



ServiceNow CMDB Synchronization PowerPack

Version 3.5.0, rev. 2

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Chapter

1

Introduction to the ServiceNow CMDB Synchronization PowerPack

Overview

This chapter describes the "ServiceNow CMDB" Synchronization PowerPack, which lets you integrate SL1 with the ServiceNow Configuration Management Database (CMDB).

This Synchronization PowerPack maintains and enhances the ServiceNow CMDB by sharing discovered device information, importing and exporting data bi-directionally between SL1 and ServiceNow, and by automatically maintaining ServiceNow Configuration Item (CI) relationships.

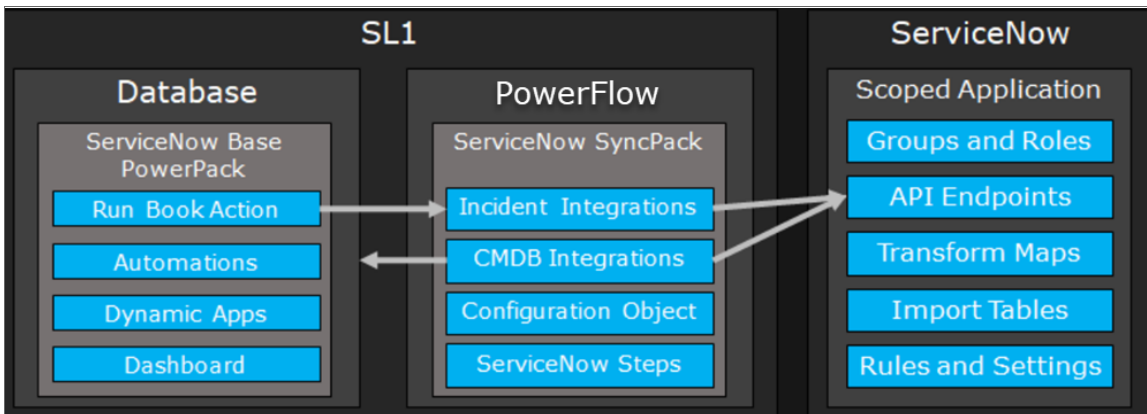
<p>NOTE: This Synchronization PowerPack is available with a ScienceLogic SL1 Standard solution. Contact your ScienceLogic Customer Success Manager or Customer Support to learn more.</p>
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This chapter covers the following topics:

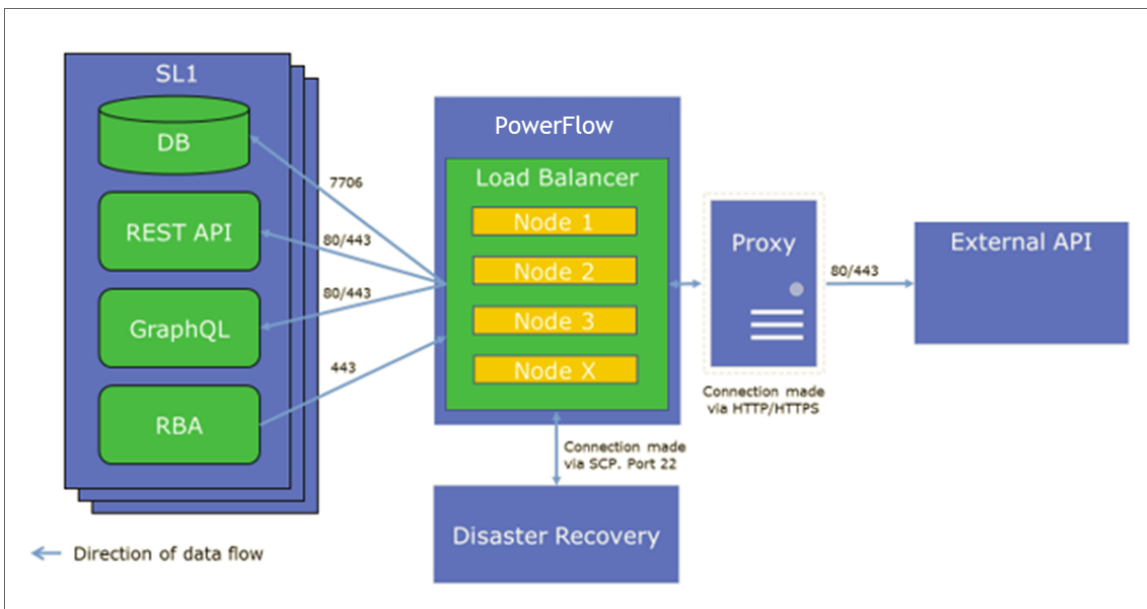
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Architecture Overview for ServiceNow Synchronization PowerPacks SL1

The following diagram details the various elements that are contained in SL1 and the PowerFlow system, and how PowerFlow sits between the core SL1 platform and an external data platform:



The following diagram provides an example of the high-level architecture of a PowerFlow system with High Availability, Disaster Recovery, and a proxy configured:



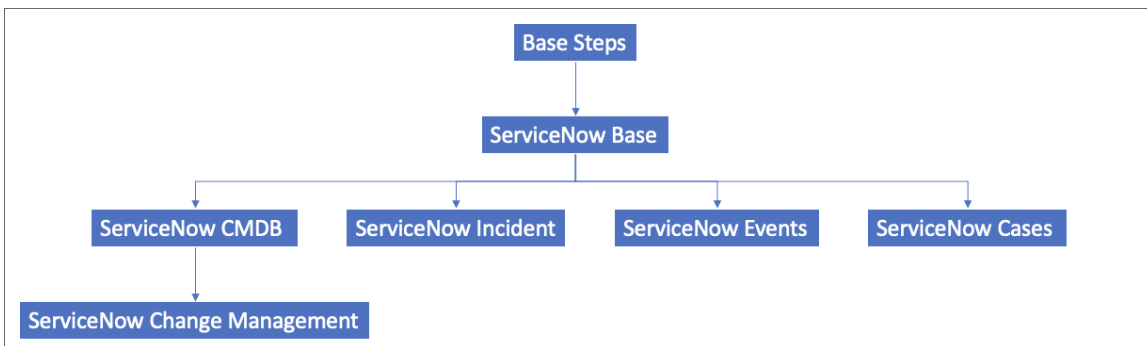
SL1 and ServiceNow Terminology

The following table lists the different names for the shared elements in SL1 and ServiceNow:

SL1	ServiceNow
Asset, Custom Attribute	Asset (ITAM)
Device	CI (Configuration Item)
Discovery Session	Service Request, Catalog Request
Event	Incident, Event, or Case (depending on the Synchronization PowerPack you are using)
Alert	Event
Organization	Company, Domain
Schedule, Maintenance Schedule	Change Request, Change Schedule
Topology, Relationships, Dynamic Component Mapping and Relationships (DCM+R)	Dependency View, Affected CIs

Dependency Map for ServiceNow Synchronization PowerPacks

The following graphic describes which Synchronization PowerPacks depend on other Synchronization PowerPacks:



TIP: For more information about the Standard *Base Steps* Synchronization PowerPack, see the *SL1 PowerFlow Platform* manual.

Prerequisites for the ServiceNow CMDB Synchronization PowerPack

This section describes the prerequisites for the ServiceNow Synchronization PowerPacks. For more information about the specific software versions required by a ServiceNow Synchronization PowerPack, see the release notes for that Synchronization PowerPack.

Administrator Access

To install this Synchronization PowerPack, you must have administrator access to both SL1 and ServiceNow. Specifically, you will need:

- ScienceLogic root SSH access
- ScienceLogic administrator access to the Administration Portal
- ServiceNow administrator access

Port Access

The following table lists the port access required by PowerFlow and this Synchronization PowerPack:

Source IP	PowerFlow Destination	PowerFlow Source Port	Destination Port	Requirement
PowerFlow	SL1 API	Any	TCP 443	SL1 API Access
PowerFlow	ServiceNow API	Any	TCP 443	ServiceNow API Access
PowerFlow	SL1 Database	Any	TCP 7706	SL1 Database Access

NOTE: ScienceLogic highly recommends that you disable all firewall session-limiting policies. Firewalls will drop HTTPS requests, which results in data loss.

Contents of the ServiceNow CMDB Synchronization PowerPack

This section lists the PowerFlow applications that are in the "ServiceNow CMDB" Synchronization PowerPack.

NOTE: Starting with version 3.5.0 of this Synchronization PowerPack, the "Sync Advanced Topology from SL1 to ServiceNow" application was removed. The functionality in that application was added to the "Sync Devices from SL1 to ServiceNow" and the "Sync Interfaces from SL1 to ServiceNow" applications.


PowerFlow Applications

The following applications are included with the "ServiceNow CMDB" Synchronization PowerPack:

- **Cache ServiceNow Companies, CIs and SL1 Orgs, Device Classes.** Reads all existing SL1 Organizations, SL1 Device Classes, ServiceNow Companies, and ServiceNow CIs and writes them to a cache. To perform a Device Sync, you must run this application before you run the "Sync Devices from SL1 to ServiceNow" application. Before version 3.5.0 of this Synchronization PowerPack, this application was named "Cache ServiceNow CIs and SL1 Device Classes". For more information, see [Syncing Devices from SL1 to ServiceNow](#).
- **Create Custom Attributes and ServiceNow Custom Link in SL1.** Creates custom device attributes in SL1, which SL1 uses to create a custom link in SL1 that redirects to the ServiceNow CI. In SL1 the link appears as a ServiceNow link in the **Tools** menu on the **Device Investigator** window for the corresponding device. For more information, see [Syncing CI Attributes from ServiceNow to SL1](#).
- **Delete Devices from SL1.** Lets you delete devices in a specific SL1 Virtual Collector Group if those devices have not been modified in SL1 for a specified amount of time that is set in the application. For more information, see [Deleting Devices](#).
- **Generate Required CI Relations for ServiceNow.** Pulls device class mappings from the "Sync Devices from SL1 to ServiceNow" and the "Sync CI Attributes from ServiceNow to SL1" applications to prevent you from having to add a separate set of class mappings. The application also lists any missing relationships in the Step Log in the PowerFlow user interface. Please note that this application is a report used by PowerFlow, and it does not send any data to ServiceNow. For more information about the log messages, see [Log Messages for the "Generate Required CI Relations for ServiceNow" Application](#).
- **Report: Identify Unmapped Devices Classes.** Pulls the class mappings from Device Sync and Attribute Sync and compares the mappings with the full list of device classes of discovered devices in SL1. The application generates a report on the **Reports** page that lists missing mappings, and if any device classes are unmapped, the application generates an event in the target SL1 system. For more information, see [Checking for Missing Device Mappings](#).
- **Sync Business Services from SL1 to ServiceNow.** Reads Business Services, IT Services, and Device Services in SL1 and syncs them with business services in ServiceNow. This application creates and updates services, but it does not delete services. For more information, see [Syncing Business Services from SL1 to ServiceNow](#).

- **Sync Business Services from ServiceNow to SL1.** Syncs services that were defined in ServiceNow with Business Services in SL1. By syncing services from Service Now to SL1, you can see the relationships between the service components, the application components, and the infrastructure components in SL1. For more information, see [Syncing Business Services from ServiceNow to SL1](#).
- **Sync CI Attributes from ServiceNow to SL1.** Reads CI attributes from ServiceNow and maps those attributes to asset and attribute fields in SL1. This application uses the mappings and additional attributes options from the "Sync Devices from SL1 to ServiceNow" application. This application can also sync the location and production state attributes from ServiceNow to SL1. For more information, see [Syncing CI Attributes from ServiceNow to SL1](#).
- **Sync Device Groups from SL1 to ServiceNow.** Collects all device groups and group IDs from SL1 and posts device group data to ServiceNow. To prevent errors when running this application or a device sync, make sure that the device group names are not already being used by existing groups in ServiceNow. For more information about Device Sync, see [Syncing Devices from SL1 to ServiceNow](#).
- **Sync Devices from SL1 to ServiceNow.** Syncs devices and their properties and relationships from SL1 to ServiceNow. For more information, see [Syncing Devices from SL1 to ServiceNow](#).
- **Sync Discovery Requirements.** Processes credentials from SL1, processes collector groups, device templates, virtual device classes, and collectors, and then syncs organizations and device groups. For more information, see [Discovery Sync](#).
- **Sync Discovery Session Status from SL1 to ServiceNow.** Collects and processes Discovery sessions from SL1, and collects Discovery session logs. For more information, see [Discovery Sync](#).
- **Sync Discovery Templates from SL1 to ServiceNow.** Syncs SL1 discovery sessions that contain a configured string to ServiceNow and creates Service Catalog templates in ServiceNow. You can use those templates for discovering or monitoring CIs. For more information, see [Discovery Sync](#).
- **Sync File Systems from SL1 to ServiceNow.** Reads file systems discovered in SL1 and then maps them to a parent CI record in ServiceNow. For more information, see [Syncing File Systems from SL1 to ServiceNow](#).
- **Sync Installed Software from SL1 to ServiceNow.** Reads all available software packages from ServiceNow and the devices aligned to that software by region and syncs them with SL1. Run this application after running the "Sync Software Packages from SL1 to ServiceNow" application. For more information, see [Syncing Installed Software between SL1 and ServiceNow](#).
- **Sync Interfaces from SL1 to ServiceNow.** Collects network interface data from ServiceNow and SL1, and then runs multiple CI syncs for each interface to be synced. For more information, see [Syncing Network Interfaces from SL1 to ServiceNow](#).
- **Sync Organizations from SL1 to ServiceNow.** Pulls organizations from SL1 and syncs to ServiceNow. For more information, see [Syncing Organizations from SL1 to ServiceNow](#).
- **Sync Service Requests from ServiceNow to SL1.** Processes Discovery sessions and posts Discovery sessions and new virtual devices to SL1. Also enables device decommissioning for devices you no longer want to monitor. This application was formerly named "Sync Discovery Session Requests from ServiceNow to SL1". For more information, see [Configuring a ServiceNow Service Request for Discovery Sync](#).
- **Sync Software Packages from SL1 to ServiceNow.** Reads all software packages from and creates new CIs in ServiceNow. Run this application before running the "Sync Installed Software" application. For more information, see [Syncing Installed Software between SL1 and ServiceNow](#).

PowerFlow Applications (Internal)

To view the internal PowerFlow applications, click the Filter icon () on the **Applications** page and select *Show Hidden Applications*. Internal applications are hidden by default. The following applications are "internal" applications that should not be run directly, but are automatically run by applications from the previous list:

- **Bulk Delete Devices.** Deletes devices from SL1.
- **Create Discovery Session in SL1.** Creates and starts a Discovery session in SL1 and updates the ServiceNow service request.
- **Create ServiceNow CI.** Creates a new ServiceNow CI with a mappings dictionary, but does not attempt to look up new CIs.
- **Create Virtual Device in SL1.** Creates a virtual device in SL1 and updates the Requested Item (RITM) value.
- **Post Attribute DB Calls to SL1.** Posts attribute database calls to SL1.
- **Post Attribute Rest Calls to SL1.** Posts attribute REST calls to SL1.
- **Post Company and Organization Updates.** Posts company and organization updates to ServiceNow or SL1.
- **Post Discovery-dependent Data to ServiceNow.** Posts data used by a Discovery session to ServiceNow.
- **Post Installed Software to ServiceNow.** Posts installed software data to ServiceNow.
- **Post New Companies to ServiceNow.** Posts new companies to ServiceNow.
- **Post New Organization to SL1.** Posts a new organization to SL1.
- **Process Remove Device Requests from ServiceNow to SL1.** Pulls requested device information from SL1 and validates the requests to remove a device from monitoring. Removed devices are placed in an SL1 Virtual Collector Group.
- **Pull and Post Discovery Logs.** Pulls Discovery session logs from SL1 and posts updates to ServiceNow.

Chapter

2

Installing and Configuring the ServiceNow CMDB Synchronization PowerPack

Overview

This chapter explains how to install and configure the various applications used by the the "ServiceNow CMDB" Synchronization PowerPack.

This chapter covers the following topics:

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Workflow for Installing and Configuring this Synchronization PowerPack

The following workflow covers how to install and configure this Synchronization PowerPack:

1. *In PowerFlow, download, import, and install the "ServiceNow CMDB" Synchronization PowerPack.*
2. *In ServiceNow, enable cross-scoped access* (if needed).
3. *In ServiceNow, install the "ScienceLogic SL1: CMDB & Incident Automation" application* (also called the "Scoped Application").
4. *In ServiceNow, create a ServiceNow Group* and then *create a ServiceNow User*.
5. *In ServiceNow, install and activate the relevant plugins.*
6. *In ServiceNow, enable the ServiceNow Identification and Reconciliation Module.*
7. *In ServiceNow, install the "ScienceLogic Domain Separation (Global)" update set* (for domain-separated ServiceNow instances only).

Downloading, Importing, and Installing the Synchronization PowerPack

A Synchronization PowerPack file has the **.whl** file extension type. You can download the Synchronization PowerPack file from the ScienceLogic Support site.

WARNING: If you are *upgrading* to this version of the Synchronization PowerPack from a previous version, make a note of any settings you made on the **Configuration** pane of the various PowerFlow applications in this Synchronization PowerPack, as these settings are *not* retained when you upgrade. However, any mappings you added to the **attribute_mappings** section for the "Sync Devices from SL1 to ServiceNow" application are retained when you upgrade.

Downloading the Synchronization PowerPack

NOTE: If you are installing or upgrading to the latest version of this Synchronization PowerPack in an offline deployment, see *Installing or Upgrading in an Offline Environment* to ensure you install any external dependencies.

To locate and download the Synchronization PowerPack:

1. Go to the ScienceLogic Support Site at <https://support.sciencelogic.com/s/>.
2. Click the **[Product Downloads]** tab and select *PowerPack*.

3. In the **Search PowerPacks** field, search for the Synchronization PowerPack and select it from the search results. The **Release Version** page appears.
4. On the **[PowerPack Versions]** tab, click the name of the Synchronization PowerPack version that you want to install. The **Release File Details** page appears.
5. Click the **[Download File]** button to start downloading the file.

After you download the Synchronization PowerPack, you can import it to your PowerFlow system using the PowerFlow user interface.

Importing the Synchronization PowerPack

To import a Synchronization PowerPack in the PowerFlow user interface:


1. On the **SyncPacks** page (☺) of the PowerFlow user interface, click **[Import SyncPack]**. The **Import SyncPack** page appears.
2. Click **[Browse]** and select the **.whl** file for the Synchronization PowerPack you want to install. You can also drag and drop a **.whl** file to the **Import SyncPack** page.
3. Click **[Import]**. PowerFlow registers and uploads the Synchronization PowerPack. The Synchronization PowerPack is added to the **SyncPacks** page.
4. You will need to activate and install the Synchronization PowerPack in PowerFlow. For more information, see [Activating and Installing a Synchronization PowerPack](#).

NOTE: You cannot edit the content package in a Synchronization PowerPack published by ScienceLogic. You must make a copy of a ScienceLogic Synchronization PowerPack and save your changes to the new Synchronization PowerPack to prevent overwriting any information in the original Synchronization PowerPack when upgrading.


Installing the Synchronization PowerPack






NOTE: You must import and install the "ServiceNow Base" Synchronization PowerPack before uploading and installing any of the other ServiceNow Synchronization PowerPacks.

To activate and install a Synchronization PowerPack in the PowerFlow user interface:

1. On the **SyncPacks** page of the PowerFlow user interface, click the **[Actions]** button () for the Synchronization PowerPack you want to install and select *Activate & Install*. The **Activate & Install SyncPack** modal appears.

NOTE: If you try to activate and install a Synchronization PowerPack that is already activated and installed, you can choose to "force" installation across all the nodes in the PowerFlow system.

TIP: If you do not see the PowerPack that you want to install, click the Filter icon () on the **SyncPacks** page and select *Toggle Inactive SyncPacks* to see a list of the imported PowerPacks.

2. Click **[Yes]** to confirm the activation and installation. When the Synchronization PowerPack is activated, the **SyncPacks** page displays a green check mark icon () for that Synchronization PowerPack. If the activation or installation failed, then a red exclamation mark icon () appears.
3. For more information about the activation and installation process, click the check mark icon () or the exclamation mark icon () in the **Activated** column for that Synchronization PowerPack. For a successful installation, the "Activate & Install SyncPack" application appears, and you can view the Step Log for the steps. For a failed installation, the **Error Logs** window appears.
4. If you have other versions of the same Synchronization PowerPack on your PowerFlow system, you can click the **[Actions]** button () for that Synchronization PowerPack and select *Change active version* to activate a different version other than the version that is currently running.

Installing or Upgrading in an Offline Deployment

Use the following procedure if you are installing or upgrading this Synchronization PowerPack in an offline deployment.

This release of the Synchronization PowerPack requires the following external files for an offline deployment:

- **Jinja2-2.11.1-py2.py3-none-any.whl**, available at [this location](#) at pypi.org.
- **MarkupSafe-1.1.1-cp37-cp37m-manylinux1_x86_64.whl**, available at [this location](#) at pypi.org.

To upload the required external files:

1. After downloading the two required external files, SCP the files to the master node.
2. Run the following commands on the host:

```
devpi use 'https://<is_username>:<is_password>@<is_hostip>:3141/isadmin/dependencies'
```

```
devpi login <is_username> --password=<is_password>
```

```
cd /tmp/
```

```
devpi upload Jinja2-2.11.1-py2.py3-none-any.whl
```

```
devpi upload MarkupSafe-1.1.1-cp37-cp37m-manylinux1_x86_64.whl -force
```

NOTE: If you cannot run these commands on the host, you can instead run them on the pypiserver container.

3. Perform a docker copy to both files (if you are running commands in the pypiserver container):

```
docker cp <file1-location> $(docker ps -q -f name=services_pypiserver):/tmp
```

```
docker cp <file2-location> $(docker ps -q -f name=services_pypiserver):/tmp
```

4. Follow the steps in [Installing the Synchronization PowerPack](#) to install and activate this Synchronization PowerPack.

Allowing Cross-Scoped Access in ServiceNow

When using custom tables, you might need to configure cross-scope access for the ScienceLogic plugin. The following examples contain errors that might occur when cross-scope access is required.

Example of an API response:

```
{"results":[{"error":{"message":"com.glide.script.fencing.access.ScopeAccessNotGrantedException: read access to ui_test_hardware not granted","detail":"","status":"failure"}}
```

Example of navigating to a URL directly from a web browser when cross-scope access is required:

This page contains the following errors:

error on line 1 at column 1: Document is empty

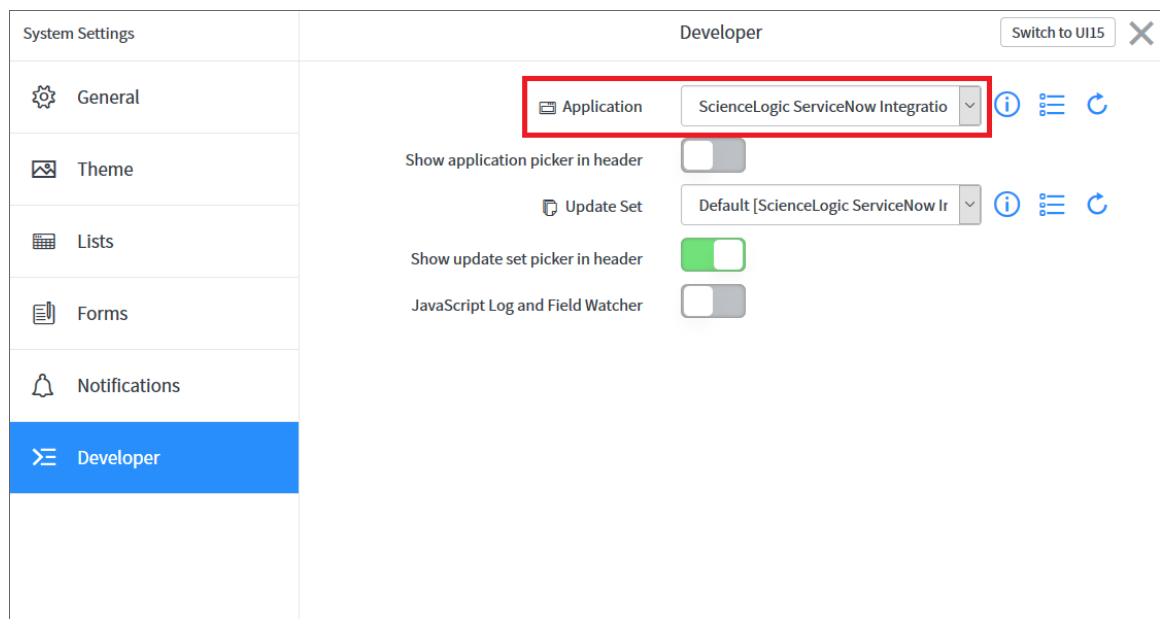
Below is a rendering of the page up to the first error.

In this example, the table requires that you grant access to the ScienceLogic Scope to allow the API call to run correctly. In the above example, the target table is **u_test_hardware**.

NOTE: A ServiceNow account with System Administrator is required.

To grant access to the ScienceLogic Scope in ServiceNow:

1. Log in to your ServiceNow instance.
2. Click the **Settings** icon (⚙️) and select the **Developer** tab. The **Developer System Settings** window appears:



3. From the **Application** drop-down list, select *ScienceLogic ServiceNow Integration*.

4. Close the **Developer System Settings** window and navigate to the **Cross scope privileges** page (System Applications > Application Cross-Scope Access).

NOTE: Make sure you are in the "ScienceLogic ServiceNow Application" scope and track these updates in an update set.

5. Click the **[New]** button to create a new record on the **Cross scope privileges** page:

The screenshot shows the 'Cross scope privilege' form in ServiceNow. The form is titled 'Cross scope privilege New record'. It contains several fields: 'Source Scope' (ScienceLogic ServiceNow Integration), 'Target Scope' (Global), 'Target Name' (cmd_ci_endpoint_storage_fc), 'Target Type' (Table), 'Application' (ScienceLogic ServiceNow Integration), 'Operation' (Read), and 'Status' (Allowed). There is a 'Submit' button at the bottom left.

6. Verify that the **Source Scope** and **Application** fields are set to *ScienceLogic ServiceNow Integration*. If they are not, repeats steps 2-3.
7. Complete the following fields:
 - **Target Scope**. Specify the scope of the target table, such as *Global*. Be sure to verify the application to which the table belongs, and use that value as the target scope in this field.
 - **Operation**. Select *Read*.
 - **Target Name**. Specify the name of the target table.
 - **Status**. Select *Allowed*.
 - **Target Type**. Select *Table*.
8. Click the **[Submit]** button.

For more information, see the [Cross-scope privilege record](#) topic in the ServiceNow documentation.

Installing the "ScienceLogic SL1: CMDB & Incident Automation" Application in ServiceNow

You must install the "ScienceLogic SL1: CMDB & Incident Automation" application on the ServiceNow instance to enable this Synchronization PowerPack. The "ScienceLogic SL1: CMDB & Incident Automation" application is also known as the "Certified" or "Scoped" application.

Version 1.0.76 of the "ScienceLogic SL1: CMDB & Incident Automation" certified application includes updates to the ServiceNow Identification & Reconciliation Engine (IRE). As a result, the latest "ScienceLogic Domain Separation (Global)" update set is required.

NOTE: You can access this update set from the **additional_materials.zip** file included in the main **.zip** file for this Synchronization PowerPack, which you can find by searching for the **ServiceNow CMDB Synchronization PowerPack** page at <https://support.sciencelogic.com/s/powerpacks>. You can also ask your ScienceLogic contact for access to this update set.

In version 1.0.76 of the "ScienceLogic SL1: CMDB & Incident Automation" application, the Incident portion of the application was turned off by default as part of an ongoing effort to make each individual application easier to support. Please note that the none of the Incident content was removed, but it is no longer enabled by default.

- For users of the "ServiceNow CMDB" Synchronization PowerPack, there will be no impact, as the Incident portion is turned off by default in version 1.0.76 of the "ScienceLogic SL1: CMDB & Incident Automation" application. For more information about turning Incident features on and off, see below.
- ScienceLogic strongly recommends that users of the "ServiceNow Incident" Synchronization PowerPack migrate to the "ScienceLogic SL1: Incident Automation" application. You can download this application from the ServiceNow Store at <https://store.servicenow.com>.
- In future releases of the *ServiceNow Incident* Synchronization PowerPack, you will need to download and install the "ScienceLogic SL1: Incident Automation" application to get any updates to the Incident module. The two Synchronization PowerPacks and their corresponding applications will be completely separate going forward.

Requesting and Installing the Certified Application

You must first request the "ScienceLogic SL1: CMDB & Incident Automation" application from the ServiceNow Store, and then you can install it. You must have a ServiceNow HI Service Account to request this application and download it onto your ServiceNow instance.

To request and install the certified application:

1. Go to the ServiceNow Store at <https://store.servicenow.com> and search for "ScienceLogic SL1".
2. Select the "ScienceLogic SL1: CMDB & Incident Automation" application. The detail page for the application appears.
3. Click the **[Get]** button and log in with your HI credentials.
4. After the request is approved, log in to ServiceNow as an administrator and navigate to **Application Manager** (System Applications > Applications or My Company Applications).
5. Click **[Downloads]** in the menu header or search for "ScienceLogic".
6. Click the version drop-down for the "ScienceLogic SL1: CMDB & Incident Automation" application listing to make sure you are using the correct version of the application that is compatible with your version of this Synchronization PowerPack.
7. Click the **[Install]** button for the application. The installation is complete when the button changes to **[Installed]**.
8. In the filter navigator, search for "ScienceLogic" and locate the application in the left-hand navigation menu to verify that the application was installed. You might need to log out of ServiceNow and log in again to see the updated left-hand navigation menu.

Incident Features Turned Off in Version 1.0.76 of the Certified Application

The following elements in version 1.0.76 of the "ScienceLogic SL1: CMDB & Incident Automation" application were turned off by default.

Table Transform Maps

To reactivate the following transforms:

1. Navigate to **Systems Import Sets > Administration > Transform Maps**.
2. Search for *ScienceLogic Incident* or *ScienceLogic Event*.
3. For ScienceLogic Incident and ScienceLogic Event, the **Active** field was unchecked. To continue to use one or both of these transforms, check the **Active** box.

Application Modules

To reactivate the following application modules so they display again in the Application Menu:

1. Navigate to the **System Definition > Application Menus**.
2. Search for *ScienceLogic* with filter *Application = ScienceLogic ServiceNow Integration*.
3. You can reactivate the following application modules in the module Related Lists section:
 - *Event*: To continue to use the Module, check the **Active** box.
 - *Event Properties*: To continue to use the Module, check the **Active** box.
 - *Events*: To continue to use the Module, check the **Active** box.
 - *Severity Lookup Rules*: To continue to use the Module, check the **Active** box.

Creating a ServiceNow Group

For best practice and security, create a dedicated ServiceNow account that has restricted access to only the groups, access control lists (ACLs), and roles needed for ScienceLogic incident management.

To create a ServiceNow Account for ScienceLogic Incident management:

1. In ServiceNow, search in the filter navigator for "groups".
2. On the **Groups** page (System Security > Groups), click **[New]**. A **New record** page appears.

3. In the **New record** page, type the group name and any additional information. **Name** is the only required field:

Group New record

Name: Sciencelogic Service Accounts

Manager: System Administrator

Group email:

Parent:

Description:

Submit

4. Right-click the gray header and click Save to save the record.

Group New record

Name: Sciencelogic Service Accounts

Manager: System Administrator

Group email:

Parent:

Description:

Save

- Configure
- Export
- Create Favorite
- Copy URL
- Copy sys_id
- Reload form

5. At the bottom of the Group form, select the **[Roles]** tab and click **[Edit:]**

Roles Group Members Groups

Roles Edit... Go to Created Search

Group = Sciencelogic Service Accounts

Created Role Granted by Inherits

No records to display

6. Search for `x_sclo_scilogic.Admin` and move it to the **Roles List** column using the arrow buttons:

The screenshot shows a role assignment interface. At the top, there are buttons for 'Add Filter', 'Run filter', and a help icon. Below these are three dropdown menus: '-- choose field --', '-- oper --', and '-- value --'. The interface is split into two main columns: 'Collection' on the left and 'Roles List' on the right. The 'Collection' column has a search bar and a list of roles including 'action_designer', 'activity_admin', 'activity_creator', 'admin', 'agent_admin', 'announcement_admin', 'api_analytics_read', 'app_service_admin', 'app_service_user', 'approval_admin', 'approver_user', 'assessment_admin', 'asset', 'assignment_rule_admin', 'atf_test_admin', and 'atf_test_designer'. The 'Roles List' column is titled 'IS4 - Service Accounts' and contains the role 'x_sclo_scilogic.Admin', which is highlighted with a red box. Between the two columns are two arrow buttons, one pointing right and one pointing left. At the bottom of the dialog are 'Cancel' and 'Save' buttons.

7. Click **[Save]**. Your ServiceNow Group now has an assigned Role:

The screenshot shows the 'Group' configuration page for 'IS4 - Service Accounts'. The page has a header with a back arrow, a hamburger menu, the group name, and icons for edit, share, and delete, along with 'Update' and 'Delete' buttons. The main form contains fields for 'Name' (IS4 - Service Accounts), 'Group email', 'Manager', 'Parent', and 'Description'. Below the form are 'Update' and 'Delete' buttons. The 'Roles' tab is selected, showing a table with one role assigned. The role is highlighted with a red box in the table.

	Created	Role	Granted by	Inherits
<input type="checkbox"/>	2019-01-15 12:09:31	x_sclo_scilogic.Admin	(empty)	true

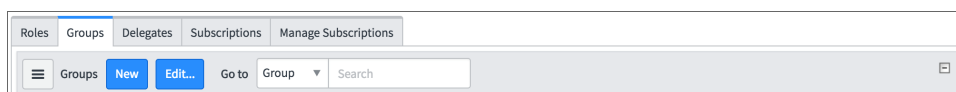
8. Next, create a ServiceNow user to use with this Group. See the following procedure for the details.

Creating a ServiceNow User

NOTE: The ServiceNow user you create in this procedure will *not* be able to log into the ServiceNow user interface with the username and password you give this user. However, you will use the username and password in the relevant configuration objects in the PowerFlow user interface to run applications. For more information about configuration objects, see [Creating and Aligning a Configuration Object](#).

To create a ServiceNow Account for ScienceLogic Incident management:

1. In ServiceNow, search in the filter navigator for "users".
2. On the **Users** page (System Security > Users), click **[New]**. A **New record** page appears.
3. Complete the following fields:
 - **User ID**. Type a user ID. Required.
 - **First Name**. Type the user's first name.
 - **Last Name**. Type the user's last name.
 - **Password**. Type a password. Required.
 - **Active**. Select this checkbox. Required.
 - **Web Service Access Only**. Select this checkbox. Required.
 - **Time Zone**. Select *GMT*. Required.
 - **Date Format**. Select *System (yyyy-MM-dd)*.
4. Right-click the gray header and click **Save** to save the user.
5. Select the **[Groups]** tab at the bottom of the record and click the **[Edit]** button:



- Find the group you created previously and move the group to the right-hand column using the arrow buttons:

Collection

Q sciencelogic

--None--

>

<

Groups List

Service Account

Sciencelogic Service Accounts

Cancel Save

Name Sciencelogic Service Accounts

- Click **[Save]**. After the user has been added to the group, you can see their Roles and Groups at bottom of the record:

Roles (18) Groups (1) Delegates Subscriptions Manage Subscriptions

Roles Edit... Go to Role Search

1 to 18 of 18

NOTE: As a best practice, you should use a non-administrator ServiceNow user for the PowerFlow configuration object.

Installing and Activating ServiceNow Plugins

This Synchronization PowerPack requires the "ServiceNow Configuration Management for Scoped Apps (CMDB)" plugin (com.snc.cmdb.scoped), which gives the ScienceLogic scoped application access to the Identification Engine APIs. You will need to install this plugin on your ServiceNow instance.

In addition, ScienceLogic strongly recommends that you install the "CMDB CI Class Models" plugin (sn_cmdb_ci_class). This plugin contains all new class models provided by ServiceNow.

To install and activate plugins in ServiceNow, you must have ServiceNow Instance administrator rights.

To install one or both of the plugins in ServiceNow:

1. In ServiceNow, log in and navigate to **Plugins** (System Definition > Plugins). This page is only available with administrative rights.
2. Search for a plugin by its name or its ID (such as sn_cmdb_ci_class) and select the plugin. The options to **Install** or **Update** appear, depending on the status of the plugin:
 - **Install**. Installs the plugin in ServiceNow if it has not been installed before. After you install the plugin, the button is grayed out and the text changed to **Installed**.
 - **Update**. Shows that newer versions of the plugin are available.
3. Click **Install** or **Update** to complete the installation.

Enabling the ServiceNow Identification and Reconciliation Module

This Synchronization PowerPack uses the "ServiceNow Identification and Reconciliation" module to create and de-duplicate CI records. PowerFlow builds a JSON-formatted string that is sent to the "ServiceNow Identification and Reconciliation" module. The following link provides additional detail about the formatting of the JSON-formatted string: [IdentificationEngineScriptableApi](#).

IMPORTANT: Version 3.5.0 and later of this Synchronization PowerPack uses enhanced versions of the IdentificationEngine API: [createOrUpdateCIEnhanced](#) and [identifyCIEnhanced](#).

The JSON-formatted string is sent directly to a custom-scripted API endpoint and run through the IdentificationEngineScriptable API. Identification (Insert or Update) of Configuration Items (CIs) is handled by the ServiceNow Identification and Reconciliation module.

For more information about how SL1 and ServiceNow work with the ServiceNow Identification and Reconciliation module to discover and module other applications, such as VMware, see [Mappings between SL1, ServiceNow, and Other Applications](#).

For more information about the "ServiceNow Identification and Reconciliation" module, see [CMDB Identify and Reconcile](#). See also [Reconciliation Rules](#), [CMDB Identification Rules](#), and [Identification engine error messages](#).

NOTE: As a best practice, do not use information for identification that is specific to only ScienceLogic. An example is the device ID (DID) | SL1 ID, which is a number that SL1 automatically assigns and is only unique to that specific SL1 system.

Configuring Service Rules for Device Sync

NOTE: The default device relationships are based on ServiceNow defaults. Hardware defaults to SNMP OID Classifications (**discovery_snmp_oid**). vCenter, File systems and network adapters are all matched against ServiceNow Discovery.

The ServiceNow CMDB Synchronization PowerPack utilizes class hierarchies to build relationships in ServiceNow. This requires building **service rules** (containment rules and hosting rules) in ServiceNow to correctly identify dependent CIs during the business discovery process and service mapping. **Containment rules** describe which CIs are contained by a given CI. **Hosting rules** describe the environment on which a CI runs.

ScienceLogic recommends packaging all of the service rules into a ServiceNow update set so that you can be easily package and deploy these changes across environments. For more information, see [Creating a ServiceNow Update Set](#).

These rules or "mappings" are defined in the "Sync Devices from SL1 to ServiceNow" application in the PowerFlow user interface. These mappings connect an **SL1 device class** to a **ServiceNow CI class**, which determines the CI class that ServiceNow uses when creating the CI in ServiceNow.

For more information about the "ServiceNow Identification and Reconciliation" module, see [CMDB dependent relationship rules](#) and [CMDB Identification Rules](#) at the ServiceNow website.

For example, if you experience error messages about missing relationships in ServiceNow when you run the "Sync Devices from SL1 to ServiceNow" application in the PowerFlow user interface, you might be missing certain containment rules or mappings that are needed to complete the export process:

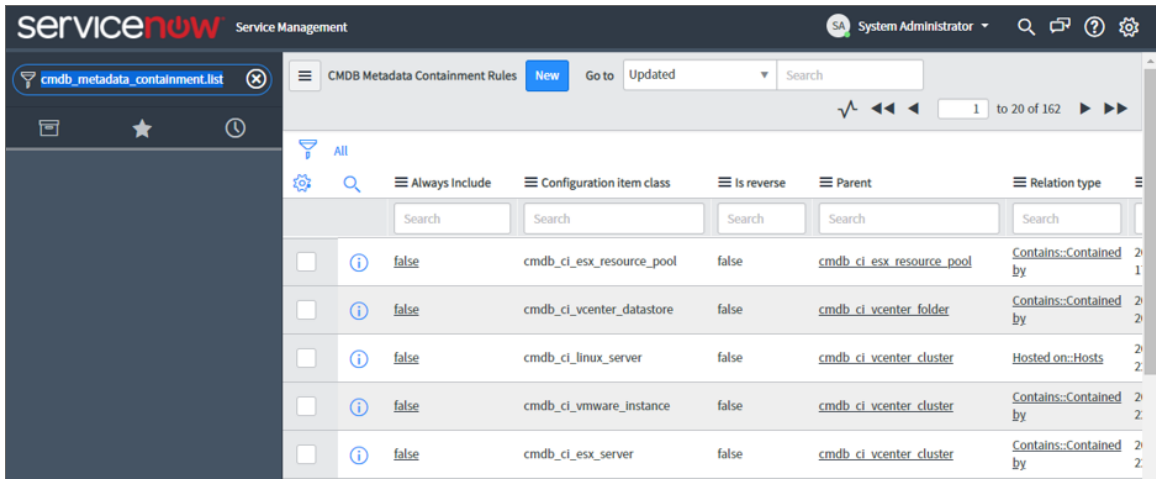
Logs			
	MODULE	DATE/TIME	LOG LEVEL MESSAGE
1	ipass_logger	2018-08-08 17:41:29.245	FLOW Start SnowEm7DeviceComparator
2	BaseStep	2018-08-08 17:41:29.274	ERROR Traceback (most recent call last): File "usr/local/lib/python2.7/site-packages/ipasscore/BaseStep.py", line 458, in execute_step self.execute() File "SnowEM7DeviceCompare", line 70, in execute File "SnowEM7DeviceCompare", line 191, in get_device_dicts File "SnowEM7DeviceCompare", line 149, in get_parent_device_info StepFailedException: No ci match in cache for Parent/Child Relationship: cmdb_ci_netapp_datacenter . Please verify the existence of the CIs, and their relationship in ServiceNow

Containment Rules

Containment rules are chained to each other in a group, with a CI type that is the top-level (root) parent of the group.

To create containment rules:

1. In ServiceNow, type "cmdb_metadata_containment.list" in the filter navigator to access the **CMDB Metadata Containment Rules** page:



2. Click [New]. A new **CMDB Metadata Containment Rules** record appears:

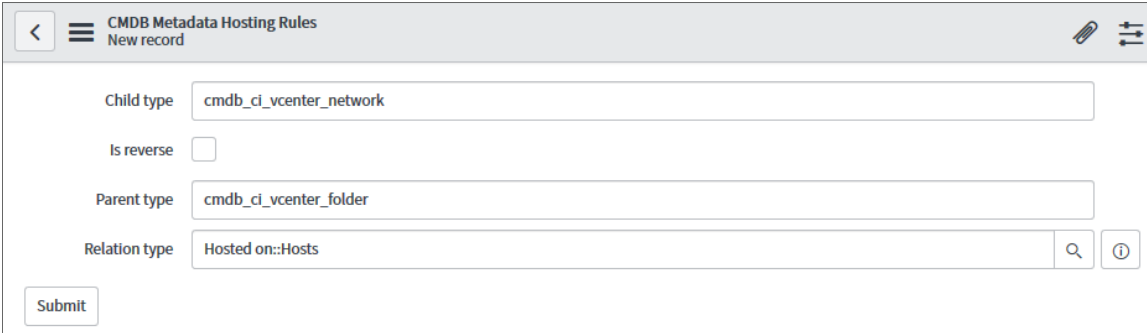
A screenshot of the ServiceNow 'New' form for a 'CMDB Metadata Containment Rules' record. The form has a header bar with the title 'CMDB Metadata Containment Rules' and the record name 'cmdb_ci_vcenter_network'. Below the header, there are several fields: 'Always Include' (a checkbox), 'Configuration item class' (a text field with 'cmdb_ci_vcenter_network' entered), 'Is reverse' (a checkbox), 'Parent' (a text field with 'cmdb_ci_vcenter_folder' entered), and 'Relation type' (a dropdown menu with 'Contains-Contained by' selected). There are also 'Update' and 'Delete' buttons at the bottom of the form.

3. Complete the following fields:
 - **Configuration item class.** Specify the child CI class.
 - **Parent.** Specify the parent CI class.
 - **Relation type.** Specify the relationship type. The common relationship types used by the ServiceNow integration are "contained" or "contained by", depending on your CMDB. Click the magnifying glass icon to select the correct value.
4. Click [Submit].
5. In the PowerFlow user interface, go to the **Applications** page and manually run the "Cache ServiceNow CIs and SL1 Device Classes" application.
6. Run the "Sync Devices from SL1 to ServiceNow" application and make sure that no errors exist due to missing CI relationships.

Hosting Rules

Hosting rules can only be one level, and they always involve resources such as physical or virtual hardware.

1. In the ServiceNow filter navigator, type "cmdb_metadata_hosting.list" to view the **CMDB Metadata Hosting Rules** page.
2. Click **[New]**. A new CMDB Metadata Hosting Rules record appears:




The screenshot shows the 'New record' form for 'CMDB Metadata Hosting Rules'. The form has a header bar with a back arrow, a menu icon, the title 'CMDB Metadata Hosting Rules', and a 'New record' label. On the right of the header are a pin icon and a list icon. The form contains four input fields: 'Child type' with the value 'cmdb_ci_vcenter_network', 'Is reverse' with an unchecked checkbox, 'Parent type' with the value 'cmdb_ci_vcenter_folder', and 'Relation type' with the value 'Hosted on::Hosts'. The 'Relation type' field has a magnifying glass icon and an information icon to its right. A 'Submit' button is located at the bottom left of the form.

3. In the New Metadata Hosting Rules record, complete the following fields:
 - **Child type.** Specify the child CI class.
 - **Parent type.** Specify the parent CI class.
 - **Relation type.** Specify the relationship type. The common relationship types used by the ServiceNow integration are "Hosts" or "Hosted on", depending on your CMDB. Click the magnifying glass icon to select the correct value.
4. Click **[Submit]**.
5. Add any additional containment and hosting rules that are needed to build the CI relationships in ServiceNow.
6. In the PowerFlow user interface, go to the **Applications** page and manually run the "Cache ServiceNow CIs and SL1 Device Classes" application.
7. Run the "Sync Devices from SL1 to ServiceNow" application and make sure that no errors exist due to missing CI relationships.

Creating a ServiceNow Update Set

ScienceLogic recommends packaging the service rules into a standalone ServiceNow update set that you can export if needed. An **update set** is an XML file containing a group of customizations that can be moved from one ServiceNow instance to another. This update set should include any changes or configurations to the service rules for the ServiceNow Identification and Reconciliation Module.

To create a standalone update set in ServiceNow:

1. In ServiceNow, enable the Developer Update set picker by clicking the **Settings** icon () and selecting the **Developer** tab.

2. Select the **Show update set picker in header** toggle to enable it, and then close the **System Settings** page.
3. In the filter navigator, search for local update sets.
4. Under **System Update Sets**, select **Local Update Sets** and click **[New]**. A new Update Set record appears:

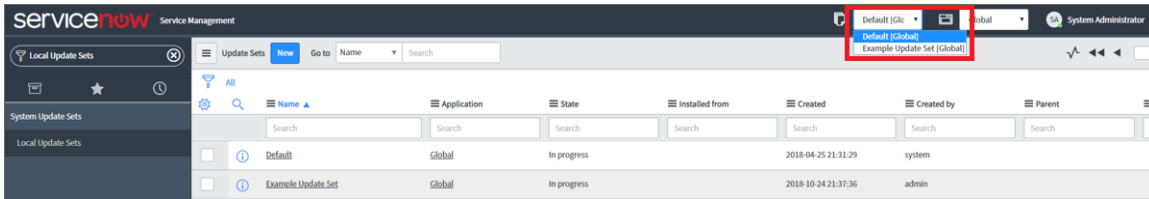
The screenshot shows the ServiceNow 'Update Set New record' form. The left sidebar has a search bar with 'update' and a list of update sets: Favorites, System Update Sets - Local Upd..., System Update Sets, Update Sources, Retrieved Update Sets, Update log, Local Update Sets (selected with a star), Merge Update Sets, Merge Completed Sets, and Update Sets to Commit. The main form area has the following fields: Name (ScienceLogic ServiceNow Integration), Application (Global), State (In progress), Parent, Release date, and Description. At the bottom are 'Submit' and 'Submit and Make Current' buttons.

5. Complete the following fields:
 - **Name**. Specify a name that describes the rules of this update set.
 - **Application**. Set the application scope to *Global*.
 - **State**. Set to *In Progress*.
 - Complete the remaining fields as needed.
6. Click **[Submit]** or **[Submit and Make Current]**. If you selected **[Submit and Make Current]**, go to step 8.
7. If you clicked **[Submit]**, you can select the update set in the picker in the header or navigate to the update set and select *Make This My Current Set* in the **Related links** section. You are now ready to make changes in your ServiceNow Instances.
8. When you are done with all updates in the update set, change the update set **State** field to *Complete*.

Adding Service Rules to an Update Set

If you submitted your new update set and made it "Current" in [Creating a ServiceNow Update Set](#), skip this step and go to [Exporting an Update Set](#).

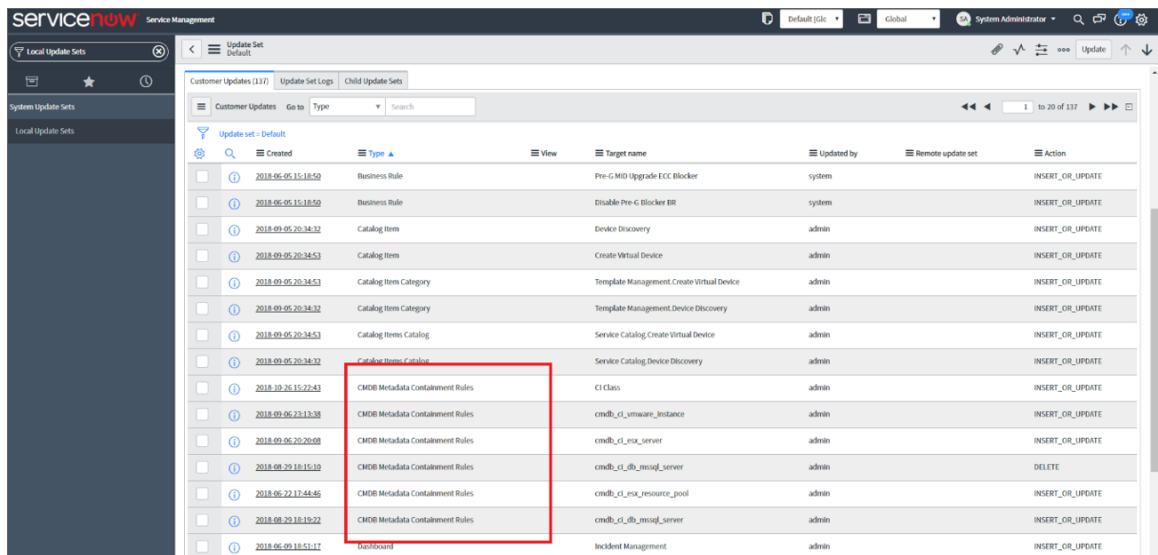
If you did not make your update set current, you will need to identify your current update set and move all of the service rules you need into your update set. You can find this information in a drop-down located in the ServiceNow navigation bar:



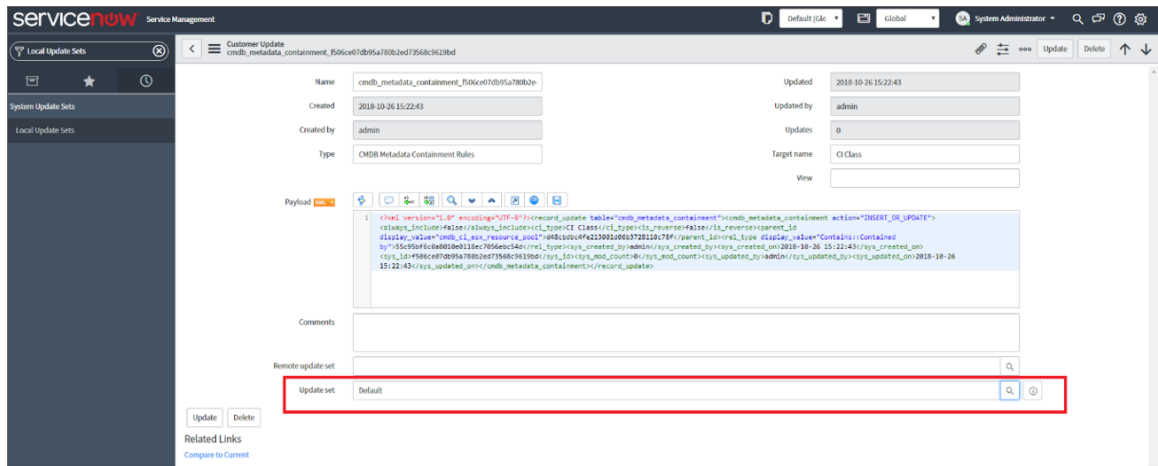
All of the service rules that you defined are tracked in the update set record under the **[Customer Updates]** tab.

To add all created service rules to your update set:

1. In the ServiceNow filter navigator, type "local update sets" to view a list of update sets on the ServiceNow instance.
2. Identify your current update set, which should have all of the created service rules tracked.
3. Identify the self-created update set that you want to contain all the service rules. This is the update set that you want to export.
4. Select the current update set that has all of the already-created service rules.
5. On the **[Customer Updates]** tab, identify all of the records with a **Type** of either **CMDB Metadata Containment Rules** or **CMDB Metadata Hosting Rules**:



6. Select each of the relevant service rule records and set the **Update set** field to match the update set you want to export. Click the magnifying glass icon to select the correct value:



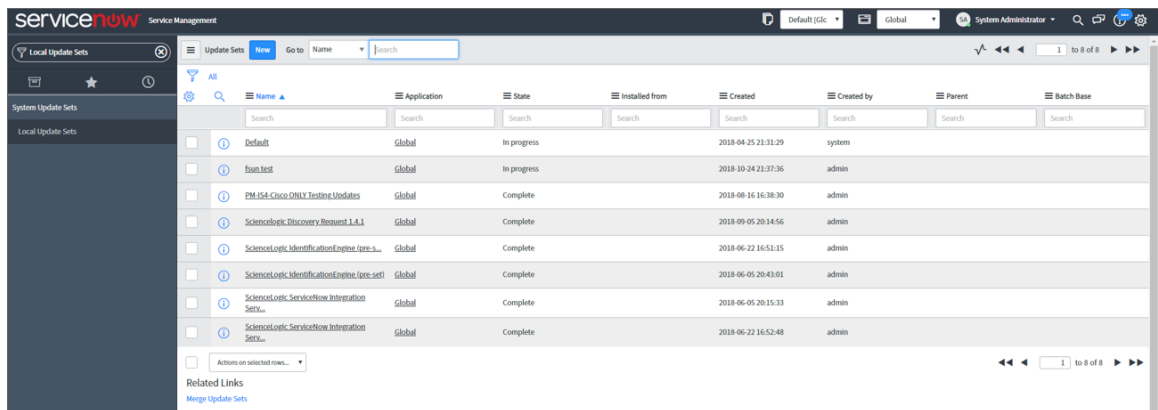
7. Click **[Update]**.
8. Repeat steps 6-7 until all relevant containment and hosting rules are in the new update set, and then go to [Exporting an Update Set](#).

Exporting an Update Set

After you have created your update set and defined the service rules, mark your update set as **Complete** and export it to an XML file.

To export an update set:

1. In the ServiceNow filter navigator, type "Local Update Sets" to view a list of update sets in ServiceNow:



2. Select your update set from the list.
3. Set the **State** to **Complete** and click **[Update]**.
4. From the **Update Sets** page, select your completed update set from the list.

5. Under the **Related Links** section, click **Export to XML**:

The screenshot shows the ServiceNow interface for an Update Set. The top section contains fields for Name, State, Parent, Release date, Install date, Installed from, and Description. The right section contains fields for Application, Created, Created by, and Merged to. Below these fields are buttons for 'Update' and 'Back Out'. The 'Related Links' section is highlighted with a red box, showing the 'Export to XML' link. Below this is a section for 'Customer Updates (37)' with a table of update logs.

Created	Type	Target name	Updated by	Remote update set	Action
2018-06-22 16:51:15	CMDB Metadata Containmentment Rules	cmdb_ci_vmware_instance	admin		INSERT_OR_UPDATE
2018-06-22 16:51:15	CMDB Metadata Containmentment Rules	cmdb_ci_vcenter_datacenter	admin		INSERT_OR_UPDATE
2018-06-22 16:51:15	CMDB Metadata Containmentment Rules	cmdb_ci_vcenter_datastore	admin		INSERT_OR_UPDATE
2018-06-22 16:51:15	CMDB Metadata Containmentment Rules	cmdb_ci_vcenter_dvs	admin		INSERT_OR_UPDATE

6. Save the downloaded XML file.

Installing the ScienceLogic Domain Separation (Global) Update Set in ServiceNow

If your ServiceNow environment is **domain-separated**, where the data, processes, and administrative tasks have been organized into logical groupings called domains, you will need to install the latest version of the "ScienceLogic Domain Separation (Global)" update set in ServiceNow. This update set is *not* included in the "ScienceLogic SL1: CMDB & Incident Automation" application (also called the Certified application).

For more information about ServiceNow domain separation, see [Using ServiceNow Domain Separation with PowerFlow](#).

NOTE: You can access this update set from the **additional_materials.zip** file included in the main **.zip** file for this Synchronization PowerPack, which you can find by searching for the **ServiceNow CMDB Synchronization PowerPack** page at <https://support.sciencelogic.com/s/powerpacks>. You can also ask your ScienceLogic contact for access to this update set.

IMPORTANT: If your ServiceNow environment does *not* use domain separation, you can skip this topic.

Overview of the Update Set

The "ScienceLogic Domain Separation (Global)" update set contains the following items:

- Scripted REST API
- Scripted REST Resource
- Scripted REST Query Parameter
- Scripted REST Query Parameter Association
- Script Include

This update set completely separates the ServiceNow Identification Engine REST resource that is used in the "ScienceLogic ServiceNow Integration" application and all of the required resources and duplicates it in the Global scope.

A Scripted REST Service in the Global application is a direct copy of the application endpoint with a new name: `api/10693/sciencelogic_domain_separation`. This REST Service includes only one Resource: `Device IdentificationEngine POST`. This resource works exactly like the application version, but it points to the new Script Include "SciLoDomainSepUtil". This version of the REST resource takes the same formatted JSON as the Certified application.

The Script Include "SciLoDomainSepUtil" includes all of the functionality needed to run the ServiceNow Identification Engine API.

Additional resources for the ServiceNow API:

- [CMDB Identification and Reconciliation](#)
- [identifyCI\(String jsonString\)](#)
- [createOrUpdateCI\(String source, String input\)](#)
- [Identification engine error messages](#)

NOTE: The only resource shared with this update set and the Certified application is the Device Properties page. These properties are located in the Certified application at ScienceLogic > Device > Device Properties.

Limitations of the Identification Engine

For more information about how the Identification Engine handles incoming payloads in domain-separated systems, see the following ServiceNow Knowledge Base article: [KB0695949](#).

The payload and the user domain must match, or the ServiceNow Identification Engine (IDE) will by default insert the CMDB record. Safeguards within the PowerFlow Device Sync application were put in place for payloads that have relationships. The application will drop the payload if all Configuration Items do not share the same domain.

Installing the Update Set

To install the "ScienceLogic Domain Separation (Global)" update set:

1. Retrieve the latest version of the update set from the **ServiceNow CMDB Synchronization PowerPack** page on the ScienceLogic Support Site at <https://support.sciencelogic.com/s/powerpacks>.
2. In ServiceNow, navigate to the **Retrieved Update Sets** page (System Update Sets > Retrieved Update Sets).
3. Click the **Import Update Set from XML** link under **Related Links**.
4. Click **[Browse]** and navigate to the update set XML file you downloaded. Select the XML file and click **[Upload]**.
5. After the file is uploaded, the **Retrieved Update Sets** page appears. Click the link for the "ScienceLogic Domain Separation (Global)" update set. The **Retrieved Update Set** page appears.
6. Click **[Preview Update Set]**. After the preview set runs, a status page appears.
7. Ensure that "Success" appears in the **Completion code** field. If "Success" does not appear in the **Completion code** field, contact ScienceLogic Support to assist with reviewing any conflicts that might exist. Do not proceed until those conflicts are resolved and "Success" appears in the **Completion code** field.
8. Click **[Commit]** to commit the fix script after running the preview set.
9. Before you start to sync devices, you must select the **Domain Separation** option on the **Configuration** pane in the "Sync Devices from SL1 to ServiceNow" application. This option ensures that PowerFlow gets re-pointed to the API endpoint after you install the "ScienceLogic Domain Separation (Global)" update set. For more information, see [Running a Device Sync](#).

Configuring Domain Separation without Using the Update Set

You can sync to a domain-separated ServiceNow CMDB without installing "ScienceLogic Domain Separation (Global)" update set, but you will need to manage multiple configuration objects and schedules in PowerFlow. You will need to create multiple schedules, and each schedule will reference a unique configuration object that is specific to a specific domain in ServiceNow.

Creating the Configuration Objects for the ServiceNow Domains

To create a configuration object for each ServiceNow domain:

1. In the PowerFlow user interface, go to the **Configurations** page and click **[Create Configuration]**:

Create Configuration

Friendly Name
Stack A Config

Description
Config for Stack A

Author
ScienceLogic

Version
1.0.0

Toggle JSON Editor

Configuration Data

```
1- [[
2- {
3-   "encrypted": false,
4-   "name": "sl1_host",
5-   "value": "SL1_StackA"
6- },
7- {
8-   "encrypted": false,
9-   "name": "sl1_db_host",
10-  "value": "${config.sl1_host}"
11- },
12- {
13-   "encrypted": false,
14-   "name": "sl1_password",
15-   "value": ""
16- }
17- ]]
```

expects type: json

Save

2. Click **[Toggle JSON Editor]** to open the JSON viewer.
3. In the **Configuration Data** section, make sure that this object is configured with a ServiceNow domain-specific user. For example:

```
{
  "encrypted": false,
  "name": "snow_user",
  "value": "domainA_user"
},
{
  "encrypted": false,
  "name": "snow_password",
  "value": "domainA_password"
},
{
  "encrypted": false,
  "name": "include_orgs",
  "value": [1,2,3]
},
{
  "encrypted": false,
  "name": "snow_admin",
  "value": "domainA_admin"
}
```

4. Update the **include_orgs** value with a list of organizations that map to the domain to which you are syncing.

```
{
  "encrypted": false,
  "name": "include_orgs",
  "value": [1,2,3]
},
{
  "encrypted": false,
  "name": "snow_admin",
  "value": "domainA_admin"
}
```

5. Define the class mapping for the configuration object. For example:

```
{
  "encrypted": false,
  "name": "mapping",
  "value": {
    "cmdb_ci_computer": [
      "IBM | IBM OS/400 V5R1M0",
      "IBM | Main Frame",
      "IBM | AIX RS/6000"
    ],
    "cmdb_ci_esx_resource_pool": [
      "VMware | Resource Pool"
    ]
  }
},
```

6. The **region** value should be unique to SL1 stack that is being synced. For example:

```
{
  "encrypted": false,
  "name": "region",
  "value": "StackA"
}
```

7. Repeat steps 1-6 for each ServiceNow domain you want to use.

Example JSON Code for a Configuration Object

The following JSON code is for an example configuration object:

```
[
  {
    "encrypted": false,
    "name": "sl1_host",
    "value": "SL1_StackA"
  },
  {
    "encrypted": false,
    "name": "sl1_db_host",
    "value": "${config.sl1_host}"
  },
  {
    "encrypted": false,
```

```

    "name": "sl1_password",
    "value": "password"
  },
  {
    "encrypted": false,
    "name": "sl1_user",
    "value": "StackA_user"
  },
  {
    "encrypted": false,
    "name": "sl1_db_user",
    "value": "root"
  },
  {
    "encrypted": false,
    "name": "sl1_db_password",
    "value": "StackA_password"
  },
  {
    "encrypted": false,
    "name": "snow_host",
    "value": "example.service-now.com"
  },
  {
    "encrypted": false,
    "name": "snow_user",
    "value": "domainA_user"
  },
  {
    "encrypted": false,
    "name": "snow_password",
    "value": "domainA_password"
  },
  {
    "encrypted": false,
    "name": "include_orgs",
    "value": [1,2,3]
  },
  {
    "encrypted": false,

```

```

    "name": "mapping",
    "value": {
      "cmdb_ci_computer": [
        "IBM | IBM OS/400 V5R1M0",
        "IBM | Main Frame",
        "IBM | AIX RS/6000"
      ],
      "cmdb_ci_esx_resource_pool": [
        "VMware | Resource Pool"
      ]
    }
  },
  {
    "encrypted": false,
    "name": "region",
    "value": "StackA"
  }
]

```

Aligning a Schedule with a ServiceNow Domain

After you have created the configuration objects, you can define multiple schedules, one schedule for each domain. When scheduling the application, you will need to create multiple schedules, where each schedule uses a domain-specific configuration object.

NOTE: When specifying a configuration object to use in the custom parameters, use the ID of the configuration object.

The following image shows how you can create a schedule that uses a specific configuration object using the **Custom Parameters** field in the PowerFlow Scheduler:

device_sync_sciencelogic_to_servicenow

Schedule Name
Device Sync Domain A

Switch to Frequency in Seconds

Important values

* any value , list separator - range of values / step values

Expression: "02:00 every day"

Minutes: 0 Hours: 2 Day of Month: * Month: * Day of Week: *

Custom Parameters

```
1 {
2   "configuration": "now_domain_a"
3 }
```

The following image shows how you could schedule Device Syncs for multiple ServiceNow domains:

device_sync_sciencelogic_to_servicenow

Task Name	Runs	Type
Device Sync Domain A	0	crontab
Device Sync Domain B	0	crontab
Device Sync Domain C	0	crontab

Using ServiceNow Domain Separation with PowerFlow

The following topics provide more information about ServiceNow domain separation and how it relates to PowerFlow. For more information, see [Domain separation](#) in the ServiceNow Documentation.

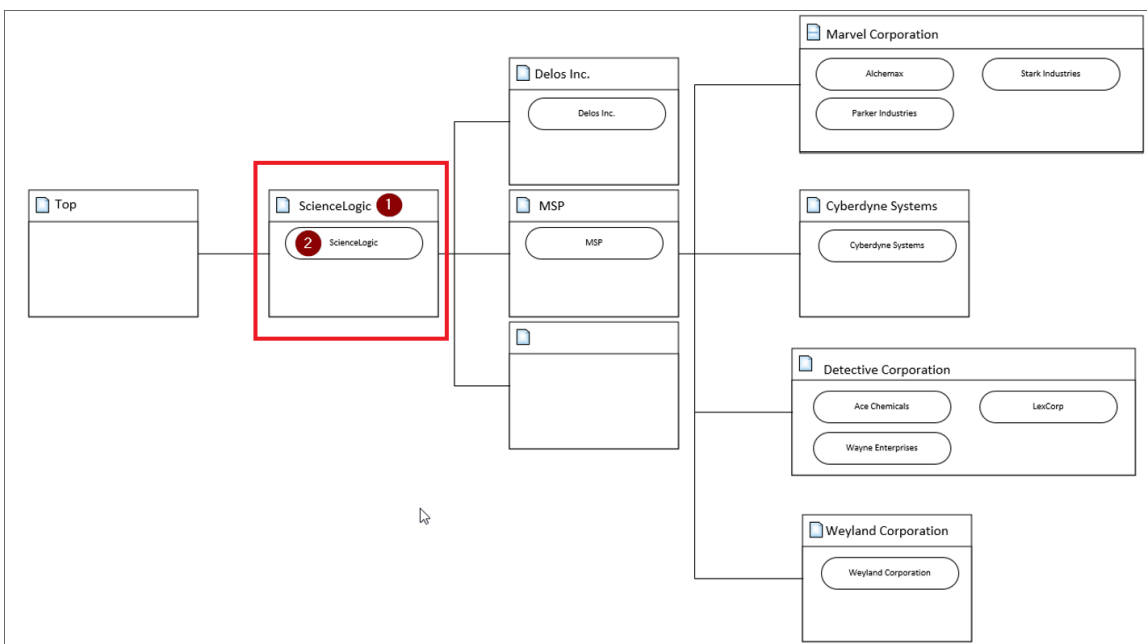
NOTE: When either multiple SL1 stacks or multiple ServiceNow systems are involved with PowerFlow, you should create an individual configuration object for each SL1 stack or ServiceNow system. Next, create an individual schedule for each configuration object. Each schedule should use a configuration object that is specific to that single SL1 stack or ServiceNow system. Creating copies of a PowerFlow application from a Synchronization PowerPack for the purpose of distinguishing between domains is not supported, and will result in issues on upgrades.

User Setup

Company and domain setup is critical for the domain separation integration to work using the Identification Engine provided by ServiceNow. This solution requires only one user and will require proper setup depending on where the user is located within the domain tree.

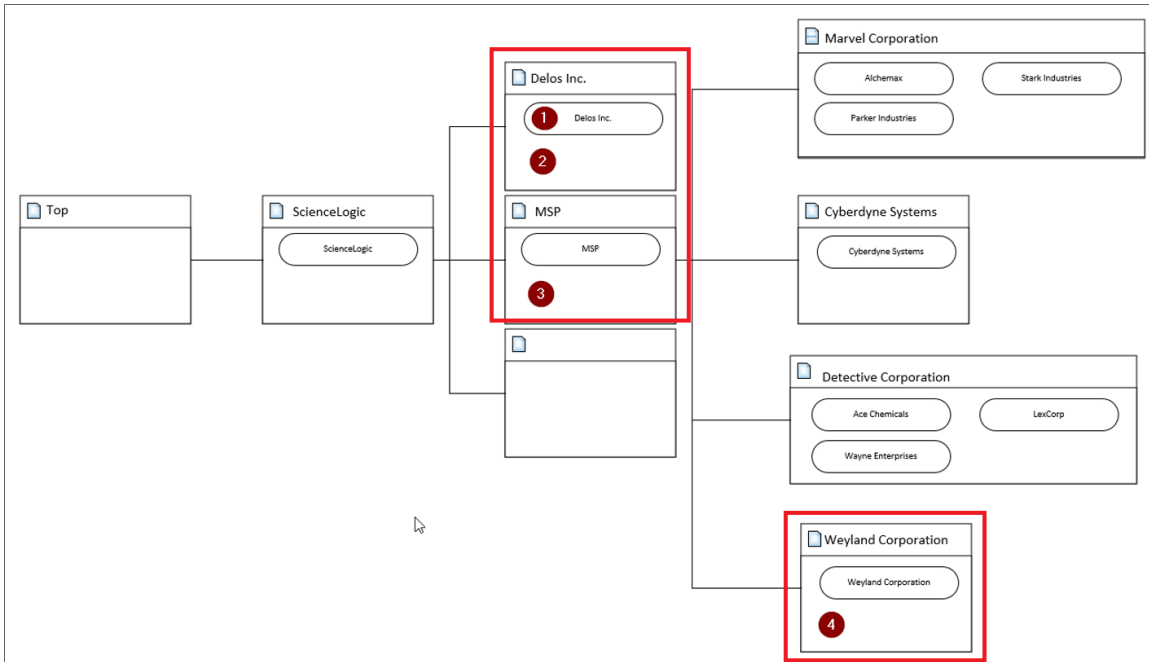
Example 1

In the following example, **ScienceLogic (1)** is both the domain and the company. The ScienceLogic user service account is associated with **ScienceLogic (2)** company, and it will have access to all child domains. You do not need to set visibility to any domain. This is the best way to set up this user, because placing it in the top domain ensures that it always has access to all children:



Example 2

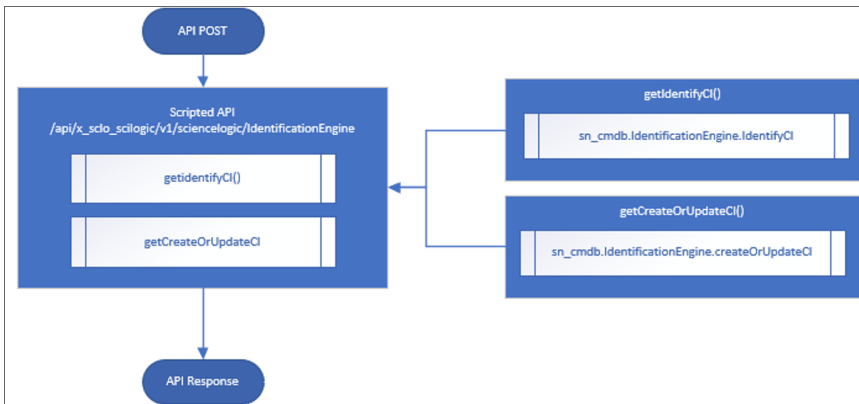
In the following example, **Delos Inc. (1)** is the company within the **Delos Inc.** domain. The PowerFlow service account is associated with the **Delos Inc. (1)** company. The **Delos Inc.** domain has no children domains, and if domain visibility is not assigned, PowerFlow will not properly update the CMDB. This setup works, but it requires that proper domain visibility is set up for the service account to work correctly.



NOTE: Assigning visibility to **MSP (3)** will grant the service account access to all child domains. Assigning visibility to **Weyland Corporation (4)** will only allow access to the **Delos Inc.** domain and the **Weyland** domain; all other domains will not work.

Workflow

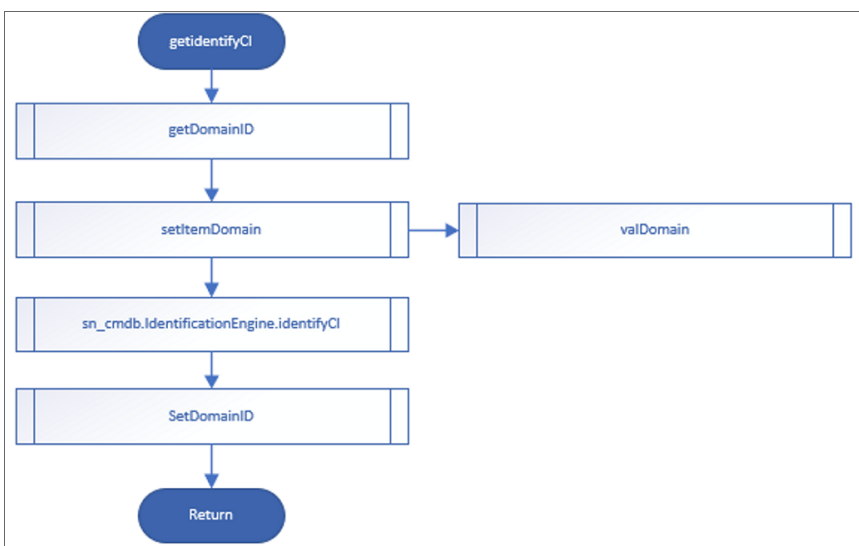
The API endpoint is based on the API query parameter "test" being true or not, which determines which Identification Engine API resource should be used. There are two primary avenues supplied with this REST resource: "createOrUpdateCI" or "identifyCI", and the only difference is that "identifyCI" does not commit the results:



The "getCreateOrUpdateCI" function uses the following workflow:

1. Retrieves the current session Domain ID (`sys_id`).
2. Sets the user Domain ID by creating an array of domain `sys_id` values and returning only the unique domains, or setting the domain if the array has only one unique domain.
3. Submits the JSON formatted string to "createOrUpdateCI()" or "identifyCI()" API.
4. Sets the user's Domain ID back to the original session ID.

The following image shows this workflow:



Chapter

3

Configuring Applications for the CMDB Synchronization PowerPack

Overview

This chapter describes the how to configure and run the various PowerFlow applications contained in the "ServiceNow CMDB" Synchronization PowerPack.

A **PowerFlow application** is a JSON object that includes all the information required for executing an integration on the PowerFlow platform. A PowerFlow application combines a set of steps that execute a workflow. You can configure the parameters in the application to customize the sync process.


TIP: While a PowerFlow application is running on the **Applications** page, you will see a dark green, horizontal line moving across the top of the page until the process completes.

This chapter covers the following topics:

<i>Creating and Aligning a Configuration Object</i>	<i>46</i>
<i>Syncing Organizations</i>	<i>50</i>
<i>Syncing Devices from SL1 to ServiceNow</i>	<i>56</i>
<i>Syncing CI Attributes from ServiceNow to SL1</i>	<i>88</i>
<i>Syncing Advanced Topology Data from SL1 to ServiceNow</i>	<i>92</i>
<i>Syncing Network Interfaces from SL1 to ServiceNow</i>	<i>96</i>
<i>Syncing File Systems from SL1 to ServiceNow</i>	<i>102</i>
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Creating and Aligning a Configuration Object

A **configuration object** supplies the login credentials and other required information needed to execute the steps for an application in PowerFlow. The **Configurations** page () of the PowerFlow user interface lists all available configuration objects for that system.

You can create as many configuration objects as you need. A PowerFlow application can only use one configuration object at a time, but you can use (or "align") the same configuration object with multiple applications.

To use this Synchronization PowerPack, you will need to create one or more configuration objects in the PowerFlow user interface and align that configuration object to the applications that let you sync data between SL1 and ServiceNow.

NOTE: Depending on your SL1 and ServiceNow environments, you might be able to use the same configuration object with other ServiceNow Synchronization PowerPacks.

NOTE: When either multiple SL1 stacks or multiple ServiceNow systems are involved with PowerFlow, you should create an individual configuration object for each SL1 stack or ServiceNow system. Next, create an individual schedule for each configuration object. Each schedule should use a configuration object that is specific to that single SL1 stack or ServiceNow system. Creating copies of a PowerFlow application from a Synchronization PowerPack for the purpose of distinguishing between domains is not supported, and will result in issues on upgrades.

Creating a Configuration Object

For this Synchronization PowerPack, you can make a copy of the "ServiceNow SyncPack" configuration object, which is the sample configuration file that was installed with the "ServiceNow Base" Synchronization PowerPack.

TIP: The "ServiceNow SyncPack" configuration object contains all of the required variables. Make a copy of the configuration object and update the variables from that object to match your SL1 and ServiceNow settings.

To create a configuration object based on the "ServiceNow SyncPack" configuration object:

1. In the PowerFlow user interface, go to the **Configurations** page (⚙️).
2. Click the **[Edit]** button for the "ServiceNow SyncPack" configuration object. The **Configuration** pane appears.

TIP: Click **[Toggle JSON Editor]** to show the JSON code. Click the button again to see the fields.

3. Click **[Copy as]**. The **Create Configuration** pane appears.

IMPORTANT: This step is required. Do *not* use the original configuration object to run PowerFlow applications.

4. Complete the following fields:
 - **Friendly Name.** Name of the configuration object that will display on the **Configurations** page.
 - **Description.** A brief description of the configuration object.
 - **Author.** User or organization that created the configuration object.
 - **Version.** Version of the configuration object.
5. In the **Configuration Data** field, include the required block of code to ensure that the applications aligned to this configuration object do not fail:

```
{
  "encrypted": false,
  "name": "s11_db_host",
  "value": "${config.s11_host}"
},
```

For example:

```
{
  "encrypted": false,
  "name": "s11_db_host",
  "value": "10.2.11.42"
},
```

6. In the **Configuration Data Values** field, update the default variable definitions to match your PowerFlow configuration.

NOTE: The **region** value is a user-defined variable that identifies your SL1 instance within ServiceNow.

7. To create a configuration variable in the JSON Editor, define the following keys:
 - **encrypted**. Specifies whether the value will appear in plain text or encrypted in this JSON file. If you set this to "true", when the value is uploaded, PowerFlow encrypts the value of the variable. The plain text value cannot be retrieved again by an end user. The encryption key is unique to each PowerFlow system. The value is followed by a comma.
 - **name**. Specifies the name of the configuration file, without the JSON suffix. This value appears in the user interface. The value is surrounded by double-quotes and followed by a comma.
 - **value**. Specifies the value to assign to the variable. The value is surrounded by double-quotes and followed by a comma.
8. Click **[Save]**. You can now align this configuration object with one or more applications.

Aligning a Configuration Object

Before you can run the applications in this Synchronization PowerPack, you must first "align" a configuration object with the application you want to use.

To align a configuration object with an application:

1. From the **Applications** page of the PowerFlow user interface, open the relevant application and click **[Configure]** (⚙️). The **Configurations** pane for that application appears:

Sync Organizations From SL1 To ServiceNow Companies

Modify application configuration and save. Show JSON Configs

Configuration Edit Configuration

sl1_hostname
\${config.sl1_host}

snow_hostname
\${config.snow_host}

sl1_user
\${config.sl1_user}

snow_user
\${config.snow_user}

sl1_password
dyNtAvUrXqs4YK2qzMot

snow_password
nOx/McpeeHaPjNXalAIHt

region
\${config.region}

read_timeout
20

chunk_size
500

Source_of_Truth
ServiceNow

☐ Domain_Separation ☐ Create_Missing ☐ Update_Name

attribute_mappings

Save

2. From the **Configurations** drop-down, select the configuration object you want to use.
3. Click **[Save]** to align that configuration with the application.
4. Repeat this process for every other application you want to use.

NOTE: The values for **eventDetails** and the other parameters that appear in the **Configuration** pane with a padlock icon (🔒) are populated by the configuration object.

Syncing Organizations

An **Organization Sync** uses the "Sync Organizations from SL1 to ServiceNow" application to sync *organizations* from SL1 with ServiceNow *companies*. In this context, **sync** means that if you update a company in ServiceNow, the Organization Sync process will update the SL1 organization with that information, and vice versa.

If your ServiceNow environment is *domain-separated*, where the data, processes, and administrative tasks have been organized into logical groupings called *domains*, then the first sync you should run on a new PowerFlow system is an **Organization Sync**. For more information, see [For Domain-separated ServiceNow Environments Only](#).

If your ServiceNow configuration does *not* use domain separation, you do not need to run an Organization Sync as the first sync. However, if you want to filter by organization with any of the other syncs in this Synchronization PowerPack, such as Device Sync, File System Sync, and Interface Sync, you will need to run the Organization Sync as documented in the steps below.

NOTE: Starting with version 3.5.0 of this Synchronization PowerPack, a new table and API were created to let multiple SL1 systems support duplicate SL1 organizations syncing to one ServiceNow company, particularly for a domain-separated company.

For Domain-separated ServiceNow Environments Only

If your ServiceNow environment is *domain-separated*, where the data, processes, and administrative tasks have been organized into logical groupings called *domains*, then the first sync you should run on a new PowerFlow system is an **Organization Sync**.

Starting with version 3.5.0 of this Synchronization PowerPack, the following fields are no longer being used on the Company table (**core_company**) in ServiceNow:

- **SL1 Monitored**
- **SL1 Region**
- **SL1 ID**

The ScienceLogic-specific information was moved to an application-specific table (**x_sclo_scilogic_organizations**) to track which Organization goes with any specific Company.

NOTE: Creating new records is currently only available with the **x_sclo_scilogic.admin** role.

Creating a Linking Record for Domain-separated ServiceNow Instances

Before running the "Sync Organizations from SL1 to ServiceNow" application for the first time in a domain-separated environment, you will need to create a linking record in ServiceNow. You should also create a linking record if you select ServiceNow as the "source of truth" on the **Configuration** page of the "Sync Organizations from SL1 to ServiceNow" application, even if your ServiceNow instance is not domain-separated.

The linking record lets you set up the following configurations:

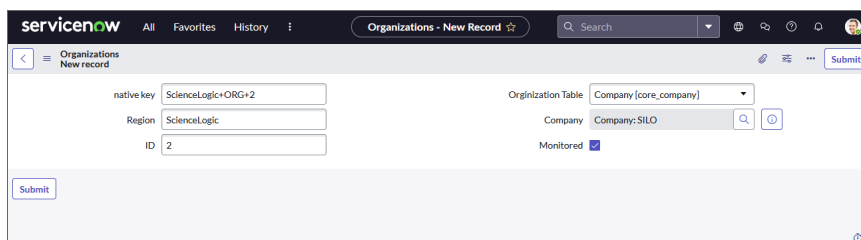
- Tracking the relationship of a single SL1 organization with a single ServiceNow company in multiple SL1 databases.
- Matching multiple SL1 organizations to the same ServiceNow company.
- Importing a ServiceNow company into SL1 as an SL1 organization.

ScienceLogic highly recommends that you try out this feature in test environment before pushing to production.

IMPORTANT: If you set up an Organization Sync with a version of this Synchronization PowerPack earlier than version 3.5.0, you will need to create a linking record when you upgrade to version 3.5.0 or later. The linking record is only required when you upgrade if you use ServiceNow as the source of truth.

To create a linking record:

1. In ServiceNow, navigate to **ScienceLogic > Supporting Imports > Organization Source**.
2. Click **[New]**. A new record appears:



The screenshot shows the ServiceNow interface for creating a new organization record. The breadcrumb trail is "Organizations - New Record". The form has the following fields and values:

Field	Value
native key	ScienceLogic+ORG+2
Region	ScienceLogic
ID	2
Organization Table	Company[core_company]
Company	Company:SILO
Monitored	<input checked="" type="checkbox"/>

A "Submit" button is located at the bottom left of the form.

3. Complete the following required fields:
 - **Region.** Set this value to match the **region** value in the configuration object aligned with the "Sync Organizations from SL1 to ServiceNow" application in the PowerFlow user interface.

- **Company.** You would only need to use this field if you either want SL1 to create the organization or you want to link a specific SL1 organization with a specific ServiceNow company. To do this, search for the name of the ServiceNow company you want to link to (or have SL1 create). Otherwise, you can leave this field blank.

Because this a document field, you must add the **Company [core_company]** table in the **Table name** field, and then click the magnifying glass icon to locate a company from the **Document** field:

- **Monitored.** Set to *True* (checked).

4. The following fields are not required, or they are required under specific conditions:

- **ID.** Use this field only if you want to link a specific SL1 organization with a specific ServiceNow company. To do this, locate the value for that organization in the ID column of the **Organizations** page (Registry > Accounts > Organizations) in SL1. Otherwise, you can leave this field blank.
- **native key.** This key is a unique identifier for an SL1 organization, from a specific SL1 database. Use the following format:

<region>+ORG+<roa_id>

where:

- **<region>** is the **region** value in the configuration object aligned with the "Sync Organizations from SL1 to ServiceNow" application. This value should match the value in the **Region** field, above.
- **<roa_id>** is the value for that organization in the **ID** column of the **Organizations** page (Registry > Accounts > Organizations) in SL1. This value should match the value in the **ID** field, above.

For example: **ScienceLogic+ORG+2.**

5. Repeat steps 2-4 to create a linking record for every instance where you want to track the relationship of a single organization with a single company in multiple SL1 databases.
6. Go to the following topic to run the "Sync Organizations from SL1 to ServiceNow" application. Make sure that the **Source_of_Truth** field on the **Configuration** pane is set correctly to *ServiceNow*.

For Case Integration ServiceNow Environments Only

Add the following roles to the Integration user so that user can interact with the "ScienceLogic SL1: Customer Service Management Integration" Application in ServiceNow.

- **x_sclo_case_mgmt.admin**. Provides user rights to interact with the scoped application tables and modules in ServiceNow.
- **import_transformer**. Provides user rights to manage import set transform maps, run transforms, and access responses.

If your ServiceNow environment is using the Case Integration module and you intend to use **customer_account** records, you will need to add additional rights to the Integration user. These rights allow the Integration user to read the table fields:

- **sn_customerservice.customer_data_viewer**

You will need to add cross-scoped access for read-only to the **customer_account** table as well. ScienceLogic recommends that you use ServiceNow as the source of truth for Organizations (Companies). For more information, see the "Allowing Cross-Scoped Access in ServiceNow" topic in the **ServiceNow CMDB Synchronization PowerPack** manual.

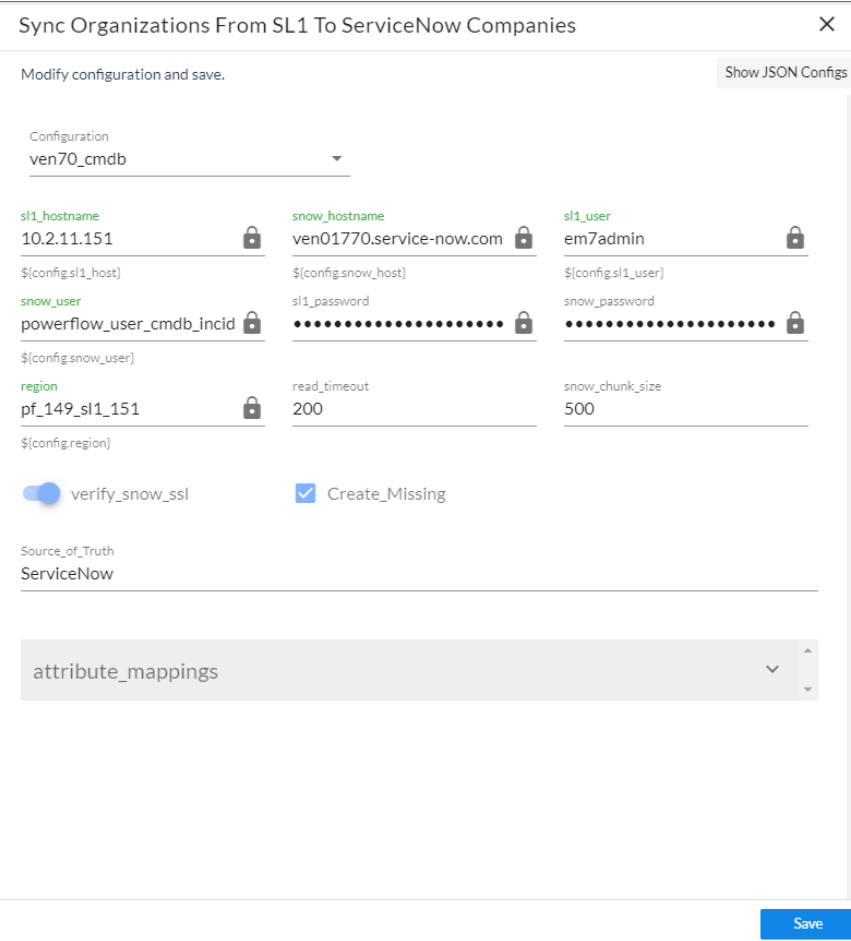
Configuring Organization Sync

Organization Sync uses the "Sync Organizations from SL1 to ServiceNow" application to pull *organizations* from SL1 and sync them with ServiceNow *companies*.

To sync SL1 organizations with ServiceNow companies:

1. In the PowerFlow user interface, go to the **Applications** page and select the "Sync Organizations from SL1 to ServiceNow" application. The **application** page for that application appears.

2. Click **[Configure]** (). The **Configuration** pane appears:



Sync Organizations From SL1 To ServiceNow Companies

Modify configuration and save. [Show JSON Configs](#)

Configuration
ven70_cmdb

sl1_hostname 10.2.11.151	snow_hostname ven01770.service-now.com	sl1_user em7admin
\$(config.sl1_host)	\$(config.snow_host)	\$(config.sl1_user)
snow_user powerflow_user_cmdb_incid	sl1_password	snow_password
\$(config.snow_user)		
region pf_149_sl1_151	read_timeout 200	snow_chunk_size 500
\$(config.region)		

☐ verify_snow_ssl ☒ Create_Missing

Source_of_Truth
ServiceNow

attribute_mappings

Save

3. Complete the following fields, as needed:


- **Configuration.** Select the configuration object with the relevant SL1 and ServiceNow credentials to align with this application. You cannot edit fields that are populated by the configuration object. Required.

NOTE: The **region** field is populated by the configuration object you aligned with this application. The region value must match the value in the **SL1 Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration object that is aligned with this application, or align a different configuration object that has the correct **region** value.

- **read_timeout.** Specify the maximum amount of time in seconds that the application should wait for a response before timing out.
- **snow_chunk_size.** Specify the number of organizations to include in each chunk sent to ServiceNow when you run this application.

- **verify_snow_ssl**. Toggle on (blue) this option to enable verification of the SSL certification when you run this application.
- **Create_Missing**. Select this option if you want PowerFlow to create a new organization or company if that record is missing, based on your selection in the *Source_of_Truth* field. By default, this option is not selected.

NOTE: Starting with version 3.5.0 of this Synchronization PowerPack, the **Update_Name** and **Domain Separation** parameters were removed from the **Configuration** pane. Domain separation is still supported, but this parameter no longer needs to be selected.

- **Source_of_Truth**. Select whether you want to use data from ServiceNow or ScienceLogic as the "source of truth" when this application encounters duplicate data or data collisions. In most situations, the source of truth would be the application where you initially configured and created the companies or organizations.
 - If you select *ServiceNow*, you must specify the values in the **Monitored** and **Region** fields in ServiceNow. Because these fields do not display by default on the **Companies** page in ServiceNow, navigate to the **Companies** page, click the *Update Personalized List* icon () , and add the **Monitored** and **Region** columns to that page.
 - If your ServiceNow configuration uses domain separation, you must select *ServiceNow* as the source of truth.
 - If you select *ScienceLogic*, you do not need to do anything else related to this field.
4. In the **attribute_mappings** section, you can edit or create a mapping for any other company attributes, such as address and contact information, that you want to sync between SL1 (the first column) and ServiceNow (the second column). A set of company attributes are already mapped by default.

NOTE: You can use Jinja2 Templates in fields that are aligned with the "Source of Truth" you selected (the left column is for SL1 , and the right column is for ServiceNow). For more information, see [Using a Jinja2 Template](#).


TIP: Starting with version 3.5.0 of this Synchronization PowerPack, the **Update_Name** parameters was removed. You can remove the mapping to the name value if you do not want to map the name back to SL1 .

5. To *edit* an existing company attribute in the **attribute_mappings** section, click the attribute name and either select an attribute from the list or type a new name for the attribute. Press **[Enter]** after editing the attribute to make sure your changes are saved.

TIP: Use the **[Tab]** button to move down through the list of options in a drop-down list, press **[Shift]+[Tab]** to move up, and press **[Enter]** to select a highlighted option.

6. To *create* a company attribute in the **attribute_mappings** section, click the **[Add Mapping]** button at the bottom of the section, type a name for the attribute in the first field, and select one or more ServiceNow attributes to which the SL1 attribute should sync in the **maps to** field. Press **[Enter]** after editing the attribute to make sure your changes are saved.

NOTE: When an attribute value is "0" in SL1, the corresponding field in ServiceNow might display as empty.

7. Click **[Save]**. The **Configuration** pane automatically closes after this message appears.
8. Click **[Run]**  to run the application.
9. When the application completes, open the **Step Log** and review the log messages for the "Process Organizations" step to see if any Company or Organization records were created. As needed, select the other steps to review the logs on the **Step Log** for those steps.

TIP: SL1 Organizations that are synced to a ServiceNow Company will have the **crm_id** field on the **[Properties]** tab for that organization populated with the ServiceNow Company **sys_id** variable.

Syncing Devices from SL1 to ServiceNow

The "Sync Devices from SL1 to ServiceNow" application syncs devices and virtual device relationships from SL1 to ServiceNow. You can also sync devices based on organization and collector group.

The Device Sync process use rules or "mappings" that you can define in the "Sync Devices from SL1 to ServiceNow" application. These mappings connect an **SL1 device class** to a **ServiceNow CI class**, which determines the CI class that ServiceNow uses when creating the CI in ServiceNow.

NOTE: For more information about building **service rules** (containment rules and hosting rules) for devices and CIs, see [Configuring Service Rules for Device Sync](#).

The "Sync Devices from SL1 to ServiceNow" application can also collect manufacturer and model attributes from asset records aligned with devices in SL1 and sync that information with ServiceNow. PowerFlow only populates the manufacturer and model attributes if the values exist in ServiceNow CIs; PowerFlow does not create new manufacturer values in ServiceNow. The "Sync Devices from SL1 to ServiceNow" application uses the **sys_id** field as a reference when syncing manufacturer and model information between SL1 and ServiceNow. For more information, see [Device Attribute Mappings](#).

Merged Devices in SL1

When the "Sync Devices from SL1 to ServiceNow" application encounters a merged device in SL1, it splits the record into two objects to allow for correct default relationships in ServiceNow.

Starting with version 3.2.0 of this Synchronization PowerPack, the "Sync Devices from SL1 to ServiceNow" application syncs *both* the physical and the component device in SL1 to ServiceNow. When a merged device is encountered in SL1, the "Sync Devices" application splits the device in PowerFlow and creates two CIs in ServiceNow. This action does not impact the source device record in SL1.

In ServiceNow, the physical CI includes the relevant asset information. A relationship also exists between the physical CI and the virtual CI. The asset information is directly copied between both CIs, so the data will essentially be duplicated across both devices, and the data will be submitted to two separate tables. The **sl1_url** will also be the same on both devices, so that both CIs will point to the same device in SL1.

Using Other Data Sources with Merged Devices

If you have other data sources syncing into the ServiceNow CMDB and you have merged devices in SL1, ScienceLogic recommends caution when integrating to the CMDB.

Also, ScienceLogic recommends that you ensure that configuration of the Identification and Reconciliation (IRE) within ServiceNow affects all data sources that are integrating into it. In the case of ScienceLogic, this is most apparent when syncing merged devices. Modifications to the IRE to handle merged devices affects all other data sources that sync to those specific class tables. It is your responsibility to understand each data source, how that data source integrates with the ServiceNow CMDB, and how to leverage that knowledge to understand the impact IRE changes may have.

WARNING: ScienceLogic cannot be held responsible for any duplicate, lost, or incorrect CI information as a result of merged devices when multiple data sources are involved. This scenario will also affect your Support SLAs, as this practice deviates from recommended best practices.

For more information about the ServiceNow Identification and Reconciliation module, see the ServiceNow documentation: https://docs.servicenow.com/bundle/orlando-servicenow-platform/page/product/configuration-management/concept/c_CompsandProcessIDandReconcil.html.

Common Fields Used by Device Sync

The "Sync Devices from SL1 to ServiceNow" application uses the following ServiceNow fields to determine which devices to sync from SL1 to ServiceNow:

- **SL1 Monitored.** This field displays a Boolean (true or false) value that is impacted by whether the device is in SL1 or not. The device being found in ServiceNow depends on the **SL1 Monitored** field. The device being found in SL1 depends on the class mappings defined in the "Sync Devices from SL1 to ServiceNow" application.
 - If the CI is in ServiceNow and the device is in SL1 , the **SL1 Monitored** flag is set to *true*.
 - If the CI is in ServiceNow but the device is *not* in SL1 , the **SL1 Monitored** field is set to *false*. Anything pulled from ServiceNow (everything that is *monitored: true* and matches the *region*) that does *not* have a matching device pulled from SL1 gets marked as *monitored: false*.
- **SL1 Region.** This field represents an ID for the SL1 instance or instances being synced to the ServiceNow instance. The **SL1 Region** field is determined by the user when configuring the IS applications. In a multi-SL1 environment, ScienceLogic recommends that you make the **SL1 Region** field descriptive so the ServiceNow user knows from which SL1 stack the CI originated.
 - If the **SL1 Region** field is defined as an identifier by the CI class, ServiceNow will create new CI records with the new **SL1 Region** value, and the user must manually delete the duplicate CIs in the old **SL1 Region** field.
 - If the **SL1 Region** field is *not* defined as an identifier by the CI class, ServiceNow will not treat these devices as new CIs, and the **SL1 Region** field will be automatically updated.

NOTE: Changing the **SL1 Region** value after an initial run of the "Sync Devices from SL1 to ServiceNow" application will have differing results depending on the service rules defined in ServiceNow that dictate reconciliation of the CI. If you change the **SL1 Region** value, you will need to run "Sync Devices from SL1 to ServiceNow" twice: once to align the CIs with the new region, and a second time to enable PowerFlow to re-cache the newly updated CIs in the region.

- **SL1 ID or *sl1_id*.** This field represents the value of the object from SL1 that is being synced. Do not use **sl1_id** as a CI Identifier.

Running a Device Sync

To perform a Device Sync between SL1 and ServiceNow, run the following applications in the PowerFlow user interface, in the specified order:



- **Cache ServiceNow Companies, CIs and SL1 Orgs, Device Classes.** Reads all existing SL1 device classes and ServiceNow CI classes and caches them for the Device Sync. This application uses this data to populate the **mappings** drop-down values in the "Sync Devices from SL1 to ServiceNow" application. Before version 3.5.0 of this Synchronization PowerPack, this application was named "Cache ServiceNow CIs and SL1 Device Classes".
- **Generate Required CI Relations for ServiceNow.** Determines if you are missing any class mappings or service rules that might be required in ServiceNow.

- **Sync Devices from SL1 to ServiceNow.** Syncs devices and virtual device relationships from SL1 to ServiceNow. In previous versions, this application was named "ScienceLogic To ServiceNow Device Sync using GraphQL".

To sync SL1 devices with ServiceNow:

1. In the PowerFlow user interface, select the "Cache ServiceNow CIs and SL1 Orgs, Device Classes" application from the **Applications** page, click **[Configure]** , align a configuration object, and then click **[Run]** .

NOTE: If you change any of the containment rules or hosting rules in ServiceNow, you will need to run "Cache ServiceNow CIs and SL1 Orgs, Device Classes" again. For more information, see [Configuring Service Rules for Device Sync](#).

2. Select the "Generate Required CI Relations for ServiceNow" application from the **Applications** page, click **[Configure]** , align a configuration object, and then click **[Run]** .

NOTE: PowerFlow uses the Device Class mappings you are going to configure in step 6, so you do not need to set up any mappings on the **Configuration** pane for the "Generate Required CI Relations for ServiceNow" application. Any mappings you add to this application will *overwrite* mappings in the "Sync Devices from SL1 to ServiceNow" application.

3. When the "Generate Required CI Relations for ServiceNow" application completes, review the log information in the **Step Log** for the "Pull and Process Relations" step. You should see a log message stating that no missing relations were found. For more information, see [Log Messages for the "Generate Required CI Relations for ServiceNow" Application](#).

NOTE: If needed, address any missing class mappings or service rules. For more information on service rules, see [Creating a ServiceNow Update Set](#).

- Select the "Sync Devices from SL1 to ServiceNow" application from the **Applications** page and click **[Configure]** (⚙️). The **Configuration** pane appears:

Sync Devices From SL1 To ServiceNow

Modify configuration and save. Show JSON Configs

Configuration
ven70_sl151_pf199_cmdb

sl1_hostname 10.2.11.151	sl1_db_host \${config.sl1_host}	snow_hostname ven01770.service-now.com
sl1_user em7admin	snow_user powerflow_user_cmdb_inclde	sl1_password ●●●●●●●●●●●●●●●●
snow_password ●●●●●●●●●●●●●●●●	sl1_db_user clientdbuser	sl1_db_password ●●●●●●●●●●●●●●●●
region ven70_sl151_pf199	read_timeout 300	Include_Orgs 8
Include_CUGs	sl1_chunk_size 500	snow_request_limit 500
selected_devices	sl1_url_override em7.sciencelogic.com	excluded_devices device_name_a,device_id_232
cache_lookup_chunk_size 1000	discovery_source Other Automated	snow_batch_size 150
snow_chunk_size 150	exclude_inactive	enable_device_active
enable_asset_networks	use_ap2_url	unmerge_devices

Save

- Complete the following fields, as needed:

- Configuration.** Select the configuration object with the relevant SL1 and ServiceNow credentials to align with this application. You cannot edit fields that are populated by the configuration object. Required.

NOTE: The **region** field (along with other fields related to user names and passwords) is populated by the configuration object you aligned with this application, using the **Configuration** field. The **region** value on this pane must match the value in the **SL1 Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration object aligned with this application, or align a different configuration object that has the correct **region** value.

- **read_timeout.** Specify the maximum amount of time in seconds that the application should wait for a HTTP Read response before timing out. The default is 300 seconds.
- **Include_Orgs.** If you want to include a specific set of SL1 Organizations in the device sync, add the Organization IDs from the SL1 **Organizations** page (Registry > Accounts > Organizations) in this field, separated by commas. If this field is enabled, PowerFlow will pull only the Organizations listed in this field; PowerFlow does not pull all Organizations and then drop those not on the list. Leave this field empty to sync *all* SL1 Organizations. Optional.
- **Include_CUGs.** If you want to include SL1 Collector Groups (CUGs) in the device sync, add the Collector Group IDs from SL1 in this field, separated by commas. Leave this field empty to sync *all* SL1 Collector Groups. Optional.

CAUTION: A misconfiguration in the **Include_Orgs** field or the **Include_CUGs** fields might change the monitoring flag for one or more devices. In other words, a misconfiguration in this field could switch the SL1 Monitored flag from "true" to "false", removing that device or devices from the device sync.

- **sl1_chunk_size.** Specify the number of devices to pull from SL1 in each chunk. The default is 500 devices per chunk.
- **snow_request_limit.** Specify the number of CIs fetched from ServiceNow in each request. The default is 500 objects per chunk.
- **selected_devices.** If you want to sync a sub-set of all discovered devices, type a comma-separated list of the Device IDs from SL1 for only the devices that you want to sync. Leave this field empty to sync all SL1 devices.
- **sl1_url_override.** Update this field if you want to use an URL that is different from the standard SL1 URL that gets sent to the ServiceNow CI record. Optional.
- **excluded_devices.** Type a list of comma-separated device names or device IDs for any devices that you want to exclude from the device sync. A device on the excluded list will still be queried, but it will be dropped during the PowerFlow sync process. Optional.
- **cache_lookup_chunk_size.** Specify the number of CI correlation documents to pull from the PowerFlow cache in a chunk. The default is 1000 documents per chunk.
- **discovery_source.** Specify the ServiceNow Discovery source. The default is "Other Automated".
- **snow_batch_size.** Specify the total number of CIs being sent to ServiceNow in each triggered application. The default is 150 objects per batch.
- **snow_chunk_size.** Specify the number of CI objects to send in each chunk or in each sub-payload with a batch (specified in the **snow_batch_size** field). The default is 150 objects per chunk or sub-payload.
- **verify_snow_ssl.** Toggle on (blue) this option to enable verification of the SSL certification when you run this application.
- **exclude_inactive.** Select this option to prevent syncing devices to ServiceNow that are not enabled, unavailable, or in maintenance. By default, this option is not selected.

- **enable_device_active.** Select this option to enable the **Device Active** block in the device GraphQL query, which contains information about the active state of the SL1 device. By default, this option is not selected. Accessing this data in the attribute mappings requires a Jinja2 Template. For more information, see [Using a Jinja2 Template](#).
- **enable_asset_networks.** Select this option to enable the **assetNetworks** block in the device GraphQL query, which returns a list of asset networks. By default, this option is not selected. Accessing this data in the attribute mappings requires a Jinja2 Template. For more information, see [Using a Jinja2 Template](#).

WARNING: Please note that enabling this option might cause performance issues on the SL1 side.


- **use_ap2_url.** Select this option if you want the device URLs in the **SL1 URL** field in ServiceNow CIs to point to the corresponding **Device Investigator** page in the SL1 user interface: `/inventory/devices/<SL1_device_ID>/investigator`. This option is enabled by default. If you turn off this option, the device URL points to the classic EM7 user interface: `/em7/index.em7?exec=device_summary&did=<SL1_device_ID>`.
- **unmerge_devices.** De-select this option if you want to turn off the "unmerge" behavior added in version 3.2.0 of this Synchronization PowerPack, where PowerFlow splits a merged device record into two objects to allow for correct default relationships in ServiceNow. This option is enabled by default.
- **Domain_Separation.** Select this option if your ServiceNow environment is *domain-separated*, where the data, processes, and administrative tasks have been organized into logical groupings called *domains*. If your ServiceNow instance is domain-separated, the user listed in the **snw_user** field must be a member of the top domain and have access to *all* of the domains you intend to integrate. Also, ServiceNow should be the "source of truth" for organizations if your environment is domain-separated. If this option is selected, PowerFlow syncs the ServiceNow Company **sys_id** to with the corresponding SL1 Organization.
- **drop_sys_id.** Select this option if you want to remove the **sys_id** in existing CIs from the sync. If you set **drop_sys_id** to *true*, make sure that ServiceNow can correctly identify and correlate your existing CIs with the properties that are available. By default, this option is not selected.
- **drop_company.** Select this option if you want to remove the **sys_id** in existing Companies from the sync, which prevents the "company" field from being sent to ServiceNow. Selecting this option has no effect if you selected the **Domain_Separation** option for this application. By default, this option is not selected.

NOTE: If you select this option, the ServiceNow company **sys_id** for the CI and the SL1 organization **crm_id** for the SL1 device will not be compared when determining if an update has occurred. Do not select this option if you selected the **Domain_Separation** option, as ServiceNow requires PowerFlow to send the "company" field in domain-separated environments. Also, do not select this option if you selected the **change_device_organizations** option, as changing the company for a CI in ServiceNow requires the "company" field to be sent.

- **change_device_organizations.** When enabled, this parameter allows devices to change companies with a Device Sync if the companies are within the same domain in ServiceNow. If you change the Organization/Company and another field or fields, but do not enable this parameter, PowerFlow will not apply any changes to the device. By default, this option is not selected.
- **generate_report.** Select this option to create a report about the devices that you sync with ServiceNow. PowerFlow generates a report every time you run the device sync application, and the reports are available on the **Reports** page of the PowerFlow user interface.
- **Simulation_Mode.** Select this option if you want to perform a simulated run of this application to show you the potential results of that run. By default, this option is not selected.
- **gql_filter.** Using JSON, you can optionally define a custom GraphQL filter to apply to the devices in the sync. To test out a GraphQL filter, go to the GraphiQL interface in SL1 by typing the URL or IP address for SL1 in a browser, add **/gql** to the end of the URL or IP address, and press **[Enter]**. Search the built in GraphQL docs for **DeviceSearch** and determine how to set up your custom filter. An example of a Device Search query using JSON: `{ "name": { "doesNotBeginWith": "jc-is-ma" } }`

NOTE: You can use this field to filter devices by Device Group. For more information, see [Filtering Device Sync by Device Group](#).

CAUTION: A misconfiguration in this field might change the monitoring flag for one or more devices. For example, a misconfiguration in this field could switch the SL1 Monitored flag from "true" to "false", removing that device or devices from the device sync. This field is an advanced feature that requires a basic knowledge of the SL1 GraphQL implementation. For more information, see the [Using the ScienceLogic GraphQL API](#) manual.

- **customer_ci_relation_overrides.** To override existing relationship linking and directly control the link between Device Classes and attributes, add JSON code to this field. The JSON for this field includes default relationship overrides for VMware instead of direct parent/child relations. For more information, see [Configuring Customer CI Relation Overrides](#) and [Mappings between SL1, ServiceNow, and Other Applications](#).
6. In the **mappings** section, click the expand button () to view the mappings between SL1 Device Classes and ServiceNow CI classes. This section is pre-loaded with a large number of default device mappings. For a complete list of the default mappings and a list of available mappings, see [Device Attribute Mappings](#).

NOTE: The "Sync Devices from SL1 to ServiceNow" application will *only* sync a device from SL1 if the Device Class for that device is mapped to a ServiceNow CI class in **mappings** section. The default mappings in this section do not cover all technologies, however, and syncing additional technologies from SL1 to ServiceNow might require additional research to understand the class structure.

7. To create a custom mapping for the device sync, click **[Add Mapping]** at the bottom of the **mappings** section. ServiceNow CI classes display on the left, and SL1 device classes display on the right. You can map a single ServiceNow CI class with multiple SL1 devices classes.
8. In the **company_mapping_override** section, you can create a new mapping for the ServiceNow "company" field for ServiceNow CIs (the first field on the left in the user interface). You can override the "company" field with a different ServiceNow field where you can read and write the **company_sys_id** for CIs.

9. In the **attribute_mappings** section, click the expand button (⌵) to view the mappings. In this section, you can create a mapping for any other custom device attributes you want to sync between SL1 (the first column) and ServiceNow (the second column):

Sync Devices From SL1 To ServiceNow

Modify configuration and save. Show JSON Configs

```
61      "rel_type": "Connected by::Connects",
62      "reverse": false
63    },
64  ],
65  "values": {}
66 },
67 "cldb_ci_vcenter_cluster": {
68   "relations": [
69     {
70       "parent": "cldb_ci_vcenter_datacenter",
71       "rel_type": "Contains::Contained by",
72       "reverse": false
73     },
74   ]
75 }
```

expects type: json

mappings

attribute_mappings

SL1 Attribute	ServiceNow Attribute
Description: {{device.device_category}}, De	short_description
assetTag	asset_tag
cpuCount	cpu_count

Save

NOTE: All custom attributes for each SL1 device are automatically synced.

TIP: You can use a Jinja2 Template for device attribute fields on the SL1 side (the left column). For more information, see [Using a Jinja2 Template](#).

10. To *edit* an existing device attribute in the **attribute_mappings** section, click the attribute name and either select an attribute from the list or type a new name for the attribute. Press **[Enter]** after editing the attribute to make sure your changes are saved.

11. To create a custom device attribute in the **attribute_mappings** section, click the **[Add Mapping]** button at the bottom of the section, type a name for the attribute in the first field, and select one or more ServiceNow attributes to which the SL1 attribute should sync in the **maps to** field. Press **[Enter]** after editing the attribute to make sure your changes are saved.

NOTE: When an attribute value is "0" in SL1, the corresponding field in ServiceNow might display as empty.

TIP: To sync Device Notes between SL1 and ServiceNow, create a custom attribute for the device note in this section. This option works best if you only want a single value synced over so that value can remain in the notes.

12. Click **[Save]**. The **Configuration** pane closes.
13. Run the "Sync Devices from SL1 to ServiceNow" application.
14. When the application completes, open the **Step Log** and review the log messages for the "Compare SL1 Devices and ServiceNow CIs" step to see if any Device or CI records were added, updated, or disconnected from the sync. As needed, select the other steps to review the logs on the **Step Log** for those steps.

NOTE: Depending on the number of devices you are syncing to ServiceNow, it might take a few minutes for all devices to get fully synced to the CMDB. You might notice after running device sync that the number of SL1 Monitored CIs continues to increase after each refresh. This is expected behavior due to payload chunking in ServiceNow. ServiceNow processes each payload as an individual chunk.

Using a Jinja2 Template

The attribute mappings in Device Sync applications now support Jinja2 Templates, which let you sync complex, concatenated (linked) fields from SL1 to ServiceNow. For example, you can add these complex values in the SL1 side of the **attribute_mappings** section of the **Configuration** pane for the "Sync Devices from SL1 to ServiceNow" application, and that value is mapped to one or many fields in ServiceNow. For more information about Jinja2 Templates, see the [Template Designer Documentation](#).

In the "Sync Devices from SL1 to ServiceNow" application, the SL1 side can be a Template. In the "Sync CI Attributes from ServiceNow to SL1" application, the ServiceNow side can be a Template.

Example: A Basic Template for Device Attributes

This example is included in the "Sync Devices from SL1 to ServiceNow" application as the first default value in the **attribute_mappings** section of the **Configuration** pane:

This template, when used on the SL1 side of the **attribute_mappings** section, populates the **short_description** field in ServiceNow:

```
"Description: {{device.device_category}}, Device Class: {{device.device_class}}": [ "short_description" ]
```

In the above example, for a device with a **category: Testing** and a Device Class of **Testing | Testing**, the end result would be **Description: Testing, Device Class: Testing | Testing**, which will be posted to the **short_description** field in ServiceNow.

The Jinja2 Templates will have access to all properties on the Device.

NOTE: Any item that is generated by a template is always a string.

Example: An Advanced Template for Device Sync

The following example lets you get the active status of SL1 Devices:

```
{%- set output = [] -%}
{%- if device.active.unavailable == True -%}{%- set output = output +
['Unavailable'] -%}
{%- endif -%}
{%- if device.active.userDisabled == True -%}{%- set output = output +
['User Disabled'] -%}
{%- endif -%}
{%- if device.active.userInitiatedMaintenance == True -%}{%- set output =
output +
['User Initiated Maintenance'] -%}{%- endif -%}
{%- if device.active.userMaintenance == True -%}{%- set output = output +
['User Initiated Maintenance'] -%}{%- endif -%}
```

```
{%- if output|length > 0 -%}
{{ " , ".join(output) }}
{%- else -%}
{{ "Active" }}
{%- endif -%}
```

Example: Another Advanced Template for Device Sync

The following example shows another way to get the active status of SL1 Devices:

```
{%- set prettify = {"userInitiatedMaintenance": "User Initiated Main-
tenance", "systemDisabled":
"System Disabled", "maintenance": "System Maintenance", "unavailable":
"Unavailable",
"userDisabled": "User Disabled"} -%}
{%- set ns = namespace(maint=[]) -%}
{%- for k,v in device.active.items() -%}
{%- if v -%}
{%- set ns.maint = ns.maint + [prettify[k]] -%}
{%- endif -%}
{%- endfor -%}
{{ " , ".join(ns.maint) if ns.maint else "Active" }}
```

Example: Advanced Template for Device Class, Sub Category, and Model

The following example shows how to gather device data based on Device Class and Sub Category if available, or Model if Device Class and Sub Category are not available:

```
{%- set output = [] -%}
{%- set output = device.device_class.split('|') -%}
{%- if (output[0]|trim) in ['Checkpoint', 'ScienceLogic', 'Microsoft'] -%}
{%- set output = output[1]|trim -%}
{%- else %}
{%- set output = device.model -%}
{%- endif -%}
{{output}}
```

Filtering Device Sync by Device Group

You can use the **gql_filter** field on the **Configuration** pane of the "Sync Devices from SL1 to ServiceNow" application to add a block of JSON code that lets you define a custom filter to apply to the devices in the sync.

NOTE: You cannot enter GraphQL code in the **gql_filter** field in PowerFlow. The field *only* accepts JSON.

Using GraphQL to Create the Custom Filter

In this example, you will create a custom GraphQL filter in SL1 based on Device Groups. This filter will prevent Devices that belong to specific Device Groups from creating CIs in the ServiceNow CMDB.

To create a JSON filter for the **gql_filter** field:

1. Go to the GraphiQL interface in SL1 by typing the URL or IP address for SL1 in a browser, adding **/gql** to the end of the URL or IP address, and pressing **[Enter]**.
2. Create a GQL query that uses a search variable, such as the following example:

```
query DeviceFetch($search: DeviceSearch, $order: [ConnectionOrder],
  $first: Int) {
  devices(first: $first, search: $search, after: "", order: $order) {
    pageInfo {
      hasNextPage
      matchCount
    }
    edges {
      cursor
      device: node {
        ...
      }
    }
  }
}
```

3. After the query gives you the results you want, copy the resulting JSON variable definitions from the **Query Variables** section:

```

114 query DeviceFetch($search: DeviceSearch, $order: [ConnectionOrder], $first: Int) {
115   devices(first: $first, search: $search, after: "", order: $order) {
116     pageInfo {
117       hasNextPage
118       matchCount
119     }
120     edges {
121       cursor
122       device: node {
123         ...device

```

QUERY VARIABLES	
1	{
2	"search": {"and":[{"deviceGroup": {"has": {"or": [{"name": {"contains": "foo"}}, {"name": {"contains": "bar"}}]}]}},
3	"first": 100
4	}

4. Paste that JSON code into the **gql_filter** portion of PowerFlow and save the PowerFlow application.

JSON Code Template

Instead of using the GraphQL user interface in SL1, you can use the following JSON code as a template for filtering based on Device Group; simply paste the code into the **gql_filter** field on the **Configuration** pane and edit the search criteria and group names as needed:

```

{
  "deviceGroup": {
    "has": {
      "or": [
        {
          "name": {
            "contains": "group1"
          }
        },
        {
          "name": {
            "contains": "group2"
          }
        }
      ]
    }
  }
}

```

Tips for customizing the JSON code:

- To add or remove additional Device Groups, copy or delete the following block of code and edit the group name as needed:

```

{
  "name": {

```

```

    "contains": "group2"
  }
}

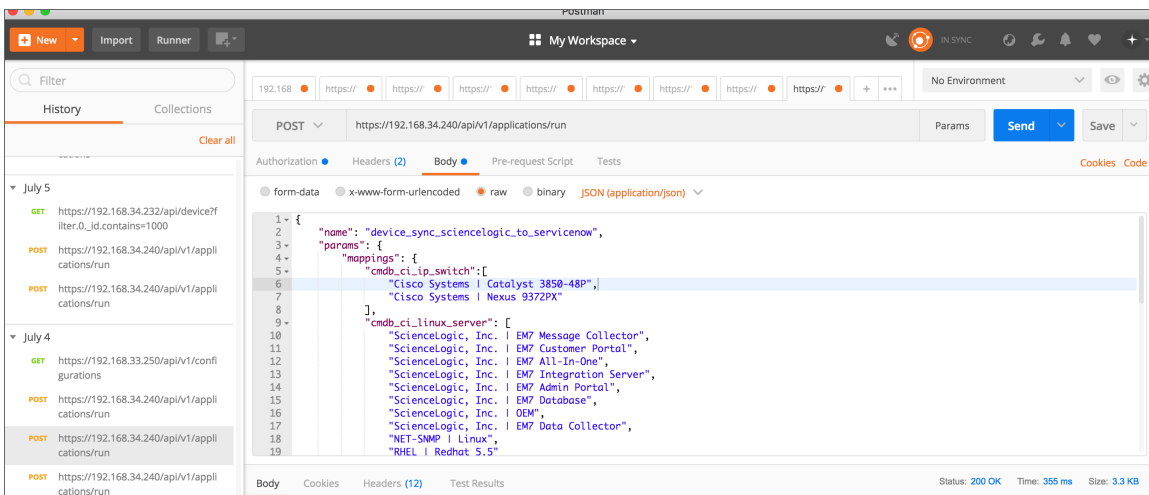
```

- If you add additional name blocks, add a comma after each name block except for the last name block. If you delete a block, delete the preceding comma.
- You can change the "or" to an "and" if you want to block syncing for devices that are in more than one Device Group.
- The "contains" can be changed to "eq" to make the name an exact match. For example, "contains": "office" would match "The Office," "HQ Office," and "Office235."

Adding Device Mappings

You can dynamically set the device mappings on a per-run basis using the API. You can also [persistently save device mappings with the API](#). You can find these mappings in the **mappings** section of the **Configuration** pane for the "Sync Devices from SL1 to ServiceNow" application.

The following image displays an example of using Postman to send the mapping data to PowerFlow:



NOTE: This example only maps device classes to ServiceNow for VMware, SL1 devices, and a few Cisco devices. If your environment contains other device classes, you must manually create the mappings.

To add device mappings using Postman, POST the following JSON file to trigger the required applications in the PowerFlow user interface to model SL1 devices to ServiceNow:

```

{

  "name": "device_sync_sciencelogic_to_servicenow",

```

```

"params": {
  "mappings": {
    "cmdb_ci_ip_switch": [
      "Cisco Systems | Catalyst 3850-48P",
      "Cisco Systems | Nexus 9372PX"
    ],
    "cmdb_ci_linux_server": [
      "ScienceLogic, Inc. | EM7 Message Collector",
      "ScienceLogic, Inc. | EM7 Customer Portal",
      "ScienceLogic, Inc. | EM7 All-In-One",
      "ScienceLogic, Inc. | EM7 Integration Server",
      "ScienceLogic, Inc. | EM7 Admin Portal",
      "ScienceLogic, Inc. | EM7 Database",
      "ScienceLogic, Inc. | OEM",
      "ScienceLogic, Inc. | EM7 Data Collector",
      "NET-SNMP | Linux",
      "RHEL | Redhat 5.5"
    ],
    "cmdb_ci_esx_resource_pool": ["VMware | Resource Pool"],
    "cmdb_ci_esx_server": [
      "VMware | ESXi 5.1 w/HR",
      "VMware | Host Server",
      "VMware | ESX(i) 4.0",
      "VMware | ESX(i) w/HR",

```



```

    "VMware | ESX(i) 4.0 w/HR",
    "VMware | ESX(i)",
    "VMware | ESX(i) 4.1 w/HR",
    "VMware | ESXi 5.1 w/HR",
    "VMware | ESXi 5.0 w/HR",
    "VMware | ESX(i) 4.1",
    "VMware | ESXi 5.1",
    "VMware | ESXi 5.0"
  ],
  "cmdb_ci_vcenter_datacenter": ["VMware | Datacenter"],
  "cmdb_ci_vcenter_datastore": ["VMware | Datastore", "VMware | Datastore Cluser"],
  "cmdb_ci_vcenter_dv_port_group": ["VMware | Distributed Virtual Portgroup"],
  "cmdb_ci_vcenter_dvs": ["VMware | Distributed Virtual Switch"],
  "cmdb_ci_vcenter_folder": ["VMware | Folder"],
  "cmdb_ci_vcenter_network": ["VMware | Network"],
  "cmdb_ci_vmware_instance": ["VMware | Virtual Machine"],
  "cmdb_ci_vcenter": ["VMware | vCenter", "Virtual Device | Windows Services"],
  "cmdb_ci_vcenter_cluster": ["VMware | Cluster"]
},
  "configuration": "template_snow_integration" #name your configuration file
}
}

```

Persistently Saving Device Mappings with the API

You can persistently save device mappings using the API.

1. Use Postman or cURL to do a GET to load the "Sync Devices from SL1 to ServiceNow" application:

```
GET PowerFlow_hostname/api/v1/applications/device_sync_sciencelogic_to_servicenow
```

where `PowerFlow_hostname` is the IP address or URL for your PowerFlow system.

NOTE: The response should contain the entire JSON output for the application.

2. Copy the entire JSON code and save it to a file named: "device_sync_sciencelogic_to_servicenow".
3. Open the file you created and locate the object with the "name": "mappings" property in the "app_variables" list. The "value" property in this object specifies the mappings to use throughout the PowerFlow applications:

```
"value": {
  "cmdb_ci_appl_sharepoint": [
    "VMware | Resource Pool"
  ],
  "cmdb_ci_esx_resource_pool": [
    "VMware | Resource Pool"
  ],
  "cmdb_ci_esx_server": [
    "VMware | ESXi 5.1 w/HR",
    "VMware | Host Server",
    "VMware | ESX(i) 4.0",
    "VMware | ESX(i) w/HR",
    "VMware | ESX(i) 4.0 w/HR",
    "VMware | ESX(i)",
    "VMware | ESX(i) 4.1 w/HR",
    "VMware | ESXi 5.1 w/HR",
    "VMware | ESXi 5.0 w/HR",
    "VMware | ESX(i) 4.1",
    "VMware | ESXi 5.1",
    "VMware | ESXi 5.0"
  ],
  "cmdb_ci_hyper_v_network": [
    "VMware | Resource Pool"
  ],
}
```

4. Modify the "value" property of the object to use the mappings you want to use.
5. Ensure that the mappings follow the same JSON data structure, or else the sync will not work:

```
{  
  
  "cmdb_ci_class": [  
  
    "ScienceLogic Dev Class| ScienceLogic subclass",  
  
    "Another Silo Dev Class | Another Silo subclass"  
  
  ]  
  
}
```

6. After you update the mappings, use the iscli tool to upload the updated application with your new settings. Type the following command at the command line:

```
iscli -uaf device_sync_sciencelogic_to_servicenow -H PowerFlow_  
hostname -p password
```

where:


- `PowerFlow_hostname` is the hostname or IP address of the PowerFlow system.
- `password` is the password you use to log in to the PowerFlow system.


Checking for Missing Device Mappings

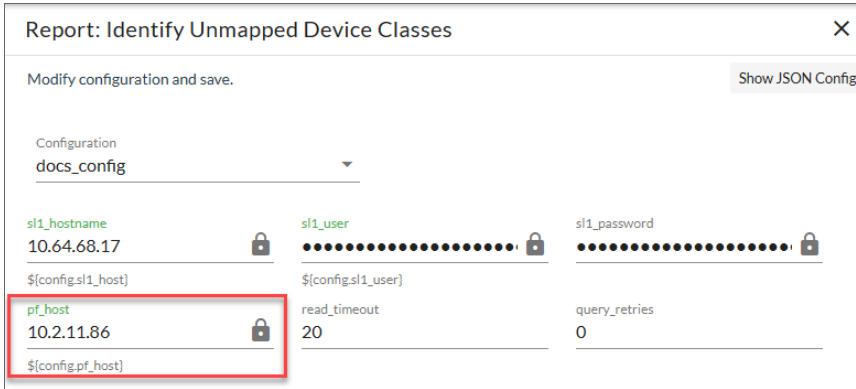
You can use the "Report: Identify Unmapped Devices Classes" PowerFlow application to check whether any device mappings are missing in your PowerFlow server.

This application pulls the class mappings from Device Sync and Attribute Sync and compares the mappings with the full list of device classes of discovered devices in SL1. The application generates a report on the **Reports** page that lists missing mappings, and if any device classes are unmapped, the application generates an event in the target SL1 system.

To configure the "Report: Identify Unmapped Devices Classes" application:

1. If you do not have the *ServiceNow Base PowerPack* version 104 or later on your SL1 system, search for and download the PowerPack from the **PowerPacks** page on the ScienceLogic Support Site at <https://support.sciencelogic.com/s/powerpacks>.
2. In SL1, enable the "ServiceNow CMDB: Un-Mapped Device Classes" Event Policy from the *ServiceNow Base PowerPack* version 104 or later to trap the alert generated by this application.
3. In the PowerFlow user interface, go to the **Configurations** page.
4. Click the **[Actions]** button () for the configuration object you want to use with this application and select *Edit*. The **Configuration** pane for the object appears.
5. In the **Configuration Data Values** section, click **[Add Value]**. A new name-value line appears.

6. Add a configuration variable named **pf_host** that has a value of the externally addressable IP or fully qualified domain name (FQDN) of the PowerFlow cluster or instance.
7. Click **[Save]**.
8. Go to the **Applications** page and select the "Report: Identify Unmapped Devices Classes" application.
9. Click **[Configure]**  to open the **Configuration** pane:





Report: Identify Unmapped Device Classes

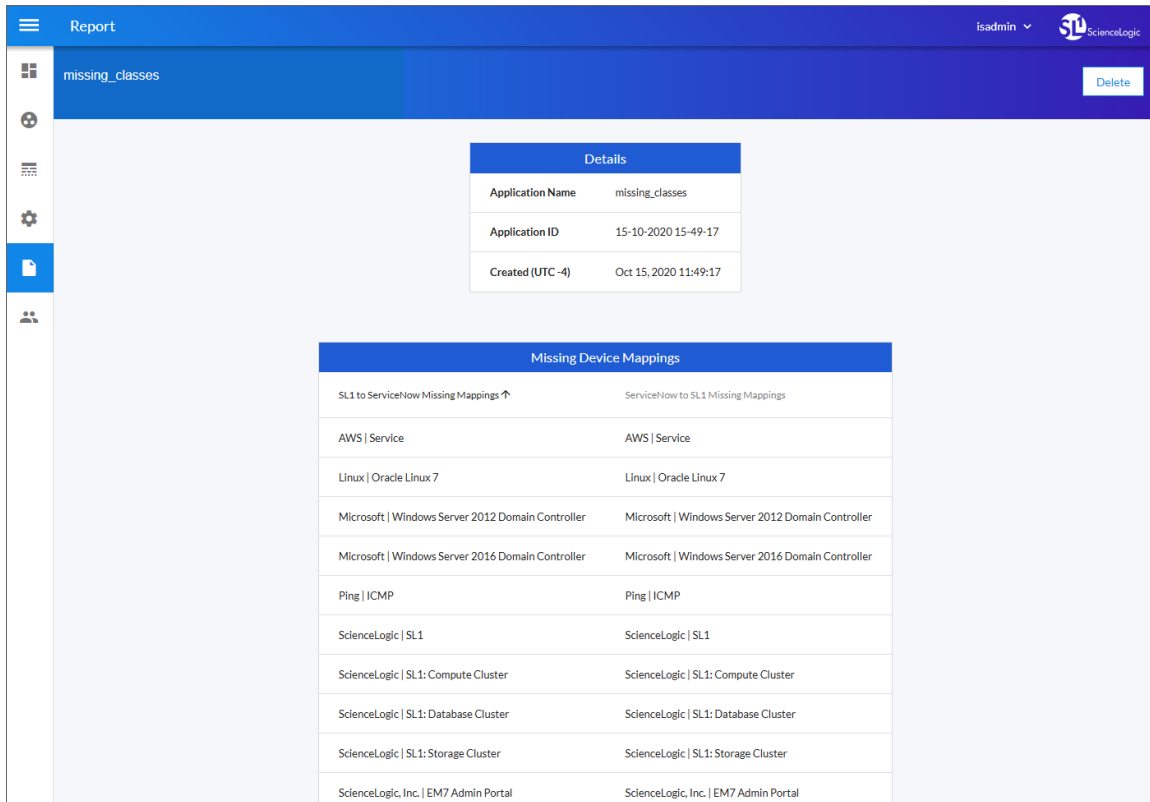
Modify configuration and save. [Show JSON Configs](#)

Configuration
docs_config

sl1_hostname 10.64.68.17	sl1_user	sl1_password
\$(config.sl1_hostname)	\$(config.sl1_user)	
pf_host 10.2.11.86	read_timeout 20	query_retries 0
\$(config.pf_host)		

10. Complete the following fields, as needed:
 - **Configuration.** Select the configuration object you updated in steps 1-5 to align with this application. Make sure that the **pf_host** value that is updated on the **Configuration** pane is accurate. You cannot edit fields that are populated by the configuration object. Required.
 - **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.
 - **query_retries.** Specify the number of times to retry this query if needed. The default chunk size is 0.
11. Click **[Save]** and wait for the "App & Config modifications saved" pop-up message to appear. The **Configuration** pane automatically closes after this message appears.
12. Click **[Run]**  to run the application.

13. After the application runs, click the **[Reports]** button () and select the relevant **report-missing-classes** report from the **Reports** page. The "missing_classes" report appears:



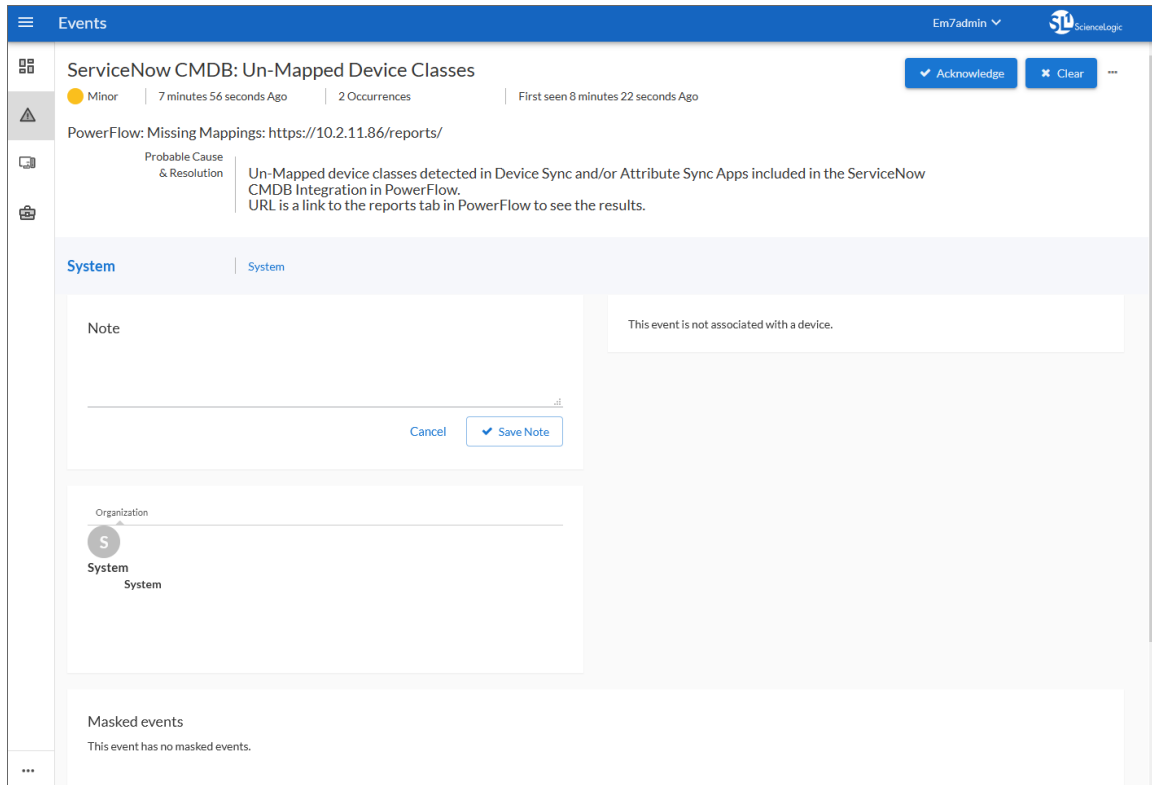
The screenshot shows the 'missing_classes' report in the ScienceLogic interface. The report is titled 'missing_classes' and has a 'Delete' button. It displays details for the application and a table of missing device mappings.

Details	
Application Name	missing_classes
Application ID	15-10-2020 15-49-17
Created (UTC -4)	Oct 15, 2020 11:49:17

Missing Device Mappings	
SL1 to ServiceNow Missing Mappings ↑	ServiceNow to SL1 Missing Mappings
AWS Service	AWS Service
Linux Oracle Linux 7	Linux Oracle Linux 7
Microsoft Windows Server 2012 Domain Controller	Microsoft Windows Server 2012 Domain Controller
Microsoft Windows Server 2016 Domain Controller	Microsoft Windows Server 2016 Domain Controller
Ping ICMP	Ping ICMP
ScienceLogic SL1	ScienceLogic SL1
ScienceLogic SL1: Compute Cluster	ScienceLogic SL1: Compute Cluster
ScienceLogic SL1: Database Cluster	ScienceLogic SL1: Database Cluster
ScienceLogic SL1: Storage Cluster	ScienceLogic SL1: Storage Cluster
ScienceLogic, Inc. EM7 Admin Portal	ScienceLogic, Inc. EM7 Admin Portal

TIP: The report displays missing mappings for Device Sync (SL1 to ServiceNow) in the first column, and missing mappings for Attribute Sync (ServiceNow to SL1) in the second column.

Also, if any device classes are unmapped and you enabled the "ServiceNow CMDB: Un-Mapped Device Classes" Event Policy in step 2, SL1 generates an event on the **Events** page in SL1 :



Device Attribute Mappings

The "Sync Devices from SL1 to ServiceNow" application can also collect manufacturer and model attributes from asset records aligned with devices in SL1 and sync that information with ServiceNow. You can find these mappings in the **attribute_mappings** section of the **Configuration** pane for that application.

NOTE: These manufacturer and model attributes are different from custom attributes in SL1.

PowerFlow only populates the manufacturer and model attributes if the values exist in ServiceNow CIs; PowerFlow does not create new manufacturer values in ServiceNow. "Sync Devices from SL1 to ServiceNow" application uses the **sys_id** field as a reference when syncing manufacturer and model information between SL1 and ServiceNow.

WARNING: Integer fields in ServiceNow have a maximum value of 2147483647. If a value exceeds that value, ServiceNow stores it as 2147483647. This is a MySQL limitation on the maximum value that can be stored in a signed integer variable.

NOTE: The "Sync Devices from SL1 to ServiceNow" application only syncs assets that have a value populated in SL1. SL1 automatically populates fields in an asset record when the record is properly configured. For more information on configuring assets in SL1, see the **Asset Management** manual.

Default Device Attribute Mappings

The "Sync Devices from SL1 to ServiceNow" application contains a set of default device attribute mappings between SL1 and ServiceNow. You can find these mappings in the **attribute_mappings** section of the **Configuration** pane for that application.

The following table describes the default device attribute mappings:

SL1 Device Attribute	ServiceNow CI Attribute
Description	"Description: {{device.device_category}}, Device Class: {{device.device_class}}": ["short_description" NOTE: This field requires a Jinja2 Template. For more information, see Using a Jinja2 Template .
asset_tag	asset_tag
cpuCount	cpu_count
cpuMake	cpu_type
cpuSpeed	cpu_speed
dateAdded	first_discovered
diskSize	disk_space
dnsDomain	dns_domain
function	justification
hostname	fqdn, host_name
instance_uuid	account_id
ip	ip_address
manufacturer_sys_id	manufacturer
memory	ram
model_sys_id	model_id
name	name
operatingSystem	os
purchaseDate	order_date
serial	serial_number
status	hardware_substatus
warrantyExpirationDate	warranty_expiration

SL1 Device Attributes Available for Syncing

In the **attribute_mappings** section of the **Configuration** pane for the "Sync Devices from SL1 to ServiceNow" application, you can also use the following SL1 device attributes from SL1 when syncing attributes with ServiceNow:

- arraySize
- asset_id
- asset_tag
- company_sys_id
- component_unique_id
- cpuCount
- cpuMake
- cpuSpeed
- dateAdded
- depreciationMethod
- depreciationSchedule
- device_category
- device_class
- diskCount
- diskSize
- dnsDomain
- dnsName
- domain_sys_id
- firmwareVersion
- floor
- function
- hostId
- hostname
- ip
- location
- make
- manufacturer_sys_id
- memory
- model
- model_sys_id
- name

- operatingSystem
- org_id
- org_name
- owner
- panel
- parent_device
- parent_did
- plate
- punch
- purchaseCheck
- purchaseCost
- purchaseDate
- purchaseOrderNumber
- rack
- region
- rfid
- room
- serial
- serviceCheck
- serviceCost
- serviceDate
- serviceDescription
- serviceExpirationDate
- serviceOrderNumber
- servicePolicyNumber
- shelf
- sl1_id
- sl1_url
- snow_ci_class
- snow_sys_id
- status
- vitalAssetInformation
- vitalServiceInformation
- warrantyCheck
- warrantyCost

- warrantyDate
- warrantyDescription
- warrantyExpirationDate
- warrantyOrderNumber
- warrantyPolicyNumber
- zone

Adding New Device Attributes to ServiceNow

You can also add one or more new attributes to ServiceNow that you can then sync with SL1.

To add an attribute in ServiceNow:

1. In ServiceNow, search for "Tables" in the filter navigator and select **System Definition > Tables**.
2. From the **Tables** page, search for and select the table to which you want to add a field for a new attribute.
3. From the **Table** page, click the **[New]** button to add a new field on the table. A new record appears:

The screenshot shows the 'Dictionary Entry' form in ServiceNow for a 'New record'. The form is titled 'Dictionary Entry New record' and includes a 'Submit' button in the top right corner. Below the title, there is a descriptive text block: 'A dictionary entry manages how ServiceNow stores data in tables and fields (columns). For new dictionary entries, select a Table and the field Type of the new column. Also enter a column label, which becomes the field label, and the column name. If necessary, set a Max length for text String type fields, make the field Mandatory to save a record, and make the field a Display Value for reference fields so it appears on records that reference this table. [More Info](#)'. The form contains several input fields: 'Table' (a dropdown menu with 'Configuration Item [cmdb_ci]' selected), 'Application' (a dropdown menu with 'Global' selected), 'Type' (a text input field with a search icon), 'Column name' (a text input field), 'Function field' (a checkbox), and 'Read only' (a checkbox). Below these fields, there is a 'Default Value' section with a text input field and a description: 'The Default value specifies what value the field has when first displayed.' At the bottom of the form, there is a 'Submit' button and a 'Related Links' section with a link to 'Advanced view'.

4. From the **Type** drop-down list, select the data type you want to store, such as *String*. Depending on your selection, additional required fields display:

* Table	Configuration Item [cmdb_ci]
* Type	String
* Column label	SL1 Region
* Column name	u_sciencelogic_region
* Max length	100

NOTE: In the *String* example, above, **Column label** contains the text you want to display in ServiceNow, and **Column name** is the exact column name used by PowerFlow or the API.

5. Complete the required fields and any other fields as needed, and then click the **Submit** button. The field is added to ServiceNow.

Configuring Customer CI Relation Overrides

When you are mapping Device Classes and attributes, you might find that SL1 creates relationship mappings very differently than the way that ServiceNow creates relationships. As a result, ScienceLogic strongly recommends that you use the **customer_ci_relation_overrides** field instead of using ServiceNow to set up those relationships.

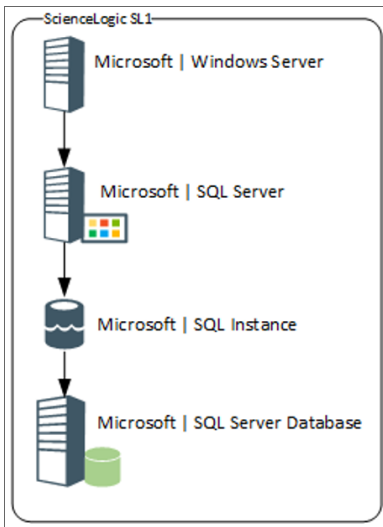
In the "Sync Devices from SL1 to ServiceNow" PowerFlow application, you can use the **customer_ci_relation_overrides** field to override the existing relationship linking and directly control the link between Device Classes and attributes. The **customer_ci_relation_overrides** field lets you build dynamic relationships rather than statically setting up relationships within ServiceNow.

WARNING: ScienceLogic does not support using ServiceNow to control and set up your device relationships.

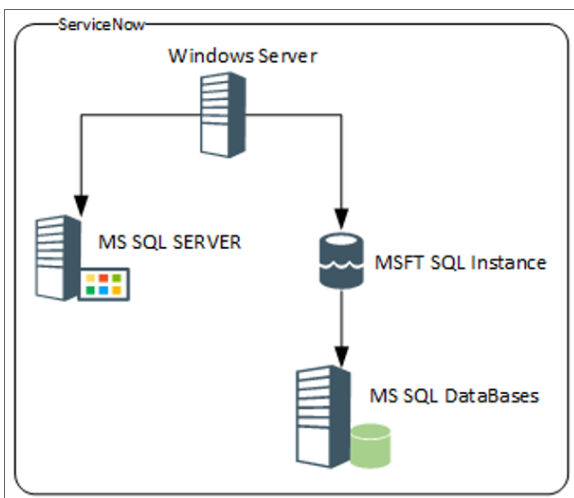
In addition, ScienceLogic strongly recommends that you use the default relationship overrides for VMware, which you can view by clicking **[Show JSON Configs]** from the **Configuration** pane for the "Sync Devices from SL1 to ServiceNow" PowerFlow application.

CAUTION: This mapping process is intended for advanced users that are familiar with how SL1 and ServiceNow construct device relationships.

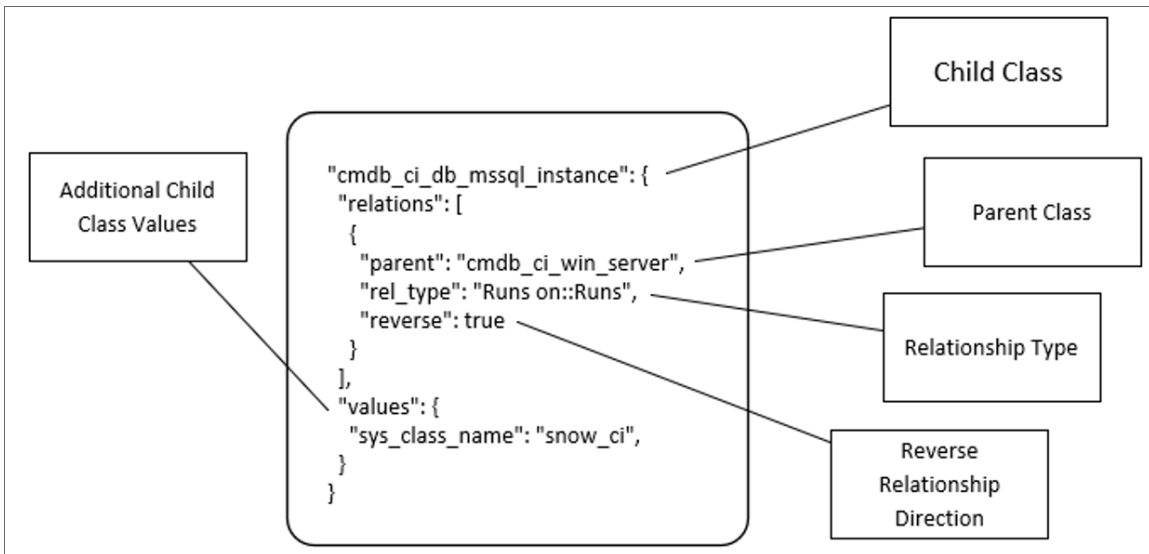
In the following example, the relationship structure in SL1 is linear :



In ServiceNow, however, the structure is not as linear, and it requires an override (a manual link) between classes to make the relationship link required:



The following image shows the JSON structure formatting that is required for the ***customer_ci_relation_******overrides*** field:



The values in the **customer_ci_relation_overrides** field supersede any of the values configured in the **mappings** section in the **Configuration** pane for the "Sync Device Classes from SL1 to ServiceNow" PowerFlow application.


WARNING: You must ensure that all classes in the relationship chain in SL1 are mapped to classes in ServiceNow, or else the chain will break, and PowerFlow will not correctly apply the overrides.

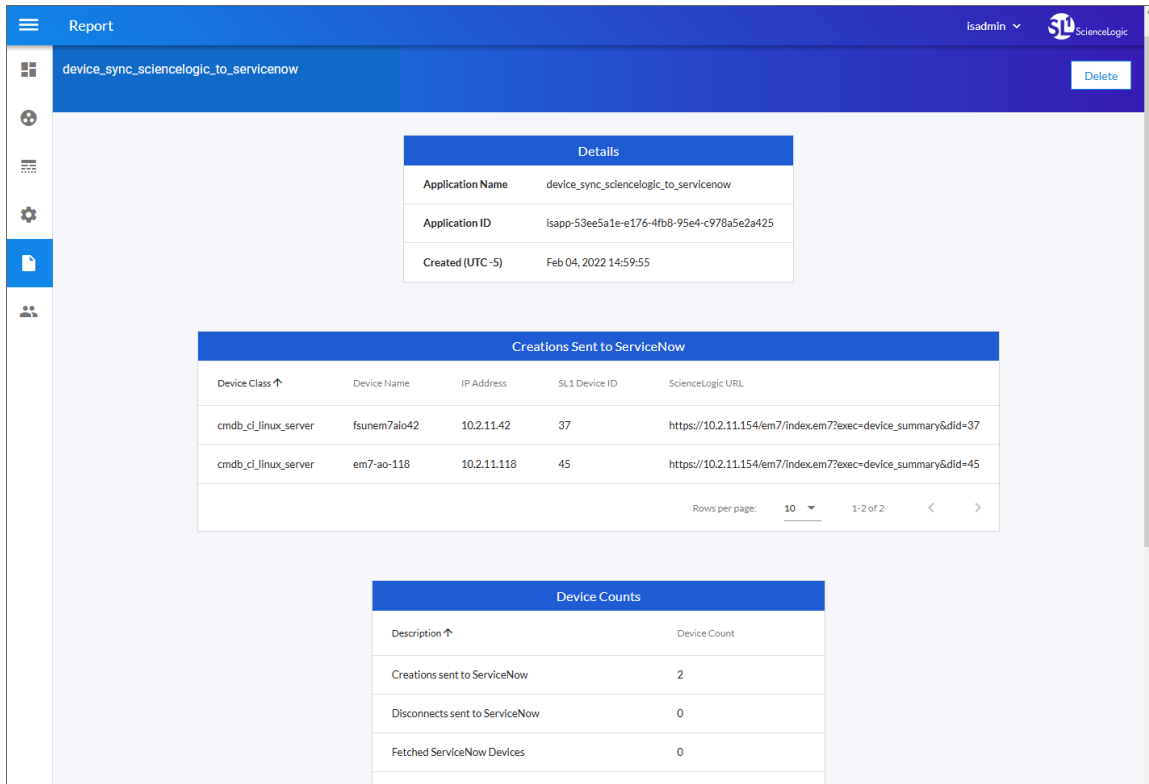
In the **customer_ci_relation_overrides** field, you can string together multiple relationships as in the following example:

```
{
  "cmdb_ci_db_mssql_instance": {
    "relations": [
      {
        "parent": "cmdb_ci_win_server",
        "rel_type": "Runs on::Runs",
        "reverse": true
      }
    ],
    "values": {"sys_class_name": "snow_ci_class", "instance_name":
"name"}
  },
  "cmdb_ci_db_mssql_database": {
    "relations": [
      {
        "parent": "cmdb_ci_db_mssql_instance",
        "rel_type": "Contains::Contained by",
        "reverse": false
      }
    ],
    "values": {"sys_class_name": "snow_ci_class", "database": "name"}
  },
  "cmdb_ci_db_mssql_server": {
    "relations": [
      {
        "parent": "cmdb_ci_win_server",
        "rel_type": "Runs on::Runs",
        "reverse": true
      }
    ],
    "values": {"sys_class_name": "snow_ci_class", "instance_name":
```

```
"name" }
  }
}
```

Viewing Reports for Device Sync

The "Sync Devices from SL1 to ServiceNow" application lets you create a report about the devices that you sync with ServiceNow. The report displays on the **Reports** page ():



The screenshot shows a report page for the application 'device_sync_scienceLogic_to_servicenow'. The page includes a 'Details' pane and two data tables.

Details

Application Name	device_sync_scienceLogic_to_servicenow
Application ID	Isapp-53ee5a1e-e176-4fb8-95e4-c978a5e2a425
Created (UTC-5)	Feb 04, 2022 14:59:55

Creations Sent to ServiceNow

Device Class ↑	Device Name	IP Address	SL1 Device ID	ScienceLogic URL
cldb_ci_linux_server	fsunem7alo42	10.2.11.142	37	https://10.2.11.154/em7/index.em7?exec=device_summary&did=37
cldb_ci_linux_server	em7-ao-118	10.2.11.118	45	https://10.2.11.154/em7/index.em7?exec=device_summary&did=45

Rows per page: 10 1-2 of 2

Device Counts

Description ↑	Device Count
Creations sent to ServiceNow	2
Disconnects sent to ServiceNow	0
Fetches ServiceNow Devices	0

TIP: Enable the report by selecting the **generate_report** option on the **Configuration** pane for the application.

When the relevant data is present in a device sync, the report displays the following data under the **Details** pane:

- **Creations Sent to ServiceNow.** Device information for devices in SL1 that will be created in ServiceNow.
- **Device Counts.** Lists the number of created, disconnected, and updated devices, as well as the number of devices pulled from SL1 and ServiceNow during the sync. If domain separation is on and there are devices removed due to domain separation errors, that count will be added to the table.
- **Deletions Sent to ServiceNow.** Device information for devices in SL1 that will be deleted in ServiceNow.

- **Post CIs to ServiceNow.** Each instance of the "Post CIs to ServiceNow" application, listing creations, disconnects, errors, skips, and updates made in ServiceNow.
- **Updates Sent to ServiceNow.** Device information for devices in SL1 to be updated in ServiceNow.

Syncing CI Attributes from ServiceNow to SL1

The "Sync CI Attributes from ServiceNow to SL1" application imports CI attributes from ServiceNow to the relevant asset and attribute fields in SL1. The CI Sync supports assets, asset configuration, asset maintenance, location, production statuses, and custom attributes.

The "Sync CI Attributes from ServiceNow to SL1" application can sync the display value and **sys_id** of **Reference** fields, such as location, as well as the value and label of **Choice List** fields, such as operational_status. These values can be accessed by appending **_label** to the desired field name.

Reference Example:

```
"location": "240f6630db993300dc44f00fbf96196f"
```

```
"location_label": "Corporate Headquarters"
```

Choice List Example:

```
"operational_status": "1",
```


```
"operational_status_label": "Operational",
```

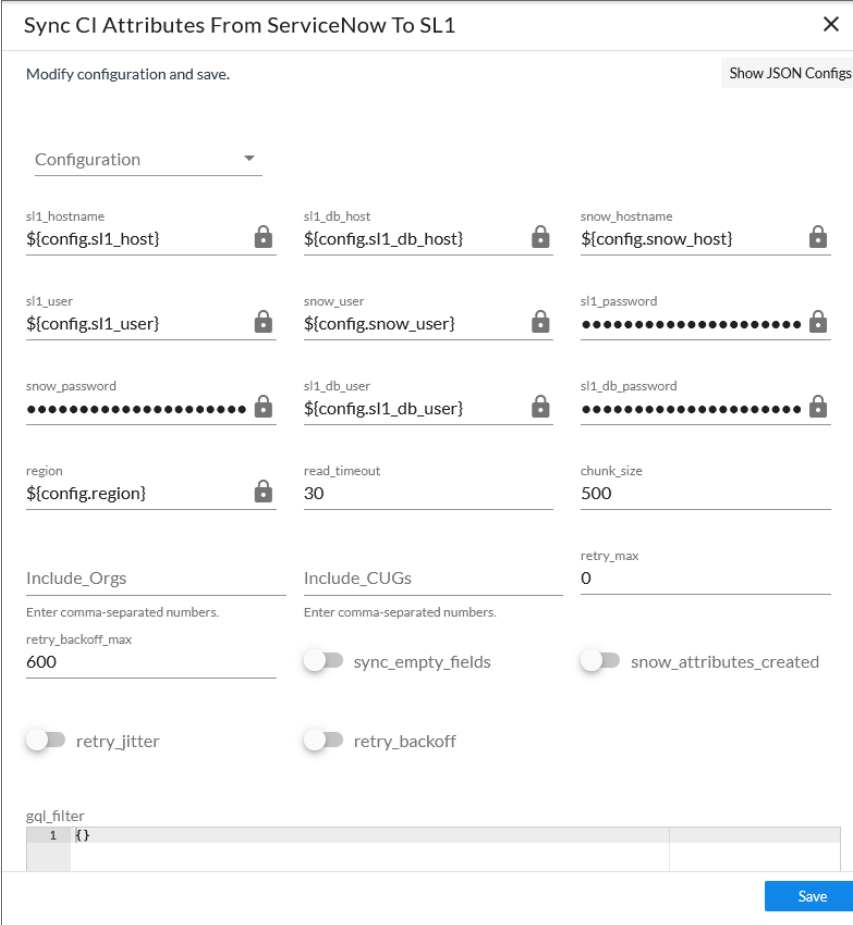
The following image shows the **Location** table, and the **Display** column shows the **Name** marked as **true**. Only one field on the table can be marked as **true**, and that is the field that will be returned to PowerFlow :

Column label	Type	Reference	Max length	Default value	Display
Name	String	(empty)	100		true
Phone territory	Reference	Sys Phone Territory	32		false
Contact	Reference	User	32		false
Updates	Integer	(empty)	40		false
City	String	(empty)	40		false
Company	Reference	Company	32		false
Zip / Postal Code	String	(empty)	40		false
Full name	String	(empty)	255		false
Updated by	String	(empty)	40		false
Phone	String	(empty)	40		false
Longitude	Floating Point Number	(empty)	40		false
Created by	String	(empty)	40		false

NOTE: When this application runs, if no mappings are provided, PowerFlow queries the "Sync Devices from SL1 to ServiceNow" application and uses the mappings from that application.

To sync CI attributes from ServiceNow to SL1 :

1. Go to the **Applications** page of the PowerFlow user interface and run the "Cache ServiceNow Companies, CIs and SL1 Orgs, Device Classes" application. This application reads all existing SL1 Device Classes, Organizations, ServiceNow CIs, and Companies and writes them to a cache.
2. When that application completes, go to the **Applications** page and run the "Sync Devices from SL1 to ServiceNow" application to enable PowerFlow to use the mappings and additional attribute options from Device Sync.
3. When that application completes, go to the **Applications** page and run the "Sync CI Attributes from ServiceNow to SL1" application.
4. Click **[Configure]** . The **Configuration** pane appears:



Sync CI Attributes From ServiceNow To SL1

Modify configuration and save. [Show JSON Configs](#)

Configuration

sl1_hostname \${config.sl1_host}	sl1_db_host \${config.sl1_db_host}	snow_hostname \${config.snow_host}
sl1_user \${config.sl1_user}	snow_user \${config.snow_user}	sl1_password
snow_password	sl1_db_user \${config.sl1_db_user}	sl1_db_password
region \${config.region}	read_timeout 30	chunk_size 500
Include_Orgs Enter comma-separated numbers. retry_backoff_max 600	Include_CUGs Enter comma-separated numbers. sync_empty_fields	retry_max 0 snow_attributes_created
retry_jitter	retry_backoff	

sql_filter

1	{}
---	----

Save

5. Complete the following fields, as needed:

- **Configuration.** Select the configuration object with the relevant SL1 and ServiceNow credentials to align with this application. You cannot edit fields that are populated by the configuration object. Required.

NOTE: The **region** field (along with other fields related to user names and passwords) is populated by the configuration object you aligned with this application. The region value must match the value in the **SL1 Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration object that is aligned with this application, or align a different configuration object that has the correct **region** value.


- **read_timeout.** Specify the maximum amount of time in seconds that the application should wait for a response before timing out. The default is 20 seconds
- **chunk_size.** Specify the number of devices to include in each chunk sent to ServiceNow when you run this application. The default chunk size is 500 devices.
- **Include_Orgs.** If you want to include SL1 Organizations in the sync, add the Organization IDs from SL1 in this field, separated by commas. Leave this field empty to sync all SL1 Organizations. This option filters on the ServiceNow CI sync as well as the SL1 Device sync.
- **Include_CUGs.** If you want to include SL1 Collector Groups (CUGs) in the sync, add the Collector Group IDs from SL1 in this field, separated by commas. Leave this field empty to sync all SL1 Collector Groups.
- **snow_request_limit.** Specify the number of CIs fetched from ServiceNow in each request. The default is 500 objects per chunk.
- **retry_max.** The maximum number of times PowerFlow will retry to execute the step before it stops retrying and logs a step failure. For example, if **retry_max** is 3, PowerFlow will retry after 1 second, then 2 seconds, then 4 seconds, and stop if the last retry fails. The default is 0.
- **retry_backoff_max.** The maximum time interval for the **retry_backoff** option, in seconds. For example, if you have **retry_max** set to 15, the delays will be 1, 2, 4, 8, 16, 32, 64, 120, 240, 480, 600, 600, 600, 600, and 600. The default is 600.
- **verify_snow_ssl.** Toggle on (blue) this option to enable verification of the SSL certification when you run this application.
- **sync_empty_fields.** Select this option if you want to include empty fields on ServiceNow CIs when you run this application. This option is disabled by default.

NOTE: SL1 does not return extended custom attributes for devices if no value is present. As a result, if the value for the custom attribute is empty in ServiceNow, PowerFlow will continually send updates for those devices, because the empty value written to is not returned in subsequent runs of the application. When the **sync_empty_fields** option is selected, the application sends a 0 or "", depending on the attribute type for the custom attributes in the mappings for all devices.

- **snow_attributes_created**. Select this option to show that custom attributes for ServiceNow **sys_id** and **ci_class** already existing in SL1.
- **retry_jitter**. When selected, instead of using a defined interval between retries, PowerFlow will retry the step execution at random intervals. The default is unselected.
- **retry_backoff**. When selected, instead of using a defined interval between retries, PowerFlow will incrementally increase the interval between retries. The default is unselected.
- **gql_filter**. Specify a custom GraphQL filter to apply to the devices in the sync. An example of a Device Search GraphQL query is: `{"name": {"doesNotBeginWith": "jc-is-ma"}}`
- **mappings**. This section lets you view and add mappings between SL1 Device Classes and ServiceNow CI classes. If no mappings are provided in this section, the application step will only pull CI classes provided in the "Sync Devices from SL1 to ServiceNow" application. If you add mappings in this section, only CI classes that were included in this section will be returned from ServiceNow.
- **company_mapping_override**. In this section, you can create a new mapping for the ServiceNow "company" field for ServiceNow CIs (the first field on the left in the user interface). You can override the "company" field with a different ServiceNow field where you can read and write the **company_sys_id** for CIs.
- **attribute_mappings**. In this section, you can create a mapping for any other custom attributes you want to sync between SL1 (the first column) and ServiceNow (the second column).

TIP: You can use a Jinja2 Template for attribute fields on the ServiceNow side (the right column). For more information, see [Using a Jinja2 Template](#).

TIP: To sync a user-defined field on the ServiceNow CI record to the device notes table in SL1, create a custom attribute mapping for that field in this section. This option works best if you only want a single value synced over so that value can remain in the notes.

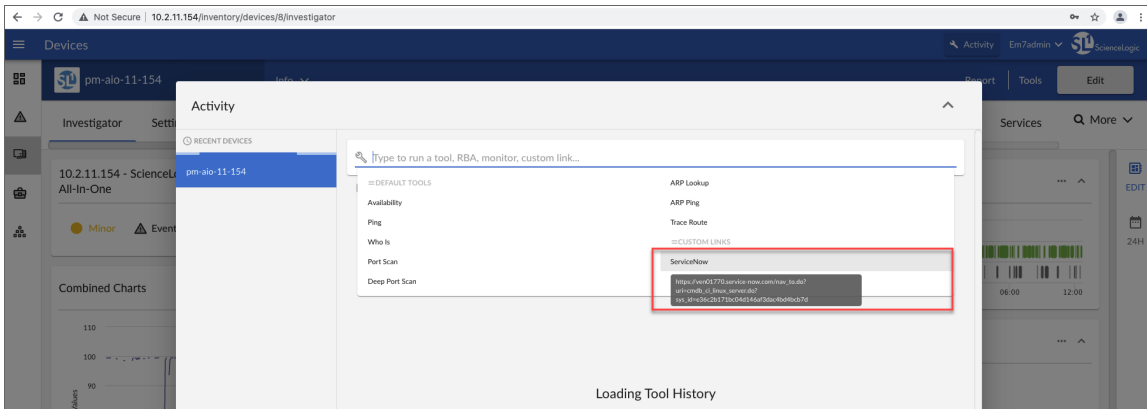
6. Click **[Save]**. The **Configuration** pane automatically closes.
7. Click **[Run]**  to run the "Sync CI Attributes from ServiceNow to SL1" application.

Creating a Link in an SL1 Device to a ServiceNow CI

To help you manage your SL1 devices and their corresponding ServiceNow CIs, you can create a link in an SL1 Device that goes directly to the synced CI in ServiceNow.



The "Create Custom Attributes and ServiceNow Custom Link in SL1" PowerFlow application creates **servicenow_sys_id** and **servicenow_ci_class** custom device attributes in SL1, and then SL1 uses those two attributes to create a custom link in SL1 titled *ServiceNow* that redirects to the ServiceNow CI.

In SL1, the link appears as a custom link on the **Tools** menu for the corresponding device:



NOTE: The application only creates the custom attributes if the attributes do not already exist. Additionally, if the custom link functionality is disabled by default on SL1, the application will enable the feature before creating the necessary attributes and link.

To create a link for the SL1 device:

1. In the PowerFlow user interface, go to the **Applications** page and open the "Sync CI Attributes from ServiceNow to SL1 to ServiceNow" application.
2. Click the **[Configure]** button. The **Configuration** pane appears.
3. Enable the **snow_attributes_created** toggle and click **[Save]**.
4. Click **[Run]** () to run the application.
5. On the **Applications** page, open the "Create Custom Attributes and ServiceNow Custom Link in SL1" PowerFlow application, align a configuration object if needed, and click **[Run]** () to run the application.

NOTE: You only need to run the "Create Custom Attributes and ServiceNow Custom Link in SL1" application once.

Syncing Advanced Topology Data from SL1 to ServiceNow




NOTE: Starting with version 3.5.0 of this Synchronization PowerPack, the "Sync Advanced Topology from SL1 to ServiceNow" application was removed. The functionality in that application was added to the "Sync Devices from SL1 to ServiceNow" and "Sync Interfaces from SL1 to ServiceNow" applications.

For versions of this Synchronization PowerPack that came out before version 3.5.0, the "Sync Advanced Topology from SL1 to ServiceNow" application reads Dynamic Component Mapping relationships from SL1 and syncs those relationships with ServiceNow. This application also syncs CDP, L2, L3, LLDP and DCM+R relationships.

If this is a new PowerFlow system, you must run both the "Sync Devices from SL1 to ServiceNow" application and the "Sync Interfaces from SL1 to ServiceNow" application at least twice on new PowerFlow systems to populate the cache for this application.

WARNING: PowerFlow only syncs topology data for devices and network interfaces that have already been synced with ServiceNow. Before setting up advanced topology sync, you must first [sync devices](#) or [sync network interfaces](#), depending on your environment.

To sync advanced topology data and relationships from SL1 to ServiceNow:


1. On the **Applications** page of the PowerFlow user interface, click **[Run]**  for the "Sync Devices from SL1 to ServiceNow" application. Run the application a second time if this is a new PowerFlow system.
2. Click **[Run]**  for the "Sync Interfaces from SL1 to ServiceNow" application. Run the application a second time if this is a new PowerFlow system.
3. Select the "Sync Advanced Topology from SL1 to ServiceNow" application and click **[Configure]** . The **Configuration** page appears:

Sync Advanced Topology from SL1 to ServiceNow
✕


Modify configuration and save.
Show JSON Configs

Configuration
▼


sl1_hostname

\$(config.sl1_host) 


snow_hostname

\$(config.snow_host) 


sl1_user

\$(config.sl1_user) 


snow_user

\$(config.snow_user) 


sl1_password

●●●●●●●●●●●●●●●● 

snow_password

●●●●●●●●●●●●●●●● 

region

\$(config.region) 

☐ Domain Separation

chunk_size

500

read_timeout

20

customer_ci_relation_overrides

1	

expects type: json

☐ Simulation_Mode


Save

4. Complete the following fields, as needed:

- **Configuration.** Select the configuration object with the relevant SL1 and ServiceNow credentials to align with this application. You cannot edit fields that are populated by the configuration object. Required.

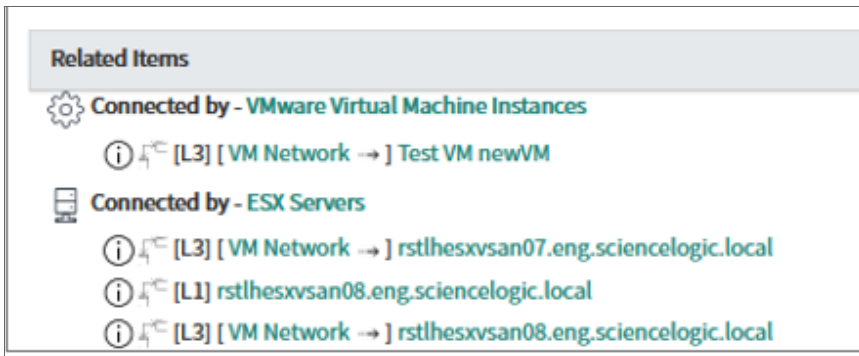
NOTE: The **region** field is populated by the configuration object you aligned with this application. The region value must match the value in the **SL1 Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration object that is aligned with this application, or align a different configuration object that has the correct **region** value.

- **chunk_size.** Specify the number of topologies to include in each chunk sent to ServiceNow when you run this application. The default chunk size is 500.
- **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.
- **retry_max.** The maximum number of times PowerFlow will retry to execute the step before it stops retrying and logs a step failure. For example, if **retry_max** is 3, PowerFlow will retry after 1 second, then 2 seconds, then 4 seconds, and stop if the last retry fails. The default is 0.
- **retry_backoff_max.** The maximum time interval for the **retry_backoff** option, in seconds. For example, if you have **retry_max** set to 15, the delays will be 1, 2, 4, 8, 16, 32, 64, 120, 240, 480, 600, 600, 600, 600, and 600. The default is 600.
- **Domain_Separation.** Select this option if your ServiceNow environment is *domain-separated*, where the data, processes, and administrative tasks have been organized into logical groupings called *domains*. If your ServiceNow instance is domain-separated, the user listed in the **snow_user** field must be a member of the top domain and have access to *all* of the domains you intend to integrate. Also, ServiceNow should be the "source of truth" for organizations if your environment is domain-separated. This application does not support relationships for devices across domains; all devices in a relation payload must be in the same domain.
- **Simulation_Mode.** Select this option if you want to perform a simulated run of this application to show you the potential results of that run.
- **retry_jitter.** When selected, instead of using a defined interval between retries, PowerFlow will retry the step execution at random intervals. The default is unselected.
- **retry_backoff.** When selected, instead of using a defined interval between retries, PowerFlow will incrementally increase the interval between retries. The default is unselected.
- **customer_ci_relation_overrides.** To set a Dynamic Component Mapping + Relationships (DCM+R) relationship type other than "Connects to" and "Connected By", add JSON code to this field. Example relationships include VM to Datastore or VM to Network. For more information, see [Configuring Customer CI Relation Overrides](#) and [Mappings between SL1, ServiceNow, and Other Applications](#).

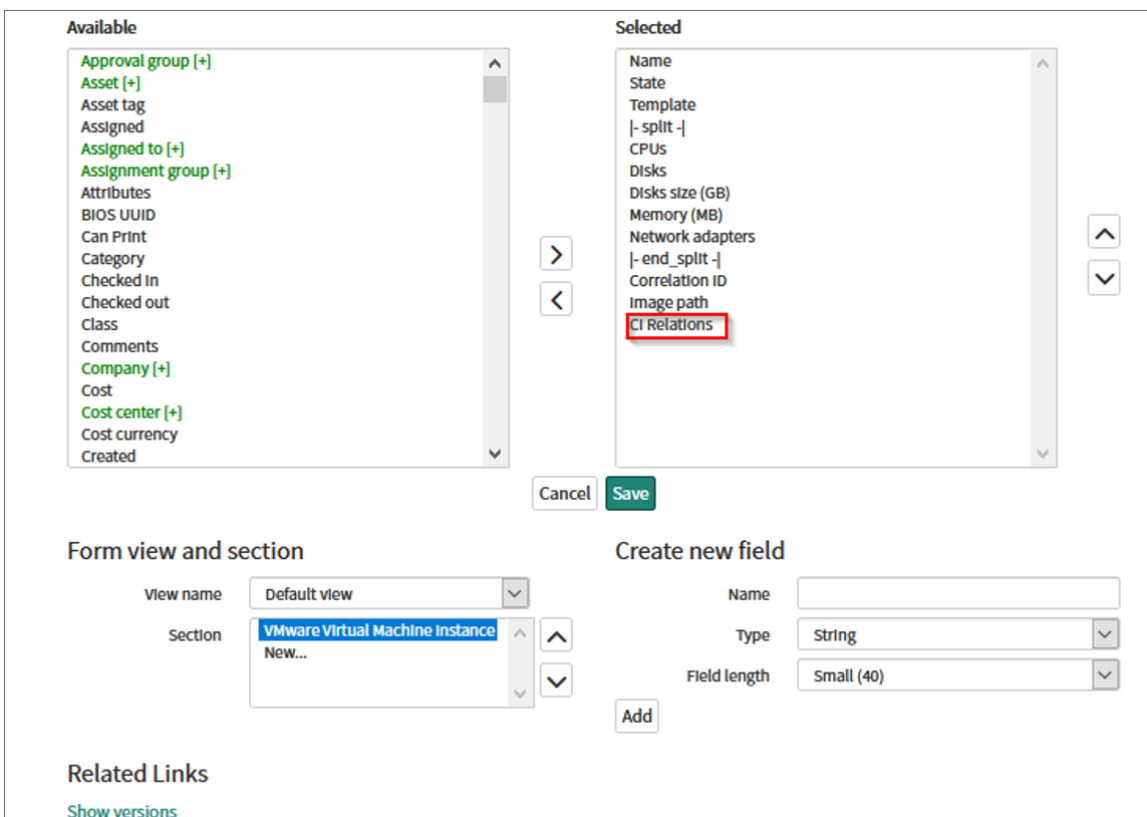
5. Click **[Save]**. The **Configuration** pane automatically closes.
6. Click **[Run]**  to run the application.

Adding Related Items and Lists to the CI Record in ServiceNow

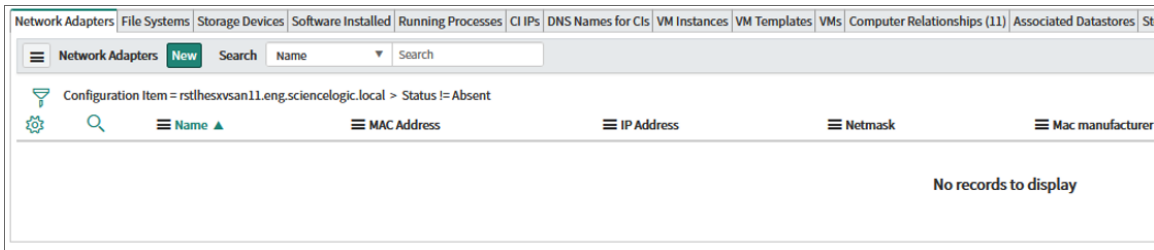
In ServiceNow you can add Related Items and Related Lists to CI records so you can see all related records in ServiceNow. The following image shows the **Related Items** pane on a CI record for a VMware Virtual Machine Instance:



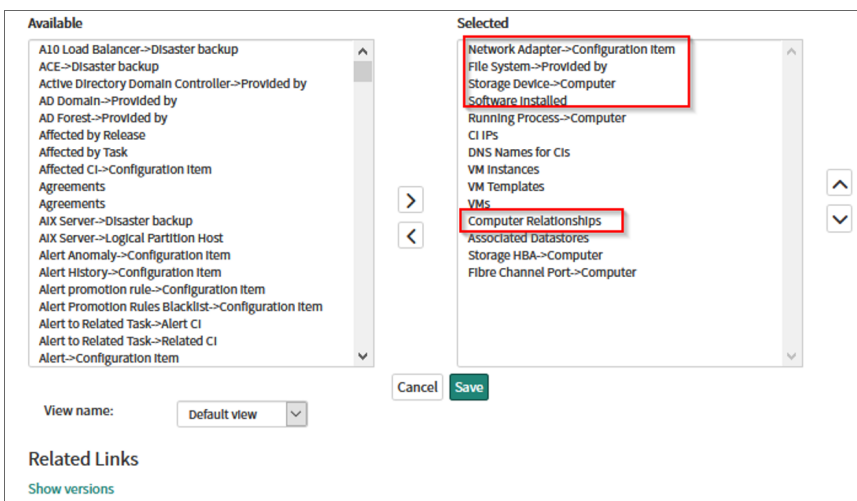
The following image shows how to add Related Items for a VMware Virtual Machine instance by selecting the *CI relations* option.



The following image shows the related lists for network adapters and files systems:



The items highlighted by the red boxes below are the most commonly used items:



For more information, see the ServiceNow Documentation at https://docs.servicenow.com/bundle/paris-platform-user-interface/page/use/using-forms/concept/c_RelatedLists.html.


Syncing Network Interfaces from SL1 to ServiceNow

You can map and sync network interfaces in much the same way you sync devices between SL1 and ServiceNow. The "Sync Interfaces from SL1 to ServiceNow" application collects interface data from ServiceNow and SL1 and runs multiple CI syncs for each interface to be synced.

NOTE: Version 3.5.0 and later of this Synchronization PowerPack requires SL1 version 11.2.0 or later.

WARNING: PowerFlow only syncs network interfaces that are aligned with devices that are already synced with ServiceNow. Before setting up network interface sync, you must first [sync devices between SL1 and ServiceNow](#).

To sync SL1 network interfaces with ServiceNow:

1. In the PowerFlow user interface, go to the **Applications** page and run the "Cache ServiceNow Companies, Cls and SL1 Orgs, Device Classes" application to read all existing SL1 Device Classes, Organizations, ServiceNow Cls, and Companies and write them to a cache.
2. When that application completes, go to the **Applications** page and select the "Sync Interfaces from SL1 to ServiceNow" application.
3. Click **[Configure]** (). The **Configuration** pane appears:

Sync Interfaces From SL1 To ServiceNow

Modify configuration and save.

Show JSON Configs

Configuration

ven1770_x_sclo_scilogic_sl151_pf199

sl1_hostname

10.2.11.151

\$(config.sl1_host)

sl1_user

em7admin

\$(config.sl1_user)

region

ven1770_x_sclo_scilogic_sl1

\$(config.region)

Include_Orgs

0,8,4

Enter comma-separated numbers.

discovery_source

Other Automated

Other Automated

interface_snow_default

change_interface_organiza

tions

snow_hostname

ven01770.service-now.com

\$(config.snow_host)

snow_user

powerflow_user_cmdb_incid

\$(config.snow_user)

sl1_db_user

clientdbuser

\$(config.sl1_db_user)

snow_request_limit

500

snow_chunk_size

150

Domain_Separation

verify_snow_ssl

sl1_db_host

\$(config.sl1_db_host)

sl1_password

.....

sl1_db_password

.....

read_timeout

300

snow_batch_size

150

enabled_only

generate_report

drop_company

Save

4. Complete the following fields, as needed:

- **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.

NOTE: The **region** field (along with other fields related to user names and passwords) is populated by the configuration object you aligned with this application, using the **Configuration** field. The **region** value on this pane must match the value in the **SL1 Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration object aligned with this application, or align a different configuration object that has the correct **region** value.

- **sl1_chunk_size.** Specify the number of interfaces to pull from SL1 in each chunk. The default is 500.
- **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out.
- **Include_Orgs.** If you want to include a specific set of SL1 Organizations in the interface sync, add the Organization IDs from the SL1 **Organizations** page (Registry > Accounts > Organizations) in this field, separated by commas. If this field is enabled, PowerFlow will pull only the Organizations listed in this field; PowerFlow does not pull all Organizations and then drop those not on the list. Leave this field empty to sync *all* SL1 Organizations. Optional.

CAUTION: A misconfiguration in the **Include Orgs** field might change the monitoring flag for one or more devices. In other words, a misconfiguration in this field could switch the SL1 Monitored flag from "true" to "false", removing that interface or interfaces from the device sync.

- **snow_request_limit.** Specify the number of objects fetched from ServiceNow in each request. The default is 500 objects per chunk.
- **snow_batch_size.** Specify the total number of objects being sent to ServiceNow in each triggered application. The default is 150 objects per batch.
- **discovery_source.** Specify the ServiceNow Discovery source. The default is "Other Automated".
- **snow_chunk_size.** Specify the number of objects to send in each chunk or in each sub-payload with a batch (specified in the **snow_batch_size** field). The default is 150 objects per chunk or sub-payload.
- **enabled_only.** Select this option only sync enabled interfaces. When enabled, this filter is applied to both the SL1 and ServiceNow side pulls. By default, this option is not selected.
- **interface_snow_default.** Select this option to allow interface types that are not included in the mappings to be sent to the **cmdb_ci_network_adapter** table in ServiceNow.

- **Domain_Separation.** Select this option if your ServiceNow environment is *domain-separated*, where the data, processes, and administrative tasks have been organized into logical groupings called *domains*. If your ServiceNow instance is domain-separated, the user listed in the **snw_user** field must be a member of the top domain and have access to *all* of the domains you intend to integrate. Also, ServiceNow should be the "source of truth" for organizations if your environment is domain-separated. By default, this option is not selected.
- **change_interface_organizations.** Toggle on (blue) this option to allow interfaces to change companies with an Interface Sync if the companies are within the same domain in ServiceNow. If you change the Organization/Company and another field, but do not enable this parameter, PowerFlow will not apply any changes to the interface. By default, this option is not selected.
- **drop_company.** Toggle on (blue) this option to remove the **sys_id** in existing companies from the sync. This will prevent the "Company" field from sending to ServiceNow. This option has no effect if the **domain_separation** parameter is enabled for this application. By default, this option is not selected.


NOTE: If you select this option, the ServiceNow company **sys_id** for the interface and the SL1 organization **crm_id** for the SL1 device will not be compared when determining if an update has occurred. Do not select this option if you selected the **Domain_Separation** option, as ServiceNow requires PowerFlow to send the "company" field in domain-separated environments. Also, do not select this option if you selected the **change_interface_organizations** option, as changing the company for an interface in ServiceNow requires the "company" field to be sent.

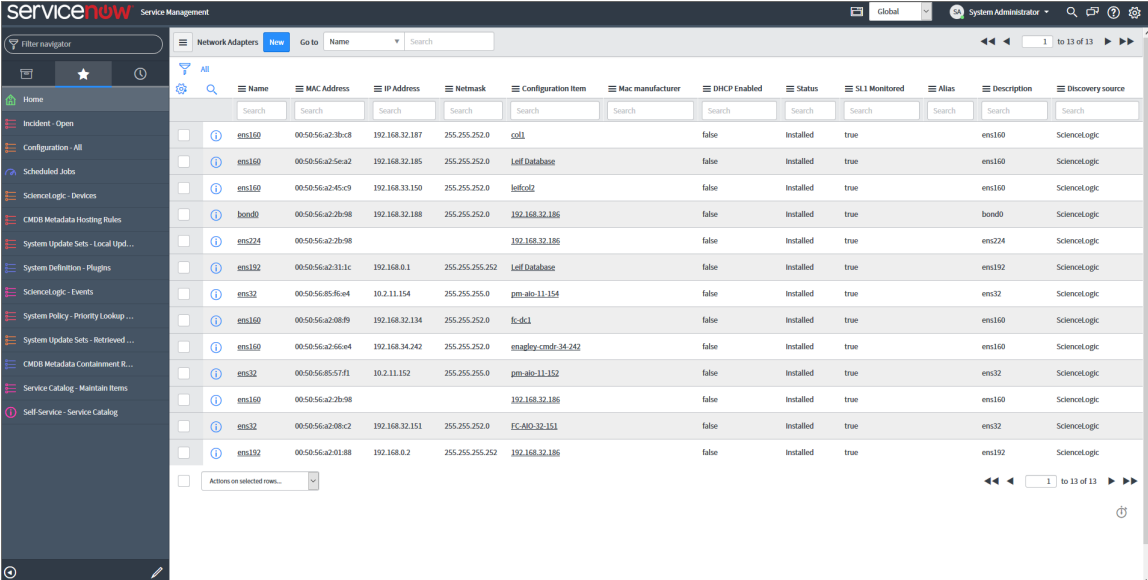
- **verify_snw_ssl.** Toggle on (blue) this option to enable verification of the SSL certification when you run this application.
- **generate_report.** Select this option to create a "Sync Interfaces from SL1 to ServiceNow" report. This report contains counts of the number of interfaces gathered from SL1 and ServiceNow, the number of unchanged interfaces, as well as the number of creations, updates, and disconnects sent to ServiceNow. Detailed interface information for the interfaces sent to ServiceNow is also displayed. The reports are available on the **Reports** page of the PowerFlow user interface.
- **Simulation_Mode.** Select this option if you want to perform a simulated run of this application to show you the potential results of that run. This option is not selected by default.
- **gql_filter.** Using JSON, you can optionally define a custom GraphQL filter to apply to the interfaces in the sync. To test out a GraphQL filter, go to the GraphiQL interface in SL1 by typing the URL or IP address for SL1 in a browser, add **/gql** to the end of the URL or IP address, and press **[Enter]**. Search the built in GraphQL docs for **InterfaceSearch** and determine how to set up your custom filter.
- **interface_table_relations.** Using JSON, define the relationship for any ServiceNow tables used in the **mappings** parameter, below. If a table is included in the mappings, but the relationship is not defined in the **interface_table_relations**, the Interface Sync application will fail.

- **mappings.** In this section, you can map specific interface types to different tables in ServiceNow. Interfaces with types that are not defined in these mappings will be skipped. If the **interface_snow_default** option is selected, missing mappings will be sent to the **cmdb_ci_network_adapter** table.

NOTE: You can add mappings for interface types that map to the *cmdb_ci_network_adapter*, *dscy_switchport*, or *dscy_router_interface* tables in ServiceNow. However, if the parent device type of the interface in SL1 is *Network.Switches* or *Network.Router*, the interface will be sent to *dscy_switchport* and *dscy_router_interface* tables, respectively, regardless of the mappings added here. If an IP address is found on the interface and the parent device is one of these types, an additional interface will also be sent to the *cmdb_ci_network_adapter* and will contain **IFCOPY** in the native key.

- **company_mapping_override.** In this section, you can create a new mapping for the ServiceNow "company" field for ServiceNow CIs (the first field on the left in the user interface). You can override the "company" field with a different ServiceNow field where you can read and write the **company_sys_id** for CIs.
- **attribute_mappings.** In this section, you can create a mapping for any other custom attributes you want to sync between SL1 (the first column) and ServiceNow (the second column):

5. Click **[Save]**. The **Configuration** pane closes.
6. Click **[Run]**  to run the application.
7. When the application completes, go to ServiceNow and type "cmdb_ci_network_adapter.list". The **Network Adapters** page appears, with a list of synced interfaces:



Name	MAC Address	IP Address	Network	Configuration Item	Mac manufacturer	DHCP Enabled	Status	SL1 Monitored	Alias	Description	Discovery source
ens160	00:50:56:a2:3b:c8	192.168.32.187	255.255.252.0	coll		false	Installed	true	ens160	ScientLogic	ScientLogic
ens160	00:50:56:a2:5e:a2	192.168.32.185	255.255.252.0	Leaf Database		false	Installed	true	ens160	ScientLogic	ScientLogic
ens160	00:50:56:a2:45:c9	192.168.31.150	255.255.252.0	leaf02		false	Installed	true	ens160	ScientLogic	ScientLogic
bond0	00:50:56:a2:7b:98	192.168.32.188	255.255.252.0	192.168.32.186		false	Installed	true	bond0	ScientLogic	ScientLogic
ens224	00:50:56:a2:7b:98			192.168.32.186		false	Installed	true	ens224	ScientLogic	ScientLogic
ens192	00:50:56:a2:31:1c	192.168.0.1	255.255.255.252	Leaf Database		false	Installed	true	ens192	ScientLogic	ScientLogic
ens32	00:50:56:85:f6:e4	10.2.11.154	255.255.255.0	pm-abc-11-154		false	Installed	true	ens32	ScientLogic	ScientLogic
ens160	00:50:56:a2:08:f9	192.168.32.134	255.255.252.0	fc-dc1		false	Installed	true	ens160	ScientLogic	ScientLogic
ens160	00:50:56:a2:66:e4	192.168.34.242	255.255.252.0	enagley-cmtr-34-242		false	Installed	true	ens160	ScientLogic	ScientLogic
ens32	00:50:56:85:57:f1	10.2.11.152	255.255.255.0	pm-abc-11-152		false	Installed	true	ens32	ScientLogic	ScientLogic
ens160	00:50:56:a2:7b:98			192.168.32.186		false	Installed	true	ens160	ScientLogic	ScientLogic
ens32	00:50:56:a2:08:c2	192.168.32.151	255.255.252.0	FC-A0-32-151		false	Installed	true	ens32	ScientLogic	ScientLogic
ens192	00:50:56:a2:01:88	192.168.0.2	255.255.255.252	192.168.32.186		false	Installed	true	ens192	ScientLogic	ScientLogic

8. Select a network interface from the list and scroll down to the **Network Adapters** tab to see more information about the interface, such as the **Operational status** value, which is synced from SL1.

Network Adapters (2)

Storage HBAs

Storage Devices

File Systems

Software Installed

Running Processes

Serial Numbers

Attachments

CI IPs

DNS Names for CIs

Memory Modules

≡

Network Adapters

Now

Go to

Name

▼

Search

◀◀◀

1

to 2 of 2

▶▶▶

⌵

🔍

Configuration Item = Leaf Database = Status = Absent

⚙️

🔍

	<div>≡</div> <div>Name</div>	<div>≡</div> <div>IP Address</div>	<div>≡</div> <div>Netmask</div>	<div>≡</div> <div>DHCP Enabled</div>	<div>≡</div> <div>MAC Address</div>	<div>≡</div> <div>Operational status</div>	<div>≡</div> <div>Mac manufacturer</div>
<input type="checkbox"/>	<div>ⓘ</div> <div>ems160</div>	192.168.32.185	255.255.252.0	false	00:50:56:a2:5e:a2	Operational	
<input type="checkbox"/>	<div>ⓘ</div> <div>ems192</div>	192.168.0.1	255.255.255.252	false	00:50:56:a2:31:1c	Operational	

☐

Actions on selected rows...

▼

◀◀◀

1

to 2 of 2

▶▶▶

NOTE: The **Operational status** value is different from the **[SL1 Monitored]** value, but PowerFlow tracks both values.

Syncing File Systems from SL1 to ServiceNow

You can map and sync file systems in much the same way you sync devices between SL1 and ServiceNow. The "Sync File Systems from SL1 to ServiceNow" application reads file systems discovered in SL1 and then maps them to a parent CI record in ServiceNow.

For a file system to be synced from SL1 to ServiceNow, the class of the file system's parent device must be included in the mappings parameters for the "Sync Devices from SL1 to ServiceNow" application. Interfaces with parent CIs with **className** values of **cmdb_ci_ip_switch** or **cmdb_ci_ip_router** will be sent to ServiceNow, but by default they will not be created in ServiceNow due to missing relationship information.

WARNING: PowerFlow only syncs file systems that are aligned with devices that are already synced with ServiceNow. Before setting up file system sync, you must first [sync devices between SL1 and ServiceNow](#).

To sync SL1 file systems with ServiceNow:

1. In the PowerFlow user interface, go to the **Applications** page and run the "Cache ServiceNow Companies, CIs and SL1 Orgs, Device Classes" application to read all existing SL1 Device Classes, Organizations, ServiceNow CIs, and Companies and write them to a cache.
2. When that application completes, go to the **Applications** page and select the "Sync File Systems from SL1 to ServiceNow" application.

3. Click **[Configure]** (⚙️) to open the **Configuration** pane:

Sync File Systems From SL1 To ServiceNow

Modify configuration and save. [Show JSON Configs](#)

Configuration

sl1_db_host
\${config.sl1_db_host} 🔒

snow_hostname
\${config.snow_host} 🔒

snow_user
\${config.snow_user} 🔒

snow_password
..... 🔒

sl1_db_user
\${config.sl1_db_user} 🔒

sl1_db_password
..... 🔒

region
\${config.region} 🔒

Include_Orgs
Enter comma-separated numbers.
500

snow_request_limit
500

read_timeout
30

snow_batch_size
150

discovery_source
Other Automated

snow_chunk_size
150

☐ Domain_Separation

☐ include_hidden

☐ include_stale

☐ drop_company

☐ change_fs_organizations

☐ verify_snow_ssl

☐ sl1_org_filter_only

☐ generate_report

☐ Simulation_Mode

Save

4. Complete the following fields, as needed:

- **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.

NOTE: The **region** field (along with other fields related to user names and passwords) is populated by the configuration object you aligned with this application, using the **Configuration** field. The **region** value on this pane must match the value in the **SL1 Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration object aligned with this application, or align a different configuration object that has the correct **region** value.

- **Include_Orgs.** If you want to include a specific set of SL1 Organizations in the sync, add the Organization IDs from the SL1 **Organizations** page (Registry > Accounts > Organizations) in this field, separated by commas. If this field is enabled, PowerFlow will pull only the Organizations listed in this field; PowerFlow does not pull all Organizations and then drop those not on the list. Leave this field empty to sync *all* SL1 Organizations. Optional.
- **snow_request_limit.** Specify the number of objects fetched from ServiceNow in each request. The default is 500 objects per chunk.
- **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 30 seconds.
- **snow_batch_size.** Specify the total number of objects being sent to ServiceNow in each triggered application. The default is 150 objects per batch.
- **discovery_source.** Specify the ServiceNow Discovery source. The default is "Other Automated".
- **snow_chunk_size.** Specify the number of objects to send in each chunk or in each sub-payload with a batch (specified in the **snow_batch_size** field). The default is 150 objects per chunk or sub-payload.
- **include_hidden.** Select this option to sync hidden file systems. This filter is only applied on the SL1 side of the sync. By default, this option is not selected.
- **include_stale.** Select this option to sync stale file systems. This filter is only applied on the SL1 side of the sync. By default, this option is not selected.

WARNING: Be cautious when applying these **include** options, as enabling one or both options might cause unwanted disconnects if the File System Sync is run with these options enabled and then run with the options disabled.

- **Domain_Separation.** Select this option if your ServiceNow environment is *domain-separated*, where the data, processes, and administrative tasks have been organized into logical groupings called *domains*. If your ServiceNow instance is domain-separated, the user listed in the **snow_user** field must be a member of the top domain and have access to *all* of the domains you intend to integrate. Also, ServiceNow should be the "source of truth" for organizations if your environment is domain-separated.
- **change_fs_organizations.** Toggle on (blue) this option to allow file systems to change companies with an Interface Sync if the companies are within the same domain in ServiceNow. If you change the Organization/Company and another field, but do not enable this parameter, PowerFlow will not apply any changes to the file system. By default, this option is not selected.
- **drop_company.** Toggle on (blue) this option to remove the sys_id in existing companies from the sync. This will prevent the "Company" field from sending to ServiceNow. This option has no effect if the **domain_separation** parameter is enabled for this application. By default, this option is not selected.

NOTE: If you select this option, the ServiceNow company **sys_id** for the file system and the SL1 organization **crm_id** for the SL1 device will not be compared when determining if an update has occurred. Do not select this option if you selected the **Domain_Separation** option, as ServiceNow requires PowerFlow to send the "company" field in domain-separated environments. Also, do not select this option if you selected the **change_interface_organizations** option, as changing the company for a file system in ServiceNow requires the "company" field to be sent.

- **verify_snow_ssl.** Toggle on (blue) this option to enable verification of the SSL certification when you run this application.
- **sl1_org_filter_only.** Toggle on (blue) this option to apply the organization filter to only the SL1 side of the data pull.

CAUTION: Enabling this toggle will only apply organization filtering to the SL1 side of the data pulls, while all file systems for the provided region in ServiceNow will be returned. Be cautious using this option, as enabling it may cause unwanted disconnects in ServiceNow.

- **generate_report.** Select this option to create a "Sync File Systems from SL1 to ServiceNow" report. This report contains counts of the number of file systems gathered from SL1 and ServiceNow, the number of unchanged file systems, and the number of creations, updates, and disconnects sent to ServiceNow. Detailed file system information for the file systems sent to ServiceNow is also displayed. Finally, the report contains file systems that are in an unsupported format. The reports are available on the **Reports** page of the PowerFlow user interface.

NOTE: Due to the differences between how SL1 and ServiceNow discover file systems, only certain formats of file systems contained in the SL1 database will be synced to ServiceNow. Only file systems where the name and the mount point can be determined from the name database field stored in the SL1 will be synced.

- **Simulation_Mode.** Select this option if you want to perform a simulated run of this application to show you the potential results of that run.
- **company_mapping_override.** In this section, you can create a new mapping for the ServiceNow "company" field for ServiceNow CIs (the first field on the left in the user interface). You can override the "company" field with a different ServiceNow field where you can read and write the **company_sys_id** for CIs.
- **attribute_mappings.** In this section, you can create a mapping for any other custom attributes you want to sync between SL1 (the first column) and ServiceNow (the second column).

5. Click **[Save]**. The **Configuration** pane closes.

6. Click **[Run]**  to run the application.

Syncing Business Services

Depending on where you have your business services configured initially, you can use one of the two following methods to sync business services between SL1 and ServiceNow:

- [Syncing Business Services from SL1 to ServiceNow](#)
- [Syncing Business Services from ServiceNow to SL1](#)

To avoid duplicate services, you should only use *one* of the above processes in the PowerFlow user interface. The PowerFlow application you use depends on in which application (SL1 or ServiceNow) you initially configured your services, before syncing.

For example, if you have Business Services, IT Services, and Devices Services set up in SL1, you would use the "Sync Business Services from SL1 to ServiceNow" application, and SL1 would be the "source of truth" after the sync.

Syncing Business Services from SL1 to ServiceNow

The ***Sync Business Services from SL1 to ServiceNow*** application reads Business Services, IT Services, and Device Services from SL1 and syncs them with business services in ServiceNow. This application creates and updates services, but it does not delete services.

The "Sync Business Services from SL1 to ServiceNow" application does not currently support deleting or disconnecting services within ServiceNow. The application logs for the "Post to ServiceNow" step might contain information regarding disconnects, but you can ignore that information.

If a Device Service does not have a parent IT Service, the CMDB Group will be created, but the CI will not be created because of the way PowerFlow pulls each of those items. At the time of the Group creation, PowerFlow does not know if a service has a parent or not. At the time of the CI creation, PowerFlow does not directly pull Device Services; it only pulls Business Services and IT Services and their children.

WARNING: PowerFlow only syncs business services that are aligned with devices that are already synced with ServiceNow. Before setting up business service sync, you must first [sync devices between SL1 and ServiceNow](#).

To sync SL1 business services with ServiceNow:

1. In ServiceNow, create an identifier rule for syncing services by typing "CI Identifiers" in the filter navigator and clicking **[New]** on the **Identifiers** page:


The screenshot shows the ServiceNow 'Identifiers' configuration page. The left sidebar contains a filter navigator with 'CI Identifiers' selected. The main form has the following fields:

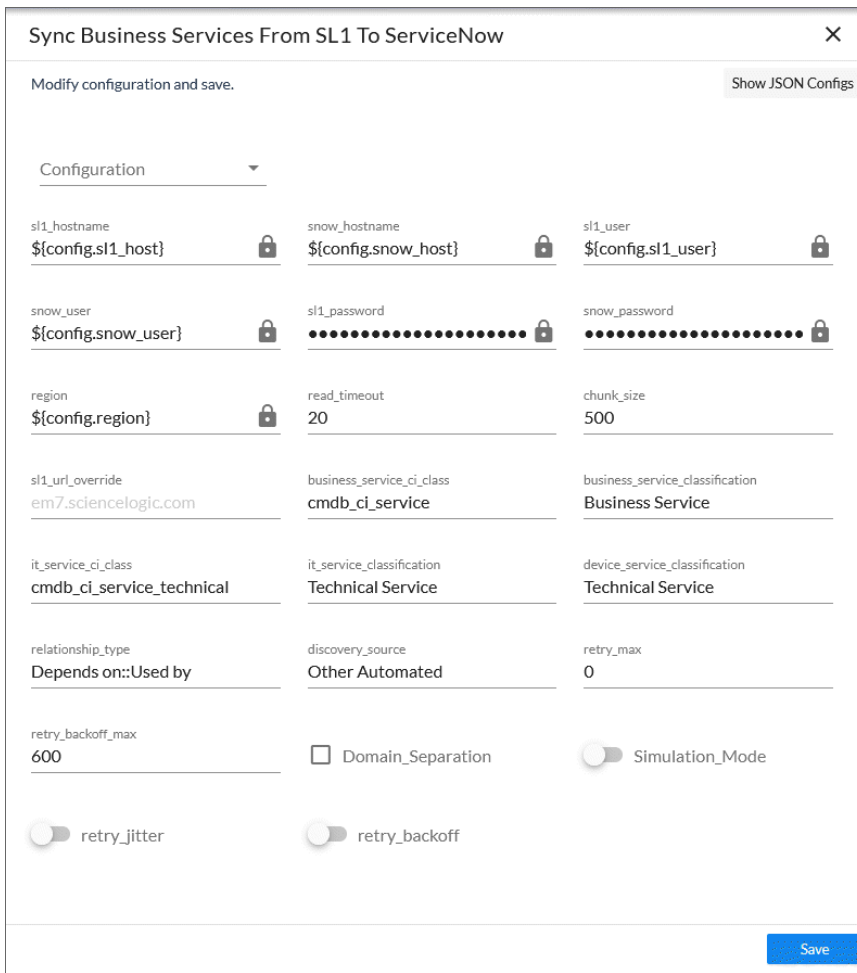
- Name:** Business Service
- Applies to:** Business Service [cmdb_ci_service]
- Description:** (empty)
- Independent:** ☒

Below the form is the 'Identifier Entries' table:

Identifier	Search	Priority
Business Service [cmdb_ci_service]	name_service_classification	100
Business Service [cmdb_ci_service]	correlation_id	200

2. Complete the following fields:
 - **Name.** Type a relevant name for this rule, such as "Business Service".
 - **Applies to.** Select `cmdb_ci_service`.
 - **Independent.** Select this option.
3. Right-click the gray header and click Save to save the record.
4. On the **[Identifier Entries]** tab, click **[New]** and add the relevant values from the **Criterion attributes** field for this business service, such as `name`, `service_classification` and `correlation_id`.
5. Click **[Submit]**.
6. Repeat steps 4-5 for each identifier you want to add.
7. Go to the **Applications** page of the PowerFlow user interface and run the "Cache ServiceNow Companies, CIs and SL1 Orgs, Device Classes" application. This application reads all existing SL1 Device Classes, Organizations, ServiceNow CIs, and Companies and writes them to a cache.
8. When that application completes, go to the **Applications** page and run the "Sync Devices from SL1 to ServiceNow" application to sync devices and their properties and relationships from SL1 to ServiceNow.
9. When that application completes, go to the **Applications** page and select the "Sync Business Services from SL1 to ServiceNow" application.

10. Click **[Configure]**  to open the **Configuration** pane:



Sync Business Services From SL1 To ServiceNow

Modify configuration and save. [Show JSON Configs](#)

Configuration

sl1_hostname \${config.sl1_host}	snow_hostname \${config.snow_host}	sl1_user \${config.sl1_user}
snow_user \${config.snow_user}	sl1_password	snow_password
region \${config.region}	read_timeout 20	chunk_size 500
sl1_url_override em7.sciencelogic.com	business_service_ci_class cmdb_ci_service	business_service_classification Business Service
it_service_ci_class cmdb_ci_service_technical	it_service_classification Technical Service	device_service_classification Technical Service
relationship_type Depends on::Used by	discovery_source Other Automated	retry_max 0
retry_backoff_max 600	<input type="checkbox"/> Domain_Separation	<input checked="" type="checkbox"/> Simulation_Mode
<input checked="" type="checkbox"/> retry_jitter	<input checked="" type="checkbox"/> retry_backoff	

Save

11. Complete the following fields, as needed:


- **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.

NOTE: The **region** field is populated by the configuration object you aligned with this application. The region value must match the value in the **SL1 Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration object that is aligned with this application, or align a different configuration object that has the correct **region** value.

- **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.
- **sl1_chunk_size.** Specify the number of services to include in each chunk sent to ServiceNow when you run this application. The default chunk size is 500.

- **snow_request_limit**. Specify the number of CIs fetched from ServiceNow in each request. The default is 500 objects per chunk.
- **sl1_url_override**. Specify a URL that is different from the standard SL1 URL that gets sent to the ServiceNow CI record. Optional.
- **business_service_ci_class**. Specify the ServiceNow CI Class for Business Services. The default is **cmdb_ci_service**.
- **it_service_ci_class**. Specify the ServiceNow CI Class for IT Services. The default is **cmdb_ci_service_technical**.
- **business_service_classification**, **it_service_classification**, and **device_service_classification**. Use these fields to update the default service classifications. Optional.
- **relationship_type**. Specify the relationship type string to use between services. The default is *Depends on::Used by*.
- **discovery_source**. Specify the ServiceNow Discovery source. The default is "Other Automated".
- **verify_snow_ssl**. Toggle on (blue) this option to enable verification of the SSL certification when you run this application.
- **snow_batch_size**. Specify the total number of CIs being sent to ServiceNow in each triggered application. The default is 150 objects per batch.
- **snow_chunk_size**. Specify the number of CI objects to send in each chunk or in each sub-payload with a batch (specified in the **snow_batch_size** field). The default is 150 objects per chunk or sub-payload.
- **retry_max**. The maximum number of times PowerFlow will retry to execute the step before it stops retrying and logs a step failure. For example, if **retry_max** is 3, PowerFlow will retry after 1 second, then 2 seconds, then 4 seconds, and stop if the last retry fails. The default is 0.
- **retry_backoff_max**. The maximum time interval for the **retry_backoff** option, in seconds. For example, if you have **retry_max** set to 15, the delays will be 1, 2, 4, 8, 16, 32, 64, 120, 240, 480, 600, 600, 600, 600, and 600. The default is 600.
- **Domain_Separation**. Select this option if your ServiceNow environment is *domain-separated*, where the data, processes, and administrative tasks have been organized into logical groupings called *domains*. If your ServiceNow instance is domain-separated, the user listed in the **snow_user** field must be a member of the top domain and have access to *all* of the domains you intend to integrate. Also, ServiceNow should be the "source of truth" for organizations if your environment is domain-separated.
- **Simulation_Mode**. Select this option if you want to perform a simulated run of this application to show you the potential results of that run.
- **company_mapping_override**. In this section, you can create a new mapping for the ServiceNow "company" field for ServiceNow CIs (the first field on the left in the user interface). You can override the "company" field with a different ServiceNow field where you can read and write the **company_sys_id** for CIs.

12. Click **[Save]**. The **Configuration** pane automatically closes.

13. Click **[Run]**  to run the "Sync Business Services from SL1 to ServiceNow" application.

Syncing Business Services from ServiceNow to SL1

The **Sync Business Services from ServiceNow to SL1** application syncs services that were defined in ServiceNow with Business Services in SL1. When you sync services from Service Now to SL1, PowerFlow recreates the service structure in SL1, where you can see the relationships between the service components, the application components, and the infrastructure components. You can also sync any asset fields on the service using an attribute mapping on the **Configuration** pane.

Aspects of Syncing Business Services from ServiceNow to SL1

- This process syncs the business service structure or map from ServiceNow; however, because ServiceNow only allows one device service for each device, the process will not dynamically create rules and services in SL1.
- This process groups all devices into a single device service. If there are other services at the same level as the devices, that service will be modeled as a separate aggregate service in SL1.
- An aggregate service in SL1 will only be created with services as children and a device service in SL1 will only be created with devices as children.
- Depending on the actions taken in ServiceNow, an aggregate service can be inserted above or a device service may be inserted below certain services when the aggregate service is created in SL1.
- This process creates device services in SL1, but it does not create devices in SL1.
- Services are not merged in this process, so when you use the "Sync Business Services from ServiceNow to SL1" application, the "source of truth" will be set to ServiceNow, not SL1.
- If a ServiceNow service has no child services or child devices, that service will not be created in SL1.
- If a ServiceNow service was previously synced to SL1 when it was not empty, but it is now an empty service ServiceNow, the service is deleted in SL1.

The following tables in ServiceNow are treated as services in a sync to SL1:

- cmdb_ci_service
- cmdb_ci_service_technical
- cmdb_ci_query_based_service
- cmdb_ci_service_discovered
- cmdb_ci_service_auto
- cmdb_ci_service_group
- service_offering
- cmdb_ci_service_manual
- cmdb_ci_service_calculated

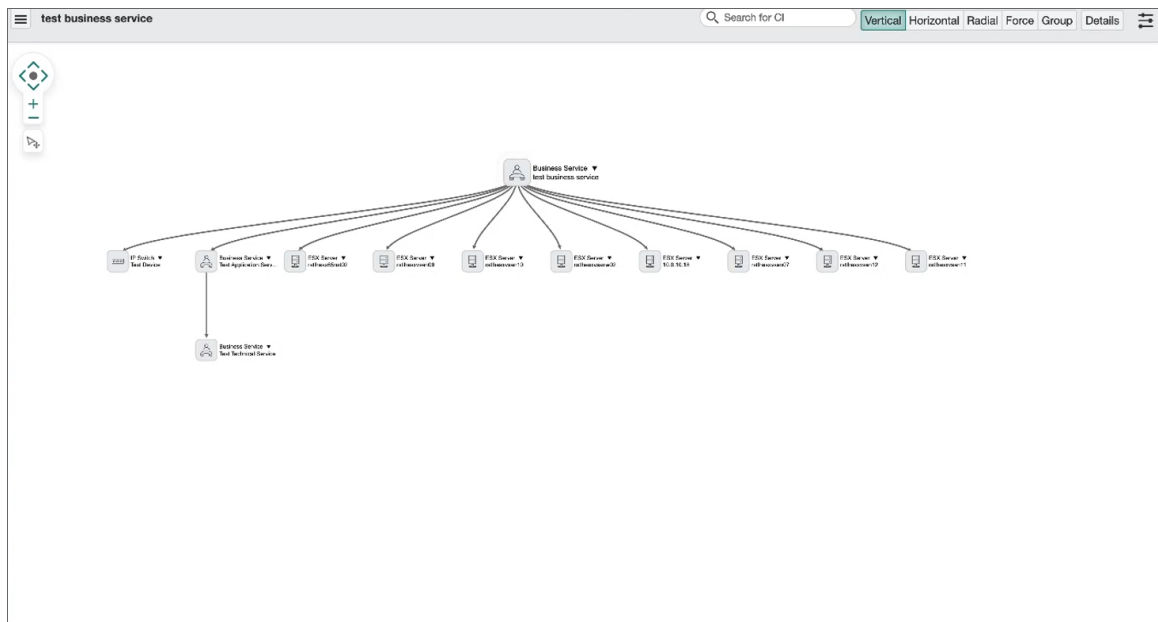
All other tables will be treated as devices.

NOTE: The `cmdb_ci_query_based_service` table contains the device services within ServiceNow. For any other service with a CI as a direct child, a device service will be inserted in between this service and the child CI in SL1.

WARNING: Syncing services from ServiceNow to SL1 requires SL1 10.2.0 or later.

To sync ServiceNow services with SL1 Business Services:

1. In ServiceNow, configure your business service structure or map so it is ready to be synced to SL1:



2. For each service that you want to sync with SL1:
 - Ensure that the *SL1 Region* field in ServiceNow matches the **region** field in PowerFlow.
 - Set the **SL1 Monitored** flag to *True*.
3. Go to the **Applications** page of the PowerFlow user interface and run the "Cache ServiceNow Companies, CIs and SL1 Orgs, Device Classes" application. This application reads all existing SL1 Device Classes, Organizations, ServiceNow CIs, and Companies and writes them to a cache.
4. When that application completes, go to the **Applications** page and run the "Sync Devices from SL1 to ServiceNow" application to enable PowerFlow to use the mappings and additional attribute options from Device Sync.
5. When that application completes, go to the **Applications** page and select the "Sync Business Services from ServiceNow to SL1" application.

6. Click **[Configure]** (⚙️) to open the **Configuration** pane:

Sync Business Services from ServiceNow to SL1

Modify configuration and save.

Show JSON Configs

Configuration

_bserv_sync_to_43

sl1_hostname

10.2.11.43

lock

\$(config.sl1_host)

sn1_hostname

ven01770.service-now.com

lock

\$(config.sn1_host)

sl1_user

em7admin

lock

\$(config.sl1_user)

sn1_user

is4user1

lock

\$(config.sn1_user)

region

unique_id

lock

\$(config.region)

sl1_password

••••••••••••••••

lock

\$(config.sl1_password)

sn1_password

••••••••••••••••

lock

\$(config.sn1_password)

read_timeout

20

attribute_map

Select/type an option

+

maps to:

Search options

+


Add Mapping

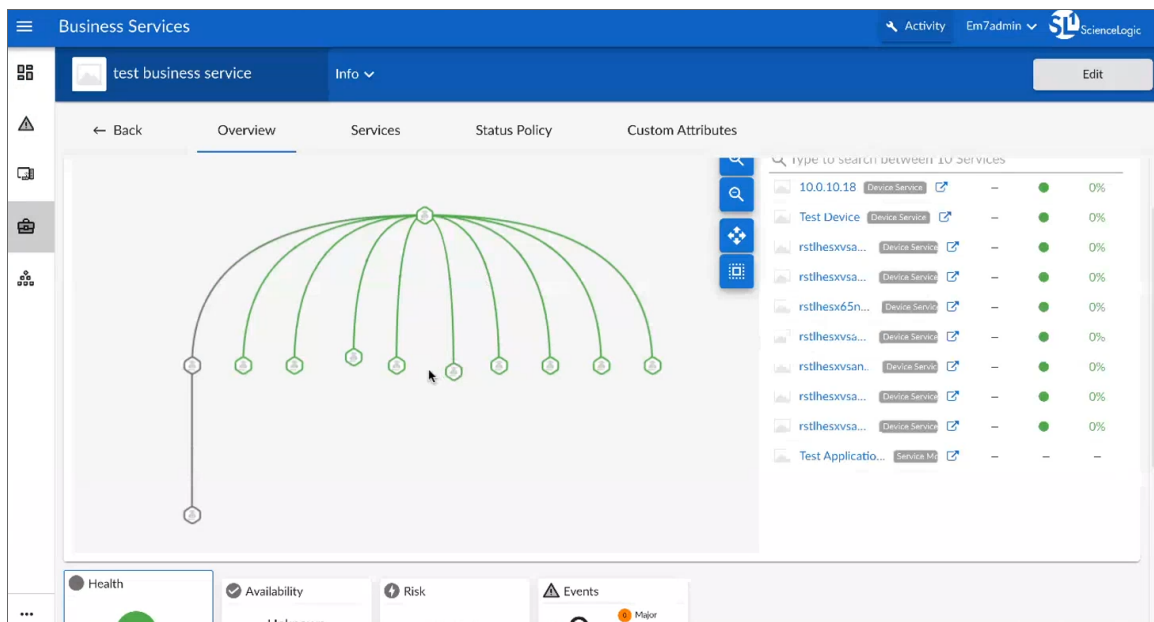
Save

7. Complete the following fields, as needed:

- **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.

NOTE: The **region** field is populated by the configuration object you aligned with this application. The region value must match the value in the **SL1 Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration object that is aligned with this application, or align a different configuration object that has the correct **region** value.

- **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.
 - **verify_snow_ssl.** Toggle on (blue) this option to enable verification of the SSL certification when you run this application.
 - **attribute_map.** In this section, click **[Add Mapping]** if you want to create a mapping for any other asset fields that you want to sync between SL1 (the first column) and ServiceNow (the second column).
 - **company_mapping_override.** In this section, you can create a new mapping for the ServiceNow "company" field for ServiceNow CIs (the first field on the left in the user interface). You can override the "company" field with a different ServiceNow field where you can read and write the **company_sys_id** for CIs.
8. Click **[Save]**. The **Configuration** pane automatically closes.
9. Click **[Run]**  to run the application. When the application completes, the ServiceNow business services will be available on the **Business Services** page of SL1:



Syncing Installed Software between SL1 and ServiceNow


You can use the following applications to sync your installed software assets between and ServiceNow:

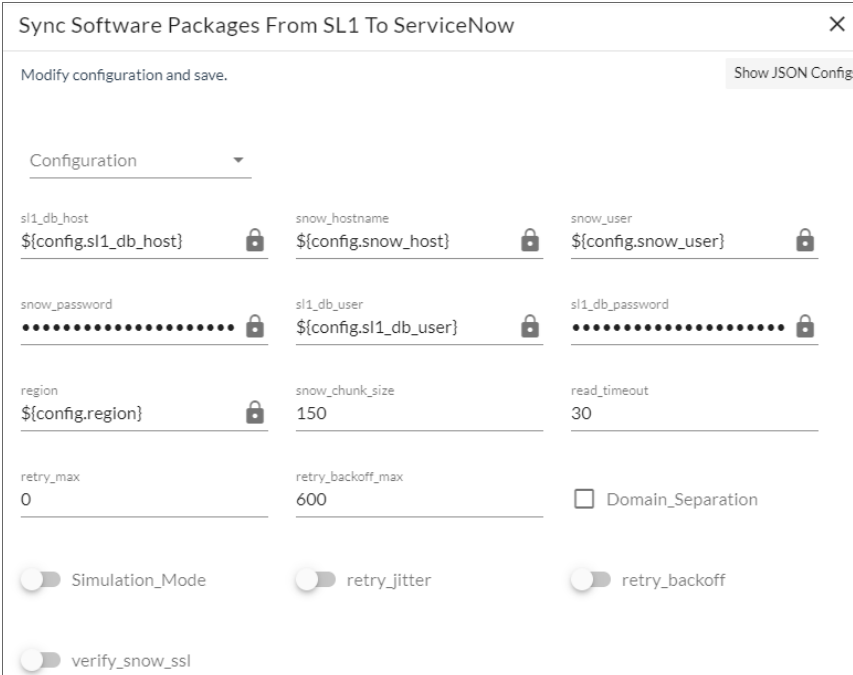
- "Sync Software Packages from SL1 to ServiceNow". Reads all software packages from SL1 and creates new CIs in ServiceNow. Run this application before running the "Sync Installed Software" application.
- "Sync Installed Software from SL1 to ServiceNow". Reads all available software packages from SL1 and the devices aligned to that software by region and syncs them with ServiceNow.

The applications do not currently support domain separation.

NOTE: The Software Asset Management (SAM) application in ServiceNow is not supported with the current level of installed software data acquired with SL1. As a result, syncing installed software data with ServiceNow Discovery and other Software Asset Management software is not currently supported.

To sync installed software between SL1 and ServiceNow:

1. Make sure that you have recently run the "Sync Devices from SL1 to ServiceNow" application to populate the device cache.
2. In the PowerFlow user interface, go to the **Applications** page and select the "Sync Software Packages from SL1 to ServiceNow" application.
3. Click **[Configure]**  to open the **Configuration** pane:



Sync Software Packages From SL1 To ServiceNow

Modify configuration and save. [Show JSON Configs](#)



Configuration

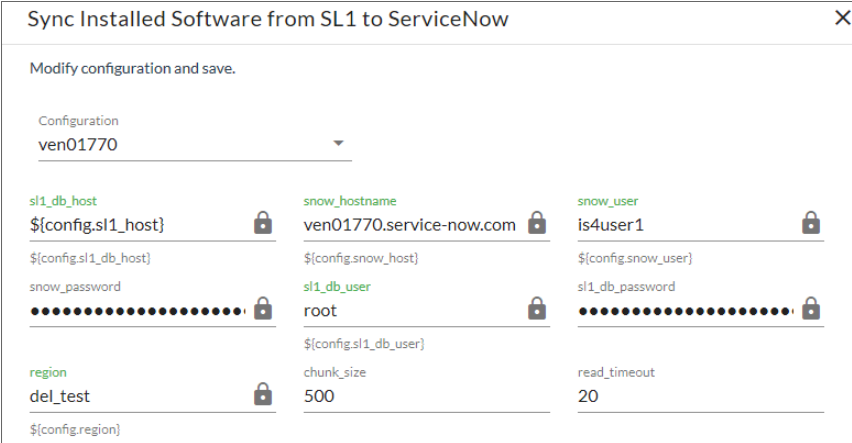
sl1_db_host \${config.sl1_db_host}	snow_hostname \${config.snow_host}	snow_user \${config.snow_user}
snow_password	sl1_db_user \${config.sl1_db_user}	sl1_db_password
region \${config.region}	snow_chunk_size 150	read_timeout 30
retry_max 0	retry_backoff_max 600	<input type="checkbox"/> Domain_Separation
<input type="checkbox"/> Simulation_Mode	<input type="checkbox"/> retry_jitter	<input type="checkbox"/> retry_backoff
<input type="checkbox"/> verify_snow_ssl		

4. Complete the following fields, as needed:

- **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.

NOTE: The **region** field is populated by the configuration object you aligned with this application. The region value must match the value in the **SL1 Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration object that is aligned with this application, or align a different configuration object that has the correct **region** value.

- **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.
 - **snow_request_limit.** Specify the number of objects fetched from ServiceNow in each request. The default is 500 objects per chunk.
 - **snow_chunk_size.** Specify the number of objects to send in each chunk. The default is 150 objects per chunk.
 - **verify_snow_ssl.** Toggle on (blue) this option to enable verification of the SSL certification when you run this application.
5. Click **[Save]** and wait for the "App & Config modifications saved" pop-up message to appear. The **Configuration** pane automatically closes after this message appears.
 6. Click **[Run]**  to run the application.
 7. After the "Sync Software Packages from SL1 to ServiceNow" application finishes running, go to the **Applications** page and select the "Sync Installed Software from SL1 to ServiceNow" application.
 8. Click **[Configure]**  to open the **Configuration** pane:




Sync Installed Software from SL1 to ServiceNow

Modify configuration and save.

Configuration
ven01770

sl1_db_host \${config.sl1_db_host}	snow_hostname ven01770.service-now.com	snow_user is4user1
\$(config.sl1_db_host)	\$(config.snow_host)	\$(config.snow_user)
snow_password	sl1_db_user root	sl1_db_password
	\$(config.sl1_db_user)	
region del_test	chunk_size 500	read_timeout 20
\$(config.region)		

9. Complete the following fields, as needed:
 - **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.

- **region**. The region value is populated by the configuration object you selected. The region value must match the value in the **SL_Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration that is aligned with this application, or align a different configuration that has the correct region value.
 - **chunk_size**. Specify the number of services to include in each chunk sent to ServiceNow when you run this application. The default chunk size is 500.
 - **read_timeout**. Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.
10. Click **[Save]** and wait for the "App & Config modifications saved" pop-up message to appear. The **Configuration** pane automatically closes after this message appears.
 11. Click **[Run]**  to run the application.

Discovery Sync

The Discovery Sync integration lets you use SL1 for discovering and syncing ServiceNow devices. With Discovery Sync, you start an SL1 discovery session from ServiceNow and then sync the newly discovered SL1 devices or virtual devices and their data with ServiceNow.

Before running a Discovery Sync session, you must complete the following steps first:

1. For domain-separated ServiceNow instances, perform a company sync by running the "Sync Organizations from SL1 to ServiceNow" application in the PowerFlow user interface. For more information, see [Syncing Organizations from SL1 to ServiceNow](#).
2. In ServiceNow, configure a service request for Discovery Sync. For more information, see [Configuring a ServiceNow Service Request for Discovery Sync](#).
3. In the PowerFlow user interface, run the applications listed in the [Discovery Sync Workflow](#).

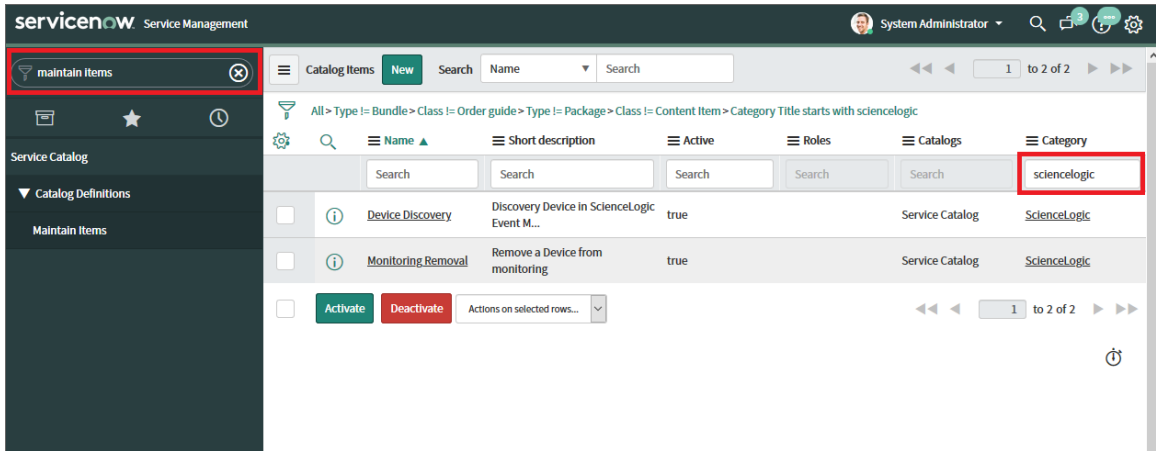
Configuring a ServiceNow Service Request for Discovery Sync

Before you can run a Discovery Sync, you need to configure the catalog and category values in the ServiceNow service request forms. You also need to activate the "Device Discovery" service request in ServiceNow.

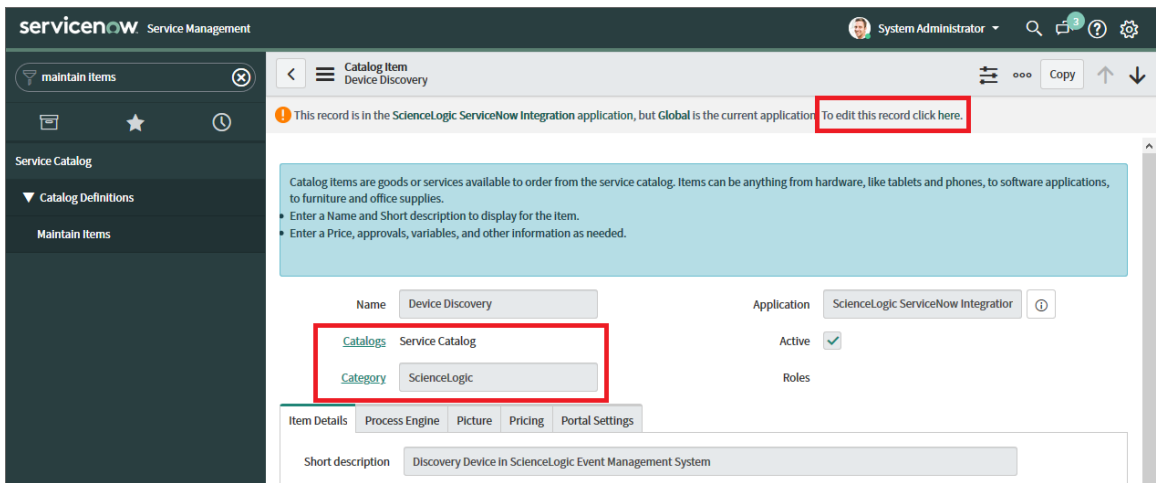
NOTE: Because some of the fields in the service request form will only populate if you have completed the previous fields in the form, you need to complete the fields in the service request form in sequential order.

To configure the ServiceNow service requests for Discovery Sync:

1. In ServiceNow, search for "Maintain Items" in the filter navigator.
2. Go to **Service Catalog > Catalog Definitions > Maintain Items** and type "ScienceLogic" in the Category field. The **Device Discovery** and **Monitoring Removal** service requests appear:



3. Open the **Device Discovery** service request and ensure that the **Catalogs** and **Category** fields are accurate. For example:



NOTE: Do not set the **Category** to a *Change Request*.

4. If you need to update these fields, click the "To edit this record click **here**" link at the top of the detail page.
5. Update the fields and click the **[Update]** button to save your changes.
6. From the **Catalog Items** page, click the check box for the **Device Discovery** service request and click **[Activate]**.

NOTE: This service request is instance-specific, which means that the service request will appear in the same location as the catalogs you specified for that request. In the example, above, the **Catalog** was set to *Service Catalog*.

7. Navigate to the relevant catalog for the service request. For example, if you selected *Service Catalog* for one or both requests, then type "Service Catalog" in the filter navigator, or select **Self-Service > Service Catalog** to view the new service requests. Type "device discovery" in the **Search catalog** field to quickly locate the request.
8. Run the applications listed in the [Discovery Sync Workflow](#) before creating the Device Discovery service request in ServiceNow.

Discovery Sync Workflow

To prepare SL1 and ServiceNow for a Discovery Sync, run the following applications in the PowerFlow user interface, in the following order:

1. **Sync Discovery Requirements.** This application exports information from SL1 to populate the information in the ServiceNow request form. You must run this application before you can create the discovery sync session in ServiceNow. This application uses one or more of the following options from the **Configuration** pane:

- **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.

NOTE: The **region** field is populated by the configuration object you aligned with this application. The region value must match the value in the **SL1 Region** field in ServiceNow. If you need to update this value, you will need to define the **region** variable in the configuration object that is aligned with this application, or align a different configuration object that has the correct **region** value.

- **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 30 seconds.
- **sl1_chunk_size.** Specify the number of object to include in each chunk sent from SL1 to ServiceNow. The default is 500.
- **snow_chunk_size.** Specify the number of objects to send in each chunk from ServiceNow. The default is 150 objects per chunk.
- **Create_Missing.** Select this option if you want PowerFlow to create a new device or CI if that record is missing, based on your selection in the *Source_of_Truth* field.
- **Sync_Empty_Groups.** Select this option if you want to sync device groups that have no devices, or device groups that have devices but no matching CIs.
- **Source_of_Truth.** Select whether you want to use data from ServiceNow or ScienceLogic as the "source of truth" when this application encounters duplicate data or data collisions.

- **attribute_mappings.** In this section, you can create a mapping for any other custom attributes you want to sync between SL1 (the first column) and ServiceNow (the second column).
2. **Sync Service Requests from ServiceNow to SL1.** This application sends the request forms to SL1. This application was called "Sync Discovery Session Requests from ServiceNow to SL1" in previous versions of the Synchronization PowerPack. This application uses one or more of the following options from the **Configuration** pane:
- **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.
 - **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.
 - **Open_State.** The State ID from ServiceNow that specifies which Requested Items (RITMs) to pull and process. The default is 1.
 - **Closed_Success_State.** The State ID for a successfully created virtual device. The State ID for a successful run changes from 1 to 2 and then ends with 4. The default is 3.
 - **Closed_Failed_State.** The State ID for failed discoveries or failed virtual device creation, usually caused by invalid payloads. The State ID for a failed run changes from 1 to 2 and then ends with 4. The default is 4.
 - **In_Progress_State.** The State ID for RITMs for a running discovery. The default is 2.
 - **target_vcug.** Leave this field blank.
 - **recursively_disable_children.** Leave this field blank.
3. **Sync Discovery Session Status from SL1 to ServiceNow.** This application populates the discovery session logs back to ServiceNow. This application uses the following options from the **Configuration** pane:
- **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.
 - **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.
 - **retry_max.** The maximum number of times PowerFlow will retry to execute the step before it stops retrying and logs a step failure. For example, if **retry_max** is 3, PowerFlow will retry after 1 second, then 2 seconds, then 4 seconds, and stop if the last retry fails. The default is 0.
 - **retry_backoff_max.** The maximum time interval for the **retry_backoff** option, in seconds. For example, if you have **retry_max** set to 15, the delays will be 1, 2, 4, 8, 16, 32, 64, 120, 240, 480, 600, 600, 600, 600, and 600. The default is 600.
 - **Closed_Success_State.** The State ID for a successfully created discovery. The State ID for a successful run changes from 1 to 2 and then ends with 4. The default is 3.
 - **Closed_Failed_State.** The State ID for failed discoveries, usually caused by invalid payloads. The State ID for a failed run changes from 1 to 2 and then ends with 4. The default is 4.
 - **sys_id_target.** Takes the **sys_id** value from the CI in the ServiceNow Service Request and populates it in the relevant field in SL1, such as **c-sys_id**.

- ***ci_class_target***. Takes the ***ci_class*** value from the CI in the ServiceNow Service Request and populates it in the relevant field in SL1, such as ***c-ci_class_target***.

NOTE: If the ***sys_id_target*** field and the ***ci_class_target*** field are not populated, PowerFlow will skip the process of consuming cached data and populating custom attribute fields in SL1 with the ***sys_id*** and ***ci_class*** values of newly discovered devices.

- ***snow_attributes_created***. Select this option if custom attributes for ServiceNow ***sys_id*** and ***ci_class*** already exist in SL1.
4. ***Sync Discovery Templates from SL1 to ServiceNow***. This application creates Service Catalog templates in ServiceNow based on Discovery Sessions that were created in SL1. This option lets you use any existing SL1 Discovery Sessions as a template for discovering or monitoring a CI with SL1. This application uses the following options from the **Configuration** pane:
- ***Configuration***. Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.
 - ***chunk_size***. Specify the number of devices to include in each chunk sent to ServiceNow when you run this application. The default is 0.
 - ***template_prefix***. Specify the prefix string that PowerFlow will search for in SL1. Any Discovery Sessions that contain that string will be used in ServiceNow to create a service catalog template. The default string is ***ServiceNow Template;***, but you can configure this as needed.

- **read_timeout**. Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 30 seconds.

In SL1, go to the **Discovery Control Panel** page (Manage > Classic Discovery) and search for the Discovery Session or Sessions that you want to use as a template. The start of the name in the **Name** field should match the value in the **template_prefix** field, above:

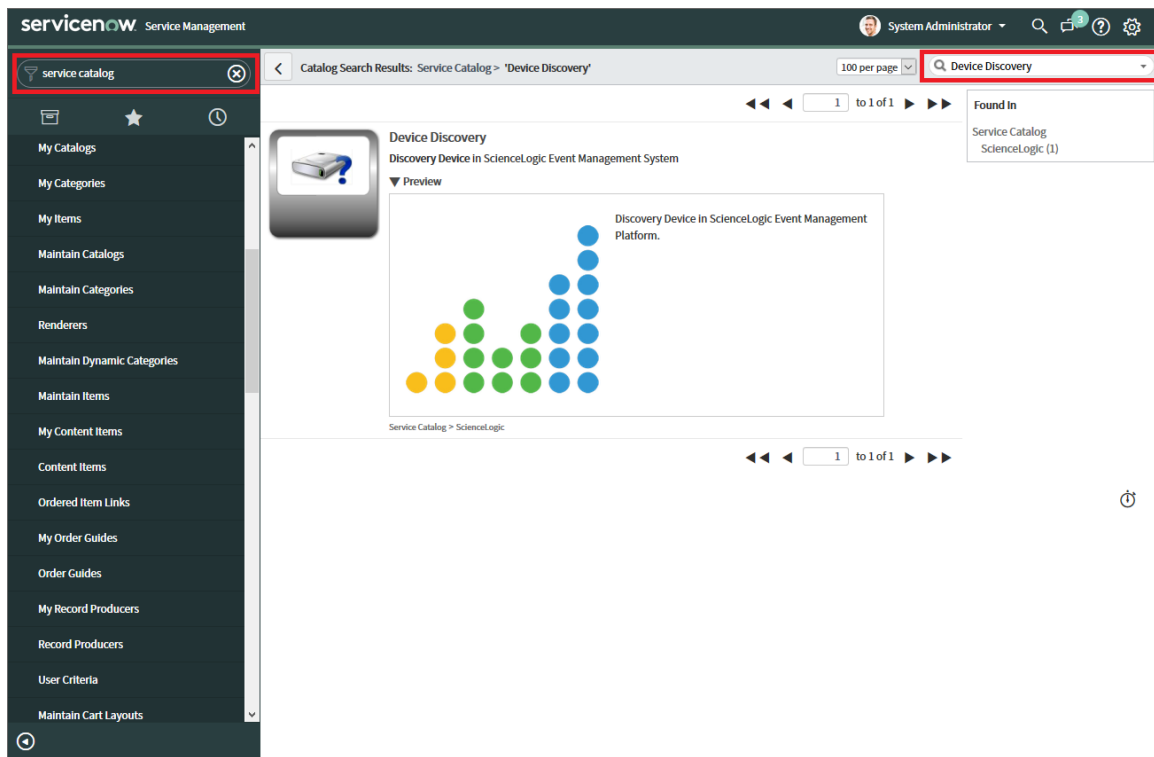
5. **Sync Devices from SL1 to ServiceNow**. Running this application ensures that the devices discovered by SL1 get synced to ServiceNow.
6. When the applications finish running, PowerFlow sends the status of those applications to ServiceNow, and you can [run a Discovery Sync in ServiceNow](#).

Running a Discovery Sync in ServiceNow

The Discovery Sync process starts an SL1 discovery session from ServiceNow and syncs the newly discovered SL1 devices and their data with ServiceNow. You can choose to discover standard devices or virtual devices.

To run a Discovery Sync from the Service Catalog page:

1. In ServiceNow, search for "service catalog" in the filter navigator.
2. Navigate to the **Service Catalog** page (Self-Service > Service Catalog), type "device discovery" in the **Search catalog** field at the top right, and press **[Enter]**. The **Device Discovery** catalog entry appears:



NOTE: Previous versions of the "ScienceLogic SL1: CMDB & Incident Automation Application" (also called the Certified or Scoped Application) created two separate service requests: **Create Virtual Device** and **Device Discovery**. Both features have been combined into the **Device Discovery** service request.

3. Click **Device Discovery**. The **Device Discovery** service request appears:

The screenshot shows the ServiceNow interface for the 'Device Discovery' service request. The left sidebar contains navigation links for 'Self-Service', 'Service Catalog', 'Catalogs', 'Open Records', 'Requests', 'Items', 'Tasks', 'Catalog Definitions', 'My Catalogs', 'My Categories', 'My Items', 'Maintain Catalogs', 'Maintain Categories', 'Renderers', 'Maintain Dynamic Categories', 'Maintain Items', and 'My Content Items'. The main content area is titled 'Discovery Device In ScienceLogic Event Management System'. It features a decorative graphic of colored dots (yellow, green, blue) arranged in a grid. Below the graphic, there are several form fields: 'What company is this for?' with a search icon, 'Request Type' with a dropdown menu showing 'Discover Device(s)', 'Discover Device(s)', and 'Create Virtual Device', 'Service Catalog item Template' with a 'Select Template' field and a 'Save as Template' checkbox, and 'Discovery Session - IP & Credentials' with a red asterisk and a 'More Information' link. On the right side, there is an 'Order this Item' section with 'Quantity' set to 1, 'Delivery time' set to 1 Day, and buttons for 'Order Now' and 'Add to Cart'. Below this is a 'Shopping Cart' section showing 'Empty'.

4. In the **What company is this for?** field, specify the company. The **Region** field updates automatically based on the company you select.
5. In the **Request Type** field, select *Discover Device(s)* or *Create Virtual Device*, depending on the type of device you want to discover.
- If you selected *Discover Device(s)*, go to step 6.
 - If you selected *Create Virtual Device*, go to step 7.
6. If you selected *Discover Device(s)* in the **Request Type** field, complete the following fields:
- **Log All.** Select this option if you want the discovery session to use verbose logging. When you select this option, SL1 logs details about each IP address or hostname specified in the **IP Address/Hostname Discovery List** field, even if the results are "No device found at this address."
 - **Select Template.** To use a template that contains your device discovery information, select the template from the drop-down.

TIP: You can save the current device discovery as a template by checking **Save as Template**. A template saves all of the discovery settings except for the IP addresses. You can access existing templates on the **Catalog Template** page in ServiceNow (ScienceLogic > Automations > Catalog Templates).

- **IP Address/Hostname Discovery List.** Provide a list of IP addresses, hostnames, or fully-qualified domain names for SL1 to scan during discovery:
 - One or more *single IPv4 addresses* separated by commas and a new line. Each IP address must be in standard IP notation and cannot exceed 15 characters. For example, "10.20.30.1, 10.20.30.2, 10.20."
 - One or more *ranges of IPv4 addresses* with "-" (dash) characters between the beginning of the range and the end of the range. Separate each range with a comma. For example, "10.20.30.1 – 10.20.30.254".
 - One or more IP address ranges in *IPv4 CIDR notation*. Separate each item in the list with a comma. For example, "192.168.168.0/24".
 - One or more hostnames (fully-qualified domain names). Separate each item in the list with a comma.
- **Credentials.** Select one or more SNMP credentials to allow SL1 to access a device's SNMP data.
- **Discover Non-SNMP.** Specifies whether or not SL1 should discover devices that don't respond to SNMP requests.
- **Model Devices.** Determines whether or not the devices that are discovered with this discovery session can be managed through SL1.
- **DHCP.** Specifies whether or not the specified range of IPs and hostnames use DHCP. If you select this option, SL1 performs a DNS lookup for the device during discovery and each time SL1 retrieves information from the device.
- **Device Model Cache TTL (h).** Amount of time, in hours, that SL1 stores information about devices that are discovered but not modeled, either because the **Model Devices** option is not enabled or because SL1 cannot determine whether a duplicate device already exists. The cached data can be used to manually model the device from the **Discovery Session** window.
- **Collection Server.** Select an existing collector to monitor the discovered devices. Required.
- **What company is this for?.** Specify the company that will use this discovery data. Click the magnifying glass icon to locate a company.
- **Add Devices to Device Groups.** Select one or more existing device groups to which you want to add the discovered devices.
- **Apply Device Template .** Select an existing device template if needed. As SL1 discovers a device in the IP discovery list, that device is configured with the selected device template.
- **Initial Scan Level.** For this discovery session only, specifies the data to be gathered during the initial discovery session.
- **Scan Throttle.** Specifies the amount of time a discovery process should pause between each specified IP address (specified in the **IP Address/Hostname Discovery List** field). Pausing discovery processes between IP addresses spreads the amount of network traffic generated by discovery over a longer period of time.
- **Scan Default Ports.** Select this option to scan the default ports: 21,22,23,25,80. If you de-select this option, you can specify a different list of ports in the **Custom Port Scan** field that appears.

- **Port Scan All IPs.** For the initial discovery session only, specifies whether SL1 should scan all IP addresses on a device for open ports.
- **Port Scan Timeout.** For the initial discovery session only, specifies the length of time, in milliseconds, after which SL1 should stop trying to scan an IP address for open ports and begin scanning the next IP address (if applicable).
- **Interface Inventory Timeout (ms).** Specifies the maximum amount of time that the discovery processes will spend polling a device for the list of interfaces. After the specified time, SL1 will stop polling the device, will not model the device, and will continue with discovery. The default value is 600,000 ms (10 minutes).
- **Maximum Allowed Interfaces.** Specifies the maximum number of interfaces per devices. If a device exceeds this number of interfaces, SL1 stops scanning the device, will not model the device, and will continue with discovery. The default value is 10,000.
- **Bypass Interface Inventory.** Select this option if you do not want SL1 to attempt to discover interfaces for each device in the discovery session.

7. If you selected *Create Virtual Device* in the **Request Type** field, complete the following fields:

- **Name.** Type a name for the virtual device.
- **Virtual Device Class.** Specify the device class of the virtual device. Click the magnifying glass icon to locate any classes aligned with your organization.
- **Collector Group.** Specify the SL1 collector group to use for the Discovery Sync. Click the magnifying glass icon to locate any collector groups aligned with your organization.

8. Click **[Order Now]**. On the **Order Status** page that appears, make a note of value in the **Request Number** field:

Order Status

Thank you, your request has been submitted

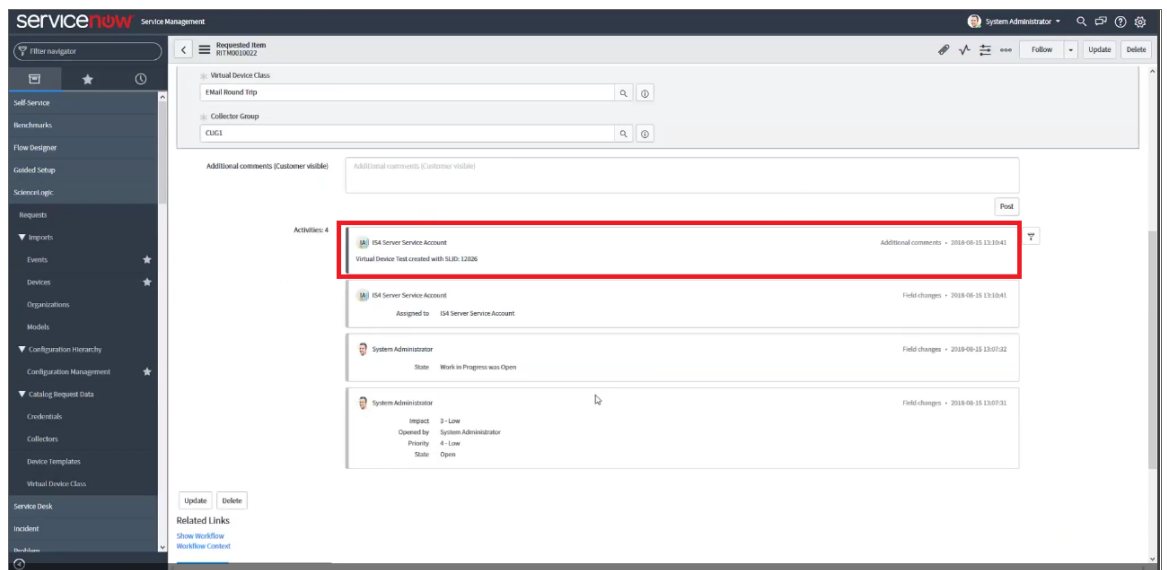
Order Placed: 2019-11-15 11:02:06
Request Number: RE00010013
 Estimated Delivery Date of Complete Order: 2019-11-16

Description	Delivery Date	Stage	Price (ea.)	Quantity	Total
Discovery Device in ScienceLogic Event Management System	2019-11-16	Completed		1	
Total					

Back to Catalog Continue Shopping Home

9. In the PowerFlow user interface, go to the **Applications** page and run the "Sync Service Requests from ServiceNow to SL1" application.
10. When the application completes, go to **Self-Service > My Requests** in ServiceNow.

11. Click the **RITM** record link to go to the **Requested Item** page. The **State** field should update to *Closed Complete* and the request should be assigned to itself.
12. In the PowerFlow user interface, go to the **Applications** page and run the "Sync Devices from SL1 to ServiceNow" application to make sure that the device or devices were discovered.
13. For a standard device discovery, go to ServiceNow and perform the following:
 - Scroll down to the **Activities** pane to verify that you have a comment stating the discovery completed.
 - In SL1, navigate to the **Discovery Control Panel** page (Registry > Manage > Discovery) and verify that SL1 created a new discovery session with that ID.
14. For a virtual device discovery, go to ServiceNow and perform the following:
 - Scroll down to the **Activities** pane to verify that you have a comment stating "Virtual Device <name> Created with SLID: <new id>".



- In SL1, navigate to the **Device Manager** page (Registry > Device Manager) and verify that SL1 created a new device with that device ID.

Discovering One or More Devices from ServiceNow to SL1

If you want to quickly select one or more CIs in ServiceNow for monitoring in SL1, you can use the *Monitor Device List* option from the **Configuration Items** list view, or the *Monitor Device* option from the Configuration Item detail view.

This feature uses registered events in ServiceNow that are queued to ServiceNow Event Management to trigger actions in PowerFlow. Also, this method is just an example of one of many ways to trigger a registered event. For more information about registered events, including examples of other triggering events you can define in ServiceNow, see the [ServiceNow Registered Events](#) appendix.

You will need to create a discovery template for a discovery process created on the **Service Catalog** page before you can discover devices using that template on the **Configuration Items** page. A template saves all of the discovery settings except for the IP addresses. You can access existing templates on the **Catalog Template** page in ServiceNow (ScienceLogic > Automations > Catalog Templates).


To discover one or more devices from ServiceNow:

1. In ServiceNow, navigate to the **Configuration Items** page.
2. From the list view, select the CI or CIs (devices) that you want to discover.

NOTE: A CI in ServiceNow must be aligned with a company in ServiceNow, or the service request will be canceled. Also, that company must be associated with a ScienceLogic Region.

3. Right-click anywhere in the window and select *Monitor Device List* from the pop-up menu. A **Select Discovery Template** dialog box appears.

TIP: You can also select a specific CI from the list view and click the *Monitor Device* option from the Configuration Item detail view. You will also need to use an existing template for this process.

4. Select a discovery template to use for the current discovery.
5. Click **[OK]** to use the template. ServiceNow generates a new service request for **Device Discovery** for each CI.
6. In the PowerFlow user interface, select the "Sync Service Requests from ServiceNow to SL1" application from the **Applications** page and click **[Configure]** . The **Configuration** pane appears:

Sync Service Requests from ServiceNow to SL1
✕

Modify configuration and save.

Configuration
cert-demo

<p>sl1_hostname 10.2.11.154</p> <p>\$(config.sl1_host)</p> <p>snow_user is4user1</p> <p>\$(config.snow_user)</p> <p>region cert-demo</p> <p>\$(config.region)</p> <p>Closed_Success_State 3</p> <p><input type="checkbox"/> recursively_disable_children</p>	<p>snow_hostname cert023.service-now.com</p> <p>\$(config.snow_host)</p> <p>sl1_password ●●●●●●●●●●●●●●●●</p> <p>Open_State 1</p> <p>Closed_Failed_State 4</p> <p>target_vcug 2</p>	<p>sl1_user em7admin</p> <p>\$(config.sl1_user)</p> <p>snow_password ●●●●●●●●●●●●●●●●</p> <p>read_timeout 20</p> <p>In_Progress_State 2</p>
--	---	---

7. Complete the following fields, as needed:

- **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.
- **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.
- **Open_State.** The State ID from ServiceNow that specifies which Requested Items (RITMs) to pull and process. The default is 1.
- **Closed_Success_State.** The State ID for a successfully created virtual device. The State ID for a successful run changes from 1 to 2 and then ends with 4. The default is 3.
- **Closed_Failed_State.** The State ID for failed discoveries or failed virtual device creation, usually caused by invalid payloads. The State ID for a failed run changes from 1 to 2 and then ends with 4. The default is 4.
- **In_Progress_State.** The State ID for RITMs for a running discovery. The default is 2.
- **target_vcug.** Leave this field blank.
- **verify_snow_ssl.** Toggle on (blue) this option to enable verification of the SSL certification when you run this application.
- **recursively_disable_children.** Leave this field blank.

8. Click **[Save]**. The **Configuration** pane automatically closes.

9. Click **[Run]**  to run the application.

10. Go to the **Applications** page and run the "Sync Devices from SL1 to ServiceNow" application to make sure that the device or devices were discovered.

Decommissioning Devices

If you want to quickly select one or more CIs in ServiceNow for to remove from monitoring (or "decommission") in SL1, you can use the *Device Monitoring Removal list* option from the **Configuration Items** list view, or the *Monitoring Removal* option from the Configuration Item detail view.

You then use the "Sync Service Requests from ServiceNow to SL1" application to decommission the devices that you no longer want to monitor. Running this application takes the list of synced devices in the service request and moves them to an SL1 Virtual Collector Group (VCUG). The "Sync Service Requests from ServiceNow to SL1" application was formerly named "Sync Discovery Session Requests from ServiceNow to SL1".

WARNING: If you move a parent device to a new VCUG, then all of its children move as well. If you move a child directly, only the child moves.

This feature uses registered events in ServiceNow that are queued to ServiceNow Event Management to trigger actions in PowerFlow. Also, this method is just an example of one of many ways to trigger a registered event. For more information about registered events, including examples of other triggering events you can define in ServiceNow, see the [ServiceNow Registered Events](#) appendix.

Activating the ServiceNow Service Request for Monitoring Removal

To activate the ServiceNow service request for Device Decommission:

1. In ServiceNow, search for "Maintain Items" in the filter navigator.
2. Go to **Service Catalog > Catalog Definitions > Maintain Items** and type "ScienceLogic" in the Category field.
3. Open the "Monitoring Removal" service request and ensure that the **Catalogs** and **Category** fields are complete. Add the relevant information if the fields are blank. For example:

< Catalog Item
Monitoring Removal

! You are editing a record in the ScienceLogic ServiceNow Integration application (cancel)

Catalog items are goods or services available to order from the service catalog. Items can be anything from supplies.

- Enter a Name and Short description to display for the item.
- Enter a Price, approvals, variables, and other information as needed.

Name Monitoring Removal

Catalogs Service Catalog

Category ScienceLogic

NOTE: Do not set the **Category** to a *Change Request*.

4. If you need to update these fields, click the "To edit this record click **here**" link at the top of the detail page.
5. Update the fields and click the **[Update]** button to save your changes.
6. From the **Catalog Items** page, click the check box for the **Monitoring Removal** service request and click the **[Activate]** button at the bottom of the **Catalog Items** window.
7. Navigate to the relevant catalog for the service request. For example, if you selected *Service Catalog*, then type "Service Catalog" in the filter navigator, or select **Self-Service > Service Catalog** to view the new service requests.

Removing Devices from Monitoring


To decommission Configuration Items (devices) in ServiceNow that you no longer want to monitor:

1. In ServiceNow, navigate to the **Configuration Items** window.
2. From the list view, select the CI or CIs (devices) that you want to decommission.

NOTE: A CI in ServiceNow must be aligned with a company in ServiceNow, or the service request will be canceled. Also, a company must be associated with a ScienceLogic Region.

3. Right-click anywhere on the window and select *Device Monitoring Removal list* from the pop-up menu. A dialog box appears.
4. Click **[OK]** to remove the CI or CIs from monitoring. ServiceNow generates a new service request for **Monitoring Removal** for each CI.

TIP: You can also select a specific CI from the list view and click the *Monitoring Removal* option from the Configuration Item detail view.

5. In the PowerFlow user interface, select the "Sync Service Requests from ServiceNow to SL1" application from the **Applications** page and click **[Configure]**  on the application detail page. The **Configuration** pane appears:


Sync Service Requests from ServiceNow to SL1

Modify configuration and save.

Configuration
cert-demo

sl1_hostname 10.2.11.154 \${config.sl1_host}	snow_hostname cert023.service-now.com \${config.snow_host}	sl1_user em7admin \${config.sl1_user}
snow_user is4user1 \${config.snow_user}	sl1_password 	snow_password
region cert-demo \${config.region}	Open_State 1	read_timeout 20
Closed_Success_State 3	Closed_Failed_State 4	In_Progress_State 2
<input type="checkbox"/> recursively_disable_children	target_vcug 2	


6. Complete the following fields:
 - **Configuration.** Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.
 - **read_timeout.** Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.

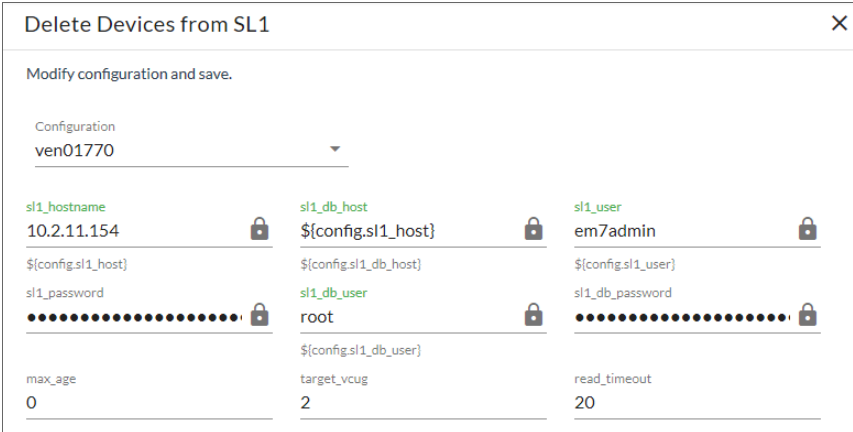
- **recursively_disable_children**. Check this option to move all child devices of the devices you are decommissioning to the VCUG. If this option is not checked and a parent device is in the disable request, the parent device will be skipped with a warning message.
 - **target_vcug**. Specify the ID of the SL1 Virtual Collection Group (VCUG) you created to hold the devices on the **Collector Group Settings** page (System > Settings > Collector Groups). If this value is null, the application will attempt to pull the value from the **target_vcug** field in the "Delete Devices from SL1" application.
7. Click **[Save]** and wait for the "App & Config modifications saved" pop-up message to appear. The **Configuration** pane automatically closes after this message appears.
 8. Click **[Run]**  to run the application.

Deleting Devices

The "Delete Devices from SL1" application lets you delete devices in a specific Virtual Collector Group (VCUG) if those devices have not been modified in SL1 for a specified time, such as one day or five days. You can update this time in the **max_age** configuration value, which is described below.

To delete devices from an SL1 Virtual Collector Group:

1. In the PowerFlow user interface, run the "Sync Service Requests from ServiceNow to SL1" application to pull a list of decommissioned devices that you no longer want to monitor. For more information, see [Decommissioning Devices](#).
2. On the **Applications** page, select the "Delete Devices from SL1" application and click **[Configure]**  on the application detail page. The **Configuration** page appears:




Delete Devices from SL1		
Modify configuration and save.		
Configuration: ven01770		
sl1_hostname 10.2.11.154	sl1_db_host \${config.sl1_host}	sl1_user em7admin
sl1_password	sl1_db_user root	sl1_db_password
max_age 0	target_vcug 2	read_timeout 20

3. Complete the following fields, as needed:
 - **Configuration**. Select the relevant configuration object to align with this application. You cannot edit fields that are populated by the configuration object. Required.
 - **read_timeout**. Specify the maximum amount of time in seconds the application should wait for a response before timing out. The default is 20 seconds.

- **max_age**. Specify how long (in days) that you want to keep the devices in the VCUG before deleting the devices. The default is 0 days. If this setting is 0, all devices in the VCUG will be deleted as soon as this application runs. If this setting is null, the application will fail. If all device children are in the same VCUG, the application will delete the target device and all of its children.
- **target_vcug**. Specify the ID of the SL1 Virtual Collection Group (VCUG) you created to hold the devices on the **Collector Group Settings** page (System > Settings > Collector Groups). Set this value to **-1** if you want this applications to use the **target_vcug** value from the "Sync Service Requests from ServiceNow to SL1" application.

WARNING: If you specify a value to **target_vcug** here, the "Delete Devices from SL1" application will use that value instead of the **target_vcug** value from the "Sync Service Requests from ServiceNow to SL1" application.

4. Click **[Save]**. The **Configuration** pane automatically closes.
5. Click **[Run]**  to run the application.

Scheduling PowerFlow Applications


Using the PowerFlow user interface, you can configure PowerFlow applications to run on a schedule instead of manually running the applications. As a best practice, if you use any of these applications, ScienceLogic recommends that you schedule those applications, in the following order:

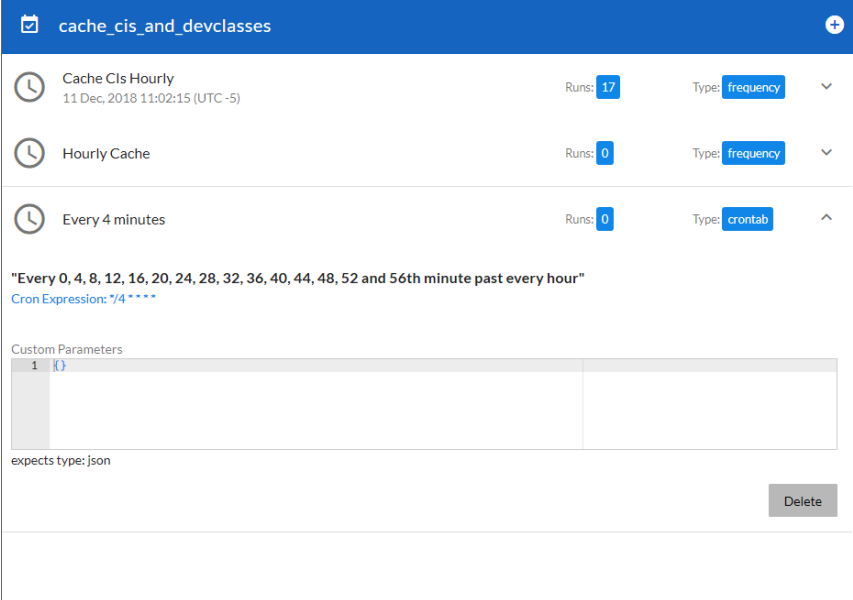
- "Cache ServiceNow CIs and SL1 Device Classes"
- "Sync Devices from SL1 to ServiceNow"
- "Sync Interfaces from SL1 to ServiceNow"

TIP: ScienceLogic recommends that you schedule these applications to run at least every 23 hours. You can also schedule additional applications as needed.

You can create one or more schedules for a single application in the PowerFlow user interface. When creating each schedule, you can specify the queue and the configuration file for that application.

To schedule an application:

1. On the **Applications** page () , click the **[Schedule]** button for the application you want to schedule. The **Schedule** window appears, displaying any existing schedules for that application:



cache_cis_and_devclasses

Cache CIs Hourly	11 Dec, 2018 11:02:15 (UTC -5)	Runs: 17	Type: frequency
Hourly Cache		Runs: 0	Type: frequency
Every 4 minutes		Runs: 0	Type: crontab

"Every 0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52 and 56th minute past every hour"
Cron Expression: */4 * * * *

Custom Parameters

1	{ }
---	-----

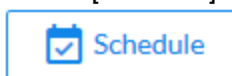
expects type: json

Delete

NOTE: If you set up a schedule using a cron expression, the details of that schedule display in a more readable format in this list. For example, if you set up a cron expression of `*/4 * * * *`, the schedule on this window includes the cron expression along with an explanation of that expression: "Every 0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, and 56th minute past every hour".

2. Select a schedule from the list to view the details for that schedule.
3. Click the + icon to create a schedule. A blank **Schedule** window appears:

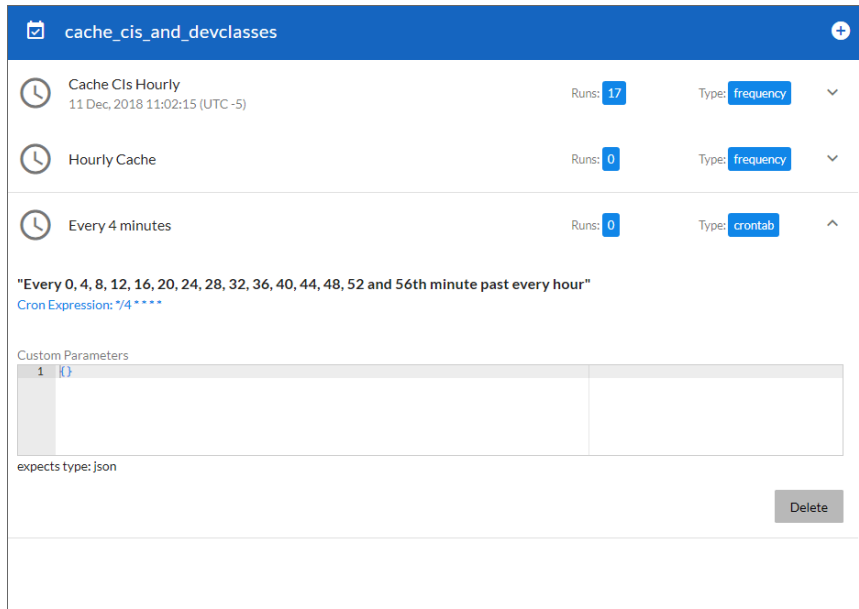
4. In the **Schedule** window, complete the following fields:
 - **Schedule Name.** Type a name for the schedule.
 - **Switch to.** Use this toggle to switch between a cron expression and setting the frequency in seconds.
 - **Cron expression.** Select this option to schedule the application using a cron expression. If you select this option, you can create complicated schedules based on minutes, hours, the day of the month, the month, and the day of the week. As you update the cron expression, the **Schedule** window displays the results of the expression in more readable language, such as *Expression: "Every 0 and 30th minute past every hour on the 1 and 31st of every month", based on */30 * */30 * **.
 - **Frequency in seconds.** Type the number of seconds per interval that you want to run the application.
 - **Custom Parameters.** Type any JSON parameters you want to use for this schedule, such as information about a configuration file or mappings.
5. Click **[Save Schedule]**. The schedule is added to the list of schedules on the initial **Schedule** window. Also, on the **Applications** page, the word "Scheduled" appears in the **Scheduled** column for this application, and the **[Schedule]** button contains a check mark:



NOTE: After you create a schedule, it continues to run until you delete it. Also, you cannot edit an existing schedule, but you can delete it and create a similar schedule if needed.

To view or delete an existing schedule:

1. On the **Applications** page, click the **[Schedule]** button for the application that contains a schedule you want to delete. The **Schedule** window appears.
2. Click the down arrow icon (▼) to view the details of an existing schedule:



3. To delete the selected schedule, click **[Delete]**.

NOTE: When either multiple SL1 stacks or multiple ServiceNow systems are involved with PowerFlow, you should create an individual configuration object for each SL1 stack or ServiceNow system. Next, create an individual schedule for each configuration object. Each schedule should use a configuration object that is specific to that single SL1 stack or ServiceNow system. Creating copies of a PowerFlow application from a Synchronization PowerPack for the purpose of distinguishing between domains is not supported, and will result in issues on upgrades.

The following image shows how you can schedule PowerFlow applications for multiple ServiceNow domains:

device_sync_sciencelogic_to_servicenow

Device Sync Domain A

n/a (UTC -4)

Runs: 63

Type: crontab

"02:00 every day"

Cron Expression: 0 2 * * *

Custom Parameters

1 {

2 "configuration": "now_domain_a"

3 }

expects type: json

Delete

Device Sync Domain B

n/a (UTC -4)

Runs: 63

Type: crontab

Device Sync Domain C

May 19, 2021 00:00:00 (UTC -4)

Runs: 63

Type: crontab

Log Messages for the "Generate Required CI Relations for ServiceNow" Application

This section describes the different types of log messages you might see in the Step Log when you run the "Generate Required CI Relations for ServiceNow" application. Please note that this application is a report used by PowerFlow, and it does not send any data to ServiceNow.

The following message displays if there are devices in a device tree that do not currently have a CI class mapping assigned.

```
Warning: 2751 Relations with missing mappings detected. Please re-run app
with log level 10 to troubleshoot.
```

In this situation, the device tree cannot be built in ServiceNow. To address this issue, make sure that you have your entire technology tree mapped out in the **mappings** section of the "Sync Devices from SL1 to ServiceNow" application or in the **mappings** section of the "Generate Required CI Relations for ServiceNow" application.

If you do a Custom Run of the "Generate Required CI Relations for ServiceNow" application in Debug mode (log level 10), the application will create a log that displays the parent and child class, CI, and device ID. For example:

```
Debug: Missing Mapping for Device. Parent: {"class": "VMware | Cluster",  
      "ci": None, "id": 76}, Child: {"class": "VMware | Host Server", ci:  
      "cmdb_ci_esx_server", id: 363 }
```

The following message appears if the GraphQL payloads had bad data for parent and or child devices:

```
Warning: 10 bad payloads received from SL1. Re-run app in debug to  
troubleshoot.
```

If you do a Custom Run the application in Debug mode, the application will create a log that displays these payloads.

The following message appears if all relations are mapped:

```
Flow: No missing relations found!
```

The following message appears if there is a parent/child relation between ServiceNow CI classes that does not currently exist in ServiceNow and is required to sync those devices:

```
Flow: Missing Relations: [{"parent": "cmdb_ci_vcenter_folder", "child":  
      "cmdb_ci_esx_server"}, {"parent": "cmdb_ci_vcenter", "child": "cmdb_ci_  
      vcenter_datacenter"}]
```

Refer to the labels in the log (above) to determine which CI class is the parent type and which is the child type. To address this issue, navigate to your ServiceNow instance and create the required service rules based on the recommendations in the **Step Log**.

The following message appears if the application encounters a list of relations that are required, but were successfully found in ServiceNow:

```
Info: Found Relations: [{"parent": "cmdb_ci_vcenter_folder", "child":  
    "cmdb_ci_esx_server"}, {"parent": "cmdb_ci_vcenter", "child": "cmdb_ci_  
vcenter_datacenter"}]
```

This message lets you verify that your mappings and relations are configured correctly.

Chapter

4

Troubleshooting the CMDB Synchronization PowerPack

Overview

This chapter includes troubleshooting resources and procedures to use with the "ServiceNow CMDB" Synchronization PowerPack.

This chapter covers the following topics:

<i>Initial Troubleshooting Steps</i>	141
<i>Resources for Troubleshooting</i>	141
<i>Troubleshooting CMDB Sync</i>	145

Initial Troubleshooting Steps

PowerFlow acts as a middle server between data platforms. For this reason, the first steps should always be to ensure that there are no issues with the data platforms with which PowerFlow is talking. There might be additional configurations or actions enabled on ServiceNow or SL1 that result in unexpected behavior. For detailed information about how to perform the steps below, see [Resources for Troubleshooting](#).

SL1 PowerFlow

1. Run `docker service ls` on the PowerFlow server.
2. Note the Docker container version, and verify that the Docker services are running.
3. If a certain service is failing, make a note the service name and version.
4. If a certain service is failing, run `docker service ps <service_name>` to see the historical state of the service and make a note of this information. For example: `docker service ps iservices_contentapi`.
5. Make a note of any logs impacting the service by running `docker service logs <service_name>`. For example: `docker service logs iservices_couchbase`.

ServiceNow

1. Make a note of the ServiceNow version and Synchronization PowerPack version, if applicable.
2. Make a note of the Synchronization PowerPack application that is failing on PowerFlow.
3. Make a note of what step is failing in the application, try running the application in debug mode, and capture any traceback or error messages that occur in the step log.

Resources for Troubleshooting

This section contains port information for PowerFlow and troubleshooting commands for Docker, Couchbase, and the PowerFlow API.

Useful PowerFlow Ports

- **`https://<IP of PowerFlow>:8091`**. Provides access to Couchbase, a NoSQL database for storage and data retrieval.
- **`https://<IP of PowerFlow>:15672`**. Provides access to the RabbitMQ Dashboard, which you can use to monitor the service that distributes tasks to be executed by PowerFlow workers.
- **`https://<IP of PowerFlow>/flower/dashboard`**. Provides access to Flower, a tool for monitoring and administering Celery clusters.

IMPORTANT: Port 5556 must be open for both PowerFlow and the client.

Helpful Docker Commands

PowerFlow is a set of services that are containerized using Docker. For more information about Docker, see the [Docker tutorial](#).

Use the following Docker commands for troubleshooting and diagnosing issues with PowerFlow:

Viewing Container Versions and Status

To view the PowerFlow version, SSH to your PowerFlow instance and run the following command:

```
docker service ls
```

In the results, you can see the container ID, name, mode, status (see the *replicas* column), and version (see the *image* column) for all the services that make up PowerFlow:

```
[root@sunis4lab ~]# docker service ls
ID                NAME                MODE                REPLICAS            IMAGE                PORTS
pm5mhu35v301     iservices_gui        replicated           1/1                 repository.auto.sciencelogic.local:5000/is-gui:1.7.0      *:80->80/tcp,*:443->443/tcp
40vs91tiwnh3     iservices_redis      replicated           1/1                 redis:4.0.2
j1m6h1jcumif     iservices_flower     replicated           1/1                 repository.auto.sciencelogic.local:5000/is-worker:1.7.0    *:5555->5555/tcp
hh3pt210irsf     iservices_scheduler  replicated           1/1                 repository.auto.sciencelogic.local:5000/is-worker:1.7.0    *:5000->5000/tcp
h1m1tvg6dmx     iservices_contentapi  replicated           1/1                 repository.auto.sciencelogic.local:5000/is-api:1.7.0
cyin5qgsudm1     iservices_rabbitmq    replicated           1/1                 rabbitmq:3
klul9h8jefsf6     iservices_visual      replicated           2/1                 dockersamples/visualizer:latest
vcy38w8buaaw     iservices_couchbase   replicated           1/1                 repository.auto.sciencelogic.local:5000/is-couchbase:1.7.0  *:8081->8080/tcp
3->8093/tcp,*:8094->8094/tcp,*:11210->11210/tcp
21bxatxoz7uf     iservices_steprunner  replicated           5/5                 repository.auto.sciencelogic.local:5000/is-worker:1.7.0
```

Restarting a Service

Run the following command to restart a single service:

```
docker service update --force <service_name>
```

Stopping all PowerFlow Services

Run the following command to stop all PowerFlow services:

```
docker stack rm iservices
```

Restarting Docker

Run the following command to restart Docker:

```
systemctl restart docker
```

NOTE: Restarting Docker does not clear the queue.

Diagnosis Tools

Multiple diagnosis tools exist to assist in troubleshooting issues with the PowerFlow platform:

- **Docker PowerPack.** This PowerPack monitors your Linux-based PowerFlow server with SSH (the PowerFlow ISO is built on top of an Oracle Linux Operating System). This PowerPack provides key performance indicators about how your PowerFlow server is performing. For more information on the Docker PowerPack and other PowerPacks that you can use to monitor PowerFlow, see the "Using SL1 to Monitor SL1 PowerFlow" chapter in the *SL1 PowerFlow Platform* manual.
- **Flower.** This web interface tool can be found at the /flower endpoint. It provides a dashboard displaying the number of tasks in various states as well as an overview of the state of each worker. This tool shows the current number of active, processed, failed, succeeded, and retried tasks on the PowerFlow platform. This tool also shows detailed information about each of the tasks that have been executed on the platform. This data includes the UUID, the state, the arguments that were passed to it, as well as the worker and the time of execution. Flower also provides a performance chart that shows the number of tasks running on each individual worker.
- **Debug Mode.** All applications can be run in "debug" mode via the PowerFlow API. Running applications in debug mode may slow down the platform, but they will result in much more detailed logging information that is helpful for troubleshooting issues. For more information on running applications in Debug Mode, see [Retrieving Additional Debug Information](#).
- **Application Logs.** All applications generate a log file specific to that application. These log files can be found at `/var/log/iservices` and each log file will match the ID of the application. These log files combine all the log messages of all previous runs of an application up to a certain point. These log files roll over and will get auto-cleared after a certain point.
- **Step Logs.** Step logs display the log output for a specific step in the application. These step logs can be accessed via the PowerFlow user interface by clicking on a step in an application and bringing up the **Step Log** tab. These step logs display just the log output for the latest run of that step.
- **Service Logs.** Each Docker service has its own log. These can be accessed via SSH by running the following command:

```
docker service logs -f <service_name>
```

Retrieving Additional Debug Information (Debug Mode)

The logs in PowerFlow use the following **loglevel** settings, from most verbose to least verbose:

- **10.** Debug Mode.
- **20.** Informational.
- **30.** Warning. This is the default settings if you do not specify a loglevel.
- **40.** Error.

WARNING: If you run applications with "loglevel": 10, those applications will take longer to run because of increased I/O requirements. Enabling debug logging using the following process is the only recommended method. ScienceLogic does not recommend setting "loglevel": 10 for the whole stack with the docker-compose file.

To run an application in Debug Mode using the PowerFlow user interface:

1. Select the PowerFlow application from the **Applications** page.
2. Hover over the **[Run]** button and select *Debug Run* from the pop-up menu. PowerFlow executes the application in Debug Mode with a log level of 10.

To run an application in Debug Mode using the API:

1. POST the following to the API endpoint:

```
https://<PowerFlow_IP>/api/v1/applications/run
```

2. Include the following in the request body:

```
{
  "name": "<application_name>",
  "params": {
    "loglevel": 10
  }
}
```

After running the application in Debug Mode, review the step logs in the PowerFlow user interface to see detailed debug output for each step in the application. This information is especially helpful when trying to understand why an application or step failed:

The screenshot displays the PowerFlow user interface. At the top, the application is titled "Delete Devices from SL1". Below the title, a workflow diagram is shown with steps: "Pull Disabled Devices from...", "Pull Affected Device Info...", "Verify Device Delete...", and a decision diamond. A red box highlights the "Pull Disabled Devices from..." step. Below the workflow, a "Run failure" message is visible. The bottom section shows the "STEP LOG" and "STEP DATA" tabs. The "STEP LOG" tab is active, showing a table with columns for step number, name, timestamp, and status. The "STEP DATA" tab is also visible, showing a detailed traceback for the "BaseStep" failure. The traceback includes the following information:

```
Traceback (most recent call last):
  File "/usr/local/lib/python3.7/site-packages/paascore/BaseStep.py", line 578, in execute_step_max_retries=retry_max
  File "/usr/local/lib/python3.7/site-packages/paascore/BaseStep.py", line 929, in retry_step_max_retries=retry_max
  File "/usr/local/lib/python3.7/site-packages/celery/app/task.py", line 706, in retry_with_context(exc)
  File "/usr/local/lib/python3.7/site-packages/paascore/BaseStep.py", line 554, in execute_step_selfexecute()
  File "/var/syncpacks_virtualenvs/serviceow_cmdb_syncpack/lib/python3.7/site-packages/serviceow_cmdb_syncpack/steps
  /PullAndProcessDisabledDevices.py", line 70, in execute_delete_device_vcug_param.name, self.application_name
  paascommon.paas_exceptions.MissingRequiredStepParameter: target_vcug is required but is not populated in either delete_devices or In Sync
  Service Requests.
```

You can also run an application in debug using curl via SSH:

1. SSH to the PowerFlow instance.
2. Run the following command:

```
curl -v -k -u isadmin:em7admin -X POST "https://<your_
hostname>/api/v1/applications/run"
-H 'Content-Type: application/json' -H 'cache-control: no-cache' -d
'{"name":
"interface_sync_sciencelogic_to_servicenow","params": {"loglevel":
10}}'
```

Troubleshooting CMDB Sync

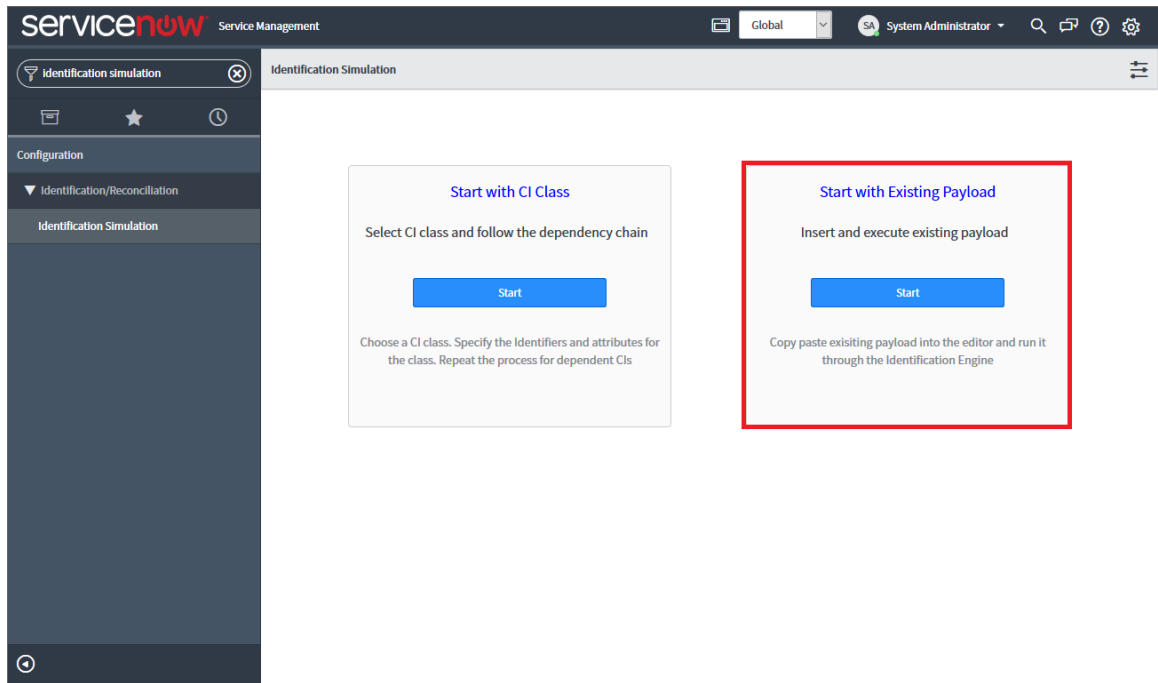
This section contains specific troubleshooting steps for the CMDB Synchronization PowerPack.

Issues Creating CIs in ServiceNow

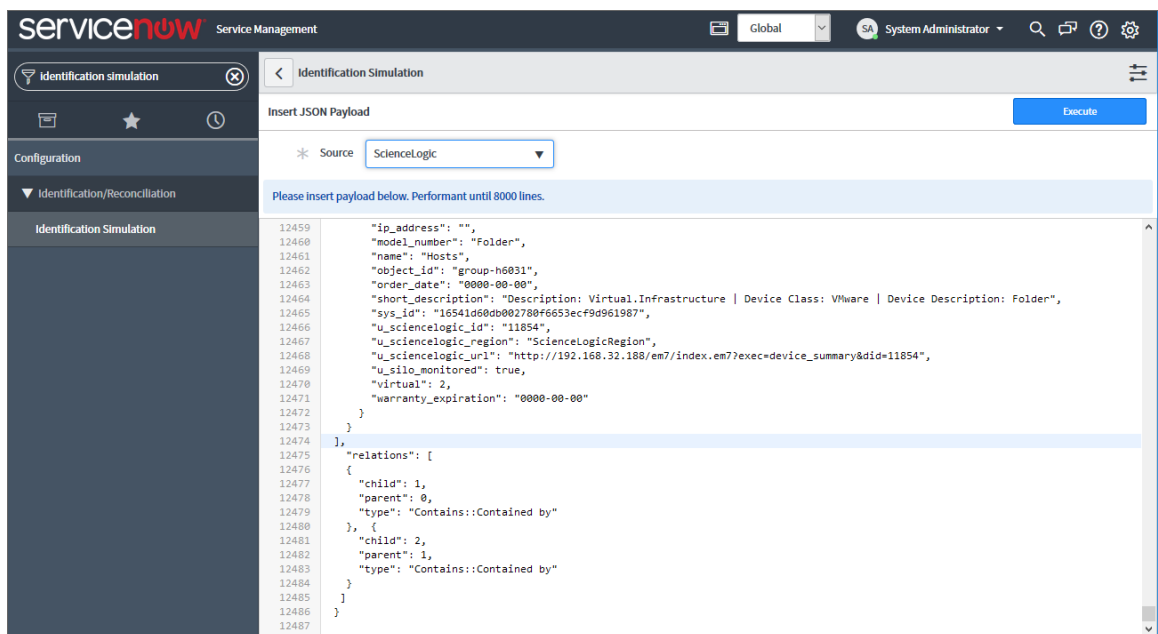
If you can successfully send data to your ServiceNow system, but you encounter issues with creating CIs in the ServiceNow CMDB, this section provides troubleshooting steps to help you test the payload and identify possible issues. These steps might be helpful if you have set up datasource precedence rules.

1. In ServiceNow, search for "import" in the filter navigator.
2. Select **ScienceLogic > Device > Imports**. The **Device Import** window appears.
3. From the list, select the Device Import log entry you want to view.
4. Copy the data from the **Payload** field in the log entry and decode the data from its Base64 encoding.
5. In the decoded string of data, remove the square brackets from the first and last line: ("[" , "]")

- Copy this modified JSON payload, and then use the filter navigator to search for "Identification Simulation" or select **Configuration > Identification Simulation**:



- On the **Identification Simulation** page, click the **[Start]** button in the **Start with Existing Payload** section. The Insert JSON Payload page appears:



- In the **Source** field, select **ScienceLogic** as the data source.
- In the **Please insert payload below** field, paste the JSON payload you edited in step 5.

10. Click the **[Execute]** button and review the payload to identify any potential issues.

Enabling Debugging of the CI Payload

You must have administrator-level permissions in ServiceNow to access the system properties and enable debugging of the Configuration Item (CI) payload in the [ServiceNow Identification and Reconciliation module](#).

To enable debugging of the CI payload in ServiceNow:

1. On the ServiceNow system, check to see if the `glide.cmdb.logger.source.identification_engine` record exists in `sys_properties.list`.
 - If the record exists, set this value to `(* or debugVerbose)`
 - If the record does not exist, you will need to create the record.
2. To create the record, complete the following fields:
 - **Name.** `glide.cmdb.logger.source.identification_engine`
 - **Description.** Enable and configure the type of details the system logs when using the Identification and Reconciliation module outside the scope of identification simulation, such as when using an API, an ECC queue, or scheduled jobs (info, warn, error, debug, or debugVerbose).
 - **Type.** String.
 - **Value:** `* or debugVerbose`

NOTE: Set the system property of **Value** back to `error` when troubleshooting is complete.

3. Run the "Sync Devices from SL1 to ServiceNow" application. The system logs will have "identification_engine" as the source, and the log messages will contain `identification_engine : Input`.
4. Copy the payload beginning from `{"items"` to the end of the message. For example:

```
Message: {"items":[{"className":"","values":{"discovery_
source":"ScienceLogic","mac_address":"9E:0F:04:0A:12:C7",
"name":"Postman Test Server 1","x_sclo_scilogic_id":"1","serial_
number":"gJ3Bwkzc8r","model_id":"","
"ip_address":"10.10.10.102","manufacturer":"ScienceLogic,
Inc.","ram":"16000",
"x_sclo_scilogic_region":"Postman"},"lookup":[],"related":
[]},"relations":[]}]}
```

5. You can run this message through the ScienceLogic endpoint by putting the {"items"} bracket within []. For example, send the following message to the endpoint

```
/api/x_sclo_scilogic/v1/sciencelogic/IdentificationEngine:
Message: [{"items":[{"className":"","values":{"discovery_
source":"ScienceLogic","mac_address":"9E:0F:04:0A:12:C7",
"name":"Postman Test Server 1","x_sclo_scilogic_id":"1","serial_
number":"gJ3Bwkzc8r",
"model_id":"","ip_
address":"10.10.10.102","manufacturer":"ScienceLogic,
Inc.","ram":"16000",
"x_sclo_scilogic_region":"Postman"},"lookup":[],"related":
[]},"relations":[]}]}
```

NOTE: The endpoint is different in a domain-separated environment.

After the identification run is complete, the ServiceNow logs contain additional data about the run.

Appendix

A

Certified Application Objects

Overview

This appendix describes the tables, endpoints, and roles that were created in ServiceNow as part of the "ScienceLogic SL1: CMDB & Incident Automation" application. This application is also known as the "Certified Application" or the "Scoped Application".

This chapter covers the following topics:

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Roles

Two Roles were added with the ScienceLogic update set, Admin (x_sclo_scilogic.Admin) and User (x_sclo_scilogic.User). Both give access to SL1.

Role	Inherited Roles	Other Inherited Roles	Role Definition
x_sclo_scilogic.Admin			Role for ScienceLogic Service Accounts.
	itil		Can perform standard actions for an ITIL help desk technician. This is the default "Technician" role. Can open, update, close incidents, problems, changes, config management items. By default, only users with the itil role can have tasks assigned to them
		Dependency_view	A special role to be applied both on the \$ngbsm UI page and on the BSMPProcessor. This role is required to access the dependency views module. By default, ITIL includes this role to avoid regressions.
		cmdb_query_builder	Can access the CMDB Query Builder application to create, run, and save queries on the CMDB.
		template_editor	
		view_changer	Can switch active views.
		app_service_user	Can view and retrieve information using API from application service maps (cmdb_ci_service_discovered).
		certification	Can work on Certification tasks.
	import_transformer		Can manage Import Set Transform Maps and run transforms.
x_sclo_scilogic.User			General user account that allows read-only access to SL1.

Tables

Name	Label	Extends	Comments
x_sclo_scilogic_catalog_item_templates	Catalog item Templates		Templates use to fill out catalog items
x_sclo_scilogic_discovery_	Discovery		Discovery Dependent

Name	Label	Extends	Comments
dependents	Dependent		Information
x_sclo_scilogic_event	Event		Event information
x_sclo_scilogic_catalog_event_severity	Event Severity Look Rules	Data Lookup Matcher Rules	Lookup table for event Severity
x_sclo_scilogic_organizations	Organizations		Table to track Organizations between different ScienceLogic platforms
x_sclo_scilogic_import_discovery_dependent	Import Discovery Dependent	Import Set Row	Import / staging events before transform to Discovery Dependent table
x_sclo_scilogic_discovery_sessions	Import Discovery Sessions	Import Set Row	Import / staging events before transform to Event and Incident
x_sclo_scilogic_incident	Import Incident	Import Set Row	Import / staging events before transform to Event and Incident
x_sclo_scilogic_catalog_event_severity			
x_sclo_scilogic_import_installed_software	Import Installed Software	Import Set Row	Import / staging events before transform to Software Instance
x_sclo_scilogic_org_ven_mfg	Import ORG VEN MFG	Import Set Row	Import / staging events before transform to core_company

Table Columns (cmdb_ci)

Name	Label	Type	Comments
x_sclo_scilogic_id	SL1 ID	Integer	Unique ID
x_sclo_scilogic_region	SL1 Region	String	Unique String of SL1 Platform
x_sclo_scilogic_url	SL1 URL	URL	URL to SL1 Platform
x_sclo_scilogic_monitored	SL1 Monitored	True/False	Device currently synced with SL1 Platform

Table Columns (core_company)

Name	Label	Type	Comments
x_sclo_scilogic_id	SL1 ID	String	Unique ID
x_sclo_scilogic_region	SL1 Region	String	Unique String of SL1 Platform
x_sclo_scilogic_monitored	SL1 Monitored	True/False	Organization currently synced with SL1 Platform

Table Columns (cmdb_group)

Name	Label	Type	Comments
x_sclo_scilogic_id	SL1 ID	String	Unique ID
x_sclo_scilogic_region	SL1 Region	String	Unique String of SL1 Platform

Script Includes

Name	API Name	Comments
CatalogUtils	x_sclo_scilogic.CatalogUtils	Catalog Script include scripts
ChangeUtils	x_sclo_scilogic.ChangeUtils	
DeviceUtils	x_sclo_scilogic.DeviceUtils	
EventUtils	x_sclo_scilogic.EventUtils	
GeneralUtils	x_sclo_scilogic.GeneralUtils	
IntgSvcUtils	x_sclo_scilogic.IntgSvcUtils	

Event Registry

Suffix	Event name	Table
device_maintenance	x_sclo_scilogic.device_maintenance	Change Request [change_request]
device_maintenance_skd	x_sclo_scilogic.device_maintenance_skd	Change Request [change_request]
remove_monitoring	x_sclo_scilogic.remove_monitoring	Configuration Item [cmdb_ci]

Scripted Actions

Name	Event name
Device Maintenance	x_sclo_scilogic.device_maintenance
Device Monitoring Catalog item	x_sclo_scilogic.device_monitoring
Device Removal Catalog item	x_sclo_scilogic.remove_monitoring
Device Schedule Maintenance	x_sclo_scilogic.device_maintenance_skd

Data Lookup Definitions

Name	Source Table	Matcher Table	Comments
Event Severity	Import Incident [x_sclo_scilogic_incident]	Event Severity Lookup Rules [x_sclo_scilogic_event_severity]	Lookup for ScienceLogic Severity to Impact and Urgency

System Properties

Suffix	Name
CatalogItemDiscovery	x_sclo_scilogic.CatalogItemDiscovery
CatalogItemRemove	x_sclo_scilogic.CatalogItemRemove
closeCode	x_sclo_scilogic.closeCode
Contact type	x_sclo_scilogic.Contact Type
discoverySource	x_sclo_scilogic.discoverySource
IdentificationEngineAPI	x_sclo_scilogic.IdentificationEngineAPI
IS_log_level	x_sclo_scilogic.IS_log_level
notResolved	x_sclo_scilogic.notResolved
SN_log_level	x_sclo_scilogic.SN_log_level
stateNew	x_sclo_scilogic.stateNew
StateResolved	x_sclo_scilogic.stateResolved

Catalog Item

Name	Comments
Device Discovery	Role for ScienceLogic Service Accounts.
Monitoring Removal	General user account that allows read only access to ScienceLogic Application.

Catalog UI Policies

Catalog item	Short description	Comments
Device Discovery	Catalog Template	Updates form based on Select template
Device Discovery	Create Virtual Device	Updates form based on Request type
Device Discovery	Create Virtual Device (Retired)	
Device Discovery	Device Discovery	Updates form based on Request type
Device Discovery	Device Discovery (Retired)	
Monitoring	Hide Overview variables not	Hide variables not required for the Monitoring Removal

Catalog item	Short description	Comments
Removal	required	request
Device Discovery	Port Scan	Hide scan ports that are not default
Device Discovery	Port Scan (Retired)	
Device Discovery	Region	Updates form based on Organization
Device Discovery	Region (Retired)	
Monitoring Removal	Region via Organization	Updates form based on Organization
Device Discovery	Save as Template	Updates form based on Save as template

Variable Sets

Title	Internal name	Comments
Create_virtual_device	create_virtual_device	
Discovery Overview	discovery_overview	
Discovery Session - Basic Settings	discovery_session_basic_settings	
Discovery Session - Detection and Scanning	discovery_session_detection_and_scanning	
Discovery Session - IP & Credentials	discovery_session_ip_credentials	
Monitoring Removal	monitoring_removal	
Service Catalog item Template	service_catalog_item_template	

Catalog Client Scripts

Name	Catalog item	Type	Comments
Hide Request Type Options	Monitoring Removal	onLoad	Shared variable hide options that don't apply
Hide Request Type Options	Device Discovery	onLoad	Shared variable hide options that don't apply
Region	Monitoring Removal	onChange	Update Region field based on Company Region
Region	Monitoring Removal	onChange	Update Region field based on Company Region

Workflows

Name	Table	Comments
SL1 Monitoring Removal	Requested Item [sc_req_item]	Workflow for Removal of devices from SL1 process
SL1 Discovery Session	Requested Item [sc_req_item]	Workflow for Discovery session process

Scripted REST Resources

Name		Comments	
Business Services	/api/x_sclo_scilogic/v1/sciencelogic/business_service	GET	This GET api will pull all ScienceLogic monitored Configuration items specific to Business Services class from the CMDB. It will be ordered via the sys_id field to ensure the same order every time.
Change Requests	/api/x_sclo_scilogic/v1/sciencelogic/change_requests	GET	This GET api will pull Active Change Requests or Change Tasks based on the record_type supplied that have ScienceLogic monitored CI attached. It will be ordered via the sys_id field to ensure the same order every time.
Classification	/api/x_sclo_scilogic/v1/sciencelogic/classification	GET	This GET api will pull all required CMDB information to build JSON payloads.
CMDB Group	/api/x_sclo_scilogic/v1/sciencelogic/cmdb_group	POST	Use this API to create cmdb_groups & add a CI to them.
Companies	/api/x_sclo_scilogic/v1/sciencelogic/companies	GET	This GET api will pull all Active Companies that are ScienceLogic monitored. It will be ordered via the sys_id field to ensure the same order every time.
Configuration Items	/api/x_sclo_scilogic/v1/sciencelogic/configuration_Items	GET	This GET api will pull all ScienceLogic monitored Configuration items from the CMDB. It will be ordered via the sys_id field to ensure the same order every time.
Device IdentificationEngine	/api/x_sclo_scilogic/v1/sciencelogic/IdentificationEngine	POST	Use this API to create or update configuration items within the CMDB via ScienceLogic.
Discovery Dependent	/api/x_sclo_scilogic/v1/sciencelogic/discovery_dependent	GET	
File Systems	/api/x_sclo_scilogic/v1/sciencelogic/file_systems	GET	This GET api will pull all ScienceLogic monitored Configuration items specific to File systems class from the CMDB. It will be ordered via the sys_id field to ensure the

Name		Comments	
			same order every time.
Import Set	/api/x_sclo_scilogic/v1/sciencelogic/import_set	POST	This POST API will post to the target import set table and create a record for each cmdb_ci.
Incidents	/api/x_sclo_scilogic/v1/sciencelogic/incidents	GET	This GET api will pull all incidents. It will be ordered via the sys_id field to ensure the same order every time.
Installed Software	/api/x_sclo_scilogic/v1/sciencelogic/installed_software	GET	This GET api will pull all Servicenow Software packages and installed instances from the CMDB. It will be ordered via the sys_id field to ensure the same order every time.
Manufacture and Model	/api/x_sclo_scilogic/v1/sciencelogic/ManufactureAndModel	POST	This POST API will pull all Manufacturers and Models.
Network Adapters	/api/x_sclo_scilogic/v1/sciencelogic/network_adapters	GET	This GET api will pull all ScienceLogic monitored Configuration items specific to Network Adapter class from the CMDB. It will be ordered via the sys_id field to ensure the same order every time.
Service Request	/api/x_sclo_scilogic/v1/sciencelogic/service_request	GET	This GET api will pull all ServiceRequest items from the CMDB associated with Device Discovery Catalog item. It will be ordered via the sys_id field to ensure the same order every time.

Transform Maps

Name	Source Table	Target Table	Comments
ScienceLogic Catalog Item Templates	Import Discovery Sessions []	Catalog item Templates []	
ScienceLogic Change Request	Import Service Request []	Change Request []	
ScienceLogic Discovery Dependent	Import Discovery Dependent	Discovery Dependent	Import / staging table for Catalog Dependents
ScienceLogic Event	Import Incident	Event [x_sclo_scilogic_	Import / staging table for Events.

Name	Source Table	Target Table	Comments
		event]	
ScienceLogic Installed Software	Import Installed Software []	Software Instance	
ScienceLogic Organization	Import ORG VEN MFG []	Company [core_company]	Import / staging table for Organization
ScienceLogic Service Request	Import Service Request []	Request Item [sc_req_item]	Import / staging table for Request item
ScienceLogic Source Organization	Import ORG VEN MFG []	Organizations []	

Appendix

B

Mappings between SL1, ServiceNow, and Other Applications

Overview

This appendix contains information about how SL1 and ServiceNow discover and model out different technologies, using VMware as an example. The VMware example explains how the differences between the systems requires rules be configured to bridge the gap between SL1 and ServiceNow.

This chapter covers the following topics:

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Overview

Different platforms do not model topology the same way. The default Customer Specific CI relation overrides delivered with the "ServiceNow CMDB" Synchronization PowerPack provides several topology mappings by default. Existing customers upgrading to new versions of these mappings will not override any mappings that are already set.

The following topics explain how SL1 and ServiceNow model topology differently and the mappings that are provided in this Synchronization PowerPack.

VMware vCenter

The following table lists the Class mappings that are delivered by default. These are the same Class mappings that are used in Service Graph solution.

IMPORTANT: The VMware | vCenter device class is mapped to the *Cloud Service Account* class and not the *vCenter* class directly. The default mapping adheres to ServiceNow Cloud Management Relationships.

Virtual Type	Device Category	Device Class Sub Class	Class Name	Table Name
ScienceLogic			ServiceNow	
Component	Virtual.Infrastructure	VMware Datacenter	VMware vCenter Datacenter	cmdb_ci_vcenter_datacenter
Component	Virtual.Infrastructure	VMware Folder	VMware vCenter Folder	cmdb_ci_vcenter_folder
PowerFlow	Servers.VMware	VMware vCenter	Cloud Service Account	cmdb_ci_cloud_service_account
Component	Virtual.Infrastructure	VMware Datastore	VMware vCenter Datastore	cmdb_ci_vcenter_datastore
Component	Virtual.Guest	VMware Virtual Machine	VMware Virtual Machine Instance	cmdb_ci_vmware_instance
Component	Servers.VMware	VMware Cluster	VMware vCenter Cluster	cmdb_ci_cluster
Component	Virtual.Network	VMware Network	VMware vCenter Network	cmdb_ci_network
Component	Virtual.Network	VMware Distributed Virtual Portgroup	VMware Distributed Virtual Port Group	cmdb_ci_vcenter_dv_port_group
Component	Virtual.Network	VMware Distributed Virtual Switch	VMware Distributed Virtual Switch	cmdb_ci_dvs
Component	Virtual.Host	VMware Host Server	ESX Server	cmdb_ci_esx_server
Component	Virtual.Infrastructure	VMware Resource Pool	ESX Resource Pool	cmdb_ci_esx_

Virtual Type	Device Category	Device Class Sub Class	Class Name	Table Name
				resource_pool

Default Customer Relationship Overrides

The following table shows the relationship breakdown for the default Customer Relationship Overrides:

Relationships Mapped	Relationship	Child Class	Identifier
VMware vCenter Datacenter	Hosted on::Hosts	Cloud Service Account	Yes
VMware vCenter Datacenter	Contains::Contained by	VMware Distributed Virtual Port Group	
VMware vCenter Datacenter	Contains::Contained by	VMware vCenter Network	
VMware vCenter Datacenter	Contains::Contained by	VMware Distributed Virtual Switch	
VMware vCenter Datacenter	Contains::Contained by	VMware vCenter Folder	
VMware vCenter Datacenter	Contains::Contained by	VMware vCenter Datastore	
VMware vCenter Folder	Hosted on::Hosts	VMware vCenter Datacenter	
VMware vCenter Datastore	Hosted on::Hosts	VMware vCenter Datacenter	
VMware vCenter Datastore	Provides storage for::Stored on	VMware Virtual Machine Instance	
VMware vCenter Datastore	Used by::Uses	ESX Server	
VMware Virtual Machine Instance	Hosted on::Hosts	VMware vCenter Datacenter	
VMware Virtual Machine Instance	Connected by::Connects	VMware Distributed Virtual Port Group	
VMware vCenter Datacenter	Contains::Contained by	VMware vCenter Cluster	
VMware vCenter Cluster	Hosted on::Hosts	VMware vCenter Cluster	
VMware vCenter Cluster	Hosted on::Hosts	VMware vCenter Datacenter	
VMware vCenter Cluster	Members::Member of	ESX Resource Pool	
ESX Server	Hosted on::Hosts	VMware vCenter Datacenter	
ESX Resource Pool	Hosted on::Hosts	VMware vCenter Datacenter	
ESX Resource Pool	Defines resources for::Gets resources from	ESX Server	
ESX Resource Pool	Members::Member of	VMware Machine Instance	
ESX Resource Pool	Defines resources for::Gets resources form	VMware vCenter Cluster	
VMware vCenter Network	Hosted on::Hosts	VMware vCenter Datacenter	
VMware vCenter Network	Provided by::Provides	ESX Server	

Relationships Mapped	Relationship	Child Class	Identifier
VMware Distributed Virtual Port Group	Hosted on::Hosts	VMware vCenter Datacenter	
VMware Distributed Virtual Switch	Hosted on::Hosts	VMware vCenter Datacenter	
VMware Distributed Virtual Switch	Connected by::Connects	VMware Distributed Virtual Port Group	
VMware Distributed Virtual Switch	Provided by::Provides	ESX Server	

Specific Class Breakdown

ScienceLogic Fields	ServiceNow Fields	Identifier	Notes
Instance UUID	Account ID	Yes	Verify that Instance UUID is a custom attribute on the vCenter device class, and is being populated with a GUID. Download the latest version of the VMware PowerPack.
Instance UUID	Object ID	Yes	
Name	name		
Datacenter type	Datacenter Type		
Instance URL	Instance URL		

ScienceLogic Fields	ServiceNow Fields	Identifier	Notes
Component Unique ID	Object ID	Yes	
Manufacture	Manufacturer		
Model	Model ID		
Instance UUID	vCenter Instance UUID		Service Graph Only
company	company		
	Location		
Component Unique ID	Managed object reference ID (MORID)		
Name	Name		

VMware vCenter Folder

ScienceLogic Fields	ServiceNow Fields	Notes
Component Unique ID	Object ID	
Component Unique ID	Managed object reference ID (MORID)	
Model	Model ID	

ScienceLogic Fields	ServiceNow Fields	Notes
	Location	
Instance UUID	vCenter Instance UUID	Service Graph Only
Name	Name	
Company	Company	
Manufacturer	Manufacture	

VMware Datastore

ScienceLogic Fields	ServiceNow Fields	Notes
Instance UUID (Service Graph only), Component Unique ID	Morid, object_id, url	
Name	Name	
Component Unique ID	Object ID	
Instance UUID	vCenter Instance UUID	Service Graph Only
Host ID	URL	
Model	Model ID	
Company	Company	
Component Unique ID	Managed object reference ID (MORID)	
Manufacturer	Manufacturer	
	Location	

VMware Virtual Machine Instance

ScienceLogic Fields	ServiceNow Fields	Notes
Component Unique ID	Object ID	
Instance UUID	vCenter Instance UUID	Service Graph Only
Manufacture	Manufacturer	
Model	Model ID	
	Location	Service Graph Only
Company	Company	
Host ID	Bios UUID	

VMware Cluster

ScienceLogic Fields	ServiceNow Fields	Notes
Component Unique ID	Object ID	
Name	Name	
Component Unique ID	Managed object reference ID (MORID)	
Manufacturer	Manufacturer	
	Location	
Model	Model ID	
Instance UUID	vCenter Instance UUID	Service Graph Only
Company	Company	

ESX Server

ScienceLogic Fields	ServiceNow Fields	Notes
Host ID	Correlation ID	
Component Unique ID	Managed object reference ID (MORID)	
Model	Model ID	
	Location	
Manufacturer	Manufacture	
Serial	Serial Number	
Company	Company	
Name	Name	
Component Unique ID	Object ID	

ESX Resource Pool

ScienceLogic Fields	ServiceNow Fields	Notes
Name	Name	
Component Unique ID	Object ID	
	Location	
Instance UUID	vCenter Instance UUID	Service Graph Only
Manufacturer	Manufacturer	
Company	Company	
Component Unique ID	Managed object reference ID (MORID)	
Model	Model ID	

vCenter Network

ScienceLogic Fields	ServiceNow Fields	Notes
Component Unique ID	Object ID	
Instance UUID	vCenter Instance UUID	Service Graph Only
Manufacturer	Manufacturer	
	Location	Service Graph Only
Name	Name	
Company	Company	
Component Unique ID	Managed object reference ID (MORID)	

Distributed Virtual Switch

ScienceLogic Fields	ServiceNow Fields	Notes
Component Unique ID	Object ID	
Company	Company	
Instance UUID	vCenter Instance UUID	Service Graph Only
Name	Name	
Component Unique ID	Managed object reference ID (MORID)	
Manufacturer	Manufacturer	
Model	Model	

Distributed Virtual Portgroup

ScienceLogic Fields	ServiceNow Fields	Notes
Component Unique ID	Object ID	
Instance UUID	vCenter Instance UUID	Service Graph Only
Model	Model ID	
Name	Name	
	Location	Service Graph Only
Manufacturer	Manufacturer	

Appendix

C

ServiceNow API Endpoints

Overview

This appendix describes the customized ServiceNow API Endpoints that were created for the ServiceNow Synchronization PowerPacks. These scripted endpoints reduce the amount of REST calls that PowerFlow makes to ServiceNow.

Please note that for pagination, you can use the following Query parameters: `sysparm_offset` and `sysparm_limit`. The default settings are:

- `sysparm_offset=0`
- `sysparm_limit` = ServiceNow defines the default upper limits for data export. It will check the following properties at *System Properties > Import Export*: `glide.json.export.limit`, `glide.ui.export.limit`, and then `glide.ui.export.war.threshold`.

For example, if you have 200 total records and you want to pull the records in 100-record chunks, then the first pull would be `sysparm_offset=0 & sysparm_limit=100` and the second pull would be `sysparm_offset=100 & sysparm_limit=100`. For more information, see the ServiceNow documentation for [Export Limits](#).

This chapter covers the following topics:

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Classification

HTTP Method

GET

Resource Path

```
/api/x_sclo_scilogic/v2/sciencelogic/classification
```

Pagination

Enabled

Overview

To support the Identification and Reconciliation framework, SL1 requires a large amount of information to correctly fill out the JSON-formatted string defined by the Identification Engine documentation.

This operation uses the **getTableExtension()** function to find all of the tables extended from the **cmdb_ci** table, and then it goes through each table individually. This operation collects information about each class, such as which fields are required to identify and if it considers another class to help find uniqueness. This operation then finds all the associated metadata.

Finally, the operation pulls a list of all field names from the table. By default the **criterion_attributes** and **attributes** are not included and require "action=attributes" as a parameter in the API call to be passed.

The class attributes have been disabled. The class attributesd require x_sclo_scilogic.Admin be added to **sys_dictionary.*** (read) ACL to allow the API to access field names on each class table.

Headers	
Key	Value
Content-Type	application/json
Accept	application/json
Parameters	
Key	Value
action	attributes
sysparm_offset	0
sysparm_limit	glide.json.export.limit, glide.ui.export.limit, glide.ui.export.war.threshold

HTTP Status	
Code	Value
200	OK

Fixed Internal Query

```
new GlideTableHierarchy("cmdb_ci").getTableExtensions() //Returns an array
of all tables extended from the current table ('cmdb_ci').
```

Example

```
https://<your_instance>.service-now.com/api/x_sclo_
scilogic/v2/sciencelogic/classification
```

Example (Response)

```
{
  "results": [
    {
      "class_label": "Tomcat WAR",
      "class_table": "cmdb_ci_app_server_tomcat_war",
      "independent": "false",
      "search_on_table": "cmdb_ci_app_server_tomcat_war",
      "criterion_attributes": [
        {
          "cmdb_ci_app_server_tomcat_war": [
            "sys_class_name,name,install_directory"
          ]
        }
      ],
      "containment_rule": [
        {
          "configuration_item": "cmdb_ci_app_server_tomcat_war",
          "parent": "cmdb_ci_app_server_tomcat",
          "rel_type": "Contains::Contained by",
          "is_reverse": "false"
        }
      ],
      "hosting_rule": [],
      "reference_rule": []
    }
  ]
}
```



```
    }  
  ],  
  "sysparm_offset": 29,  
  "sysparm_limit": 1,  
  "return_count": 1,  
  "total_count": 1  
}
```

Companies

HTTP Method

GET

Resource Path

```
/api/x_sclo_scilogic/v2/sciencelogic/companies
```

Pagination

Enabled

Overview

This operation supports multiple SL1 platforms synchronizing organization data that may share companies across different SL1 systems. The results are ordered by **sys_id** of the **sys_object_source** table entry. The **core_company** and **x_sclo_scilogic_organizations** tables are joined on query to only pull companies associated with a specific SL1. ScienceLogic-specific data is stored on **x_sclo_scilogic_organizations**, and company data is stored on the **core_company** table.

Headers	
Key	Value
Content-Type	application/json
Accept	application/json

Parameters	
Key	Value
region (required)	ScienceLogic
domainSep	false
sysparm_offset	0
sysparm_limit	glide.json.export.limit, glide.ui.export.limit, glide.ui.export.war.threshold

HTTP Status	
Code	Value

200	OK
400	Query parameter '\region\' is not defined and is required.

Example

```
https://<your_instance>.service-now.com/api/x_sclo_
scilogic/v2/sciencelogic/companies with headers: {'content-type':
'application/json', 'accept': 'application/json'} and read timeout: 30 and
api parameters {'region': 'ScienceLogic', 'sysparm_limit': 1000}
```

Example (Response)

```
{
  "results": [
    {
      "country": "USA",
      "sys_updated_on": "2022-09-09 15:27:47",
      "sys_updated_by": "powerflow_user_cmdb_incident",
      "sys_created_on": "2022-09-09 15:27:47",
      "state": "VA",
      "sys_created_by": "powerflow_user_cmdb_incident",
      "zip": "27560",
      "profits": "0",
      "phone": "(703)-354-1010",
      "fax_phone": "(703)-336-8000",
      "name": "System",
      "city": "Reston",
      "sys_class_name": "core_company",
      "sys_class_name_label": "Company",
      "sys_id": "4d6f7f821bb159100efb206cbc4bcb65",
      "market_cap": "0",
      "street": "System Location",
      "revenue_per_year": "0",
      "customer": "true",
      "native_key": "ven55_sl151_pf63+ORG+0",
      "region": "ven55_sl151_pf63"
    }
  ],
  "sysparm_offset": 4,
  "sysparm_limit": 1,
```

```
"return_count": 1  
}
```

Change Requests

HTTP Method

GET

Resource Path

```
/api/x_sclo_scilogic/v2/sciencelogic/change_requests?record_type=change_request&state=1&region=ScienceLogic
```

Pagination

Enabled

Overview

This scripted API was built for pulling Change Requests or Change Tasks and formatting a JSON object response with the required information to create a maintenance schedule in SL1. The GET queries the **task_ci** table to find configuration items that are monitored by SL1 and are the correct record type. The GET will *only* pull Change Requests and Change Tasks that are in the future.

Headers	
Key	Value
Content-Type	application/json
Accept	application/json

Parameters	
Key	Value
record_type (required)	change_request
state	-5
region (required)	ScienceLogic
sysparm_offset	0
sysparm_limit	glide.json.export.limit, glide.ui.export.limit, glide.ui.export.war.threshold

HTTP Status

Code	Value
200	OK
400	Query parameter '\region\' or '\record_type\' is not defined and is required.

Example (Request URL)

```
https://<your Instance>.service-now.com/api/x_sclo_
scilogic/v2/sciencelogic/change_requests?record_type=change_
request&state=-2@ion=ven70_sl151_pf199&sysparm_offset=1&sysparm_limit=1
```

Examples (Response)

Change Request:

```
{
  "results": [
    {
      "sys_id": "129994931bf91110f219866fdc4bcbb6",
      "number": "CHG0030115",
      "type": "Normal",
      "state_value": "-2",
      "state": "Scheduled",
      "short_description": "Firmware upgrade Printer (x8)",
      "planned_start_date": "2022-09-30 17:00:00",
      "planned_end_date": "2022-09-30 17:30:00",
      "device": [
        {
          "sys_id": "75febcd21b3d99106af3dac4bd4bcb95",
          "name": "Printer: SIM-0019004",
          "class": "cmdb_ci_printer",
          "id": "488",
          "region": "ven70_sl151_pf199"
        }
      ]
    }
  ],
  "sysparm_offset": 0,
  "sysparm_limit": 1,
  "return_count": 1,
}
```

```
    "total_count": 2
  }
```

Change Task:

```
{
  "results": [
    {
      "sys_id": "af2554eb1b7d5110f219866fdc4bcbcd",
      "number": "CTASK0010073",
      "state_value": "1",
      "state": "Open",
      "short_description": "firmware upgrade",
      "planned_start_date": "2022-10-01 14:30:00",
      "planned_end_date": "2022-10-01 15:00:00",
      "device": [
        {
          "sys_id": "01fef8d21b3d99106af3dac4bd4bcb1f",
          "name": "IP Router: SIM-0019217",
          "class": "cmdb_ci_ip_router",
          "id": "439",
          "region": "ven70_sl151_pf199"
        }
      ]
    }
  ],
  "sysparm_offset": 0,
  "sysparm_limit": 1,
  "return_count": 1,
  "total_count": 1
}
```

Incidents

HTTP Method

GET

Resource Path

```
/api/x_sclo_scilogic/v1/sciencelogic/incidents
```

Pagination

Enabled

Overview

This operation pulls all records from the incident table that are created by a specific **user_id** and its related events. The results are ordered by the **sys_id** of the incident, so the results display in the same order every time. This operation is also based on the incident being in an active state. This operation returns a pre-set of data and does not return everything on the Incident and Event (**x_sclo_scilogic_event**) tables.

Headers	
Key	Value
Content-Type	application/json
Accept	application/json

NOTE: If you are using version 3.5.0 or later of the ServiceNow CMDB Synchronization PowerPack, the **user_id** for each SL1 Region must be different.

Parameters	
Key	Value
user_id (required)	is4user1 NOTE: If you are using version 3.5.0 or later of the ServiceNow CMDB Synchronization PowerPack, the user_id for each SL1 Region must be different.
sysparm_offset	0
sysparm_limit	glide.json.export.limit, glide.ui.export.limit, glide.ui.export.war.threshold

HTTP Status	
Code	Value
200	OK
400	Query Parameter \'user_id\' is not defined and is required.

Fixed Internal Query

```
'sys_created_by=' + user_id + 'active=true'
```

Example

```
https://<your Instance>.service-now.com/api/x_sclo_
scilogic/v1/sciencelogic/incidents?user_id=is4user1&sysparm_
offset=0&sysparm_limit=100
```

Example (Response)

```
{
  "results": [
    {
      "sys_id": "e28538241b4ed9106af3dac4bd4bcba8",
      "number": "INC0022814",
      "correlation": "pm_postman_test+DEV+130",
      "state": "1",
      "state_label": "New",
      "priority": "5",
      "events": [
        {
          "event_id": "1337",
          "device": {
            "sys_id": "ccfef4d21b3d99106af3dac4bd4bcbbcb",
            "name": "Linux Server: en-s11cu-11-148",
            "class": "cmdb_ci_linux_server",
            "id": "3",
            "region": "pm_postman_test"
          }
        }
      ]
    }
  ],
}
```

```
"sysparm_offset": 0,  
"sysparm_limit": 5000,  
"return_count": 1,  
"total_count": 1  
}
```

Service Requests

HTTP Method

GET

Resource Path

```
/api/x_sclo_scilogic/v1/sciencelogic/service_request
```

Pagination

Enabled

Overview

This operation pulls all service requests that are tied to specific catalog item. Based on the request type it returns a formatted JSON object. It pulls all the required information for an SL1 Discovery session and creating a virtual device in SL1. Both requests require different information and are formatted accordingly.

The basic catalog item Device Discovery is set up as information collection to support the process within SL1. The Service Catalog has been simplified to its most basic form. The workflow moves the request into the correct state to be picked up by the GET request and then waits for its return before completing the workflow.

Headers	
Key	Value
Content-Type	application/json
Accept	application/json

Parameters	
Key	Value
region (required)	ScienceLogic
state	2
sysparm_offset	0
sysparm_limit	glide.json.export.limit, glide.ui.export.limit, glide.ui.export.war.threshold

HTTP Status

Code	Value
200	OK
400	Query Parameter '\region\' is not defined and is required.

Fixed Internal Query

State:

```
'request_item.active=true^request_item.cat_item=' + catalog + '^sc_item_option.item_option_new.name=Region^sc_item_option.value=' + region
```

Non-State:

```
'request_item.active=true^request_item.cat_item=' + catalog + '^sc_item_option.item_option_new.name=Region^sc_item_option.value=' + region + '^request_item.state=' + state
```

Example

```
https://<your Instance>.service-now.com/api/x_sclo_scilogic/v1/sciencelogic/ service_request?region=Cisco
```

Example (Response)

```
{
  "results": [
    {
      "number": "RITM0012892",
      "sysid": "b87564ad1bc6d910f219866fdc4bcb9a",
      "state": "1",
      "request_type": "remove_device",
      "organization": "3",
      "region": "ven70_sl151_pf199",
      "device_monitoring_removal": [
        {
          "sys_id": "33f87f801b0299106af3dac4bd4bcb7",
          "name": "IP Router: SIM-0000225",
          "class": "cmdb_ci_ip_router",
          "id": "244",
          "region": "ven70_sl151_pf199",
          "ip_address": "10.140.1.0"
        }
      ]
    }
  ]
}
```

```

    ]
  },
  {
    "number": "RITM0012890",
    "sysid": "017e9f111b8251506af3dac4bd4bcb82",
    "state": "1",
    "request_type": "discover_device",
    "region": "ven70_sl151_pf199",
    "log_all": false,
    "ip_hostname_list": "10.140.150.60",
    "credentials": [
      {
        "Category": "dbCredentials",
        "ID": "20"
      }
    ],
    "discover_non_snmp": true,
    "model_devices": true,
    "dhcp": true,
    "device_model_cache_ttl_h": "",
    "collection_server": "2",
    "organization": "2",
    "add_devices_to_device_groups": [],
    "device_template": "7",
    "initial_scan_level": "System Default (Recommended)",
    "scan_throttle": "0",
    "scan_ports": "21,22,23,25,80",
    "port_scan_all": "0",
    "port_scan_timeout": "System Default (Recommended)",
    "interface_inventory_timeout": "",
    "maximum_allowed_interfaces": "",
    "bypass_interface_inventory": false,
    "affected": [
      {
        "sys_id": "71fefcd21b3d99106af3dac4bd4bcbab",
        "name": "IP Router: SIM-0038429",
        "class": "cmdb_ci_ip_router",
        "id": "9999",
        "region": "ven70_sl151_pf199",
        "ip_address": "10.140.150.60"
      }
    ]
  }
]

```

```
        }
    ]
}

],
"sysparm_offset": 0,
"sysparm_limit": 10000,
"return_count": 2,
"total_count": 2
}
```

Configuration Items

HTTP Method

POST

Resource Path

```
/api/x_sclo_scilogic/v1/sciencelogic/configuration_item
```

Pagination

Enabled

Overview

This operation pulls all the fields for any configuration item or class that are not Null values by default. The results are ordered by **sys_id** of the record on the **sys_object_source** table. The **region** is required, and the POST will only return configuration items with an associated region. Business Services are handled in another GET request; otherwise all configuration items are pulled from this POST request.

Headers	
Key	Value
Content-Type	application/json
Accept	application/json

Parameters	
Key	Value
region (required)	ScienceLogic
sysparm_offset	0
sysparm_limit	glide.json.export.limit, glide.ui.export.limit, glide.ui.export.war.threshold
action	empty_fields

HTTP Status	
Code	Value
200	OK
400	Query Parameter \'region\' is not defined and is required.

Example

```
https://<your Instance>.service-now.com/api/x_sclo_  
scilogic/v1/sciencelogic/configuration_Items?region=ven70_sl151_pf199&
```

Example (Body)

```
{  
  "classes": [  
    "cmdb_ci_linux_server"  
  ],  
  "organization": "c16f7f821bb159100efb206cbc4bcb61"  
}
```

Example (Response)

```
{  
  "results": [  
    {  
      "object_source_id": "ven70_sl151_pf199+DEV+3",  
      "firewall_status": "Intranet",  
      "firewall_status_label": "Intranet",  
      "operational_status": "1",  
      "operational_status_label": "Operational",  
      "sys_updated_on": "2022-09-15 20:08:15",  
      "discovery_source": "Other Automated",  
      "discovery_source_label": "Other Automated",  
      "first_discovered": "2022-07-28 15:44:45",  
      "used_for": "Production",  
      "used_for_label": "Production",  
      "sys_created_by": "powerflow_user_cmdb_incident",  
      "ram": "16431296",  
      "cpu_speed": "2300",  
      "sys_domain_path": "/",  
      "classification": "Production",  
      "classification_label": "Production",  
      "short_description": "Description: System.EM7, Device Class:  
ScienceLogic, Inc. | EM7 Data Collector",  
      "last_discovered": "2022-09-15 20:08:15",  
      "sys_class_name": "cmdb_ci_linux_server",  
      "sys_class_name_label": "Linux Server",  
    }  
  ]  
}
```



```

    "manufacturer": "eafa349e1bf999106af3dac4bd4bcbf0",
    "manufacturer_label": "ScienceLogic, Inc.",
    "serial_number": "VMware-42 05 99 79 59 51 5b 82-05 80 01 86 7e
83 b4 82",
    "x_sclo_scilogic_monitored": "true",
    "asset": "04fef4d21b3d99106af3dac4bd4bcbcd",
    "asset_label": "ScienceLogic, Inc. EM7 Data Collector",
    "x_sclo_scilogic_region": "ven70_sl151_pf199",
    "sys_updated_by": "powerflow_user_cmdb_incident",
    "sys_created_on": "2022-09-09 20:05:25",
    "sys_domain": "global",
    "cpu_type": "Xeon(R)",
    "x_sclo_scilogic_url": "https://<SL1 instance>/in-
ventory/devices/3/investigator",
    "fqdn": "en-s11cu-11-148",
    "internet_facing": "true",
    "hardware_status": "installed",
    "hardware_status_label": "Installed",
    "install_status": "1",
    "install_status_label": "Installed",
    "name": "en-s11cu-11-148",
    "subcategory": "Computer",
    "virtual": "true",
    "sys_id": "ccfef4d21b3d99106af3dac4bd4bcbcb",
    "sys_class_path": "/!!!/!2/!(/!!!/!0",
    "company": "c16f7f821bb159100efb206cbc4bcb61",
    "company_label": "ScienceLogic",
    "attestation_status": "Not Yet Reviewed",
    "attestation_status_label": "Not Yet Reviewed",
    "sys_mod_count": "2",
    "x_sclo_scilogic_id": "3",
    "model_id": "e6fa349e1bf999106af3dac4bd4bcbf1",
    "model_id_label": "ScienceLogic, Inc. EM7 Data Collector",
    "ip_address": "10.2.11.148",
    "cost_cc": "USD",
    "cost_cc_label": "USD",
    "category": "Hardware",
    "host_name": "en-s11cu-11-148"
  }
],

```

```
"sysparm_offset": 0,  
"sysparm_limit": 100,  
"return_count": 1  
}
```

Device Identification Engine

HTTP Method

POST

Resource Path

```
/api/x_sclo_scilogic/v2/sciencelogic/IdentificationEngine
```

Overview

This operation handles all creates and updates to the CMDB. This operation incorporates Identification Engine and uses the Identification and Reconciliation framework to properly import devices into the CMDB as a configurable discovery source. SL1 uses the classification GET to populate the JSON object.

All versions after version 1.0.45 of the IdentificationEngine endpoint use [IdentificationEngineScopedAPI](#) Enhanced versions.

Headers	
Key	Value
Content-Type	application/json
Accept	application/json

Parameters	
Key	Value
test	true
Source	Other Automated

Example (Request URL)

```
https://<your_Instance>.service-now.com/api/x_sclo_scilogic/v2/sciencelogic/IdentificationEngine?test=false&source=Other%20Automated
```

Example (Body)

```
[  
  {  
    "items": [  
      ]  
    }  
  ]
```

```

{
  "className": "cmdb_ci_ip_router",
  "values": {
    "x_sclo_scilogic_monitored": true,
    "x_sclo_scilogic_id": "9861",
    "x_sclo_scilogic_region": "ven70_sl151_pf199",
    "x_sclo_scilogic_url": "https://10.2.11.151/in-
ventory/devices/9861/investigator",
    "short_description": "Description: Network.Router, Device
Class: Cisco Systems | 1811 ISR G1",
    "cpu_count": 0,
    "cpu_speed": "",
    "first_discovered": "2022-07-30 04:43:03",
    "fqdn": "SIM-0038660",
    "host_name": "SIM-0038660",
    "ip_address": "10.140.151.35",
    "manufacturer": "cefa349e1bf999106af3dac4bd4bcb18",
    "model_id": "0afa349e1bf999106af3dac4bd4bcb1e",
    "name": "SIM-0038660"
  },
  "sys_object_source_info": {
    "source_feed": "ven70_sl151_pf199",
    "discovery_source": "Other Automated",
    "source_native_key": "ven70_sl151_pf199+DEV+9861",
    "source_recency_timestamp": "2022-09-14 17:10:33"
  }
},
{
  "relations": [
  ]
},
{
  "items": [
    {
      "className": "cmdb_ci_ip_router",
      "values": {
        "x_sclo_scilogic_monitored": true,
        "x_sclo_scilogic_id": "10012",
        "x_sclo_scilogic_region": "ven70_sl151_pf199",
        "x_sclo_scilogic_url":

```

```

"https://10.2.11.151/inventory/devices/10012/investigator",
    "short_description": "Description: Network.Router, Device
Class: Cisco Systems | 1811 ISR G1",
    "cpu_count": 0,
    "cpu_speed": "",
    "first_discovered": "2022-07-30 04:50:47",
    "fqdn": "SIM-0039677",
    "host_name": "SIM-0039677",
    "ip_address": "10.140.155.28",
    "manufacturer": "cefa349e1bf999106af3dac4bd4bcb18",
    "model_id": "0afa349e1bf999106af3dac4bd4bcb1e",
    "name": "SIM-0039677"
},
"sys_object_source_info": {
    "source_feed": "ven70_sl151_pf199",
    "discovery_source": "Other Automated",
    "source_native_key": "ven70_sl151_pf199+DEV+10012",
    "source_recency_timestamp": "2022-09-14 17:10:33"
}
},
],
"relations": [
]
}
]

```

CMDB Group

HTTP Method

POST

Resource Path

```
/api/x_sclo_scilogic/v1/sciencelogic/cmdb_group
```

Overview

This operation handles the intake of groups of devices from SL1 and converts the device groups to CMDB groups. This operation uses a standard formatted JSON string, and it checks for a **sys_id** of the group first by searching for a matching group. This process creates a group if a group is not supplied or found, and then it passes the JSON object to the ServiceNow CMDBGroupAPI, which sets the manual CI list of the group.

Headers	
Key	Value
Accept	application/json
Content-Type	application/json

Example (Request URL)

```
https://<your Instance>.service-now.com/api/x_sclo_scilogic/v1/sciencelogic/cmdb_group
```

Example (Body)

```
{
  "items": [
    {
      "name": "pm_postman_test: Servers - 3",
      "manualCIList": [
        "pm_postman_test+DEV+2",
        "pm_postman_test+DEV+3",
        "pm_postman_test+DEV+4",
        "pm_postman_test+DEV+264",
        "pm_postman_test+DEV+280",
        "pm_postman_test+DEV+283",
        "pm_postman_test+DEV+285",
        "pm_postman_test+DEV+293",
      ]
    }
  ]
}
```

```

        "pm_postman_test+DEV+294",
        "pm_postman_test+DEV+303"
    ],
    "native_key": "pm_postman_test+GRP+3"
},
{
    "name": "pm_postman_test: SL1 Appliances - 6",
    "manualCILList": [
        "pm_postman_test+DEV+551",
        "pm_postman_test+DEV+616",
        "pm_postman_test+DEV+632"
    ],
    "native_key": "pm_postman_test+GRP+6"
}
]
}

```

Example (Response)

```

{
    "result": [
        {
            "name": "pm_postman_test: Servers - 3",
            "manualCILList": [
                "pm_postman_test+DEV+2",
                "pm_postman_test+DEV+3",
                "pm_postman_test+DEV+4",
                "pm_postman_test+DEV+264",
                "pm_postman_test+DEV+280",
                "pm_postman_test+DEV+283",
                "pm_postman_test+DEV+285",
                "pm_postman_test+DEV+293",
                "pm_postman_test+DEV+294",
                "pm_postman_test+DEV+303"
            ],
            "native_key": "pm_postman_test+GRP+3",
            "group": "aa1535f51b4691100efb206cbc4bcb22",
            "result": true,
            "nextBatchStart": 0,
            "idList": [],
            "partialCILListDueToACLFlag": false
        }
    ]
}

```

```

    },
    {
      "name": "pm_postman_test: SL1 Appliances - 6",
      "manualCILList": [
        "pm_postman_test+DEV+551",
        "pm_postman_test+DEV+616",
        "pm_postman_test+DEV+632"
      ],
      "native_key": "pm_postman_test+GRP+6",
      "group": "aa1535f51b4691100efb206cbc4bcb23",
      "result": true,
      "nextBatchStart": 0,
      "idList": [],
      "partialCILListDueToACLFlag": false
    }
  ]
}

```


Manufacturer and Model

HTTP Method

POST

Resource Path

```
/api/x_sclo_scilogic/v1/sciencelogic/ManufactureAndModel
```

Overview

This operation takes an array of model names and attempts to line them up with Models already in ServiceNow, and then returns the **sys_id** of models that match by name. This function uses the following provided function (MakeAndModelJS.fromNames("VAR_MANUFACTURER", "VAR_MODEL_OF_DEVICE", "VAR_MODEL_CLASS")).

Headers	
Key	Value
Accept	application/json
Content-Type	application/json

Parameters	
Key	Value
ModelCategory (required)	hardware

Example (Request URL)

```
https://<your Instance>.service-now.com/api/x_sclo_scilogic/sciencelogic/ManufactureAndModel?ModelCategory=hardware
```

Example (Body)

```
{
  "Cisco Systems": [
    "1803 ISR G1",
    "1861 ISR G1",
    "2821 ISR G1",
    "826 Quad V",
    "888SRST ISR G2",
    "Catalyst 1912C",
    "Catalyst2912XL",
```

```

        "Catalyst2960S-48FPD-L",
        "TelePresenceEX60",
        "UCSC460M4RackServer",
        "WS-C2960S-24PS-L",
        "VG202XM"
    ],
    "OpenStack": [
        "Cloud Physical Service"
    ],
    "VMware, Inc.": [
        "VMware Virtual Platform"
    ],
    "Dell Inc.": [
        "PowerEdge R530",
        "PowerEdge R740xd"
    ]
}

```

Example (Response)

```

{
  "result": {
    "Cisco Systems": {
      "models": {
        "1803 ISR G1": "b36b2d711b025d10f219866fdc4bcbb7",
        "1861 ISR G1": "f76b2d711b025d10f219866fdc4bcbb8",
        "2821 ISR G1": "4efa349e1bf999106af3dac4bd4bcb28",
        "826 Quad V": "376b2d711b025d10f219866fdc4bcbb9",
        "888SRST ISR G2": "ff6b2d711b025d10f219866fdc4bcbb9",
        "Catalyst 1912C": "bb6b2d711b025d10f219866fdc4bcbbba",
        "Catalyst2912XL": "776b2d711b025d10f219866fdc4bcbbb",
        "Catalyst2960S-48FPD-L": "336b2d711b025d10f219866f-
dc4bcbbc",
        "TelePresenceEX60": "fb6b2d711b025d10f219866fdc4bcbbc",
        "UCSC460M4RackServer": "b76b2d711b025d10f219866fdc4bcbbd",
        "WS-C2960S-24PS-L": "736b2d711b025d10f219866fdc4bcbbe",
        "VG202XM": "3f6b2d711b025d10f219866fdc4bcbbe"
      },
      "sys_id": "cefa349e1bf999106af3dac4bd4bcb18"
    },
    "OpenStack": {

```

```

        "models": {
            "Cloud Physical Service": "4c7b2d711b025d10f219866f-
dc4bcbcl"
        },
        "sys_id": "b76b2d711b025d10f219866fdc4bcbbf"
    },
    "VMware, Inc.": {
        "models": {
            "VMware Virtual Platform": "36fa749e1b-
f999106af3dac4bd4bcb66"
        },
        "sys_id": "3afa749e1bf999106af3dac4bd4bcb65"
    },
    "Dell Inc.": {
        "models": {
            "PowerEdge R530": "887b2d711b025d10f219866fdc4bcbcl",
            "PowerEdge R740xd": "447b2d711b025d10f219866fdc4bcbcl"
        },
        "sys_id": "16fa349e1bf999106af3dac4bd4bcb84"
    }
}
}
}

```

Business Services

HTTP Method

GET

Resource Path

```
/api/x_sclo_scilogic/v2/sciencelogic/business_service
```

Pagination

Enabled

Overview

This operation pulls all the fields from just the Business Service (**cmdb_ci_service**) table. The return is ordered by the **sys_id** of the record in the **sys_object_source** table. This operation requires the region to be supplied by the requester, and it will only return region-supplied configuration items.

Headers	
Key	Value
Content-Type	application/json
Accept	application/json

Parameters	
Key	Value
region (required)	ScienceLogic
sysparm_offset	0
sysparm_limit	glide.json.export.limit, glide.ui.export.limit, glide.ui.export.war.threshold

Example (Request URL)

```
https://<your Instance>.service-now.com/api/x_sclo_scilogic/v2/sciencelogic/business_service?region=ven70_sl151_pf199_cmdb&action=relationships&sysparm_limit=1
```

Example (Response)

```
{
  "results": [
    {
      "operational_status": "1",
      "operational_status_label": "Operational",
      "consumer_type": "internal",
      "consumer_type_label": "Internal",
      "sys_updated_on": "2022-09-23 20:17:00",
      "number": "BSN0001552",
      "discovery_source": "Other Automated",
      "discovery_source_label": "Other Automated",
      "first_discovered": "2022-09-13 18:20:51",
      "used_for": "Production",
      "used_for_label": "Production",
      "state": "published",
      "state_label": "Published",
      "sys_created_by": "powerflow_user_cmdb_incident",
      "sys_domain_path": "/",
      "service_status": "requirements",
      "service_status_label": "Requirements",
      "portfolio_status": "pipeline",
      "portfolio_status_label": "Pipeline",
      "busines_criticality": "2 - somewhat critical",
      "busines_criticality_label": "2 - somewhat critical",
      "last_discovered": "2022-09-23 20:17:00",
      "sys_class_name": "cmdb_ci_service_technical",
      "sys_class_name_label": "Technical Service",
      "x_sclo_scilogic_monitored": "true",
      "correlation_id": "cl80ioa534zga9ov0b4wx6l15",
      "x_sclo_scilogic_region": "ven70_sl151_pf199_cmdb",
      "sys_updated_by": "powerflow_user_cmdb_incident",
      "sys_created_on": "2022-09-13 18:20:51",
      "sys_domain": "global",
      "x_sclo_scilogic_url": "https://<powerflow_instance>/inventory/services/cl80ioa534zga9ov0b4wx6l15/overview",
      "install_status": "1",
      "install_status_label": "Installed",
      "name": "It test",
    }
  ]
}
```

```

    "price_model": "per_unit",
    "price_model_label": "Per Unit",
    "sys_id": "1f5d0de31bb19110f219866fdc4bcbdd",
    "sys_class_path": "/!!/#C/!",
    "company": "4d6f7f821bb159100efb206cbc4bcb65",
    "company_label": "System",
    "checkout": "true",
    "checkout_label": "True",
    "attestation_status": "Not Yet Reviewed",
    "attestation_status_label": "Not Yet Reviewed",
    "sys_mod_count": "2",
    "cost_cc": "USD",
    "cost_cc_label": "USD",
    "service_classification": "Technical Service",
    "service_classification_label": "Technical Service",
    "object_source_id": "ven70_sl151_pf199_cmd-
b+BIZITSRV+cl80ioa534zga9ov0b4wx6l15",
    "child_devices": [
        {
            "sys_id": "575d0de31bb19110f219866fdc4bcbdf",
            "name": "Dynamic CI Group: ds test",
            "class": "cmdb_ci_query_based_service",
            "id": "cl80iomgd4zol9iv0e0mu6pjb",
            "region": "ven70_sl151_pf199_cmdb"
        }
    ]
}

],
"sysparm_offset": 0,
"sysparm_limit": 1,
"return_count": 1
}

```

Installed Software

HTTP Method

GET

Resource Path

```
/api/x_sclo_scilogic/v1/sciencelogic/installed_software
```

Pagination

Enabled

Overview

This operation pulls all the fields from the software (**cmdb_ci_spkg**) table. The return is ordered by **sys_id**, so the results display in the same order every time. The results are filtered by the **SL1 monitored** field on the ServiceNow side. This operation requires the **region** to filter the installed software on devices.

Headers	
Key	Value
Content-Type	application/json
Accept	application/json

Parameters	
Key	Value
region	ScienceLogic
sysparm_offset	0
sysparm_limit	glide.json.export.limit, glide.ui.export.limit, glide.ui.export.war.threshold

HTTP Status	
Code	Value
200	OK
400	Query parameter \'region\' is not defined and are required.

Fixed Internal Query

'x_sclo_scilogic_monitored=true'

Example (Request URL)

```
https://<your Instance>.service-now.com/api/x_sclo_scilogic/v1/sciencelogic/installed_software?sysparm_offset=0&sysparm_limit=100&region=ScienceLogic
```

Example (Response)

```
{
  "results": [
    {
      "operational_status": "1",
      "operational_status_label": "Operational",
      "sys_updated_on": "2019-05-01 06:00:09",
      "install_count": "2",
      "sys_updated_by": "system",
      "sys_created_on": "2019-03-29 19:42:58",
      "sys_domain": "global",
      "sys_created_by": "admin",
      "sys_domain_path": "/",
      "install_status": "1",
      "install_status_label": "Installed",
      "name": "Test_31",
      "subcategory": "Package",
      "sys_class_name": "cmdb_ci_spkg",
      "sys_class_name_label": "Software",
      "sys_id": "1e9608fcdb2cb740dc44f00fbf961949",
      "sys_class_path": "/!!/#$",
      "key": "Test_31::_NULL",
      "license_available": "-2",
      "sys_mod_count": "1",
      "x_sclo_scilogic_id": "31",
      "model_id": "2c146728dbe8b740dc44f00fbf9619c6",
      "model_id_label": "Unknown",
      "cost_cc": "USD",
      "cost_cc_label": "USD",
      "x_sclo_scilogic_monitored": "true",
      "package_name": "Test_31",
    }
  ]
}
```



```
"category": "Software",
"x_sclo_scilogic_region": "AutoGenerateClass",
"installed_on": [
{
"sys_id": "5a271407dbfe6300dc44f00fbf96190f",
"id": "10",
"region": "ScienceLogic",
"monitored": "true"
},
{
"sys_id": "5a271407dbfe6300dc44f00fbf96190f",
"id": "10",
"region": "ScienceLogic",
"monitored": "true"
}
]
},
"sysparm_offset": 0,
"sysparm_limit": 100,
"return_count": 4,
"total_count": 4
}
```

Import Set

HTTP Method

POST

Resource Path

```
/api/x_sclo_scilogic/v1/sciencelogic/import_set
```

Overview

This operation handles the custom intake of import sets before it reaches the transform map staging table, such as **x_sclo_scilogic_import_installed_software**. This operation is currently only used for importing installed software (**x_sclo_scilogic_import_installed_software**).

Headers	
Key	Value
Accept	application/json
Content-Type	application/json

Parameters	
Key	Value
record_type (required)	x_sclo_scilogic_import_installed_software

Example (Request URL)

```
https://<your Instance>.service-now.com/api/x_sclo_scilogic/v1/sciencelogic/import_set
```

Example (Body)

```
[
  {
    "records": [
      {
        "name": "acl-2.2.51-12.e17",
        "software": "671bafd8dba13700dc44f00fbf961953",
        "cmdb_ci": [
          "ff01a81edb1df300dc44f00fbf961947",
          "4011a81edb1df300dc44f00fbf961958",

```

```
        "f301a81edb1df300dc44f00fbf96193d",
        "7b01a81edb1df300dc44f00fbf961942",
        "c411a81edb1df300dc44f00fbf96195d",
        "7701a81edb1df300dc44f00fbf961922",
        "7b01681edb1df300dc44f00fbf9619e7",
        "fb01a81edb1df300dc44f00fbf961927"
    ],
    "active": true
}
]
]
```

Discovery Dependents

HTTP Method

GET

Resource Path

```
/api/x_sclo_scilogic/v1/sciencelogic/discovery_dependent
```

Pagination

Enabled

Overview

This operation pulls all Discovery-dependent records that are tied to the **region** value, which is used for the catalog request process. Based on the request type, this operation returns a formatted JSON object.

Headers	
Key	Value
Content-Type	application/json
Accept	application/json

Parameters	
Key	Value
region (required)	ScienceLogic
sysparm_offset	0
sysparm_limit	glide.json.export.limit, glide.ui.export.limit, glide.ui.export.war.threshold

HTTP Status	
Code	Value
200	OK
400	Query parameter \'region\' is not defined and is required.

Fixed Internal Query

Region Specific: 'region=' + region

Example

```
https://<your_instance>.service-now.com/api/x_sclo_  
scilogic/v1/sciencelogic/discovery_dependent?region=del_test&sysparm_  
offset=0&sysparm_limit=100
```

Example (Response)

```
{  
  "results": [  
    {  
      "sys_updated_on": "2022-02-25 18:50:23",  
      "type": "device_template",  
      "type_label": "Device Template",  
      "sys_id": "02261f071b3d0950f219866fdc4bcbe6",  
      "sys_updated_by": "powerflow_user_cmdb_incident",  
      "sys_created_on": "2022-02-25 18:50:23",  
      "name": "SL1 Agent for Microsoft: Windows Server Template",  
      "id": "5",  
      "region": "unique_id",  
      "sys_created_by": "powerflow_user_cmdb_incident"  
    },  
  ],  
  "sysparm_offset": 0,  
  "sysparm_limit": 1,  
  "return_count": 1,  
  "total_count": 168  
}
```

Appendix

D

ServiceNow Registered Events

Overview

This appendix describes the commands and data you can use to generate registered events in ServiceNow that are queued to ServiceNow Event Management. These events can trigger actions in PowerFlow, such as specifying one or more CIs for monitoring, or putting a CI into maintenance.

WARNING: This appendix is recommended for advanced ServiceNow administrators.

These events use the `gs.eventQueue` command, using the following format:

```
eventQueue(String name, Object instance, String parm1, String parm2)
```

You can use examples found in the "ScienceLogic ServiceNow Integration (Catalog UI)" update set in ServiceNow to help you customize the `gs.eventQueue` command to specify which ServiceNow events can trigger PowerFlow actions. You will need to install this update set in ServiceNow.

NOTE: You can download the latest version of the update set from the **ServiceNow CMDB Synchronization PowerPack** page on the ScienceLogic Support Site at <https://support.sciencelogic.com/s/powerpacks>.

This chapter covers the following topics:

Catalog Item Events 207

Catalog Item Events

The following events are available through the "ScienceLogic ServiceNow Integration (Catalog UI)" update set in ServiceNow.

x_sclo_scilogic.device_monitoring

This event takes the selected Configuration Items in ServiceNow, files a catalog request using the template selected by the user, and submits the catalog request.

Trigger

Custom requirement supplied by ScienceLogic implementation or the Customer directly.

Command

```
gs.eventQueue('x_sclo_scilogic.device_monitoring', region, ip_list.toString(), region.getUniqueValue() + "," + region.x_sclo_scilogic_region + "," + silo_template);
```

Event Fields

Field	Description
x_sclo_scilogic.device_monitoring	Unique name of the event.
region	The table to which the event applies.
ip_list.toString()	Parm1: The IP, or a comma-separated list of IP addresses, that is pulled from the ip_address field on the cmdb_ci table.
getCompany.getUniqueValue(), silo_template	Parm2: List of three requirements that the sys_id of the company associated with the Configuration Item and the catalog template selected through the user interface action.

Example

The UI action / UI page is available through the "ScienceLogic ServiceNow Integration (Catalog UI Action)" update set.

x_sclo_scilogic.remove_monitoring

This action takes the selected Configuration Item or Items and submits a request through the ServiceNow service catalog for each Configuration Item.

Trigger

Custom requirement supplied by ScienceLogic implementation or the Customer directly.

Command

```
gs.eventQueue('x_sclo_scilogic.remove_monitoring',current,  
current.getUniqueValue(), current.company);
```

Event Fields

<i>Field</i>	<i>Description</i>
x_sclo_scilogic.remove_monitoring	Unique name of the event.
current	The table to which the event applies.
current.getUniqueValue()	Parm1: The sys_id of the Configuration Item that needs to be removed
current.company);	Parm2: The sys_id of the company that is associated with the Configuration Item.

Example

The UI action / UI page is available through the "ScienceLogic ServiceNow Integration (Catalog UI Action)" update set.

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