped after 20 minutes. In such a case, next scheduled run will resume from where the earlier run was stopped.

API Timeout Setting (in milliseconds) - The wait time (in milliseconds) for the response to the API request.

Software catalog API page size - This property defines the number of software records to pull from one API call.

Certificate API page size - It defines the number of certificates to pull from one API call.

Use Custom Attributes for Asset Metadata -

- To enable **Use Custom Attributes for Asset Metadata** option, select 'True' and save page.
- To disable **Use Custom Attributes for Asset Metadata** option, select 'False' and save page.

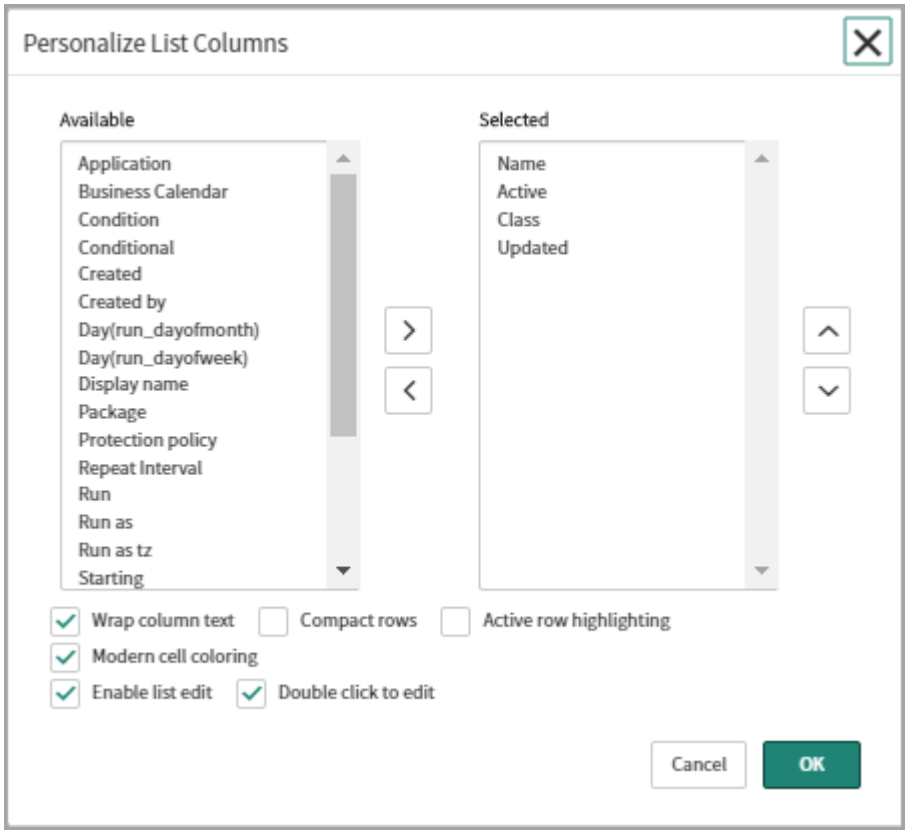
Enable AIS (Beta) - Asset Identification Service to sync managed and unmanaged Asset to Qualys.

- To enable **Use Asset Identification Service** to sync managed and unmanaged Asset to Qualys option, select 'True' and save page.
- To disable **Asset Identification Service** to sync managed and unmanaged Asset to Qualys option, select 'False' and save page.

Customize Data List Columns

We display few columns in the data lists. You can customize which columns appear and change the column sequence. We'll show you an example for adding the column "Qualys Asset Group" to data lists.

1) Click the ⚙ icon in the main pane. The Personalize List Columns pop-up appears.

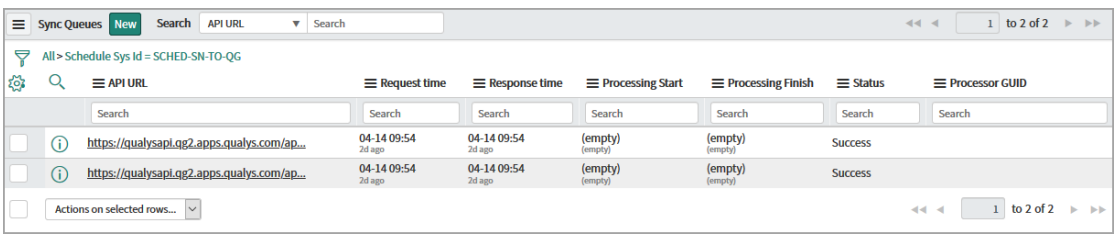


2) The Available list includes columns that are currently hidden. From this list, select the column you want to display. For example, double-click the column “Qualys Asset Group” and you’ll see it moved to the Selected list.

3) Enable or disable other settings like Wrap column text, double click to edit, and so on.

4) Click OK.

You’ll start seeing the Qualys Asset Group column. We display values in this column when the tag is present in the XML. If for some interfaces, the Qualys Asset Group is not available (XML does not contain it OR it’s empty), the value in the column will be empty.



Syncing

Start syncing your asset information between Qualys and ServiceNow CMDB.

In Summary

Sync Queue: This is where you'll see all jobs involved during the flow of assets between Qualys and ServiceNow.

Approve Qualys Assets: This is where you'll see assets that need manual approval when auto-approval is not enabled.

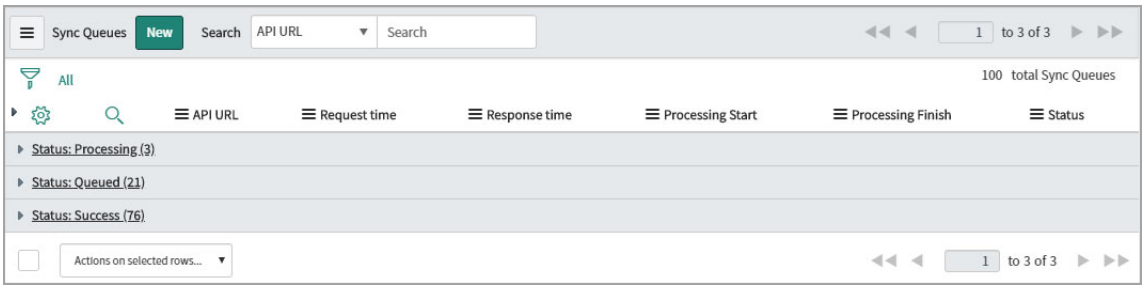
Failed Qualys Assets: This is where you'll see assets that failed to get transformed.

Sync Queue

The Sync Queue lists jobs of two types: Upload and Download. The Type column indicates the direction of the flow of assets.

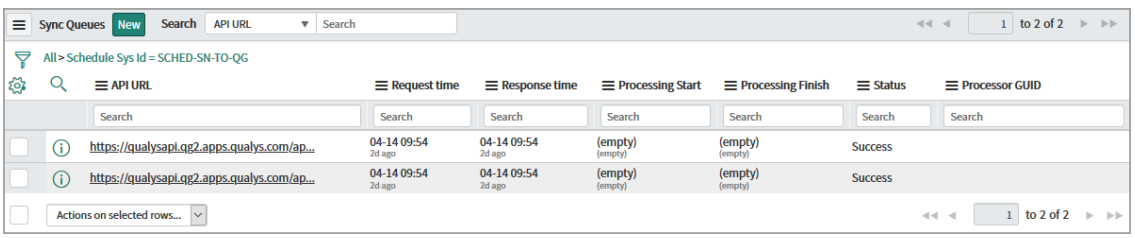
Download: Qualys to ServiceNow

This shows the list of jobs run from Qualys to ServiceNow assets. The status indicates whether the application was able to parse the XML response successfully. The XML that was transferred is also available here (usually attached as response.xml).



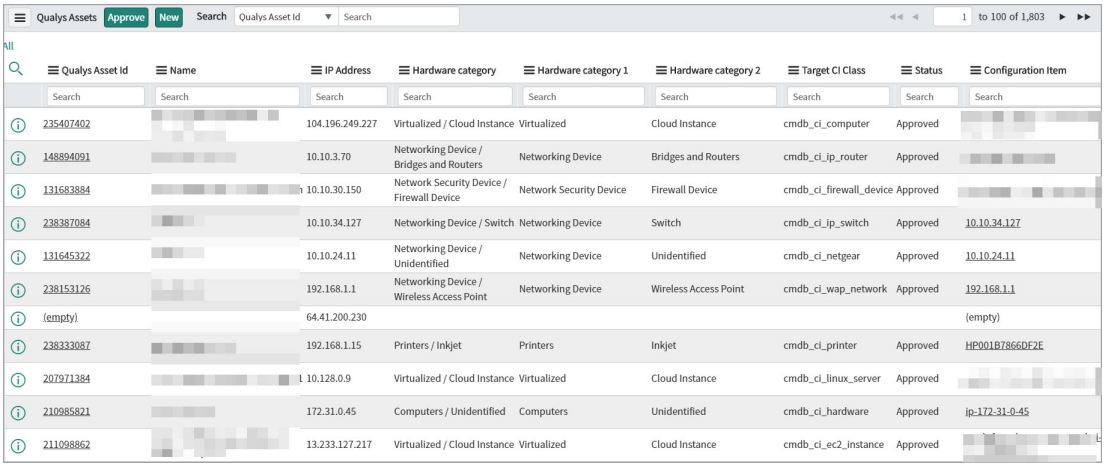
Upload: ServiceNow to Qualys

This is the list of assets to be synced from ServiceNow to Qualys Cloud Platform. Defining IP along with Asset Tag or Asset Group in Schedules will add two entries for an asset during upload: one for IP address and one for Asset Tag or Asset Group.



Approve Qualys Assets

Assets imported from Qualys to ServiceNow will appear here for approval after successful processing in Sync Queue. If processing fails for any record in Sync Queue (status = Error), none of the host assets in that XML will be visible here. You'll need to approve each asset individually or one screen at a time. You will overwrite data in your CMDB when you approve the asset.

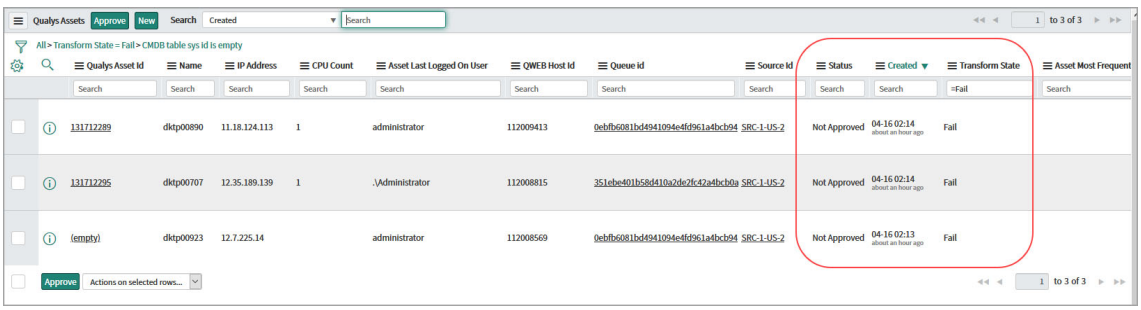


Save time by using auto-approval

Enabling auto-approval of assets saves you effort and time because you won't have to manually approve each asset. If you enable auto-approval, none of the assets are displayed in the Approve Qualys Assets list.

Failed Qualys Assets

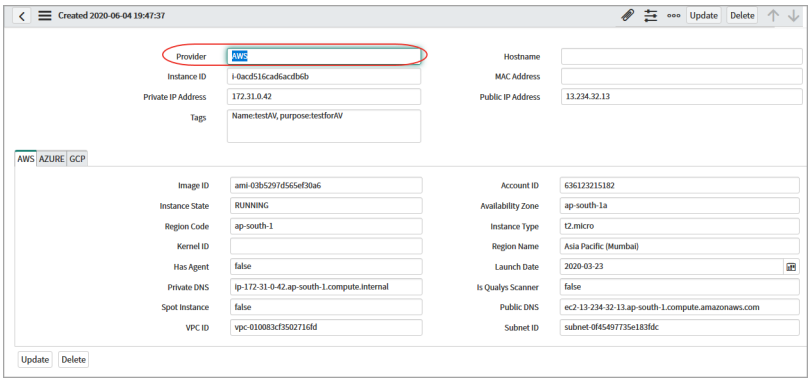
All of the assets imported from Qualys to ServiceNow that fail to get transformed are listed in the Failed Qualys Assets list. The transformation from Qualys to ServiceNow could fail due to criteria not being matched. For example, if you define the method to add data as "Identification Engine" and there is no identifier in the app.



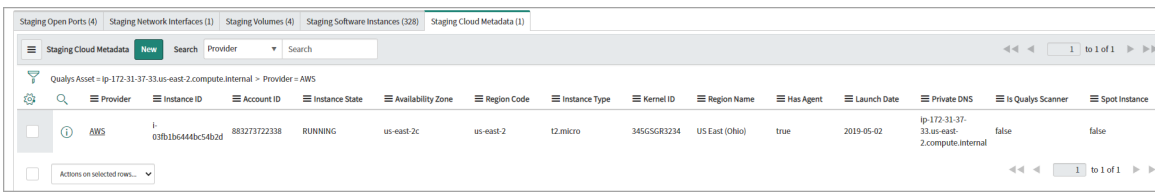
Support for Cloud Meta data

We currently support three cloud providers: Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP). All your cloud assets imported from Qualys to ServiceNow appear in Asset Details related tables for approval after successful processing in Sync Queue. Let us view few examples.

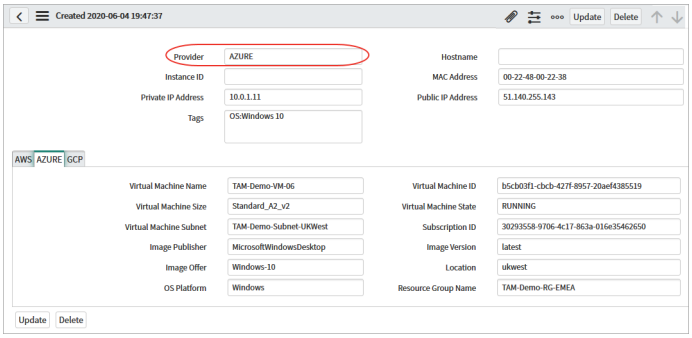
AWS



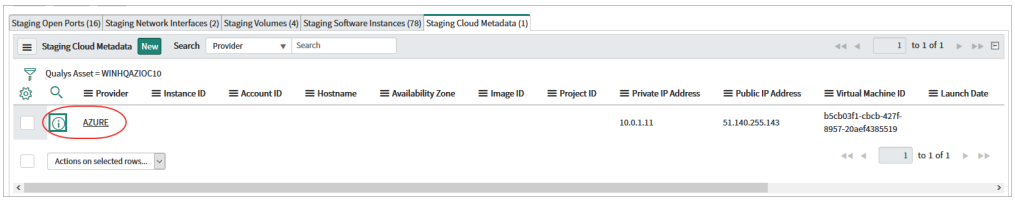
AWS: Staging Cloud Metadata



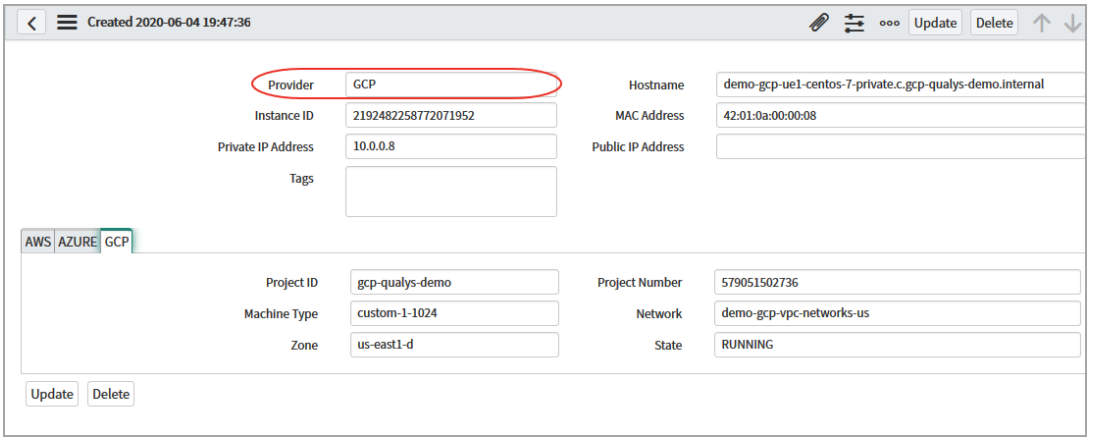
Microsoft Azure



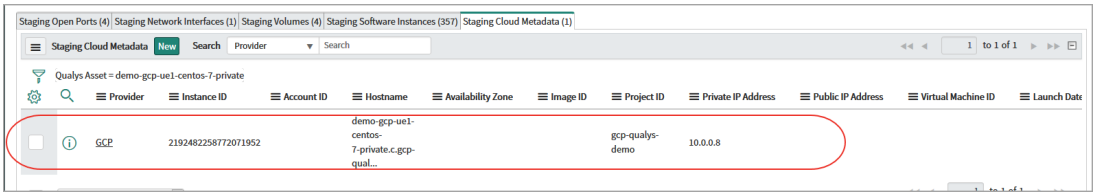
Microsoft Azure: Staging Cloud Metadata



GCP



GCP: Staging Cloud Metadata



Advanced Configuration

The Advanced Configuration tells you about various pre-defined configurations and steps to customize them to your need.

In Summary

App Scheduled Jobs - List of all scheduled jobs. Update or change the frequency of scheduled jobs as per your needs.

Transform Maps - Use transform mapping to map source and destination fields dynamically. Use predefined Transform Maps.

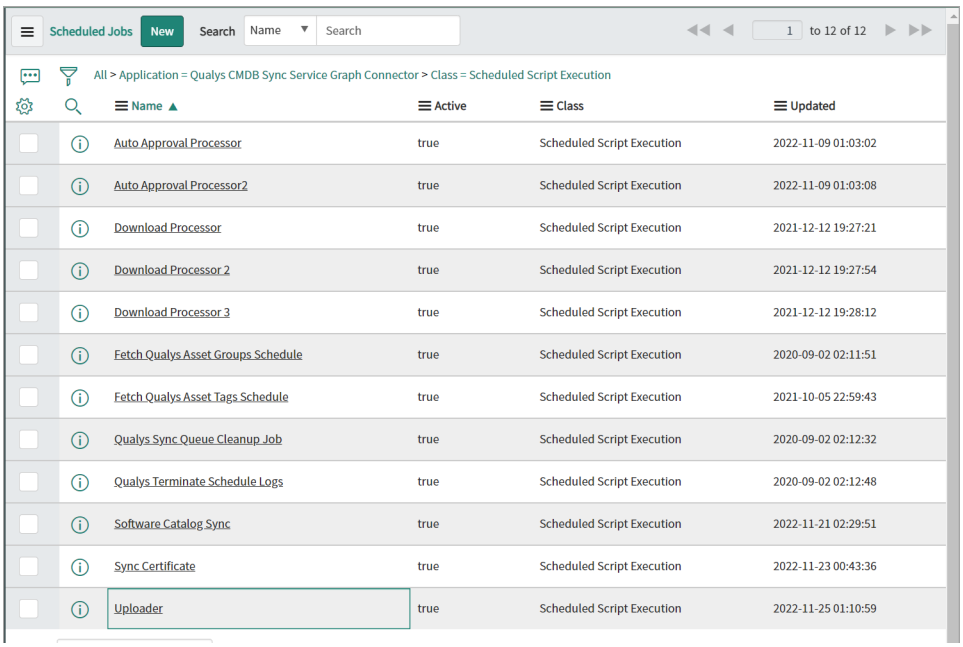
Computer - CI Class Mappings - Provides pre-defined class mappings to identify source assets.

Qualys Category - Hardware Device CI Mappings - Provide pre-defined class mappings for hardware related fields.

Application Log - All log entries related to the important activities in Qualys App.

App Scheduled Jobs

All of the App Scheduled Jobs are listed under Advanced > App Scheduled Jobs.



We support the following App Scheduled Jobs. The function and frequency of execution of each job is described. However, you can always update or change the frequency of scheduled jobs as per your needs.

Auto Approval Processor - Checks the records to know which schedule does it belong to and processes it further. Only records that have auto-approval enabled are processed by the Auto Approval Processor.

Download Processor - Picks the records of type Download with Queued status from sync queue and parses the XML. The number of records to be picked in a batch is defined by the Size of Download batch setting in Properties section. Currently, we support three download processors that work in parallel to fasten the process.

Fetch Qualys Asset Groups Schedule - By default, this schedule is executed once daily. Once executed, it syncs all of the Asset Groups in Qualys Cloud Platform for use within the App. You may run this more than once a day if you generate Asset Groups in Qualys Cloud Platform frequently.

Fetch Qualys Asset Tags Schedule - By default, this schedule is executed once daily. Once executed, it syncs all of the Asset Tags in Qualys Cloud Platform for use within the App. You may run this more than once a day if you generate Asset Tags in Qualys Cloud Platform frequently.

Qualys Sync Queue Cleanup Job - Clears the Sync Queue records with 'SUCCESS' status (older than 30 days) and records with 'ERROR' status (older than 60 days) on daily schedule.

Qualys Terminate Schedule Logs - Maintains a log of the transactions that are terminated due to exceeding the time required to execute the transaction.

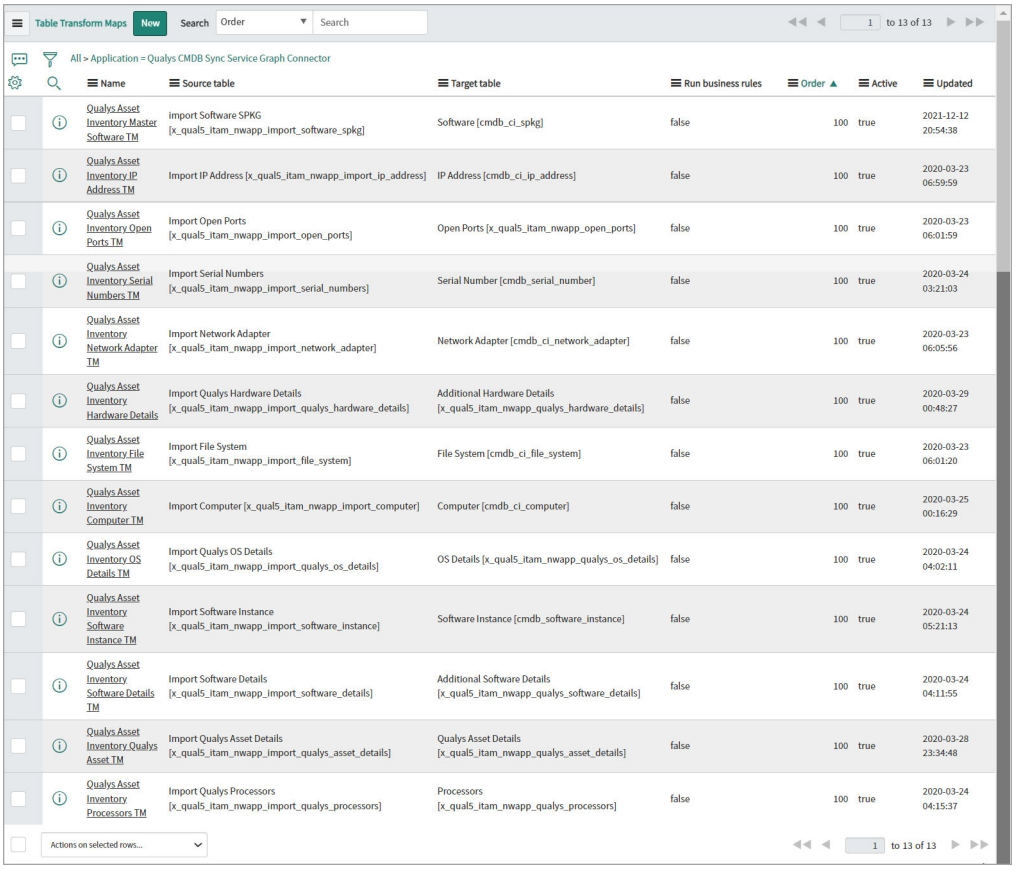
Uploader - Picks the records of type Upload with Queued status from Sync Queue and sends it to Qualys.

Sync Software Catalog - This can sync the software catalog details separately using Qualys software catalog APIs. This help in reducing the payload for asset list API.

Sync Certificate - Syncs the SSL Certificate and its relationship with assets from Qualys to ServiceNow.

Transform Maps

A transform map is a set of field maps that determine the relationships between fields in an import set and fields in an existing ServiceNow table. The transform map is used only for field mapping purposes.



Use transform mapping to map source and destination fields dynamically. You could easily use the predefined Transform Maps or create one to suit your need.

Qualys Pre-defined Transform Map	Type of Asset Information Affected
Qualys Asset Inventory IP Address Transform Map	IP Address
Qualys Asset Inventory Open Ports Transform Map	Open Ports
Qualys Asset Inventory Serial Numbers Transform Map	Serial Number
Qualys Asset Inventory Network Adapter Transform Map	Network Adapter
Qualys Asset Inventory Hardware Details	Additional Hardware Details
Qualys Asset Inventory File System Transform Map	File System
Qualys Asset Inventory Computer Transform Map	Computer
Qualys Asset Inventory OS Details Transform Map	OS Details
Qualys Asset Inventory Software Instance Transform Map	Software Instance

Qualys Pre-defined Transform Map	Type of Asset Information Affected
Qualys Asset Inventory Software Details Transform Map	Additional Software Details
Qualys Asset Inventory Qualys Asset Transform Map	Qualys Asset Details
Qualys Asset Inventory Processors Transform Map	Processors
Qualys Asset Inventory Master Software TM	Software Package

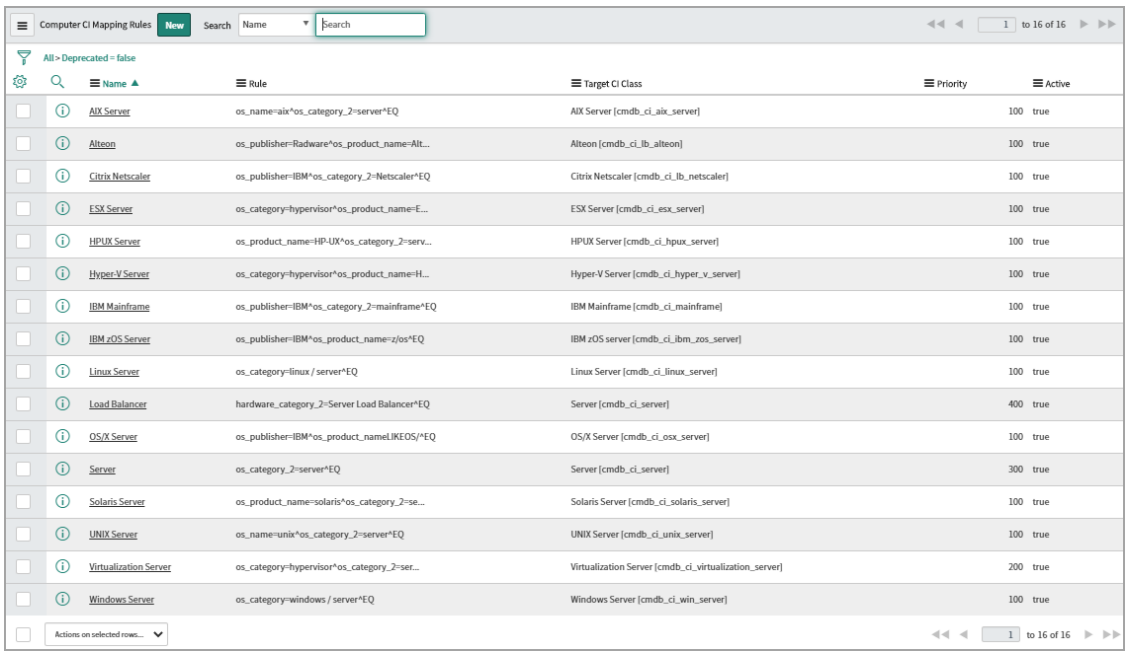
Learn more

Please refer to the ServiceNow documentation to learn more about transform maps.

Computer - CI Class Mappings

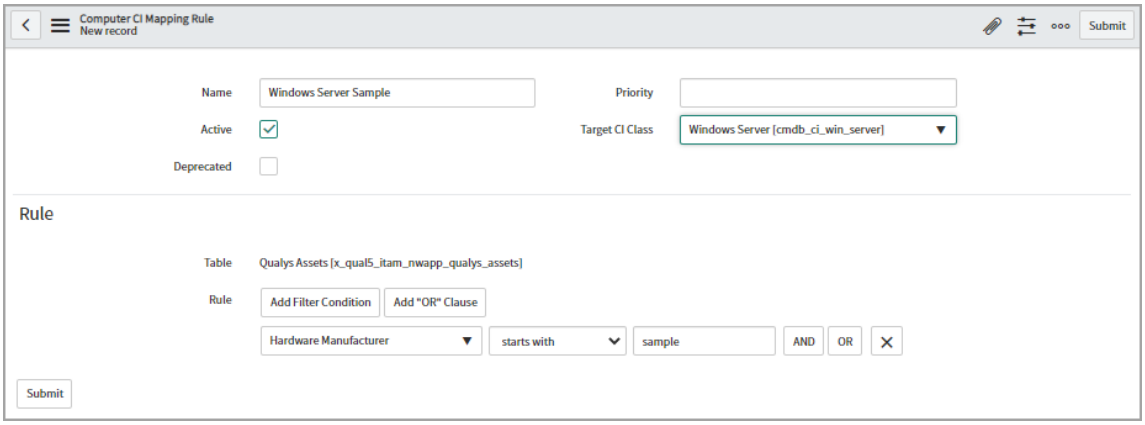
We have pre-defined tables that contain set of records with matching rules. The rules are defined using single or multiple attributes to uniquely identify source assets. The rules form the criteria to identify the assets to be picked from the source and then added to target CI classification.

The fields that could be mapped directly with the ServiceNow tables got listed in the classified tables. The custom fields that could not be directly mapped with the existing ServiceNow tables are listed in the related tables.



Classified Tables

The classified table includes the mapping of source fields with target fields that are recommended/used by ServiceNow.



Each column of the categorized CI class mappings is listed below:

Name: The pre-defined name given by Qualys to the CI class mapping.

Rules: The rule that forms the criteria to select the assets from the source table (Qualys).

Target CI Class: The name of the destination/target table (defined by ServiceNow) on the production environment where the data should be inserted. If you want change destination table, you can change the target CI class for the corresponding source field.

Active: The status of the mapping indicating if the current mapping is active or not. True indicates mapping being active.

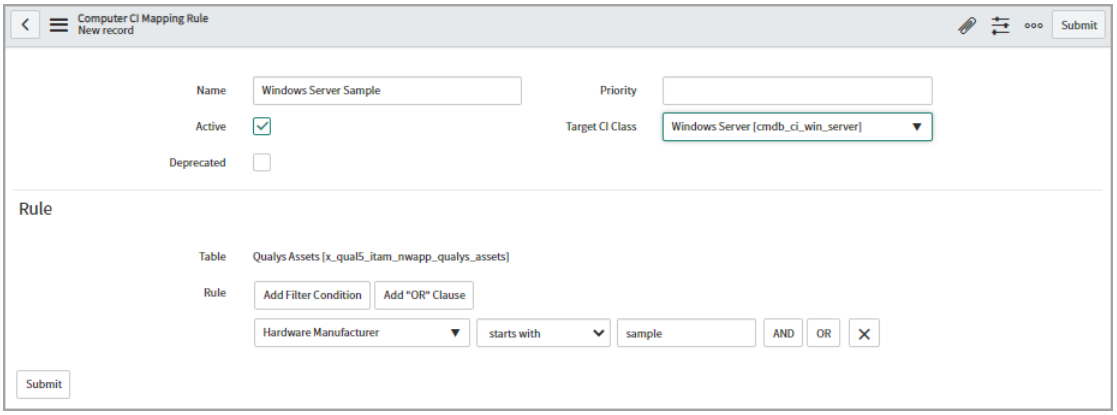
Priority: The priority decides the sequence in which the mappings should be acted upon. In case of multiple mappings for similar fields, the mapping with lowest number gets higher priority. For example, if there are two mappings with priority 50 and 100. The mapping with priority 50 gets higher precedence than 100.

For detailed list of field mappings for classified tables, refer to the Classified Tables.

Computer CI Class Mapping for Custom Fields

Let us see an example of creating custom fields mapping based on the hardware manufacturer for Windows server.

Click New and the blank form to create a new record for CI class mapping is displayed.



1. Provide a name for the record you want to create. For example, Windows Server Sample as we are creating mapping for Windows server.

2. Select the **Active** check box to activate the mapping you create. If the check box is clear, it indicates that the current mapping will not be used for inserting data in production table of ServiceNow.

3. Define the priority for the mapping. For highest precedence, use the lowest number in priority.

4. Select the **Target CI Class** table from the pre-populated list. The table you choose forms the destination table for the mapping.

5. Define the rule that would form the criteria to choose the source assets to be picked and mapped. You could form a rule using single or multiple attributes and filters.

Click **Submit** to complete the mapping process.

Qualys Category - Hardware Device CI Mappings

Similar to Computer CI Class mappings, we have pre-defined tables that contains set of records with matching rules for hardware related fields. The rules are defined using two attributes to uniquely identify source assets. If an asset meets the attributes that match the attributes listed in category 1 and category 2, only then the source asset is moved to the target CI classification table.

Note: The Computer CI Class Mappings has precedence over hardware devices CI mappings.

For detailed mappings, see Hardware Data Mappings and Cloud Data Mappings sections.

Related Tables for Custom Fields

The custom fields that could not be accommodated in the classified tables are listed in separate tables called as related tables.

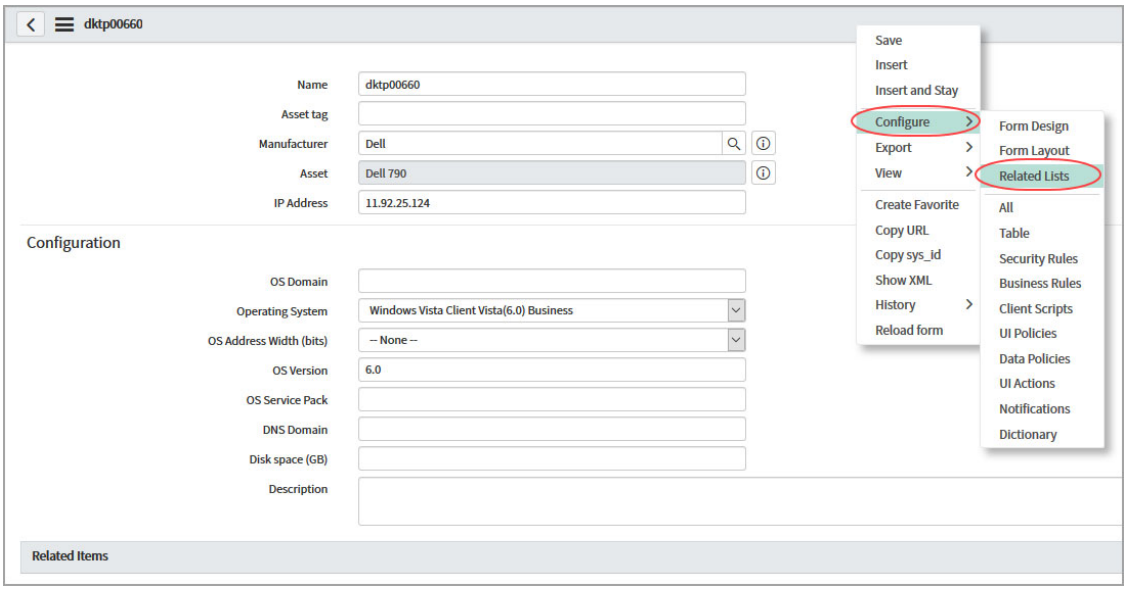
If you are using custom table that includes custom fields (excluding pre-defined fields), you need to create new mappings record to match the customizations.

Note: We do not recommend that you edit the mappings we provide in the related tables as it could lead to mismatch of the data and result it Identification Engine discarding the data.

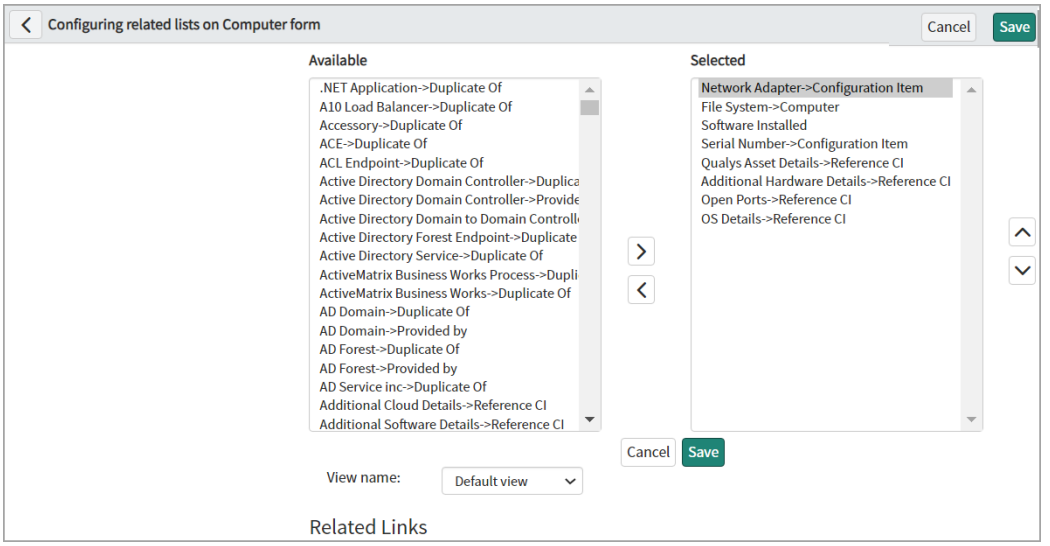
How to identify and view related table entries in out of the box table entries

1. Open the CMDB Table Record Entry (cmdb_ci_computer.list).

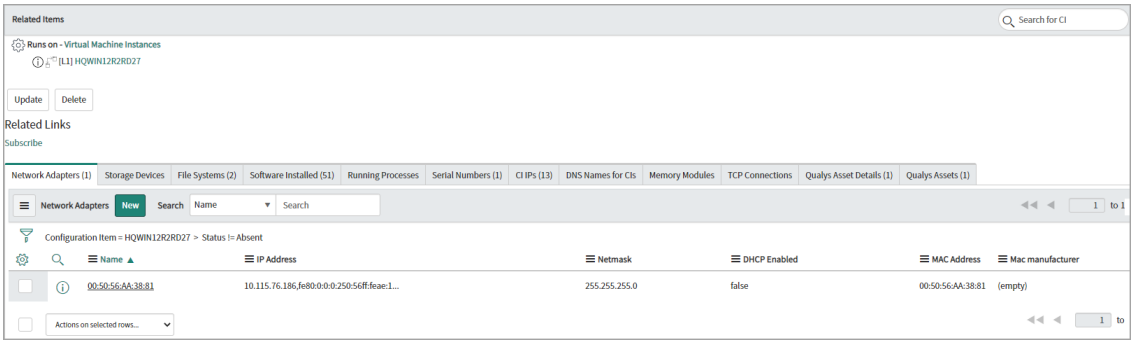
2. On the top grey bar, right-click and choose **Configure** > **Related lists** from the menu.



4. Select the required column names from **Available** and then click the **>** (Add) button to **Selected** check box and then click **Save**.

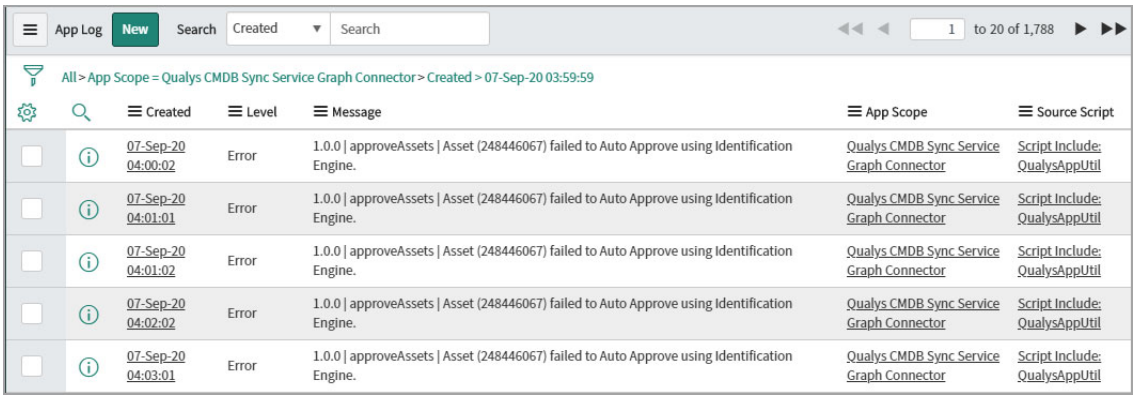


You can then view the details for the added columns in **Related Links** section.



Application Log

Log entries are listed under Advanced > Application Logs.



Logged activities include:

- API Response. For example, when you click Test Connection and if the account does not have access to Global IT Asset Inventory module.

- Schedule Lifecycle (Start, Run, and Finish).

- Lifecycle of Download Processor and Upload Processor (Start, Run, and Finish).

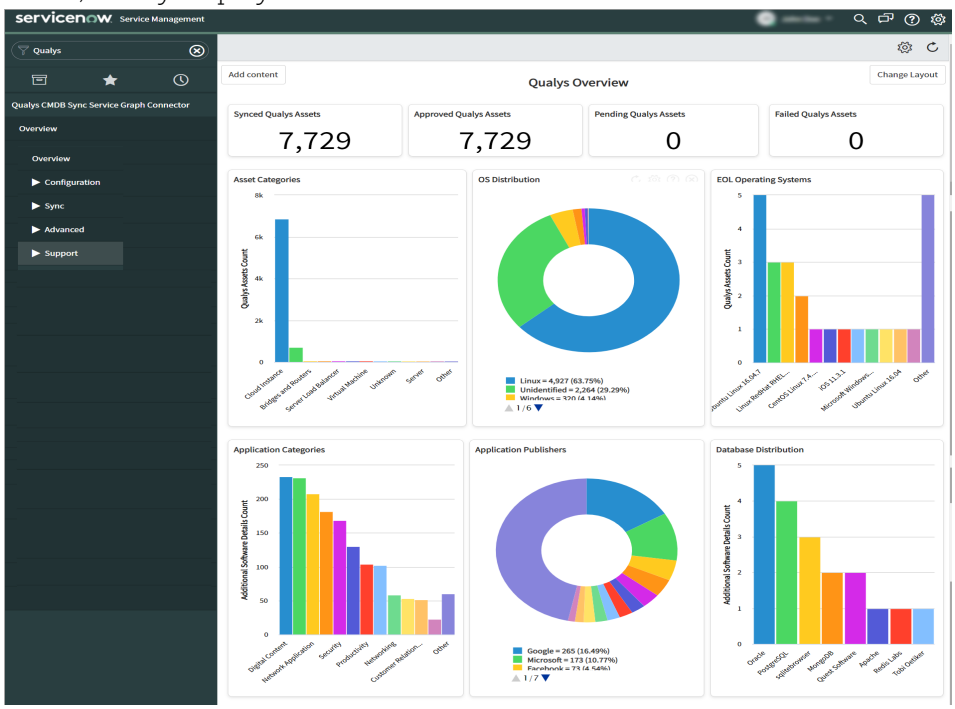
- Asset Approval type (Manual or Auto Approval).

- Fetching Asset Tags and Asset Groups.

View Reports

Overview

Go to Qualys CMDB Sync Service Graph Connector App > Overview. The Overview page displays a consolidated view of all the reports. If you view this page before syncing the assets, it may display all values as zero.



Note: From v1.3.1, to populate the data in the Application Categories, Application Publishers, Database Distributors, Software Lifecycle Stage, Software Distribution, EOL Applications widgets, and Additional Software Details table is being used. If you have not enabled Software Catalog Syncing to CMDB tables, then data in these widgets will not populate.

When the Overview page is launched for the first time, you see a list of 10 default reports. However, the reports can be customized based on your preference. For more information, see, Customize Overview Page.

Types of reports that you can configure:

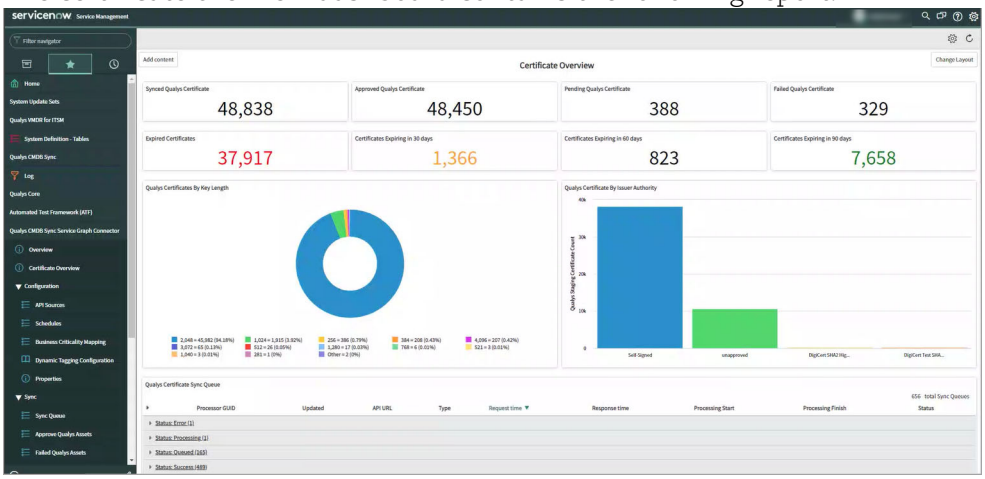
Report Name	Description
Qualys Assets Reports	
Approved Qualys Assets	The Approved Qualys Assets report lists the assets auto/manually approved. This number is listed on the production table.

Report Name	Description
Asset Categories	The Asset Categories report gives a clear picture of the various types of assets across your organization. The chart is a diagrammatic representation of the asset categories. Click the bar to view additional details about the respective asset category.
End of Life Operating Systems	The End of Life (EOL) Operating Systems report gives a clear picture of the various types of operating systems with the end of life across your organization. The chart is a diagrammatic representation of the operating systems. Click the bar to view additional details about the respective operating system.
Failed Qualys Assets	The Failed Qualys Assets lists the number of assets that are not transformed into the CMDB table.
Hardware Manufacturers	The Hardware Manufacturers report gives a clear picture of the various manufacturers of hardware across your organization. The chart is a diagrammatic representation of the hardware manufacturers. Click the slice to view additional details about the respective manufacturer.
OS Distribution	The OS Distribution report gives a clear picture of the operating systems installed on the assets across your organization. The chart is a diagrammatic representation of the operating systems. Click the slice to view additional details about the respective operative system.
Pending Qualys Assets	The Pending Qualys Assets report lists the assets which are not approved.
Synced Qualys Assets	The Synced Qualys Assets report lists the assets synced from Qualys to ServiceNow.
Software Report	
Application Categories	The Application Categories report gives a clear picture of the various types of applications installed on the assets across your organization. The chart is a diagrammatic representation of the various applications. Click the bar to view additional details about the respective application category.
Application Publishers	The Application Publishers report gives a clear picture of the various publishers of the application installed on assets across your organization. The chart is a diagrammatic representation of the publishers. Click the bar to view additional details about the respective publisher.
Database Distribution	The Database Distribution report gives a clear picture of the various types of the database used across your organization. The chart is a diagrammatic representation of the database distribution. Click the bar to view additional details about the respective database type.
End of Life Application	The End of Life (EOL) Application report gives a clear picture of the various types of applications with end of life across your organization. The chart is a diagrammatic representation of the Application. Click the bar to view additional details about the respective operating system.

Report Name	Description
Software Distribution	The Software Distribution report gives a clear picture of the various types of software used across your organization. The chart is a diagrammatic representation of the software distribution. Click the bar to view additional details about the respective database type.
Software Lifecycle Stage	The Software Lifecycle Stage report lists the lifecycle stages of applications. Example: GA, EOL/EOS.

Certificate Overview

The certificate overview dashboard contains the following report.



1. **Synced Qualys Certificate:** The Synced Qualys Certificates report lists, the certificates synced from Qualys to ServiceNow.

2. **Approved Qualys Certificate:** The Approved Qualys Certificates report lists, the certificates transformed successfully into the CMDB tables.

3. **Pending Qualys Certificate:** The Pending Qualys Certificate report lists, the assets which are not transformed.

4. **Failed Qualys Certificate:** The Failed Qualys Certificate lists, the number of certificates that are not successfully transformed into the CMDB table.

5. **Expired Certificates:** The count of certificates that are expired and not valid.

6. **Certificates Expiring in 30 Days:** The count of certificates that are expiring between 0 to 30 days.

7. **Certificates Expiring in 60 Days:** The count of certificates that are expiring between 30 to 60 days.

8. Certificates Expiring in 90 Days: The count of certificates that are expiring between 60 to 90 days.

9. Qualys Certificate By Issuer Authority: A chart that shows certificates by issuing authority.

10. **Qualys Certificates By Key Length:** A Pie chart that shows certificates by key length.

11. **Qualys Certificate Sync Queue:** This shows the list of Sync Queues for certificate download from Qualys.

12. Sync Certificate Log: This lists the logs of the Sync Certificate schedule.

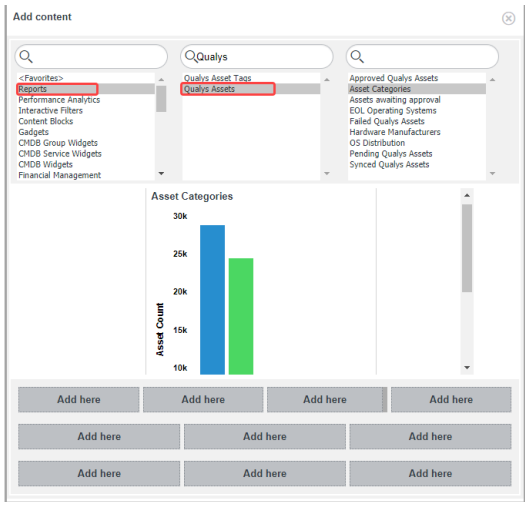
Customize Overview Page

You can add or remove the reports from the Overview page.

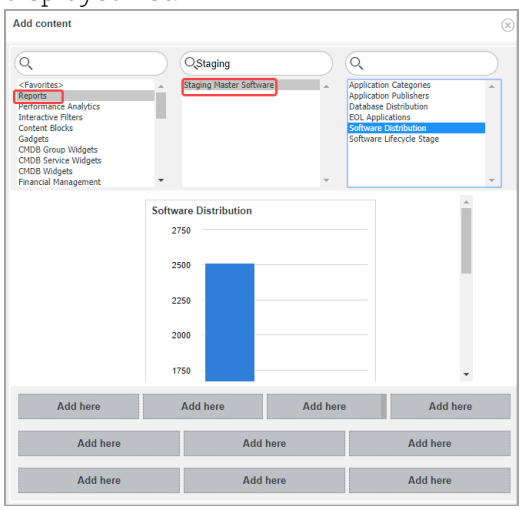
Add a Report

Click on **Add content**, the Add content pop-up appears. Select one of the following options to add reports:

-To add Qualys Assets reports: Select Reports from the first column, Qualys Assets from the second column and in the third column, select the required report from the displayed list.



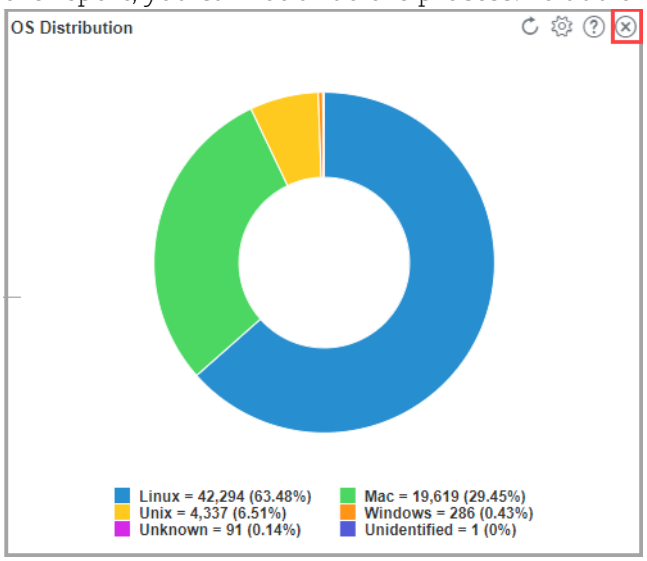
-To add Software reports: Select Reports from the first column, Staging Master Software from the second column and in the third column, select the required report from the displayed list.



Once you select the required report, click one of the **Add here** options. The 10 Add here options indicate different locations where you can add the report on the Overview page.

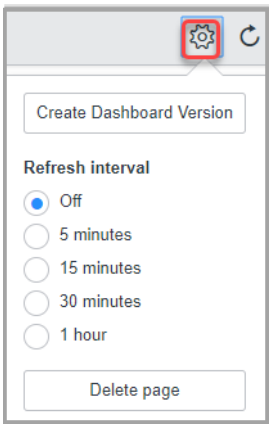
Remove a Report

To remove a report from the overview page, click on the close ⊗ option. Once you delete the report, you cannot undo the process. To add the same report again, see Add a Report.



Refresh Overview page

To refresh all the reports on the Overview page at a fixed interval, click on the Homepage Settings ⚙ icon and select the required Refresh interval.



Debugging and Troubleshooting

Here are scenarios that will help you debug certain common issues.

How to debug

In case of any unexpected application behavior one should check the application logs.

The application log has four different levels of logging: Information, Error, Warning, Debug

The application writes log entries after important transitions. For example, Schedule run, on click of test connection to API Server [Qualys CMDB Sync Service Graph Connector App > Advanced > Application Log]

Observed Issues

Scenario: Sometimes asset approval gives the user the error, "In payload invalid data source [SG-Qualys] exist. You need to provide a valid choice value from field [discovery_source] in table [cmdb_ci]"

Workaround: Navigate to **Fix Scripts** option and search for 'Add Discovery Source' in **Name** section. Open **Add Discovery Source** and click **Run Fix Script**.

Scenario: Sometimes clicking on 'Test Connection" gives 'error' response to user.

Workaround: Check the error message.

- Try to repeat the 'Test Connection' a couple more times (if all input parameters are correct then 'success' message is displayed and the validation state will change to 'validated'.)

- One can get the error message under 'Schedule Logs' for related entries in schedule record.

- If no valid error is displayed (i.e. you are sure that the credentials are correct but API reported "unauthorized"), try again after some time. If error persists, contact Qualys Support.

Scenario: When Download processor takes too much time to process

Workaround: Go to Properties and lower the Size of Download batch.

Scenario: Download Processor failed to process Sync Queue record(s)

Workaround: This may leave the corresponding Sync Queue entry in 'Error' state and the error details can be verified from 'Processing Notes/Message'

User should manually change the status back to

- 'Queued', and reset the 'Processor GUID' if user wants to process that response again.

If you reprocess any response, it will not lead to duplicate data, as application checks whether the record already exists in staging tables before inserting.

- 'Error', if user does not want to process it again.

Scenario: Failed to approve asset using Identification Engine/Invalid Update

This error is displayed when the application finds some error with Identification and Reconciliation APIs.

To verify the issue, you can to navigate to Failed Qualys Assets > Open the asset record and see the Notes section. This section contains the detailed error response, as received from Identification and Reconciliation API.

Scenario: Sometimes it is observed that 'approving' manually multiple assets gives 'Transaction Timeout' by ServiceNow

Workaround:

- In such case there is no data loss observed in asset transformation

- To overcome transaction timeout error, it is recommended to use 'Auto Approval' in schedule

Scenario: Duplicate entries found in cmdb_ci_computer for assets which were synced from ServiceNow to Qualys, scanned and then synced back from Qualys to ServiceNow

Workaround:

- If the user has added only IP address for the asset in the 'cmdb_ci_computer' table

Reason: Name is a mandatory parameter for ServiceNow IRE mechanism.

- If user added both name (any dummy name) and IP Address for the asset in 'cmdb_ci_computer' table

Reason: After scanning the asset, the name discovered during the authenticated / unauthenticated scan and the dummy name that was provided could be different.

Note: There would be no duplicate entry in 'cmdb_ci_computer' if the name is exactly same for the asset before sending the data from ServiceNow to SericeNow

Anticipated Issues

- It is quite frequent to have error in opening/viewing attached 'response.xml' from sync queue records. Those response.xmls are considered as incomplete.

List of expected failure modes

- Qualys API server is undergoing maintenance/downtime

- Qualys subscription expired

- User credentials used are incorrect

- User credentials are correct, but user has no Qualys App subscription from Qualys

Number Mismatch Between Staging and Production Tables: Assets

Assets with the Same Name: If there are multiple assets with the same name. after approval of the production class, not all will be added as separate records. The first asset which is approved gets added as a separate record. All the other assets with the same name get approved, but the IRE version updates the same record. However, the same record may contain multiple values for the same fields.

The discrepancy is observed in the following scenarios:

-Assets discrepancy could be there in the production table if the assets have the same names

Cause: IRE version uses a name to identify the CI class. Name is a mandatory parameter for transformation.

Number Mismatch Between Staging and Production Tables: Software

IRE version needs a software name and version of the data being transformed. Name is a mandatory parameter for transformation. For example, if the software has no Name/Version: The software without a name doesn't make any sense, The Software (OOB table) uses a 'key' attribute consisting of name and version.

For example, the software has the same name and the version number in the staging area. In such a case, duplicate entries may be created. Check the application log. Skipping duplicate entry

Field name missing in production tables

If you notice few fields that exist on Qualys UI or API response, but cannot locate it in ServiceNow out of box (OOB) tables. Cause: Mapping for such fields may not exist. For a complete list of mappings, refer to Field Mapping for Tables. If field mappings do not exist in the OOB tables, then such fields are not transformed into production tables. For example, the 'hostname' for network adapter exists in the staging table but missing from the production table (cmdb_ci_network_adapter). Cause: The cmdb_ci_network_adapter table does not have a mapping for the hostname field. Hence the field value is not available in the production table.

Truncated Value

If the field value exceeds the field limit then the value may get truncated. The application does not update any of the OOB table structures: like field value lengths.

Common Questions

Can user add data to ServiceNow app from different Qualys servers?

Yes, user can add asset data from different Qualys PODs. User needs to create different API Sources and Schedules as per Qualys servers.

What are Upload and Download type records in Queue?

It can be easily differentiated by Type field available in the table. For Downloading data to ServiceNow app (i.e syncing assets from Qualys to ServiceNow) Type will be Download. For Uploading data to Qualys (Syncing assets from ServiceNow to Qualys servers) Type will be Upload.

Where can I find Assets which failed to transform in ServiceNow table?

You'll find these assets in Failed Qualys Assets. Users can then approve these assets again.

How to customize the related table rules for transformation

Let's consider an example where we want to transform assets to the production table for assets with certain hardware details. The default settings, the assets will fail to approve due to related entry rules.

In such scenarios, execute the following steps to approve assets depending on the hardware details.

1. Open the Related Entry table (cmdb_related_entry_list).

2. Search for the appropriate table entries (for example, hardware details in related table column search field or any preferred method of searching).

3. Modify the entry details. You could do either or both the steps listed depending on the criteria and result that you want to achieve.:
- Allow null attribute from 'false' to 'true' [If you want to allow hardware details with 'hardware full name' as null / empty (as our 'criterion attribute' is 'hardware_full_name')]

- Modify entry from 'Active' to 'False' to uncheck the rules for transforming the assets.

Why do I view timestamps in GMT for schedules despite configuring a different timezone?

In the schedule scripts, we use ServiceNow's new GlideDateTime().getDisplayValueInternal(); function to update the schedule last_run_timestamp. When this object is directly instantiated and used (e.g. in scoped application background script), it returns time in GMT, irrespective of the timezone configured for user under whom this script runs. That's how it is designed.

Also, since ServiceNow does not allow scoped applications to set the timezone, the app cannot do that on behalf of the user who created the schedule. However, the time value you see on the UI is shown in the user set timezone - even if you set GMT date-time in this column. When the schedule runs next time, it fetches value in GMT, and not the one you see on UI. That may lead to confusion, and log entries show time in GMT, for this reason we recommend that the ServiceNow users set their time to GMT.

The Schedules I defined pulled the data accurately till yesterday. But, today, the same schedule is unable to fetch any assets or related data.

Check your application logs. The reason the schedules are unable to fetch assets is because either your trial period or your subscription has expired. Contact your TAM to extend your subscription. Once you have an active subscription, you need to activate your API Source and the schedules will fetch the assets.

If an asset is purged from Qualys, what will its status be in ServiceNow CMDB?

The asset purged from Qualys will not automatically be purged in ServiceNow CMDB. The asset must be manually purged from ServiceNow.

No related file system details for CIs other than Computer and it's child CI classes

Depending upon CIs and their dependent relationship, the file system is available only for Computer and it's child classes.

Known Issues

Here are a few known issues/limitations in the CMDB Sync Service Graph Connector App:

- The widgets Application Categories, Application Publishers, Database Distributors, Software Lifecycle Stage, Software Distribution, and EOL Applications are not populating due to changes in the Software info syncing process.

- The Business Criticality information is not getting synced while syncing Business Metadata from ServiceNow to Qualys for Business Application table.

- We have observed that in some cases, there is a discrepancy in certificate count between Cert View V2 API and Cert View Qualys UI. ServiceNow certificate details will be based on the API response, so in such cases, the discrepancy can be observed between ServiceNow and Qualys UI. We have logged a ticket for the Certificate View team to investigate it further.

- We have observed that transformation of assets having the target class esx_server fails as the asset requires identifications rules of correlation id.

- We have noticed that the user might not be able to delete the asset metadata custom attribute unless they try to delete the attribute from the list view.

Field Mapping for Tables

This chapter lists the detailed field mapping (source to target) for classified as well as related tables.

Classified Tables

The classified table includes the mapping of source fields with target fields that are recommended/used by ServiceNow

Asset Data Model

Computer (SN Table)

Qualys Staging Table Attributes	ServiceNow Production Table Attributes
manufacturer	manufacturer
memory	ram
bios_asset_tag	asset_tag
os_full_name	os
os_update	os_service_pack
os_architecture	os_address_width
model	model_id
os_version	os_version
name	name
processor_cpu_counts	cpu_count
processor_description	cpu_name
ip_address	ip_address
virtual	virtual
bios_serial_number	serial_number
os_update	os_service_pack
processor_speed	cpu_speed

Serial Number (SN Table)

Qualys Staging Table Attributes	ServiceNow Production Table Attributes
bios_serial_number	serial_number
hardware_serial_number	serial_number

Note: The serial number type depends on the type of serial number. Serial number type for a bios serial number is bios and serial number type for a hardware serial number is system.

File System (SN Table)

Qualys Staging Table Attributes	ServiceNow Production Table Attributes
name	name
free_size	free_space_bytes
total_size	size_bytes

Network Adapter (SN Table)

Qualys Staging Table Attributes	ServiceNow Production Table Attributes
mac_address	name
address	ip_address
mac_address	mac_address

IP Address (SN Table)

Qualys Staging Table Attributes	ServiceNow Production Table Attributes
ip_address	ip_address
ip_address	name

Software Data Model

Software Instance (SN Table)

Qualys Staging Table Attributes	ServiceNow Production Table Attributes
name	name
install_date	install_date
<additional field>	<Reference to cmdb_ci_package>
<additional field>	Reference to the CI the software is installed on
software	software

Related Tables

The related tables list the custom field mappings that could not be accommodated in the classified tables. We recommend that you do not alter the mappings in the related tables.

Asset Data Model

Qualys Asset details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
asset_lastloggedonuser	asset_lastloggedonuser
asset_most_frequent_user	asset_mostfrequentuser
qualys_asset_id	qualys_asset_id
asset_uuid	asset_uuid
bios_description	bios_description
last_boot	last_boot
last_modified_date	last_modified_date
time_zone	time_zone
qweb_host_id	qweb_host_id
netbios_name	netbios_name
type	type
asn	asn
isp	isp
risk_score	risk_score

Qualys Operating System details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
os_category	os_category
os_category_1	os_category_1
os_category_2	os_category_2
os_category_type	os_category_type
os_edition	os_edition
os_lifecycle_confidence	os_lifecycle_confidence
os_lifecycle_eol_date	os_lifecycle_eol_date
os_lifecycle_eol_support_stage	os_lifecycle_eol_support_stage
os_lifecycle_eos_date	os_lifecycle_eos_date
os_lifecycle_eos_support_stage	os_lifecycle_eos_support_stage
os_lifecycle_ga	os_lifecycle_ga
os_lifecycle_stage	os_lifecycle_stage
os_market_version	os_market_version
os_name	os_name
os_product_name	os_product_name
os_publisher	os_publisher

Qualys Hardware details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
hardware_category	hardware_category
hardware_category_1	hardware_category_1
hardware_category_2	hardware_category_2
hardware_category_type	hardware_category_type
hardware_lifecycle_confidence	hardware_lifecycle_confidence
hardware_lifecycle_eos_date	hardware_lifecycle_eos_date
hardware_lifecycle_ga	hardware_lifecycle_ga
hardware_lifecycle_intro_date	hardware_lifecycle_intro_date
hardware_lifecycle_obsolete_date	hardware_lifecycle_obsolete_date
hardware_lifecycle_stage	hardware_lifecycle_stage
hardware_product	hardware_product
hardware_full_name	hardware_full_name

Qualys Open Ports details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
description	description
detected_service	detected_service
port	port
protocol	protocol

Qualys Processors details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
processor_cpu_counts	processor_cpu_counts
processor_description	processor_description
processor_speed	processor_speed

Qualys EASM WhoIs details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
domain	domain
processor_description	processor_description
domain_status	domain_status
dnssec	dnssec
registrant_name	registrant_name
registrant_organization	registrant_organization
registrar	registrar
registrant_email	registrant_email
registrant_contact	registrant_contact
organization_name	organization_name
created_date	created_date
updated_date	updated_date

Qualys EASM Domains details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
domain_name	domain_name

Qualys EASM Subdomains details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
subdomain_name	subdomain_name

Unique Certificates details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
self_signed	is_self_signed
issuer_name	issuer_common_name
key_size	key_size
last_found	last_discovered
signature_algorithm	signature_algorithm
subject_name	subject_common_name
subject_name	name
subject_country	subject_country
subject_locality	subject_locality
subject_organization	subject_organization
subject_state	subject_state
dn	fingerprint
certhash	subject_distinguished_name
valid_from	valid_from
valid_to	valid_to

Qualys Asset Certificates details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
issuer_organization	issuer_organization
issuer_country	issuer_country
issuer_state	issuer_state
issuer_certhash	issuer_certhash
issuer_locality	issuer_locality
rootissuer_organization	rootissuer_organization
rootissuer_name	rootissuer_name
rootissuer_country	rootissuer_country
rootissuer_state	rootissuer_state
rootissuer_certhash	rootissuer_certhash
rootissuer_locality	rootissuer_locality
instance_count	instance_count
issuer_category	issuer_category
extended_validation	extended_validation

Software Data Model

Qualys Software details

Qualys Related Table Attributes	ServiceNow Production Table Attributes
architecture	architecture
category	category
category_1	category_1
category_2	category_2
category_type	category_type
component	component
edition	edition
is_ignored	is_ignored
is_ignored_reason	is_ignored_reason
language	language
license_category	license_category
type	type
update	update
lifecycle_ga	lifecycle_ga
lifecycle_stage	lifecycle_stage
market_version	market_version
product	product
publisher	publisher
lifecycle_confidence	lifecycle_confidence
lifecycle_eos_date	lifecycle_eos_date
lifecycle_eol_support_stage	lifecycle_eol_support_stage
master_software_sys_id	reference_ci
version	version
name	name
lifecycle_eol_date	lifecycle_eol_date

Hardware Data Mappings

The details of the hardware-data mappings are listed below

Note: ServiceNow has soft-deprecated the following classes for Qubec version:

- Human Machine Interface [cmdb_ci_hmi]

- Manufacturing Device [cmdb_ci_manufacturing]

- Programmable Logic Controller [cmdb_ci_plc]

For more information on alternative solutions, see ServiceNow notification.

Hardware Category1	Hardware Category2	Target CI Class
Printers	Laser	cmdb_ci_printer
Communication Devices	IP Phones	cmdb_ci_hardware
Virtualized	Container	cmdb_ci_computer
Computers	Point of Sale (POS) Terminal	cmdb_ci_pos
Networking Device	Wireless Access Point	cmdb_ci_wap_network
Power Conditioning Equipment	Power Distribution Unit (PDU)	cmdb_ci_pdu
Wearable Devices	Smart Glasses	cmdb_ci_wearable
Printers	Line Matrix Printers	cmdb_ci_printer
Networking Device	Unidentified	cmdb_ci_netgear
Input Devices	RFID Device	cmdb_ci_iot
Mobile	Smartphone	cmdb_ci_hardware
Computers	Mainframe	cmdb_ci_mainframe_hardware
Building Automation Devices	Smart Appliance	cmdb_ci_iot
Power Conditioning Equipment	Uninterruptible Power Supply (UPS)	cmdb_ci_ups
Industrial Networking	Industrial Ethernet Switch	cmdb_ci_ip_switch
Industrial Control System (ICS)	Intelligent Electronic Device (IED)	cmdb_ci_manufacturing
Networking Device	Concentrators, Hubs, and Multiplexers	cmdb_ci_hub_network
Building Automation Devices	BACnet Controller	cmdb_ci_iot
Building Automation Devices	HVAC Control	cmdb_ci_iot
Computers	Assembled	cmdb_ci_computer
Audio and Visual Equipment	Portable Media Player	cmdb_ci_media_player
Communication Devices	Conferencing Equipment	cmdb_ci_hardware
Industrial Control System (ICS)	Distributed Control System (DCS)	cmdb_ci_manufacturing
Audio and Visual Equipment	Smart TV	cmdb_ci_stv
Industrial Control System (ICS)	Human Machine Interface (HMI)	cmdb_ci_hmi
Wearable Devices	Health and Activity Monitor	cmdb_ci_wearable
Field Instruments	Sensor	cmdb_ci_iot
Network Security Device	Firewall Device	cmdb_ci_firewall_device
Wearable Devices	Smart Footwear	cmdb_ci_wearable

Building Automation Devices	Security Camera	cmdb_ci_security
Networking Device	Bridges and Routers	cmdb_ci_ip_router
Industrial Control System (ICS)	Remote Terminal Unit (RTU)	cmdb_ci_manufacturing
Networking Device	Other	cmdb_ci_netgear
Audio and Visual Equipment	Media Streaming Device	cmdb_ci_media_player
Building Automation Devices	Other	cmdb_ci_hardware
Communication Devices	Other	cmdb_ci_hardware
Computers	Notebook	cmdb_ci_pc_hardware
Wearable Devices	Smart Apparel	cmdb_ci_wearable
Industrial Control System (ICS)	Industrial PC	cmdb_ci_computer
Printers	Multi-Function Printer (MFP)	cmdb_ci_mfp_printer
Field Instruments	Motion Control	cmdb_ci_iot
Building Automation Devices	BACnet Router	cmdb_ci_iot
Field Instruments	Field Device Management	cmdb_ci_iot
Call Management Systems or Accessories	Premise Branch Exchange (PBX)	cmdb_ci_hardware
Building Automation Devices	Leak Detection	cmdb_ci_iot
Industrial Networking	Industrial Wireless LAN	cmdb_ci_wap_network
Audio and Visual Equipment	Smart Earpiece	cmdb_ci_media_player
Computers	Other	cmdb_ci_computer
Printers	3D Printers	cmdb_ci_printer
Building Automation Devices	Intrusion Detection and Access Control	cmdb_ci_security
Networking Device	Access Servers	cmdb_ci_server
Field Instruments	Measurement Systems	cmdb_ci_iot
Networking Device	Server Load Balancer	cmdb_ci_server
Industrial Control System (ICS)	Programmable Logic Controller (PLC)	cmdb_ci_plc
Building Automation Devices	Lighting and Control	cmdb_ci_iot
Computers	Desktop	cmdb_ci_pc_hardware
Wearable Devices	Smart Watch	cmdb_ci_wearable
Building Automation Devices	Power and Energy Monitoring	cmdb_ci_iot
Networking Device	Print Server	cmdb_ci_server
Printers	Thermal Tape Printers	cmdb_ci_printer
Networking Device	Modem	cmdb_ci_modem_network
Networking Device	Terminal Server	cmdb_ci_netgear
Wearable Devices	Wearable Camera	cmdb_ci_wearable

Building Automation Devices	Fire Safety	cmdb_ci_iot
Industrial Networking	Other	cmdb_ci_netgear
Communication Devices	Video Phone	cmdb_ci_hardware
Industrial Control System (ICS)	Safety Instrumented System (SIS)	cmdb_ci_manufacturing
Industrial Networking	Industrial Media Converter	cmdb_ci_netgear
Communication Devices	Answering Machine	cmdb_ci_hardware
Mobile	Tablet	cmdb_ci_hardware
Communication Devices	Keyphone System	cmdb_ci_hardware
Field Instruments	Robots	cmdb_ci_iot
Printers	Other	cmdb_ci_printer
Networking Device	Wireless Fidelity Base Stations Wifi	cmdb_ci_wap_network
Industrial Networking	Industrial Serial Device Server	cmdb_ci_hardware
Industrial Control System (ICS)	Other	cmdb_ci_manufacturing
Printers	Inkjet	cmdb_ci_printer
Audio and Visual Equipment	Projector	cmdb_ci_display
Field Instruments	Smart Meter	cmdb_ci_iot
Industrial Networking	IoT Gateway	cmdb_ci_iot_gateway
Networking Device	Switch	cmdb_ci_ip_switch
Industrial Networking	Communication Processor	cmdb_ci_netgear
Audio and Visual Equipment	Smart Speaker	cmdb_ci_media_player
Computers	Server	cmdb_ci_server

Cloud Data Mappings

Here are the details of the mappings for your cloud data.

Cloud Asset Column	ServiceNow Production Table	ServiceNow Production Table Attributes
AWS		
Account ID	cmdb_ci_cloud_service_account	account_id,object_id
Availability Zone	cmdb_ci_availability_zone	object_id
Image ID	cmdb_ci_os_template	object_id
Instance ID	cmdb_ci_vm_instance	object_id
Instance State	cmdb_ci_vm_instance	state
Instance Type	cmdb_ci_compute_template	object_id
Private IP Address	cmdb_ci_nic	private_ip
Public IP Address	cmdb_ci_nic	public_ip

Region Code	cmdb_ci_aws_datacenter	object_id,region,name
Subnet ID	cmdb_ci_cloud_subnet	object_id
VPC ID	cmdb_ci_network	object_id
Hostname	Additional Cloud Details*	
Private DNS	Additional Cloud Details*	
Tags	Additional Cloud Details*	
Tag Key	Additional Cloud Details*	
Tag Value	Additional Cloud Details*	

Microsoft Azure

Image Offer	cmdb_ci_os_template	object_id
Location	cmdb_ci_availability_zone	object_id
MAC Address	cmdb_ci_nic	mac_address
Private IP Address	cmdb_ci_nic	private_ip
Public IP Address	cmdb_ci_nic	public_ip
Virtual Machine Name	cmdb_ci_vm_instance	name
Resource Group Name	cmdb_ci_azure_datacenter	region
Virtual Machine Size	cmdb_ci_compute_template	object_id
Virtual Machine State	cmdb_ci_vm_instance	state
Subscription ID	cmdb_ci_cloud_service_account	account_id
Virtual Machine ID	cmdb_ci_vm_instance	object_id
Tags	Additional Cloud Details*	
Tag Key	Additional Cloud Details*	
Tag Value	Additional Cloud Details*	
Image Publisher	Additional Cloud Details*	
Image Version	Additional Cloud Details*	

Google Cloud Platform (GCP)

Instance ID	cmdb_ci_vm_instance	object_id
MAC Address	cmdb_ci_nic	mac_address
Machine Type	cmdb_ci_compute_template	object_id
Network	cmdb_ci_network	object_id
Private IP Address	cmdb_ci_nic	private_ip
Project Number	cmdb_ci_cloud_service_account	account_id, object_id
Public IP Address	cmdb_ci_nic	public_ip
Zone	cmdb_ci_availability_zone	object_id
state	cmdb_ci_vm_instance	state
Hostname	Additional Cloud Details*	
Hostname	Additional Cloud Details*	

Note: Additional Cloud Details refers to details provided by Qualys.

Appendix

The below table shows the mapping between ServiceNow fields and Qualys Asset Metadata

ServiceNow Field Label	Qualys UI Field
Asset ID	Qualys Asset ID
name	Host Name
company	Company
created	First Seen (On Connector Screen)
department	Department
environment	Environment
ip_address	IPv4 Addresses
last_updated	Last Updated Date (On Connector screen)
location	Assigned Location
managed_by	Managed By
owned_by	Owner/Custodian
status	Operational Status
supported_by	Supported By
support_group	Support Group

Business App Metadata

ServiceNow Field Label	Qualys UI Field
name	Business App Name
business_criticality	Business Criticality
environment	environment
managed_by	Managed By
owned_by	Owned By
supported_by	Supported By
support_group	Support Group
operational_status	Operational Status