ScienceLogic

ServiceNow Incidents SyncPack

Version 4.1.2, rev 4

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Chapter 1

Introduction to the ServiceNow Incidents SyncPack

Overview

This chapter describes the "ServiceNow Incidents" SyncPack, which lets you sync ServiceNow incidents with SL1 events.

This SyncPack uses the "ScienceLogic SL1: Incident Automation" certified application in ServiceNow and the latest "ServiceNow Base Pack" PowerPack in SL1.

Do not use this SyncPack and the "ServiceNow Events" or the "ServiceNow Cases" SyncPacks on the same PowerFlow system. This SyncPack is compatible with the "ServiceNow Service Graph Connector" SyncPack, version 1.0.0 or later and the "ServiceNow CMDB" SyncPack version 3.0.0 or later.

This chapter covers the following topics:

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What Can I Do with this SyncPack?

The "ServiceNow Incidents" SyncPack is the ScienceLogic integration with the ServiceNow Incident Management Module, and you can use this SyncPack to sync SL1 events with ServiceNow incidents.

This SyncPack automatically logs, de-duplicates, correlates, updates, and appends ServiceNow incidents, reducing the amount of time to resolve critical service issues. This SyncPack covers the entire incident life cycle, providing a bi-directional integration between SL1 events and ServiceNow incidents, while providing a granular view into both the event and the associated incident.

For this SyncPack, you can configure a run book action policy in SL1 to ensure that whenever SL1 detects a new, acknowledged, or cleared event, a corresponding incident is created or updated in ServiceNow. These automations are included in the latest "ServiceNow Base Pack" PowerPack. For more information, see *Overview of the Run Book Automation for Incident Sync*.

This SyncPack includes the following applications, which you can use to synchronize event and incident information between SL1 to ServiceNow:

- **Sync Incident Details from ServiceNow to SL1 Events**. Acknowledges or clears SL1 events from ServiceNow, updates the user note, and populates the incident number in the external ticket reference.
- **Sync SL1 Event to ServiceNow Incident**. The "ServiceNow: Add/Update/Clear Incident" Run Book Action policy triggers this application whenever an SL1 event is created, updated, or cleared. This application processes the SL1 event, caches it to PowerFlow to allow for bulk processing for ServiceNow by the "Sync Cached Events to ServiceNow" application, and then sends a status update to SL1.

For more information about how to configure these applications, see *Configuring the PowerFlow Applications*.

Contents of the SyncPack

This section lists the contents of the "ServiceNow Incidents" SyncPack.

PowerFlow Applications

The following PowerFlow applications are included with the "ServiceNow Incidents" SyncPack:

- ***Sync Cached Events to ServiceNow***. Bulk processes all of the cached SL1 Events and posts them to ServiceNow. Sends a "Sync Success" or "Sync Failed" status update to PowerFlow based on the result of the post. ScienceLogic recommends that you schedule this application to run every 60 seconds or longer.

- ***Sync Incident Details from ServiceNow to SL1 Events***. Acknowledges or clears SL1 Events from ServiceNow, updates the user note, and populates the incident number in the external ticket reference. This application also include the new ***user_note_template*** field that accepts a Jinja2 template to generate custom user notes. ScienceLogic recommends that you schedule this application to run every 60 seconds.

  NOTE: In previous releases of this SyncPack, this application was named the "Sync Incident State from ServiceNow to SL1 Event" application.

- ***Sync SL1 Event to ServiceNow Incident***. The "ServiceNow: Add/Update/Clear Incident" Run Book Action triggers this application whenever an SL1 Event is created, updated, or cleared.

  NOTE: This application processes the SL1 event, caches it to PowerFlow to allow for bulk processing for ServiceNow by the "Sync Cached Events to ServiceNow" application, and then sends a status update to SL1.

For more information, see *Configuring the PowerFlow Applications for the Incidents SyncPack*.

The following PowerFlow applications from previous versions of this SyncPack have been deprecated:

- Create or Update ServiceNow Incident from SL1 Event
- Sync Incident State from ServiceNow to SL1 Event
- Update ServiceNow Incident when SL1 Event is Acknowledged
- Update ServiceNow Incident when SL1 Event is Cleared

You should uninstall previous versions of this SyncPack to make sure that these applications and any other configurations have been removed.

PowerFlow Application (Internal)

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

- ***Bulk Update SL1 Events***. Bulk updates SL1 events with a given payload.

Chapter 2

Installing and Configuring the Incidents SyncPack

Overview

This chapter describes the how to install and configure the "ServiceNow Incidents" SyncPack and the other applications needed to use the SyncPack, including the "ScienceLogic SL1: Incident Automation" application and the "ServiceNow Base Pack" PowerPack.

This chapter covers the following topics:

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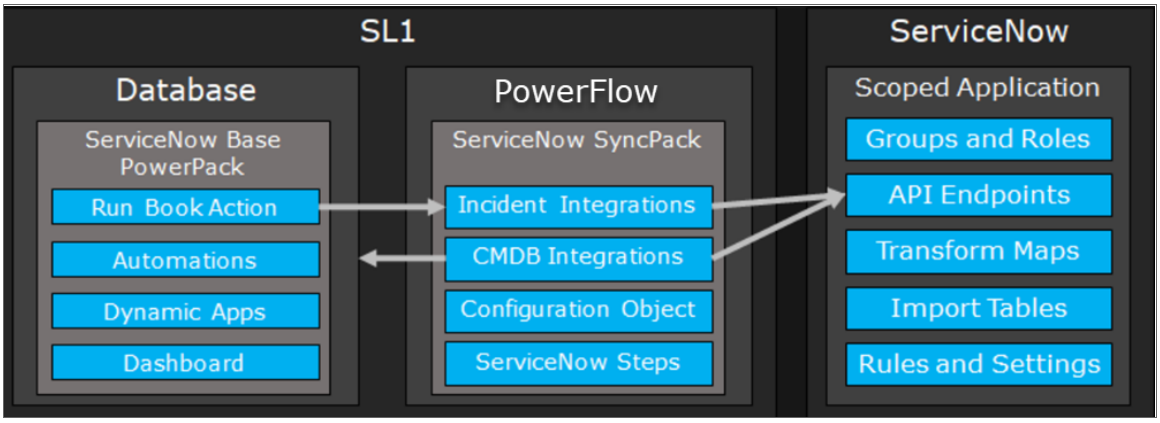
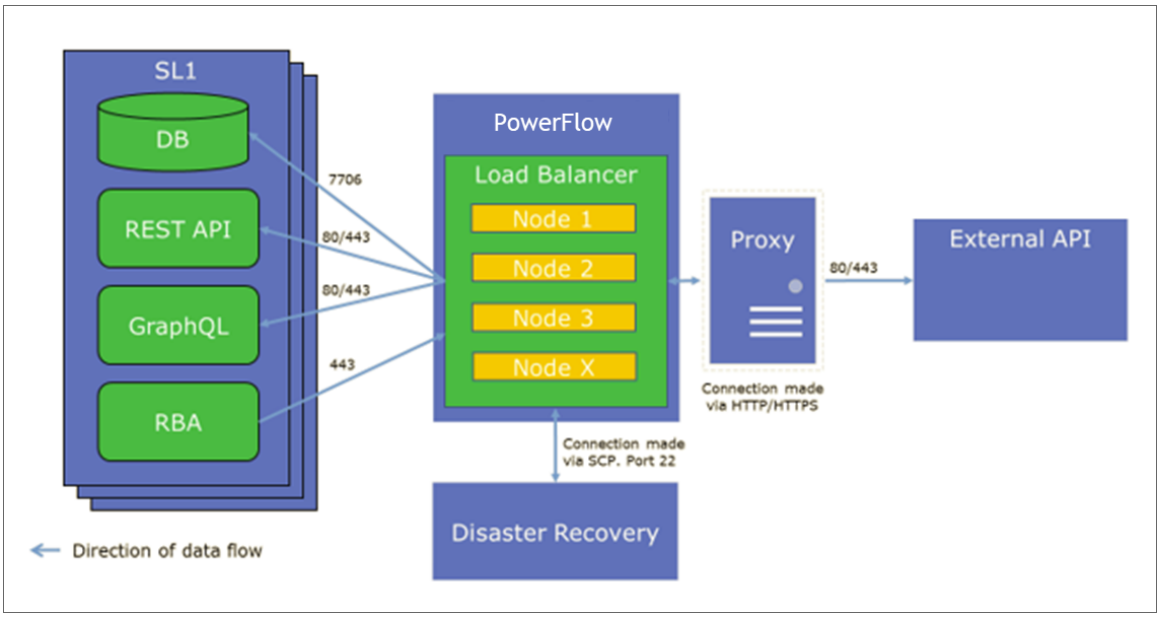
Architecture Overview for ServiceNow SyncPacks

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:



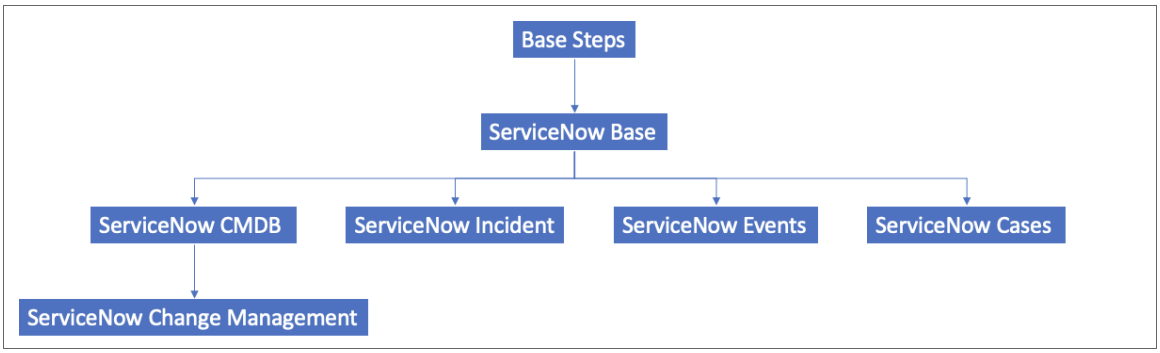
SL1 and ServiceNow Terminology

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 SyncPack 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 SyncPacks

The following graphic describes which SyncPacks depend on other SyncPacks:



TIP: For more information about the "Base Steps" SyncPack, see the ***SL1 PowerFlow Platform*** manual.

Prerequisites for ServiceNow SyncPacks

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

To install any of the ScienceLogic ServiceNow SyncPacks, you must have administrator access to both SL1 and ServiceNow. Specifically, you will need:

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

If you want to upload and install multiple ServiceNow SyncPacks at the same time, you should upload *all* of the SyncPacks first, and then install them to address any dependencies between the SyncPacks.

WARNING: ScienceLogic does not support any deployment that attempts to sync one SL1 instance to multiple ServiceNow instances. A deployment of this type will be incredibly fragile and would require the customer to strictly control their environments. This is not something that can be controlled programmatically. Escalations related to this type of deployment are not supported.

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

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
SL1 Run Book Action	PowerFlow	Any	TCP 443	Send SL1 data to PowerFlow

Downloading, Importing, and Installing the ServiceNow Incident SyncPack

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

NOTE: If you are using an older version of the *ServiceNow Incident* SyncPack, you should *uninstall* that version in the PowerFlow user interface before installing this release. Uninstalling ensures that all deprecated applications and configurations have been removed from your system.

NOTE: If you are upgrading from a previous version of this SyncPack and you want to keep your settings from the existing "ScienceLogic SL1: CMDB & Incident Automation" application, see *Migrating from the "ScienceLogic SL1: CMDB & Incident Automation" Application to the "ScienceLogic SL1: Incident Automation" Application*.

Downloading the SyncPack

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

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

To locate and download the SyncPack:

1. Go to the ScienceLogic Support Site at https://support.sciencelogic.com/s/.
2. Click the **[Product Downloads]** tab and select *PowerPacks*.
3. In the ***Search PowerPacks*** field, search for the SyncPack and select it from the search results. The **Release Version** page appears.
4. On the **[Files]** tab, click the down arrow next to the SyncPack version that you want to install, and select *Show File Details*. The **Release File Details** page appears.
5. Click the **[Download File]** button to download the SyncPack.

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

Importing the SyncPack

> **NOTE:** You must import and install the *ServiceNow Base* SyncPack before uploading and installing any of the other ServiceNow SyncPacks.

To import a SyncPack 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 SyncPack you want to install.

   > **TIP:** You can also drag and drop a **.whl** file to the **Import SyncPack** page.

3. Click **[Import]**. PowerFlow registers and uploads the SyncPack. The SyncPack is added to the **SyncPacks** page.

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

Installing the SyncPack

To activate and install a SyncPack in the PowerFlow user interface:

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

   NOTE: If you try to activate and install a SyncPack 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 SyncPack is activated, the **SyncPacks** page displays a green check mark icon (✔) for that SyncPack. 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 SyncPack. 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 SyncPack on your PowerFlow system, you can click the **[Actions]** button (⋮) for that SyncPack and select *Change active version* to activate a different version other than the version that is currently running.

Migrating from the "ScienceLogic SL1: CMDB & Incident Automation" Application to the "ScienceLogic SL1: Incident Automation" Application

This section explains how to upgrade from the existing "ScienceLogic SL1: CMDB & Incident Automation" application to the new "ScienceLogic SL1: Incident Automation" application with version 4.0.0 and later of this SyncPack.

Both applications include the following functionality:

1. Create, update, or clear a ServiceNow Incident from an SL1 Event
2. Sync Incident State from a ServiceNow to an SL1 Event

These applications do not share any tables or fields within ServiceNow.

This section highlights some considerations when transferring to the Incident only application (version 4.0.0 or later of this SyncPack). Any customizations you made in another Certified Application do not carry over to other Certified Applications, even when both are provided by the same vendor. You will need to adapt customizations made previously so they can work within this new application.

Considerations:

1. The Correlation ID (***correlation _type*** in the Run Book Action Input Parameters) is no longer set in SL1 or PowerFlow. With the new application, the Correlation ID is set in the transformation map within ServiceNow. The preset Correlation IDs that were provided in past applications are also included and can be set by using the **Properties** page in the ServiceNow Application. You can address custom behavior within the transformation map.
2. The Incident "onBefore" script addresses *Impact* and *Urgency* states. You will most likely need to customize the default behavior for these states to meet your requirements.
3. The Incident "onBefore" script also addresses cleared event behavior, and you will need to evaluate and customize this behavior to fit your requirements.

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

Version 4.0.0 or later of the "ServiceNow Incidents" SyncPack uses "ScienceLogic SL1: Incident Automation" application in ServiceNow to sync incident status update from ServiceNow back to SL1. You can access the application from the ServiceNow Store. This application is also known as the "Certified Application" or the "Scoped Application".

Versions of this SyncPack before 4.0.0 used the "ScienceLogic SL1: CMDB & Incident Automation" application, but that application is not supported with version 4.0.0 or later.

NOTE: You must have a ServiceNow HI Service Account to request this application and download it onto your ServiceNow instance.

You must first request the "ScienceLogic SL1: Incident Automation" application from the ServiceNow Store, and then you can install it.

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: 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: Incident Automation" application listing to make sure you are using the correct version of the application that is compatible with your version of this SyncPack.
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.

> **NOTE:** You might need to log out of ServiceNow and log in again to see the updated left-hand navigation menu.

Installing the ServiceNow Base Pack PowerPack in SL1

The "ServiceNow Base Pack" PowerPack monitors the ServiceNow Incident and CMDB tables, and it returns information about Incident types, priorities, and states, displaying the information in an easy-to-consume dashboard. This PowerPack is a critical component of the Incident Sync Integration with ServiceNow, using Run Book Automations to integrate with ServiceNow.

> **TIP:** By default, installing a new version of a PowerPack overwrites all content in that PowerPack that has already been installed on the target system. You can use the ***Enable Selective PowerPack Field Protection*** setting in the **Behavior Settings** page (System > Settings > Behavior) to prevent new PowerPacks from overwriting local changes for some commonly customized fields. For more information, see the ***System Administration*** manual.

To install the "ServiceNow Base Pack" PowerPack:

1. Search for and download the "ServiceNow Base Pack" PowerPack from the **PowerPacks** page at the ScienceLogic Support Site at https://support.sciencelogic.com/s/.
2. In SL1, go to the **PowerPack Manager** page (System > Manage > PowerPacks).
3. Click the **Actions** menu and choose *Import PowerPack*. The **Import PowerPack** modal appears.
4. Click **[Browse]** and navigate to the "ServiceNow Base Pack" PowerPack file from step 1.
5. Select the PowerPack file and click **[Import]**. The **PowerPack Installer** modal page displays a list of the PowerPack contents.
6. Click **[Install]**. After the installation is complete, the "ServiceNow Base Pack" PowerPack appears on the **PowerPack Manager** page.

Validating Network Communications

All communication between SL1 and ServiceNow is done through TCP port 443. To allow communication between SL1 and ServiceNow, the SL1 Database Server, Data Collector, or All-In-One Appliance must have external access to the ServiceNow instance. No inbound TCP ports are required to be open to the SL1 server. Outbound communication may use NAT or be direct.

NOTE: All firewall session-limiting policies must be disabled. If firewall session-limiting policies are enabled, HTTPS requests might be dropped by the firewall, resulting in data loss. Check with your security or firewall administrator to make sure there are no session limiting policies on TCP port 443 for your SL1 servers.

Checking DNS

Because ServiceNow is a cloud-based service, DNS must be configured on all SL1 servers that communicate with your ServiceNow instance.

NOTE: ServiceNow instances are generally named as: ***your-instance*.service-now.com**, where ***your-instance*** is the name of your ServiceNow server. The examples below use **mycompany.service-now.com**. Your instance name will be unique to your subscription.

To validate that your SL1 server has proper DNS name resolution configured, test network connectivity and name resolution using the nmap command, which is available from the command line of any SL1 server:

```
nmap -sT -p 443 mycompany.service-now.com
```

If the test was successful, you will see a message similar to the following:

```
Starting Nmap 5.51 ( http://nmap.org ) at 2013-11-12 20:22 UTC

Nmap scan report for mycompany.service-now.com (199.91.136.100)

Host is up (0.067s latency).

PORT STATE SERVICE

443/tcp open https
```

If domain name resolution fails, you will see a message similar to:

```
Failed to resolve given hostname/IP: mycompany.service-now.com.
```

Checking HTTPS and JSON

You can administer a simple test to determine if the ServiceNow JSON Plug-in web service is configured and operating using the Basic Authentication method on your ServiceNow instance. To do so, run the following command from the ScienceLogic Central Database or All-In-One Appliance:

NOTE: In the example below, replace the `admin:admin` username and password key/value pair with your ServiceNow administrator username and password and `mycompany.service-now.com` with your ServiceNow instance name.

```
curl --location -vu admin:admin -H "Accept: application/json" -H "Content-Type: application/json"
```

```
'https://mycompany.service-now.com/api/now/table/incident'
```

If not successful, the following message appears:

```
HTTP/1.1 401 Unauthorized
```

If successful, a JSON encoded string starting with the "result" variable appears:

```
{"result":[{"upon_approval":"","location":"1083361cc611227501b682158cabf646",….
```

HTTP Codes

HTTP codes are necessary for identifying specific problems. The following table lists typical HTTP codes that might occur when testing the ServiceNow JSON Web Service.

Code	Definition
401	Unauthorized. Check that the username and password are correct and properly formatted.
403	Forbidden. ServiceNow understood the request, but either the URL is incorrect, or the user account does not have permission to see the requested object.
404	The ServiceNow server has not found anything matching the requested URL. Check to make sure there is data in the target table.
200	Success.
201	Success. Data is posted.

TIP: For more information about the ServiceNow JSON Web Service and the Table API, see http://wiki.servicenow.com/index.php?title=Table_API. If you continue to have problems, please contact either ScienceLogic or ServiceNow customer support.

Chapter 3

Configuring Applications for the Incidents SyncPack

Overview

This chapter describes the how to configure and run the various PowerFlow applications and SL1 run book automations contained in the "ServiceNow Incidents" SyncPack.

After you align the PowerFlow applications in this SyncPack with the corresponding run book automation in SL1, whenever SL1 detects a new, acknowledged, or cleared event, PowerFlow creates or updates a corresponding incident in ServiceNow.

This chapter covers the following topics:

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Configuring PowerFlow *32*

Additional Options in ServiceNow *45*

Workflow for Configuring the SyncPack

The following workflows describe how to configure ServiceNow, SL1 and PowerFlow to work with Incident Sync.

Configuring ServiceNow

Use the Guided Setup process to configure an integration user account, configure an SL1 Incident Integration Application role, and connect to PowerFlow.

Configuring SL1

1. *Create a ServiceNow credential in SL1*
2. *Enable the following run book automation policies in SL1:*
    - "ServiceNow: [Incident] - Add/Update"
    - "ServiceNow: [Incident] - Event Acknowledged"
    - "ServiceNow: [Incident] - Event Cleared
3. *Enable and customize the "ServiceNow: Add/Update/Clear Incident" run book action policy*
4. Optionally, *send custom data to ServiceNow using the passthrough option*
5. Optionally, *enable and configure the "ServiceNow: Click to Create Incident" policy*
6. Optionally, *enable run book automation queue retries*

Configuring PowerFlow

1. *Create a configuration object in the PowerFlow user interface*
2. *Configure the following PowerFlow applications*:
    - "Cache SL1 Users"
    - "Sync Cached Events to ServiceNow"
    - "Sync SL1 Event to ServiceNow Incident"
    - "Sync Incident Details from ServiceNow to SL1 Events"
3. *Schedule the PowerFlow applications as needed*

Overview of the Run Book Automation for Incident Sync

You can configure a run book automation to ensure that whenever SL1 detects a new, acknowledged, or cleared event, a corresponding incident is created or updated in ServiceNow.

The "ServiceNow: Add/Update/Clear Incident" run book action policy is responsible for sending the SL1 payload to PowerFlow. PowerFlow then sends that payload to ServiceNow and creates, updates, acknowledges, or clears an incident, as needed.

SL1 features three run book automation policies that facilitate this process:

- ServiceNow: [Incident] Add/Update
- ServiceNow: [Incident] Event Acknowledged
- ServiceNow: [Incident] Event Cleared

NOTE: A fourth run book automation policy, "ServiceNow: [Incident] Click to Create" lets you manually create an incident in ServiceNow by clicking the life-preserver icon (🛟) in SL1. For more information, see *Configuring the "ServiceNow: [Incident] Click to Create" Automation Policy*.

NOTE: The "Sync Incident State from ServiceNow to SL1 Event" application does not have an associated run book action that triggers Incident Sync. You must schedule this application to run every minute, or to a time suitable for your requirements. You can use a cron job to trigger this schedule, or you can use the PowerFlow user interface to schedule the application. For more information about scheduling, see the "Scheduling a PowerFlow Application" topic in the *Managing PowerFlow Applications* chapter of the ***SL1 PowerFlow Platform*** manual.

Each run book automation policy calls a single action in SL1. Ensure that the configuration object aligned with the PowerFlow application points to the relevant SL1 system and ServiceNow instance. The run book action then calls a PowerFlow application that determines the workflow to execute.

Events in SL1 frequently occur and resolve due to fluctuations in the network and other changing conditions. However, the run book automation policies above use a de-duplication algorithm to ensure that only a single open ServiceNow incident exists per device.

If a device already has an existing ServiceNow incident, the following updates are made:

- The "Work Notes" is updated when there is an Acknowledge action.
- Impact and Urgency are updated, if they are different.
- The State is updated, and the **Assigned to** field is cleared when an incident state moves from Resolved to In Progress.
- If an event is cleared in SL1 and then later reoccurs before the incident has been "Closed" in ServiceNow, then the subsequent events appear in the original ServiceNow incident record for that device. If an incident record has been "Closed," then ServiceNow will create a new incident record when a cleared event reoccurs in SL1.

- By default, if an event is acknowledged in SL1, the ServiceNow incident record will be updated with the work notes and the acknowledging user. Clearing an SL1 event will move the ServiceNow incident record state to "Resolved". If all SL1 events associated with a ServiceNow incident record are clear, the ServiceNow incident record will, by default, move to a "Resolved" state.

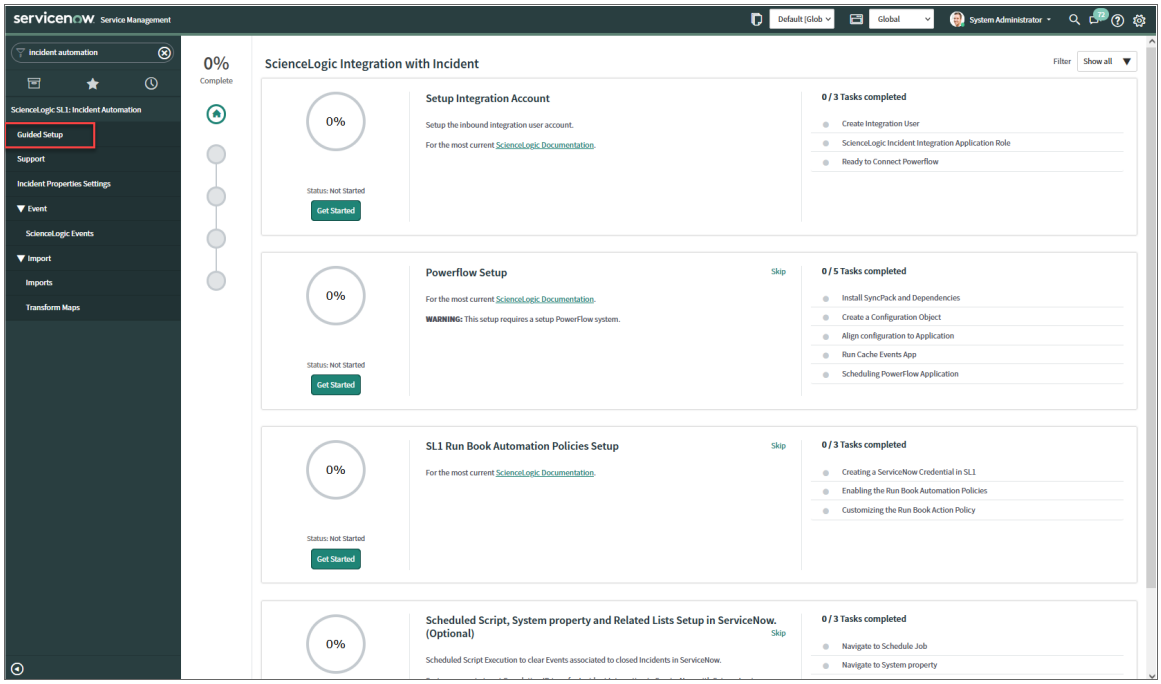
NOTE: You can edit the snippet code in the run book action to adjust the behavior for changing states when an SL1 event is acknowledged or cleared. For more information, see *Customizing the Snippet Code in the Input Parameters Pane*.

Configuring ServiceNow

In ServiceNow, you can use the Guided Setup process to configure an integration user account, configure an SL1 Incident Integration Application role, and connect to PowerFlow.

To use the Guided Setup process in ServiceNow

1. In ServiceNow, go to **ScienceLogic SL1: Incident Automation > Guided Setup**. The **ScienceLogic Integration with Incident** page appears:



2. In the **Setup Integration Account** section, click **[Get Started]** and complete the tasks in order.
3. Click **[Configure]** button to configure each task.
4. After you complete each task, click **[Mark as Complete]**.

5. After you finish all the tasks in the **Setup Integration Account** section, complete the steps in the **PowerFlow Setup** section and **SL1 Run Book Automation Policies Setup** section.

> **NOTE:** These tasks are explained in the Guided Setup sections in ServiceNow , and they are also explained in this manual.

6. Optionally, you can run the steps in the **Scheduled Script, System property and Related Lists Setup in ServiceNow** section.

Configuring SL1

The following topics cover how to set up your SL1 instance to work with Incident Sync.

Creating a ServiceNow Credential in SL1

To configure SL1 to communicate with ServiceNow, you must first create a SOAP/XML credential. This credential allows the run book automations in the "ServiceNow Base Pack" PowerPack to connect with your ServiceNow instance. These run book automations are responsible for sending the SL1 event data to PowerFlow, which ultimately sends the data to ServiceNow.

The **ServiceNow RBA - Example** credential from the "ServiceNow Base Pack" PowerPack is an example SOAP/XML credential that you can configure for your own use.

To configure the **ServiceNow RBA - Example** credential:

1. In SL1, go to the **Credential Management** page (System > Manage > Credentials).
2. Locate the **ServiceNow RBA - Example** credential and click its wrench icon ( ). The **Edit SOAP/XML Credential** page appears.
3. Complete the following fields:
   - ***Profile Name***. Type a new name for the ServiceNow credential.
   - ***Timeout***. Leave as the default of "5000" ms.
   - ***Content Encoding***. Make sure *text/xml* is selected.
   - ***Method***. Make sure *POST* is selected.
   - ***HTTP Version***. Select *http/1.1*.
   - ***URL***. Type the URL for your PowerFlow instance.
   - ***HTTP Auth User***. Type the username of your PowerFlow instance.
   - ***HTTP Auth Password***. Type the password of your PowerFlow instance.
4. Click **[Save & Close]**. The credential is added to the **Credentials** page
5. On the **Credentials** page, make a note of the value in the **ID** column for the credential you just created. You will use this value with the **sl1_credential_id** parameter when you *enable the snippet code of the "ServiceNow: Add/Update/Clear (Case/Event/Incident)" run book action policy.*

Enabling the Run Book Automation Policies

NOTE: Versions 104 and later of the "ServiceNow Base Pack" PowerPack separated these run book action policies by Cases, Events, and Incident, such as "ServiceNow: **[Incidents]** - Add/Update".

Before you can run the "ServiceNow: Add/Update/Clear" run book action, you must enable the incident specific run book automation policies in SL1:

- ServiceNow: [Incident] - Add/Update
- ServiceNow: [Incident] - Event Acknowledged
- ServiceNow: [Incident] - Event Cleared

CAUTION: Version 106 and later of the "ServiceNow Base Pack" PowerPack aligned all default Incident Automation policies with the new "ServiceNow: Send to PowerFlow" action type. If you have upgraded to the "ServiceNow Base Pack" PowerPack version 106 or later, but not the "ServiceNow Incident" SyncPack version 4.0.0 or later, you will need to update those default automation policies to align with the older action type. If you made *copies* of the automation policies, you will not need to update them.

To enable the three ServiceNow run book automation policies:

1. In SL1, go to the **Automation Policy Manager** page (Registry > Run Book > Automation).
2. Locate the "ServiceNow: [Incident] - Add/Update" automation policy and click its wrench icon (). The **Automation Policy Editor** page appears.
3. Update the following fields:
    - ***Policy State***. Select *Enabled*.
    - ***Policy Priority***. Select *High* to ensure that this PowerFlow automation policy is added to the top of the queue.
    - ***Available Actions***. If it is not already selected, select the corresponding ServiceNow run book action policy. Filter the **Available Actions** section by typing "ServiceNow" in the search field.

TIP: By default, the "ServiceNow: [Incidents] Add/Update" automation policy will create ServiceNow Incidents for ***all*** devices. You can limit the devices affected by making changes to the ***Organization***, ***Severity***, ***Match Logic***, ***Aligned Devices***, and/or ***Aligned Events*** fields.

WARNING: ScienceLogic highly recommends that you do not make changes to the ***Policy Type***, ***Repeat Time***, or ***Align With*** fields or the *And event is NOT acknowledged* setting.

4. Click **[Save]**.
5. Repeat steps 2-4 for the "ServiceNow: [Incident] - Event Acknowledged" and "ServiceNow: [Incident] - Event Cleared" run book automation policies.

Enabling and Customizing the Run Book Action Policy

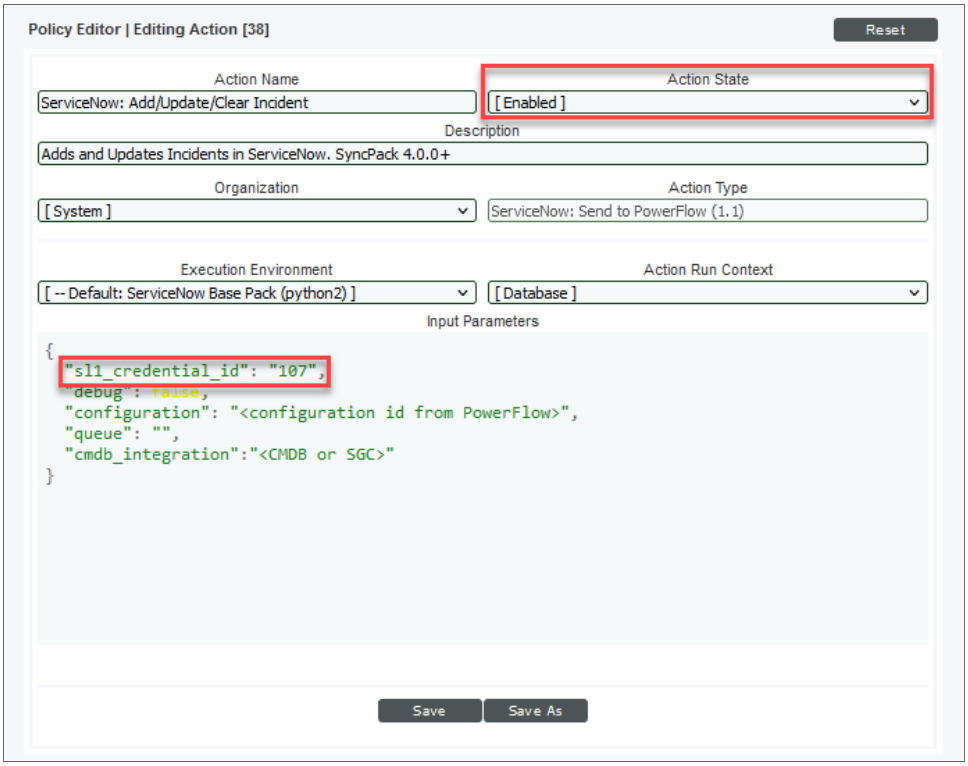
The "ServiceNow: Add/Update/Clear Incident" run book action policy contains snippet code that you can customize to use with the "ServiceNow Incident" SyncPack.

You can edit these values in the **Input Parameters** pane of the **Actions** page for this policy.

> **NOTE:** Make sure you are using the most recent version of the run book action policy. If there are two policies with the same name, always use the policy with the higher number in the **ID** column of the **Actions** page.

To enable and customize the Incident run book action policy:

1. In SL1, go to the **Actions** page (Registry > Run Book > Actions).
2. Locate the "ServiceNow: Add/Update/Clear Incident" policy and click its wrench icon (). The **Action Policy Editor** page appears:



3. For the ***Action State*** filed select *Enabled*.
4. For the ***sl1_credential_id*** field in the **Input Parameters** pane, specify the credential ID form the **ID** column on the **Credential Management** page (System > Manage > Credentials). For example: `"sl1_credential_id": "107"`
5. Edit the snippet code as necessary, using the information in the ***Customizing the Snippet Code in the Input Parameters Pane*** section, below.
6. When you are finished, click **[Save]**.

Customizing the Snippet Code in the Input Parameters Pane

SL1 Run Book Action snippets are written in Python. In the event of a syntax error, the policies will no longer run. As a result, you must ensure that all edits adhere to Python standards. True and False options are case-sensitive and must not contain quotes.

> **NOTE:** The Correlation ID (***correlation _type*** in the run book action **Input Parameters**) is no longer set in SL1 or PowerFlow starting with version 4.0.0 of the "ServiceNow Incidents" SyncPack. The Correlation ID is now set in the transformation map within ServiceNow. The preset Correlation IDs that were provided in past applications are also included and can be set by using the **Properties** page in the ServiceNow Application. You can address custom behavior within the transformation map.

You can customize the following values in the "ServiceNow: Add/Update/Clear Incident" run book action snippet code:

- ***sl1_credential_id***. Specifies the ID of the credential object. You can find this value in the **ID** column of the **Credentials** page (System > Manage > Credentials of SL1. For example: `"sl1_credential_id": "107"`
- ***debug***. A true/false value that determines if the action is logged in SL1 and if the application is run in Debug Mode on PowerFlow. Troubleshooting logs are written to **/data/tmp/servicenow_rba.log**.
- ***configuration***. Specifies the ID of the configuration object used on PowerFlow. The configuration ID is all lower-case, with spaces in the configuration object "friendly" name replaced by underscores. For example: `"configuration": "servicenow_syncpack_configs"`

> **NOTE:** To find the configuration ID with the API, make a GET request on this endpoint: `https://<powerflow_hostname>/api/v1/configurations`.

- ***queue***. Specifies the worker queue on which the application runs. Leave this as default.
- ***cmdb_integration***. Specifies which CMDB SyncPack you are using to ensure that PowerFlow sends the correct identifiers to ServiceNow.
    - If you are using the "ServiceNow CMDB" SyncPack version 3.5.0 or later, use `"SGC"` to allow CIs to attach to incidents. For example: `"cmdb_integration":"SGC"`
    - If you are using versions of the "ServiceNow CMDB" SyncPack before version 3.5.0, use `"CMDB"`.
    - If you are using the "ServiceNow Service Graph Connector" SyncPack, use `"SGC"`.

Starting with version 4.1.0 of this SyncPack, the following fields have been deprecated. If you still want to sync these fields, see *Sending Custom Data to ServiceNow Using the Passthrough Option*.

- ***pf_app_override***. If you are using a custom PowerFlow application to consume SL1 Events, add the system name of that application to this parameter. Optional. If this parameter is not present and populated, PowerFlow will use the default application for consuming events.
- ***discard_if_no_ci***. Deprecated. Previous versions let you specify whether PowerFlow should create cases, events, or incidents in ServiceNow for devices that do not have a matching CI record.
- ***servicenow_state_new***:
    - *1*. Incident state is "New". This is the default value.
    - *2*. Incident state is "In Progress".
    - *3*. Incident state is "On Hold".
    - *6*. Incident state is "Resolved".
    - *7*. Incident state is "Closed".
    - *8*. Incident state is "Canceled".
- ***servicenow_state_ack***:
    - *1*. Incident state is "New". There is no default value.
    - *2*. Incident state is "In Progress".
    - *3*. Incident state is "On Hold".
    - *6*. Incident state is "Resolved".
    - *7*. Incident state is "Closed".
    - *8*. Incident state is "Canceled".
- ***servicenow_state_clear***:
    - *1*. Incident state is "New".
    - *2*. Incident state is "In Progress".

- 3. Incident state is "On Hold".
- 6. Incident state is "Resolved". This is the default value.
- 7. Incident state is "Closed".
- 8. Incident state is "Canceled".

- To assign an assignment group, set the variable value to the ***sys_id*** of the ServiceNow Assignment Group. In the following example, the assignment group is assigned to incidents that are *cleared*:

```
"assignment_group_new": "",

"assignment_group_ack": "",

"assignment_group_clear": "sys_id"
```

Customizing Logging in the Run Book Action

You can customize the following logging-related items in the "ServiceNow: Add/Update/Clear" Run Book Action snippet code:

- `logfile = /data/tmp/ServiceNow_add_update_clear_incident.log`
  - Location for logging output.
  - Will be created if it does not exist.
  - Will be appended with each Run Book job.
  - Is case-sensitive.
- `do_debug_logging = True`
  - True is on, False is off.
  - Is case-sensitive.
  - For troubleshooting, these can be enabled or changed.
  - Writes logs to **/data/tmp/servicenow_rba.log**.

Sending Custom Data to ServiceNow Using the Passthrough Option

You can use the "ServiceNow: [*(Cases/Events/Incidents)*] Add/Update" run book automation and the "ServiceNow: Add/Update/Clear *(Case/Event/Incident)*" run book action to "pass through" custom data about SL1 cases, events, or incidents to ServiceNow (depending on the SyncPack you are using with PowerFlow).

For example, you might want to use the passthrough functionality to overwrite the impact and urgency of a ServiceNow incident, which is the only way to change the priority of the incident.

To pass custom data to ServiceNow:

- Create a new run book action that pulls the relevant data and adds it to a dictionary called EM7_RESULT.
- Add the new run book action to the "ServiceNow: [*(Cases, Events, or Incident)*] Add/Update " run book automation Policy, ahead of the "ServiceNow: Add/Update/Clear *(Case/Event/Incident)*" run book action so that the new action runs first, and then is consumed by the ServiceNow action.

Passing Custom Data to ServiceNow

The following procedure describes how to configure the passthrough functionality, using the "ServiceNow: [*Incident*] Add/Update" run book automation and the "ServiceNow: Add/Update/Clear *Incident*" run book action as examples.

To pass custom data to ServiceNow:

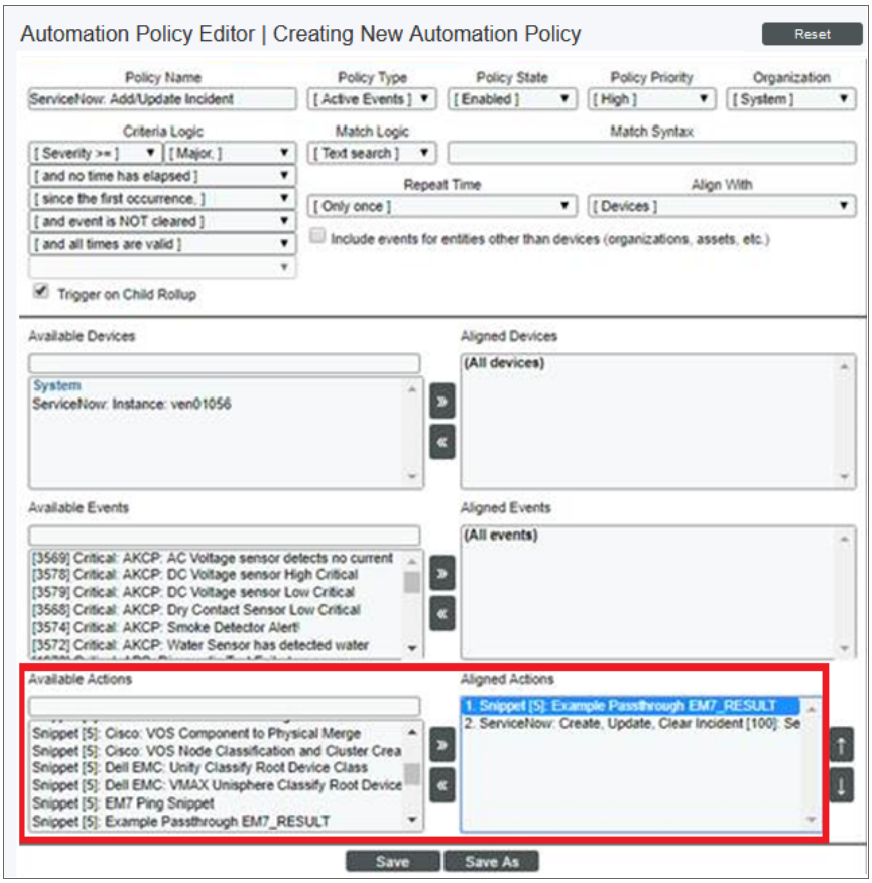
1. In SL1, go to the **Actions** page (Registry > Run Book > Actions) and click **[Create]** to create a new run book action policy.
2. Complete the following fields:
    - ***Action Name***. Type a unique name for the action.
    - ***Action State***. Select *Enabled*.
    - ***Action Type***. Select *Run a Snippet*.
    - ***Execution Environment***. Select *ServiceNow Base Pack*.
    - Complete the other fields as needed, or leave them at their default settings.
3. In the **Snippet Code** pane, add the snippet code you want to include for the EM7_RESULT dictionary. For example, the following snippet code lets you override the ServiceNow Incident work notes with a hardcoded note:

    ```
    EM7_RESULT = {"work_notes": "This is a new note"}
    ```

    Additional notes about the structure of the EM7_RESULT dictionary:

    - `EM7_RESULT =` is required for the dictionary, and the formatting of the keys should match the example above.
    - All keys defined in the EM7_RESULT dictionary need to map to field IDs on the **ScienceLogic Events** table in ServiceNow.
    - You can hard-code the values in the EM7_RESULT dictionary, or you can use variables and functions, like the "Snippet Code Example", below.
    - As a best practice, avoid sending null passthrough values to ServiceNow. If you must send 'null' or 'NULL' values to ServiceNow, pass through that value as an empty string, such as `"location":""`. Also, only pass through values that you need. For example, instead of sending `{"location": "", "work_notes": "stuff"}`, simply send `{"work_notes": "stuff"}`.
    - A long snippet might delay the ticket being created
4. Click **[Save]**.
5. Go to the **Automation Policy Manager** page (Registry > Run Book > Automation) and open the "ServiceNow: Add/Update Incident" run book automation Policy.

6. In the **Available Actions** section, add the new run book action *before* the "ServiceNow: Create, Update, Clear Incident" run book action:



> **NOTE:** The output of this new run book action will be consumed by the "ServiceNow: Create, Update, Clear Incident" run book action, ensuring that the EM7_RESULT dictionary is passed through to ServiceNow. The "ServiceNow: Create, Update, Clear Incident" run book action automatically populates the passthrough values with any values from EM7_LAST_RESULT. The passthrough overwrites any other previously defined fields, such as assignment group.

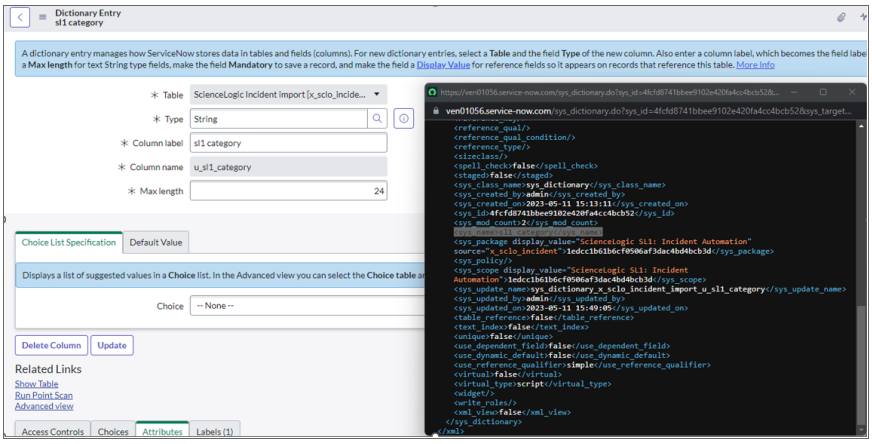
7. You can add additional run book actions to the run book automation Policy for any additional workflows that you might want to run. The Automation Policy execute these Actions in a sequential, top-down order. However, the "ServiceNow: Create, Update, Clear Incident" run book action only consumes the EM7_RESULT dictionary from the run book action directly above it.

Passthrough Example

For the Dictionary Entry of the ServiceNow field on the import table, you can reference the XML of the record. You will need to copy the `<sys_name>` value so you can use that as the key for the passthrough.

In this example, you want to bring in an additional field called ***sl1 category***.

1. Create the new ***sl1 category*** field on the import table in ServiceNow. You can right-click on the header of the form to view the XML:



2. Look for the *<sys_name>* value.
3. Copy that value directly out and use that in your EM7_RESULT for the passthrough value (in the `Snippet Code` pane):
`EM7_RESULT = {'sl1 Category': 'test'}`

Snippet Code Example

The following snippet code example shows how to pull additional information and make it available for passthrough. All of the additional information that is going to be sent is contained in a dictionary variable called EM7_RESULT. You can pass through multiple items through in a single run book action by adding additional keys to the EM7_RESULT dictionary.

This example lets you assign assignment groups to an Incident based on certain criteria, such as event policy IDs:

```
from future.utils import iteritems

def invert_mappings(mappings):
    """
    Invert received one-to-many mappings and converts it into a one-to-one
    mapping.

    Args:
        mappings (dict): Dictionary of mapped values

    Returns:
        dict: inverted dictionary.

    """
    inverted_mappings = dict()
```

```
    for key, values in iteritems(mappings):
        for sub_value in values:
            invert_mappings[sub_value] = key
    return inverted_mappings


# Example of assignment group to list of event policy ids mapping.
assignment_groups_to_event_policies = {
    "sys_id_1": [1, 2, 3, 4, 5],
    "sys_id_2": [6, 7, 8, 9, 10],
}
# which sys_id to use if the current event_policy_id isn't mapped
default_sys_id = "sys_id_3"

# invert the mappings
event_policy_to_assignment_group = invert_mappings(assignment_groups_to_
event_policies)

# Send assignment group sys_id to IS RBA
EM7_RESULT = {
    "assignment_group": event_policy_to_assignment_group.get(
        EM7_VALUES["%3"], default_sys_id
    )
}
```

Configuring the "ServiceNow: Click to Create Incident" Automation Policy

The "ServiceNow: [*(Cases/Events/Incident)*] - Click to Create" automation policy lets you manually create a case, event, or incident in ServiceNow by clicking the **Actions** button (⋯) in SL1 for an event and selecting "Create External Ticket" (or by clicking the life-preserver icon (🛟) for an event in the classic user interface).

This run book action policy is available in the "ServiceNow Base Pack" PowerPack.

To configure the "ServiceNow: Click to Create" run book action policy:

1. In SL1, go to the Behavior Settings page (System > Settings > Behavior) and set the ***Event Console Ticket Life Ring Button Behavior*** option to *Create/View External Ticket*.
2. Click **[Save]** to save your changes. You might need to log out of SL1 and log back into SL1 for the changes to update.
3. Go to the **Automation** page (Registry > Run Book > Automation).

4. Locate the "ServiceNow: *(Cases/Events/Incident)* - Click to Create" policy and click its wrench icon ( ). The **Automation Policy Editor** page appears:
5. Update the following fields:
    - ***Policy State***. Select *Enabled*.
    - In the **Criteria Logic** section, select *and external ticket IS requested* in the fifth drop-down. Leave the other values in this section at their default settings.
    - ***Repeat Time***. Specify the frequency at which SL1 should execute the automation policy while the conditions are still met. The choices range from "every 30 seconds until satisfied" to "every 2 hours until satisfied", or "only once". By default, the policy only runs once.
    - ***Available Actions***. If it is not already selected, select *ServiceNow: Send to PowerFlow: ServiceNow: Add/Update/Clear Incident* and add it to the ***Aligned Actions*** field.
6. Click **[Save]**. The "Click to Create" feature is now available on the **Events** and **Event Investigator** pages.

Enabling Run Book Automation Queue Retries

You can enable run book action (RBA) queue retries to keep from losing any data if PowerFlow is unavailable. Those pending PowerFlow applications are added to an RBA queue that you can access to retry the applications that failed.

For more information, see *Enabling Run Book Automation Queue Retries*.

Configuring PowerFlow

The following topics cover how to set up your PowerFlow instance to work with Incident Sync.

Creating a Configuration Object

A ***configuration object*** supplies the login credentials and other required information needed to execute the steps for a PowerFlow application. 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 SyncPack, you will need to use an existing configuration object in the PowerFlow user interface or create a new configuration object. Next, you need to align that configuration object to the relevant applications that are triggered by the Run Book Actions in SL1.

TIP: Depending on your SL1 environment and the third-party environment with which you are syncing data, you might be able to use the same configuration object with more than one SyncPack.

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

> **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. For the "ServiceNow SyncPack" configuration object, click the **[Actions]** button ( ) and select *Edit*.
   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": "sl1_db_host",
  "value": "${config.sl1_host}"
},
```

   For example:

```
{
  "encrypted": false,
  "name": "sl1_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.

Configuring the PowerFlow Applications

To run Incident Sync, you must "align" the configuration object to run with the following PowerFlow applications:

- ***Cache SL1 Users***. Performs a query for all existing users and writes them to a cache. To maintain the user cache for this SyncPack, ScienceLogic recommends that you schedule this application to run at least once a week.

- ***Sync Cached Events to ServiceNow***. Bulk processes all of the cached SL1 Events and posts them to ServiceNow. Sends a "Sync Success" or "Sync Failed" status update to PowerFlow based on the result of the post. ScienceLogic recommends that you schedule this application to run every 60 seconds or longer.
- ***Sync Incident Details from ServiceNow to SL1 Events***. Acknowledges or clears SL1 Events from ServiceNow, updates the user note, and populates the incident number in the external ticket reference. This application also include the new ***user_note_template*** field that accepts a Jinja2 template to generate custom user notes. ScienceLogic recommends that you schedule this application to run every 60 seconds.

  NOTE: In previous releases of this SyncPack, this application was named the "Sync Incident State from ServiceNow to SL1 Event" application.

- ***Sync SL1 Event to ServiceNow Incident***. The "ServiceNow: Add/Update/Clear Incident" Run Book Action triggers this application whenever an SL1 Event is created, updated, or cleared.

  NOTE: This application processes the SL1 event, caches it to PowerFlow to allow for bulk processing for ServiceNow by the "Sync Cached Events to ServiceNow" application, and then sends a status update to SL1.

In addition, you can configure additional fields from the **Configuration** pane for the "Sync Incident Details from ServiceNow to SL1 Events" and the "Sync Cached Events to ServiceNow" PowerFlow applications.

NOTE: If you are using the "ServiceNow CMDB" SyncPack and you want to link incidents with ServiceNow Configuration Items (CIs), you will need to run the "Sync Devices from SL1 to ServiceNow" application. If this is the first time you are running the Incident Sync, you will need to run the "Sync Devices from SL1 to ServiceNow" application twice to build the internal cache. For more information, see the ***ServiceNow CMDB SyncPack*** manual.

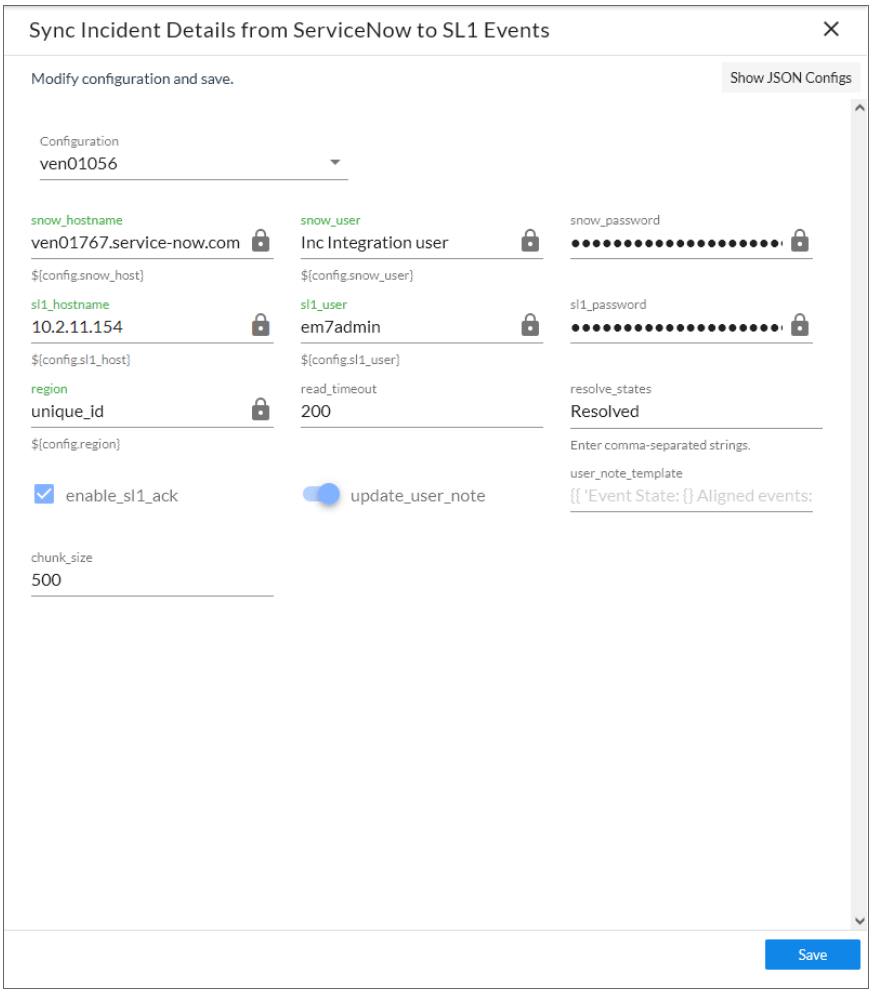
To configure the PowerFlow applications:

1. On the **Applications** page of the PowerFlow user interface, open the "Sync SL1 Event to ServiceNow Incident" application and click **[Configure]**. The **Configuration** pane for that application appears.
2. From the ***Configurations*** drop-down, select the configuration object you want to use.
3. Click **[Save]** to align that configuration object with the "Sync SL1 Event to ServiceNow Incident" application. You do not need to edit any other fields for that application.
4. Repeat steps 1-3 for the "Cache SL1 Users" application. This application is in the "System Utils" SyncPack. ScienceLogic recommends that you schedule this application to run at least once a week.
5. Go to the **Applications** page, open the "Sync Cached Events to ServiceNow" application, and click **[Configure]**. The **Configuration** pane for that application appears.
6. From the ***Configurations*** drop-down, select the configuration object you want to use.
7. Update the following fields, as needed:

- ***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_jitter***. Instead of using a defined interval between retries, the PowerFlow system will retry the step execution at random intervals. The default is unselected.
- ***retry_backoff***. Instead of using a defined interval between retries, PowerFlow will incrementally increase the interval between retries. The default is unselected.
- ***retry_backoff_max***.The maximum time interval for the ***retry_backoff*** option, in seconds. For example, This means, 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.

- ***limit***. Specify the number of events to send per batch. The default is 2000.

8. Click **[Save]**.
9. Go to the **Applications** page, open the "Sync Incident Details from ServiceNow to SL1 Events" application, and click **[Configure]**. The **Configuration** pane for that application appears:



> **NOTE:** This application populates the incident numbers in SL1 as well as updating other incident behaviors.

10. From the ***Configurations*** drop-down, select the configuration object you want to use.
11. Update the following fields, as needed:

    - ***resolve_states***. Specify one or more state labels that PowerFlow will consider as "Resolved", separated by commas. SL1 Events associated with a ServiceNow Incident in these states will be cleared.
    - ***enable_sl1_ack***. Select this option to allow this integration to acknowledge events. The application attempts to acknowledge with the user assigned to the incident.

- ***update_user_note***. De-select this option if you do not want this application to update the User Note in SL1.
- ***user_note_template***. Lets you add a Jinja2 template to define a customer format for populating the User Notes in SL1. If you leave this field blank, PowerFlow uses the state label that displays in gray text. For more information about Jinja2 filters, see the List of Built-in Filters in the Jinja2 documentation.

TIP: The following is an example of a Jinja2 template that you can use in this field:

```
{{'Incident {} is assigned to {} has {} events aligned to it
and is currently in state {}'.format(incident.incident_
number, incident.user.user|default(None),
incident.events|length, incident.state)}}
```

12. Click **[Save]**.

Scheduling PowerFlow Applications

ScienceLogic recommends that you schedule the following PowerFlow applications:

- "Cache SL1 Users": at least once a week
- "Sync Incident Details from ServiceNow to SL1 Events": every 60 seconds
- "Sync Cached Events to ServiceNow": every 60 seconds; less than 60 seconds might cause adverse performance issues within ServiceNow

You do *not* need to schedule or run the "Sync SL1 Event to ServiceNow Incident" application, as the "ServiceNow: Add/Update/Clear Incident" Run Book Action triggers this application whenever an SL1 Event is created, updated, or cleared

For more information about scheduling applications, see *Scheduling a PowerFlow Application*.

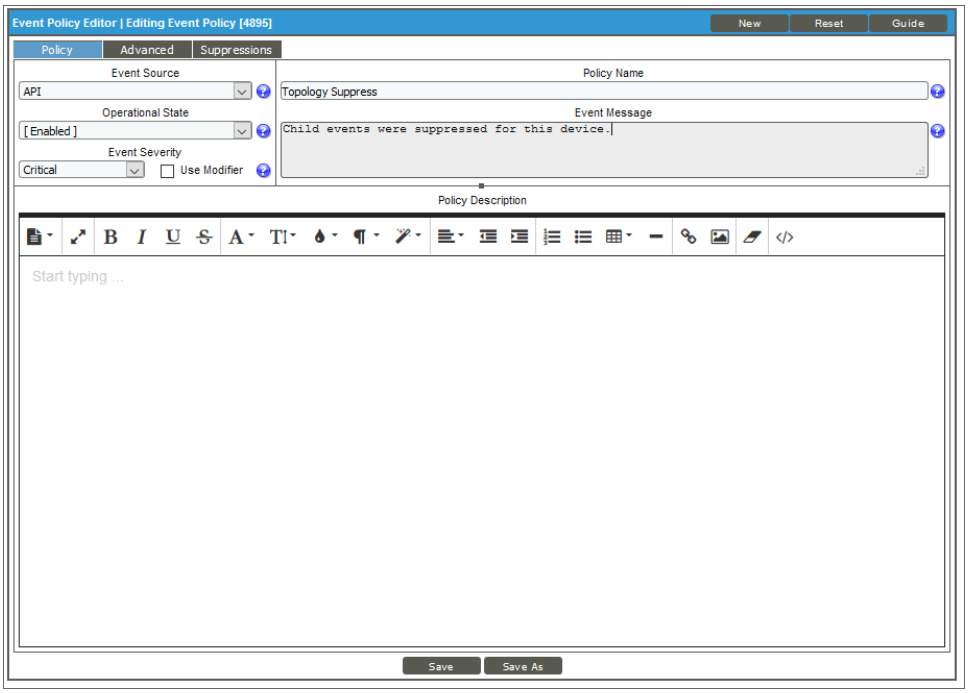
Incident Topology Suppression

Incident topology suppression is used when ServiceNow incidents that have been synced with SL1 devices occur on devices that have a parent/child relationship. If you choose to enable incident topology suppression in SL1, child events synced with ServiceNow incidents do not appear in the SL1 **Event Console** as separate events. Instead, the child events are nested under the parent event.

NOTE: The steps in this process use the Classic user interface for SL1.

To enable incident topology suppression:

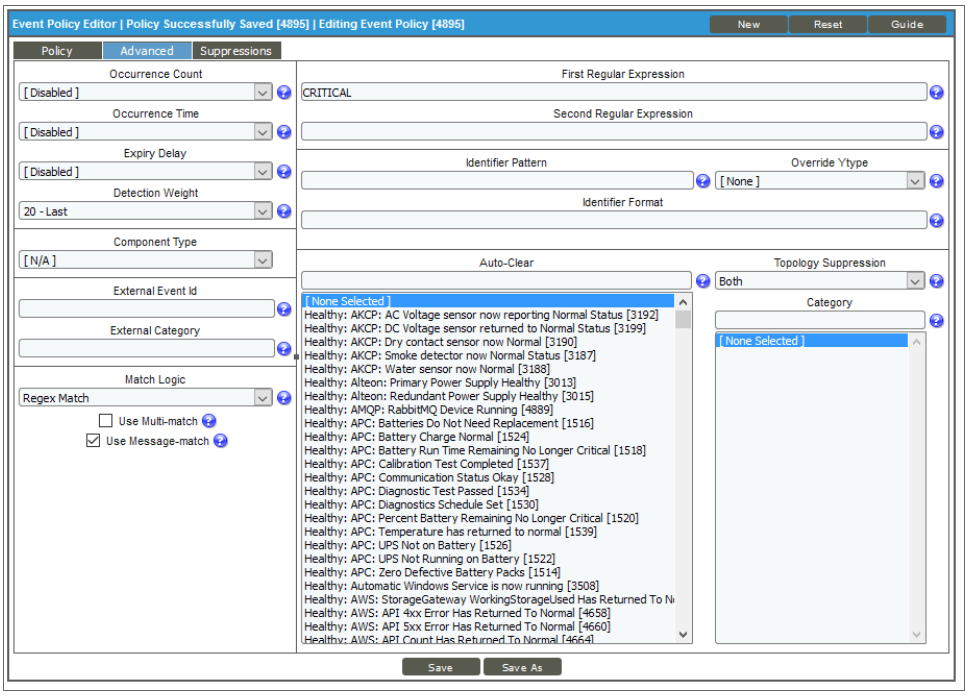
1. In SL1, navigate to the **Event Policy Manager** page (Registry > Events > Event Manager) and click the **[Create]** button. The **Event Policy Editor** modal appears:



2. On the **[Policy]** tab, update the following fields:

   - ***Event Source***: Select *API*.
   - ***Operational State***: Select *Enabled*.
   - ***Event Severity***: Select *Critical* as the severity of the event.
   - ***Policy Name***. Type the name of the event. Can be any combination of alphanumeric characters, up to 48 characters in length
   - ***Event Message***. Type the message that will appear when this event occurs.

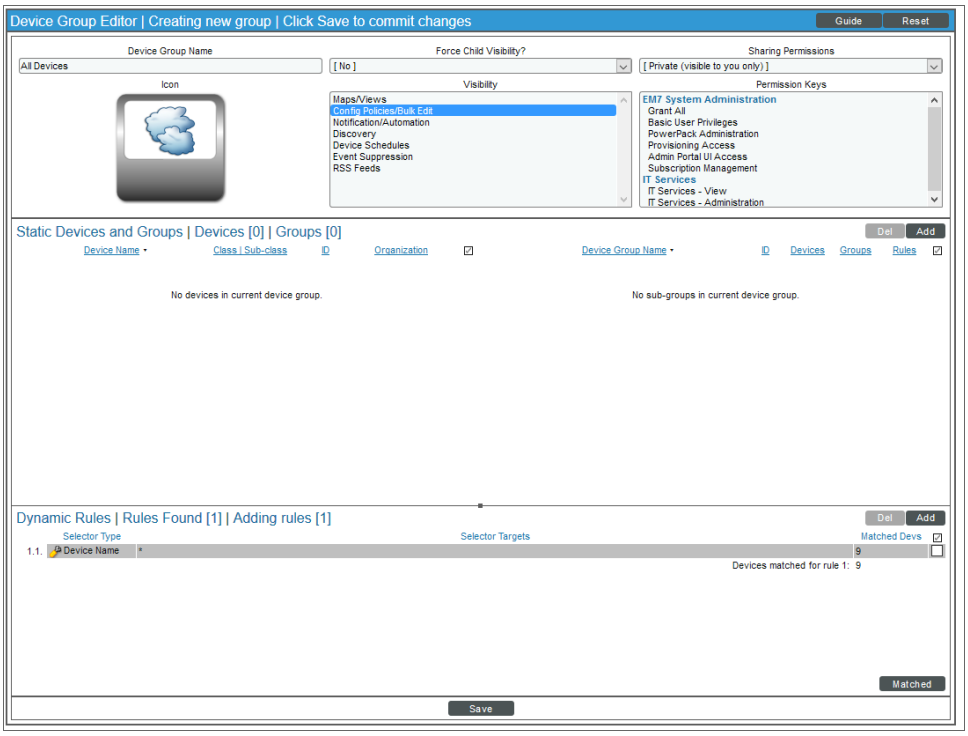
3. Click the **[Advanced]** tab.



4. On the **[Advanced]** tab, update the following fields:

   - ***Detection Weight***. Select *20 - Last*. If two event definitions are very similar, the weight field specifies the order in which SL1 should match messages against the similar event definitions. The event definition with the lowest weight will be matched first. This field is most useful for events that use expression matching. Options range from 0 (first) - 20 (last).
   - ***Match Logic***. Select *Regex Match*. Specifies whether SL1 should process the First Match String field and Second Match String as regular expressions or as simple text matches. Because you selected *Regex Match*, you cannot define a "match all" expression by leaving the First Match String and Second Match String fields empty.
   - ***Use Message-match***. Select this option. If SL1 has generated an event and then a second log message or alert matches the same event policy for the same entity, SL1 will not generate a second event, but will increase the count value for the original event. This behavior will occur only if the log messages or alerts contain the same message.
   - ***First Regular Expression***. Type "CRITICAL" as the string used to correlate the event with a log message.
   - ***Topology Suppression***. Select *Both*. If this event occurs on a parent device, it behaves as a suppressing event. If this event occurs on a child device, it behaves as a suppressible event.

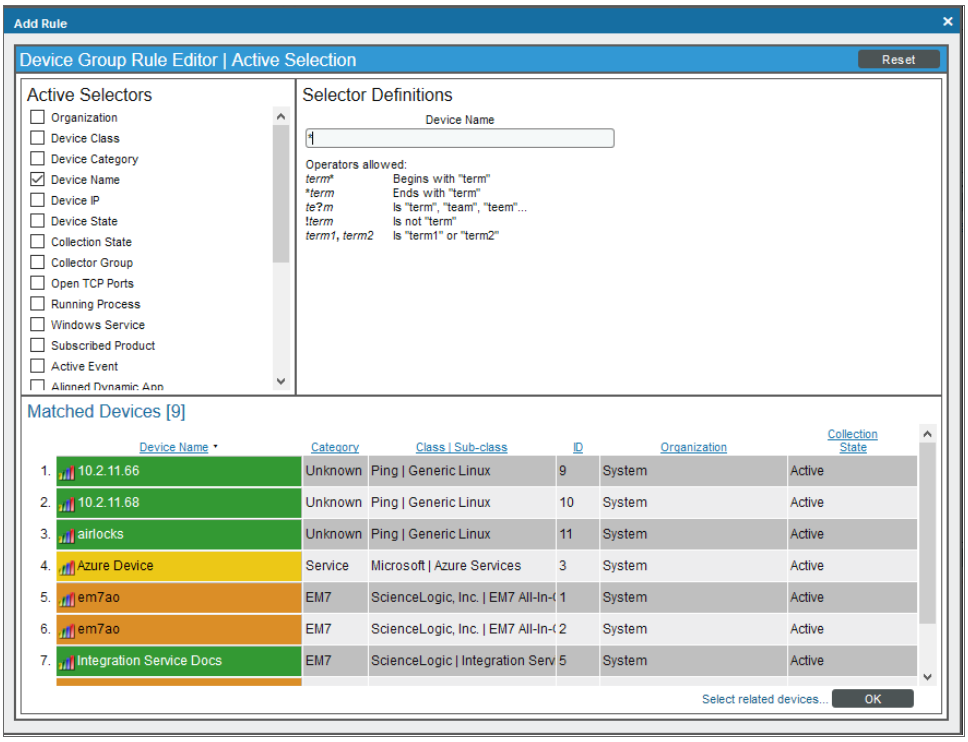
5. Click **[Save]** and close the **Event Policy Editor** modal.
6. Next, go to the **Device Groups** page (Registry > Device Groups) and click the **[Create]** button. A **Device Group Editor** page appears:



7. Complete the following fields, and leave the default settings for the remaining fields:

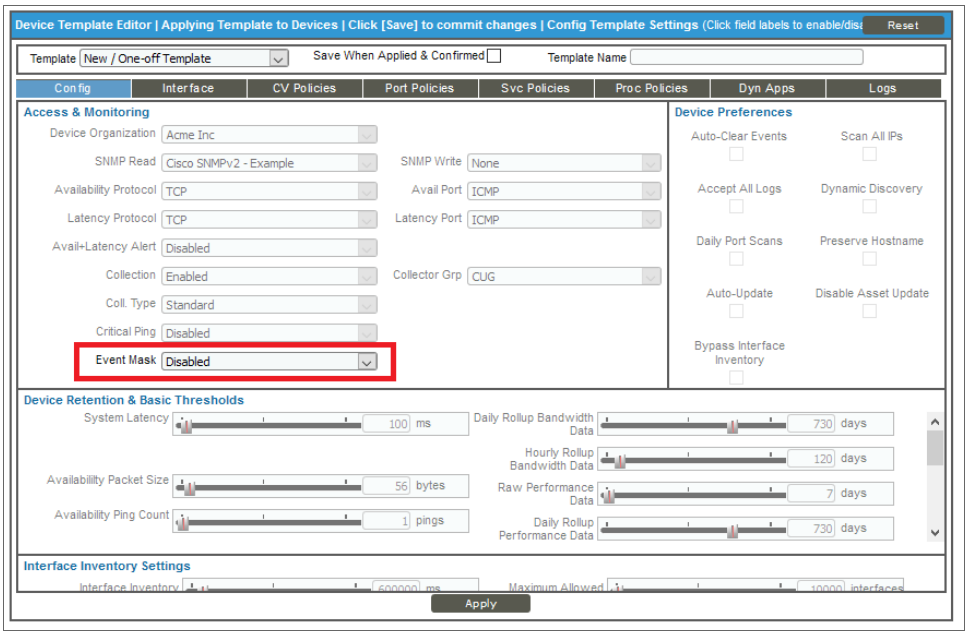
   - ***Template Name***. Specify the name of the new device group.
   - ***Force Child Visibility***. Select "No".
   - ***Visibility***. Select *Config Policies/Bulk Edit* to let you configure all the devices in the new device group using a device template.

8. Click the **[Save]** button and then click the **[Add]** button in the **Dynamic Rules** pane to add dynamic rules to the new device group. The Device Group Rule Editor modal page appears:

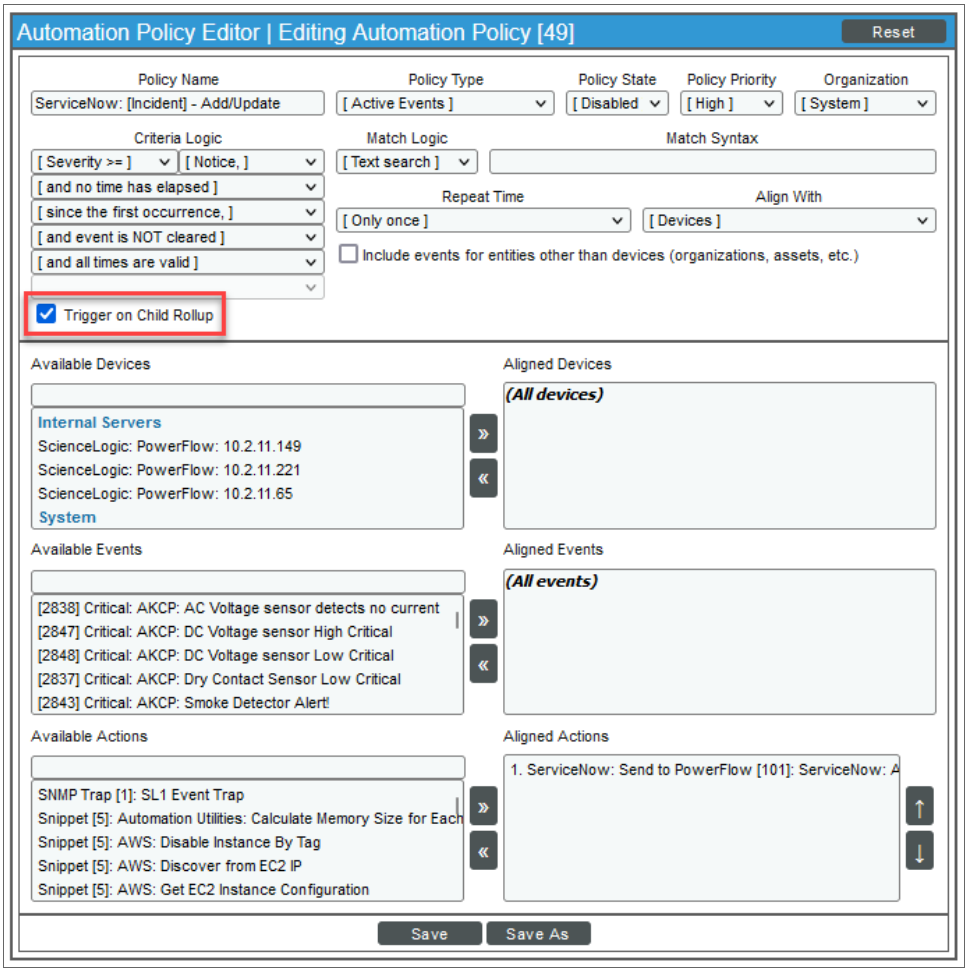


9. In the **Active Selectors** pane, select *Device Name*.
10. Optionally, in the **Selector Definitions** pane, type an asterisk (*) in the ***Device Name*** field. Using the * includes all devices by Device Name. In the **Matched Devices** pane, a list of all devices appears.
11. Click **[OK]** to close the modal page.
12. On the **Device Group Editor** modal page, click **[Save]** and close the page.

13. Next, create a Device Group Template that will disable Event Masking for all devices in the new Device Group. Click the building blocks icon ( ) for the new device group. A **Device Template Editor** page appears:



14. Because all of the fields are disabled (grayed-out) by default, click the ***Event Mask*** field name to enable the field. Use the default setting of *Disabled*.
15. Click **[Apply]** and click **[Confirm]** on the **Device Template Editor** page.
16. Next, turn off the *Trigger on Child Rollup* option on the "ServiceNow: Add/Update Incident" Run Book Automation. Go to the **Automation Policy Manager** page (Registry > Run Book > Automation) and click the wrench icon ( ) for the "ServiceNow: Add/Update Incident" Run Book Automation. The **Automation Policy Editor** page appears:



17. Make sure the *Trigger on Child Rollup* option is not selected and click **[Save]**. Close the **Automation Policy Editor** page.

Additional Options in ServiceNow

Viewing Events with ServiceNow

Within ServiceNow, the Incident Sync sends as much data as possible, but limits what is sent or updated directly to the incident table. All SL1 Event-specific data is mapped to a separate record and custom application-specific table. A related list option is available to provide event record data that you can view from the incident.

> **NOTE:** The related list **[SL1] Events** is not configured when you install the Certified application. You need to add that related list to the incident form.

You can also view the actual Event records at **ScienceLogic SL1**: **Incident Automation** > **Event** > **ScienceLogic Events**.

Hyperlinking Events

Both ServiceNow and SL1 provide mechanisms for hyperlinking to multiple active events and incidents.

Each Incident in ServiceNow will have one or more events aligned with it through a related list: **[SL1] Event**.

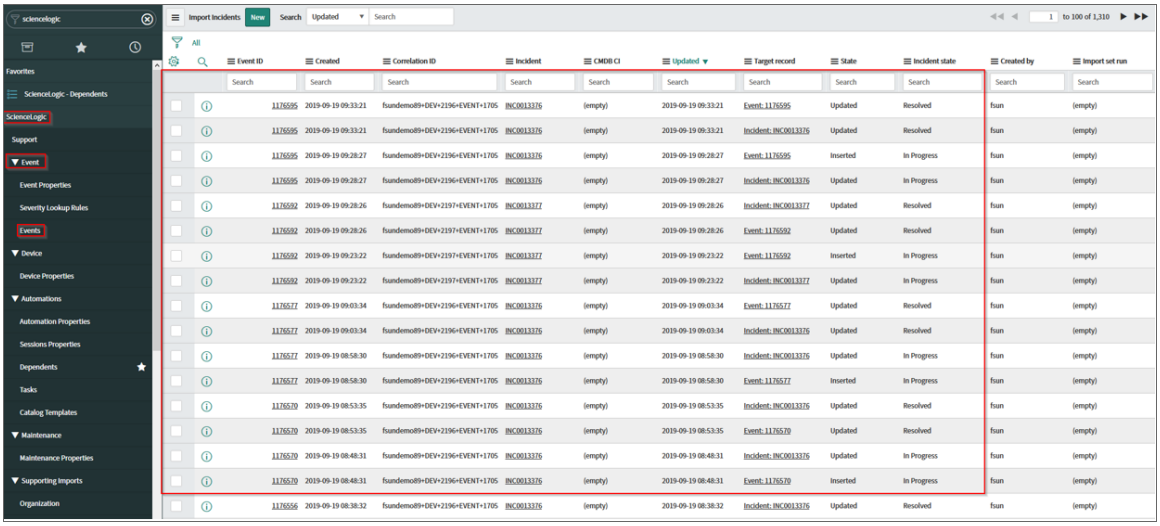
By default the ***Hyperlink*** field "Event URL" only appears on the Event (x_sclo_incident_event) custom table provided by the Certified application. If a URL link is required, you would need to customize it to be applied to different location.

The following image shows the Event record for an event aligned with an Incident:

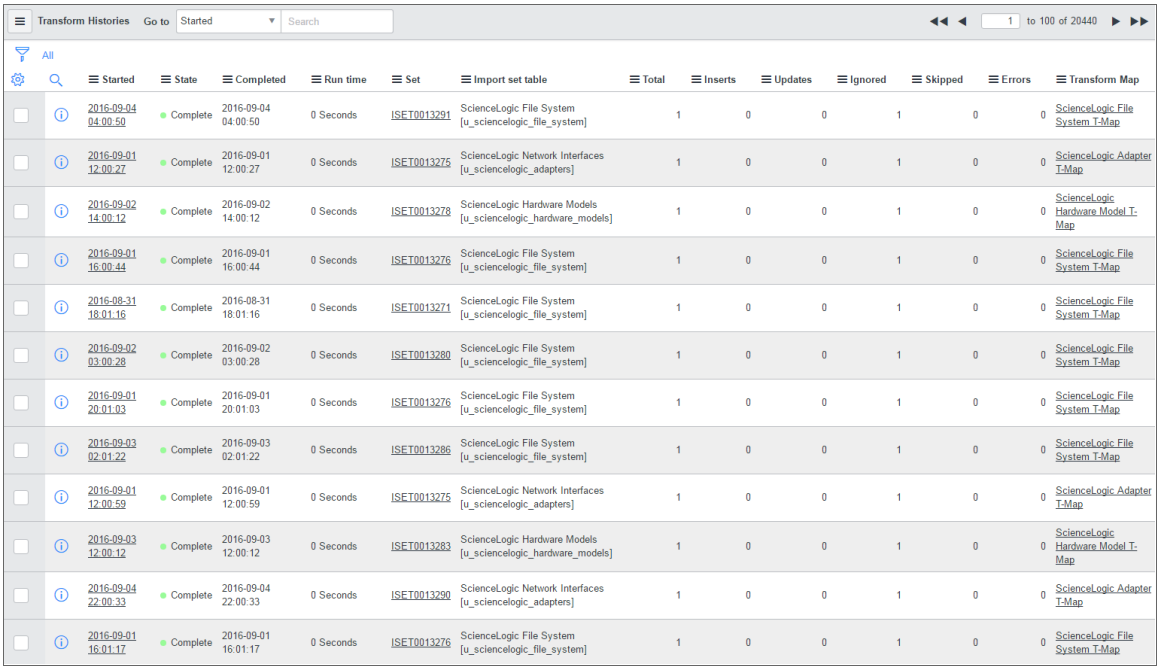
Viewing the Incident Import Table in ServiceNow

Each time SL1 creates or changes an incident in ServiceNow, data is inserted into a temporary import table on the ServiceNow system. This table displays all inbound data from SL1 and is a useful tool to determine what data is being sent and imported. The incident import table is created automatically when you install the ScienceLogic Certified (Scoped) Application.

To view the data and the status of the import process, go to the **Import Incidents** page (ScienceLogic > Event > Events) in ServiceNow:



You can view a complete audit of all import data and transforms by going to the **Transform Histories** page (System Import Sets > Advanced > Transform History):



Started	State	Completed	Run time	Set	Import set table	Total	Inserts	Updates	Ignored	Skipped	Errors	Transform Map
2016-09-04 04:00:50	Complete	2016-09-04 04:00:50	0 Seconds	ISET0013291	ScienceLogic File System [u_sciencelogic_file_system]	1	0	0	1	0	0	ScienceLogic File System T-Map
2016-09-01 12:00:27	Complete	2016-09-01 12:00:27	0 Seconds	ISET0013275	ScienceLogic Network Interfaces [u_sciencelogic_adapters]	1	0	0	1	0	0	ScienceLogic Adapter T-Map
2016-09-02 14:00:12	Complete	2016-09-02 14:00:12	0 Seconds	ISET0013278	ScienceLogic Hardware Models [u_sciencelogic_hardware_models]	1	0	0	1	0	0	ScienceLogic Hardware Model T-Map
2016-09-01 16:00:44	Complete	2016-09-01 16:00:44	0 Seconds	ISET0013276	ScienceLogic File System [u_sciencelogic_file_system]	1	0	0	1	0	0	ScienceLogic File System T-Map
2016-08-31 18:01:16	Complete	2016-08-31 18:01:16	0 Seconds	ISET0013271	ScienceLogic File System [u_sciencelogic_file_system]	1	0	0	1	0	0	ScienceLogic File System T-Map
2016-09-02 03:00:28	Complete	2016-09-02 03:00:28	0 Seconds	ISET0013280	ScienceLogic File System [u_sciencelogic_file_system]	1	0	0	1	0	0	ScienceLogic File System T-Map
2016-09-01 20:01:03	Complete	2016-09-01 20:01:03	0 Seconds	ISET0013276	ScienceLogic File System [u_sciencelogic_file_system]	1	0	0	1	0	0	ScienceLogic File System T-Map
2016-09-03 02:01:22	Complete	2016-09-03 02:01:22	0 Seconds	ISET0013286	ScienceLogic File System [u_sciencelogic_file_system]	1	0	0	1	0	0	ScienceLogic File System T-Map
2016-09-01 12:00:59	Complete	2016-09-01 12:00:59	0 Seconds	ISET0013275	ScienceLogic Network Interfaces [u_sciencelogic_adapters]	1	0	0	1	0	0	ScienceLogic Adapter T-Map
2016-09-03 12:00:12	Complete	2016-09-03 12:00:12	0 Seconds	ISET0013283	ScienceLogic Hardware Models [u_sciencelogic_hardware_models]	1	0	0	1	0	0	ScienceLogic Hardware Model T-Map
2016-09-04 22:00:33	Complete	2016-09-04 22:00:33	0 Seconds	ISET0013290	ScienceLogic Network Interfaces [u_sciencelogic_adapters]	1	0	0	1	0	0	ScienceLogic Adapter T-Map
2016-09-01 16:01:17	Complete	2016-09-01 16:01:17	0 Seconds	ISET0013276	ScienceLogic File System [u_sciencelogic_file_system]	1	0	0	1	0	0	ScienceLogic File System T-Map

SL1 Event to ServiceNow Incident Impact/Urgency Matrix

By default, when SL1 triggers an Event, the Event is sent to ServiceNow through PowerFlow. The following mappings are currently in place for mapping the Severity of an SL1 Event to the Impact and Urgency of a ServiceNow Incident:

SL1 Event Severity	ServiceNow Incident Impact	ServiceNow Incident Urgency
Critical	1-High	1-High
Major	2-Medium	2-Medium
Minor	2-Medium	3-Low
Notice	3-Low	3-Low
Healthy	3-Low	3-Low

The Severity conversions are handled in an "onBefore" transform script under the "ScienceLogic (SL1) Incident" transform map that automatically deploys with the ScienceLogic Certified (Scoped) Application.

The "onBefore" transform script calls a script include called "taskMappingHelper" that handles the conversion from Severity to Impact or Urgency.

To customize a Severity to Impact or Urgency conversion rule:

1. In ServiceNow, create a new script include with new conversion rules. You can change the `return` values for SL1 Severity labels to the desired Impact and Urgency values. The following is an example:

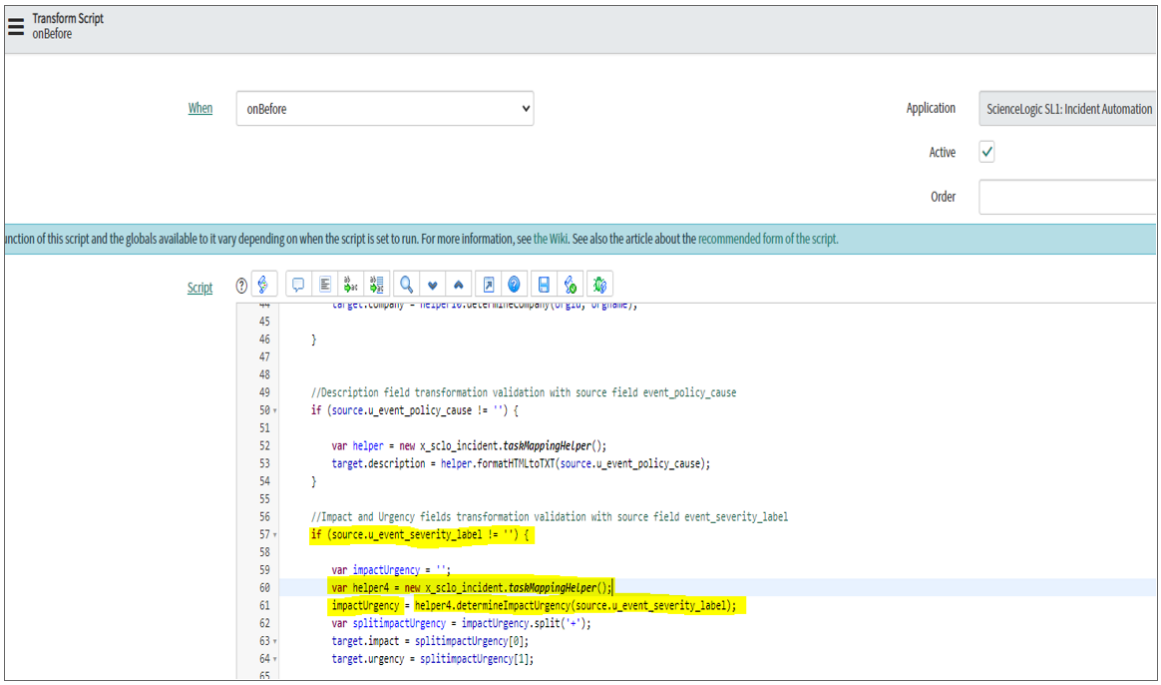
```
var taskMappingHelper = Class.create();
taskMappingHelper.prototype = {
    initialize: function() {},

    //Impact and Urgency fields validation based on event's severity label
    determineImpactUrgency: function(severity) {
        severity = severity.toLowerCase();
        if (severity.includes("critical")) { //Critical
            return "1+1";
        } else if (severity.includes("major")) { //Major
            return "2+2";
        } else if (severity.includes("minor")) { //Minor
            return "2+3";
        } else if (severity.includes("notice")) { //Notice
            return "3+3";
        } else if (severity.includes("healthy")) { //Healthy
            return "3+3";
        } else { //No Severity
            return "";
        }
    },
```

NOTE: In the above example, if the SL1 Severity label is Minor, return the corresponding ServiceNow Incident Impact of 2 and Urgency of 3.

2. In the "onBefore" transform script under the "ScienceLogic (SL1) Incident" transform map:

- Modify line 60 to call the newly created script include.
- Modify line 61 to call the newly created function under script include with the same parameter **source.u_event_severity_label**.
  For example:

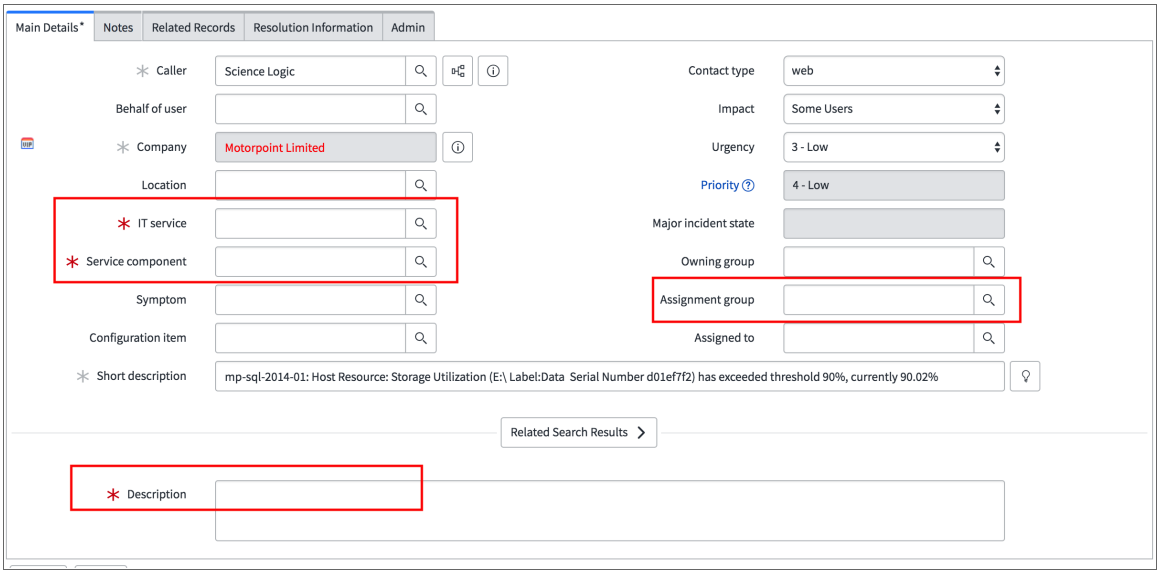


NOTE: By default, the Incident ***Priority*** field is read-only and must be set by selecting the Impact and Urgency values.

Adding Additional Fields to the Transform Map

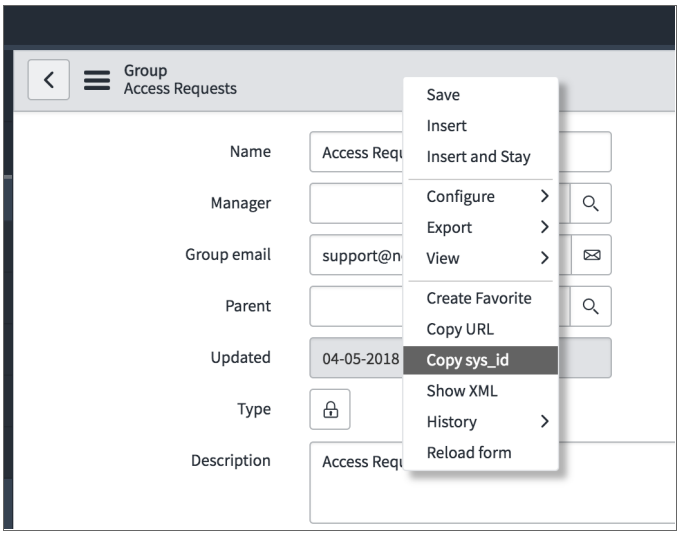
If you require additional mandatory fields to be filled out to resolve an incident, you can add those fields to the ***transform map*** in ServiceNow.

For example, if you require four mandatory fields in the ServiceNow Incident—***Assignment Group***, ***IT Service***, ***Service Component***, and ***Description***—to be filled out before that incident can be resolved in SL1, you would perform the following steps.



To add an assignment group:

1. Navigate to **User Administration > Groups** and select the assignment group you want to add. The Group record appears.
2. Right-click the gray task bar at the top and select ***Copy sys_id***.



3. In SL1, open to the "ServiceNow: Add/Update/Clear Incident" Run Book Action (Registry > Run Book > Actions).
4. Edit the **Input Parameters** of the Run Book Action to add the ***sys_id*** to the relevant parameter or parameters to assign the assignment group to one of the new, acknowledged, or cleared incidents that are mapped. After an incident is created, the assignment group value will not be changed by the Run Book Action.

   In the following example, the assignment group is assigned to incidents that are *cleared*:

```
"assignment_group_new": "",

"assignment_group_ack": "",

"assignment_group_clear": "sys_id"
```

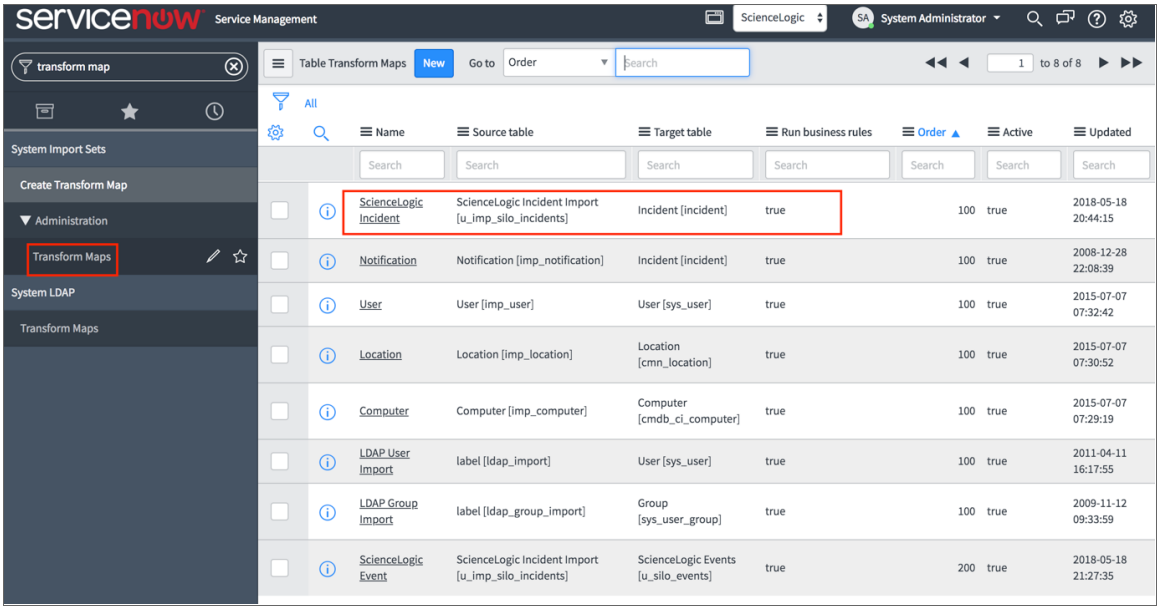
The ***IT Service***, ***Service Component***, and ***Description*** fields in our example must be filled in before an Incident can be closed. To do this, changes must be made in the transform maps that are provided in the form of update sets from ScienceLogic.

TIP: For more information about mapping new fields and other mappings options, see https://docs.servicenow.com/bundle/newyork-platform-administration/page/script/server-scripting/concept/c_MappingOptions.html.

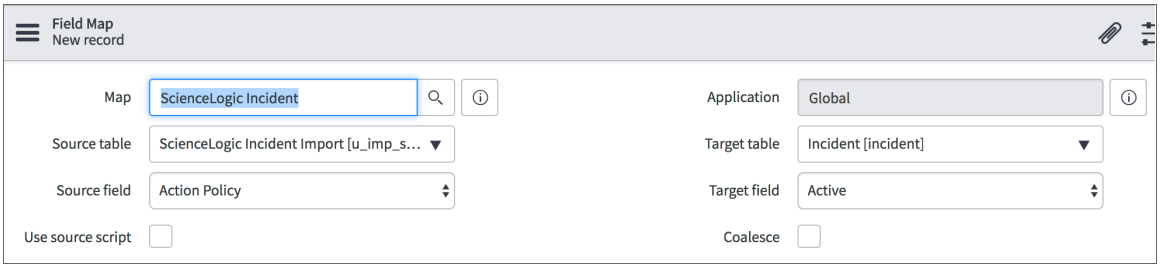
To add the ***Description*** field:

1. In ServiceNow, search for "transform map" in the filter navigator. Click **Transform Maps**.
2. In the list of transform maps, search for "ScienceLogic" in the field above the ***Name*** column.

3. Open the "ScienceLogic Incident" map:



4. The **Field Maps** table at the bottom of the page allows you to edit or create mappings from the ScienceLogic Incident Import table to the ServiceNow Incident table. Click **[New]** to create a new field mapping.
5. The ***Source table*** field should contain the ScienceLogic Incident Import and the ***Target table*** should include the ServiceNow Incident table:

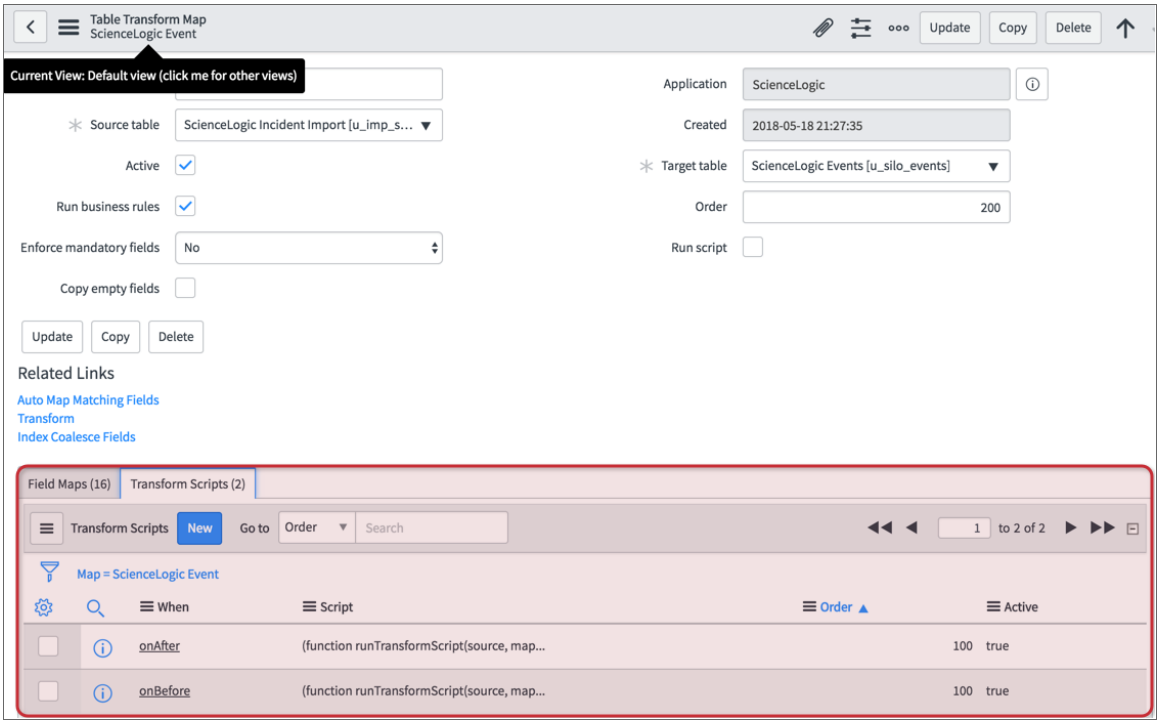


6. To create a new mapping to copy the contents of the ***Short description*** field to the ***Description*** field, select *Short description* from the ***Source field*** drop-down menu.
7. In the ***Target field*** drop-down menu, select *Description*.
8. Click **Update** to save your changes.

The ***IT Service*** and ***Service Component*** fields in our example are set in the Transform Script in the "ScienceLogic Event" transform map. To set the fields:

1. In ServiceNow, make sure you have the ***sys_id*** value for the target fields. If a field contains a magnifying glass, it will require a ***sys_id***. If a field has a drop-down, type in the field you wish to apply from the drop-down. In the case of our example, the ***sys_id*** values of the two fields are required.
2. In your ServiceNow instance, navigate to the **Transform Maps** table and select "ScienceLogic Event".

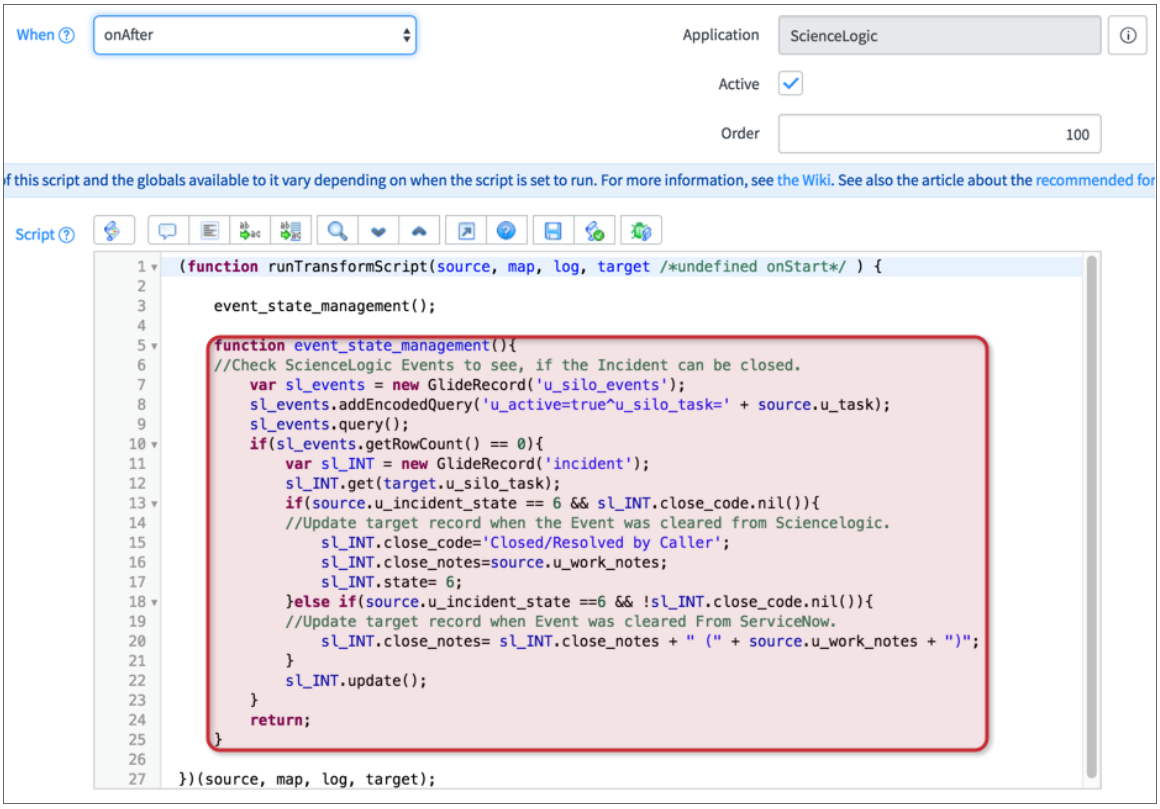
3. In the ScienceLogic Event transform map page, click the **[Transform Script]** tab and open the "onAfter" script.



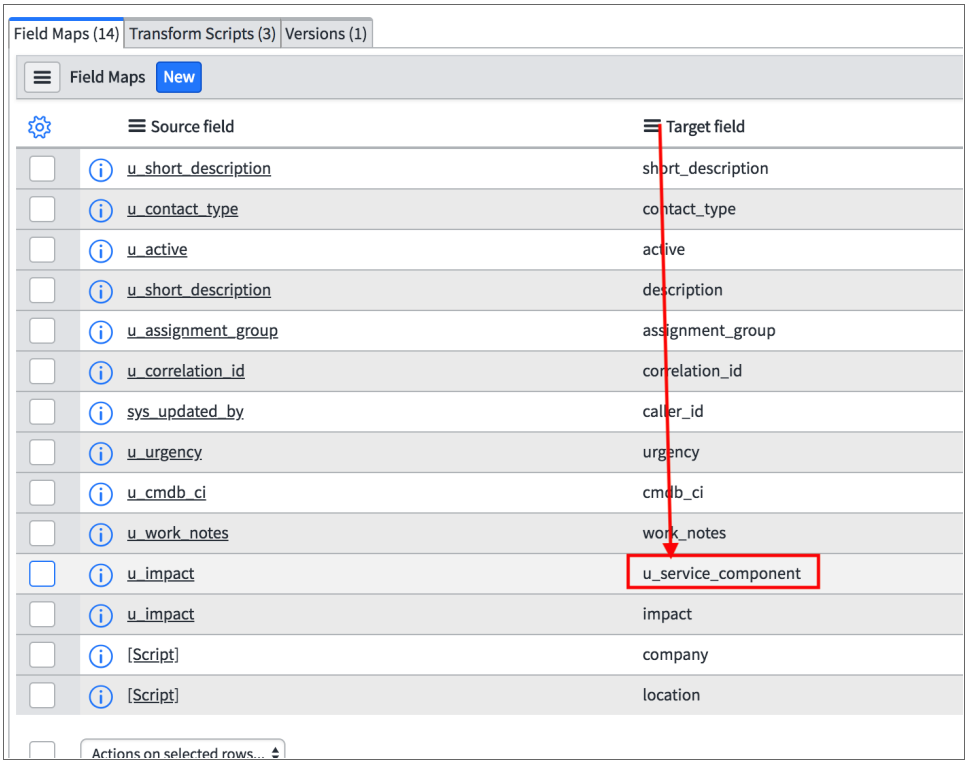
4. Add the following under the "//Update target record when the Event was cleared from Sciencelogic" text:

```
sl_INT.(target field) = '[sys_id of the source field]'; //(IT service field)
```

```
sl_INT.(target field) = '[sys_id of the source field]'; //(Service component)
```



5. To find the target field, make a temporary mapping to see what the target field is. This mapping can be deleted once you know the target field.



6. Click **[Update]** to save your changes. The selected fields will be added into an Incident on closure.

Chapter 4

Troubleshooting the Incidents SyncPack

Overview

This chapter contains troubleshooting resources, procedures, and the answers to frequently asked questions to use with the "ServiceNow Incidents" SyncPack.

This chapter covers the following topics:

Initial Troubleshooting Steps *57*

Resources for Troubleshooting *57*

Frequently Asked Questions *61*

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 SyncPack version, if applicable.
2. Make a note of the SyncPack 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 administrating 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:

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 in Debug Mode ("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 *Custom Run* from the pop-up menu. The **Custom Run** window appears.
3. Select the Logging Level. *Debug* is the most verbose and will take longer to run.
4. Specify the configuration object for the custom run in the ***Configuration*** field, and add any JSON parameters in the ***Custom Parameters*** field, if needed.
5. Click **[Run]**.

To run an application in Debug Mode using the API:

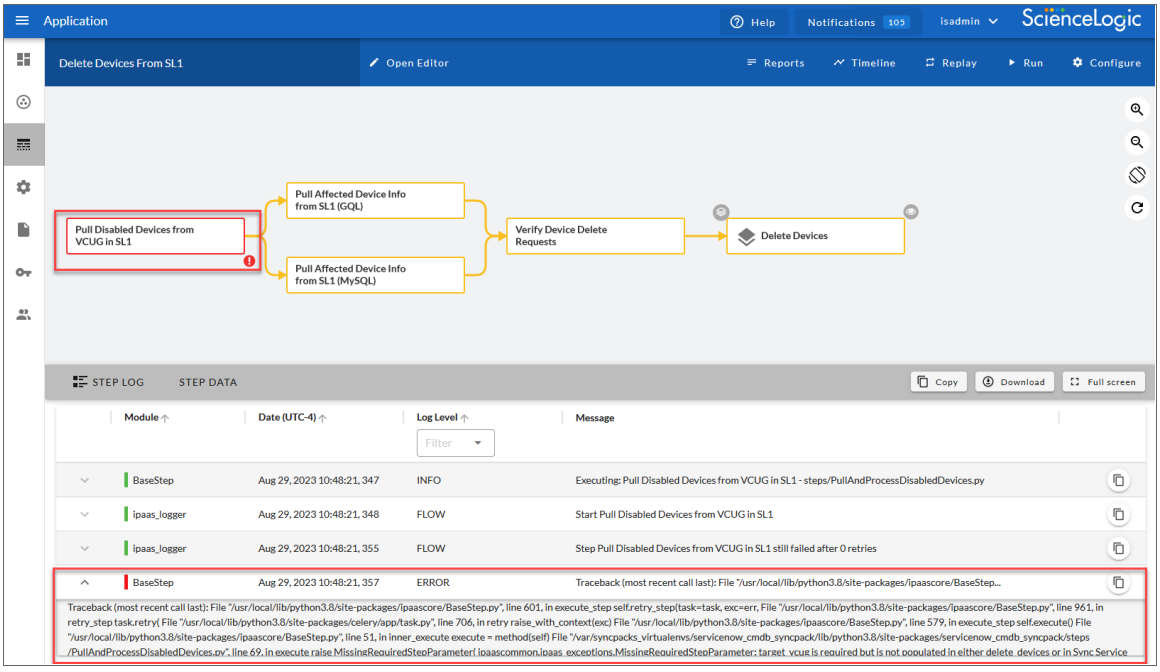
1. POST the following to the API endpoint:

```
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:



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:<password> -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}}'
```

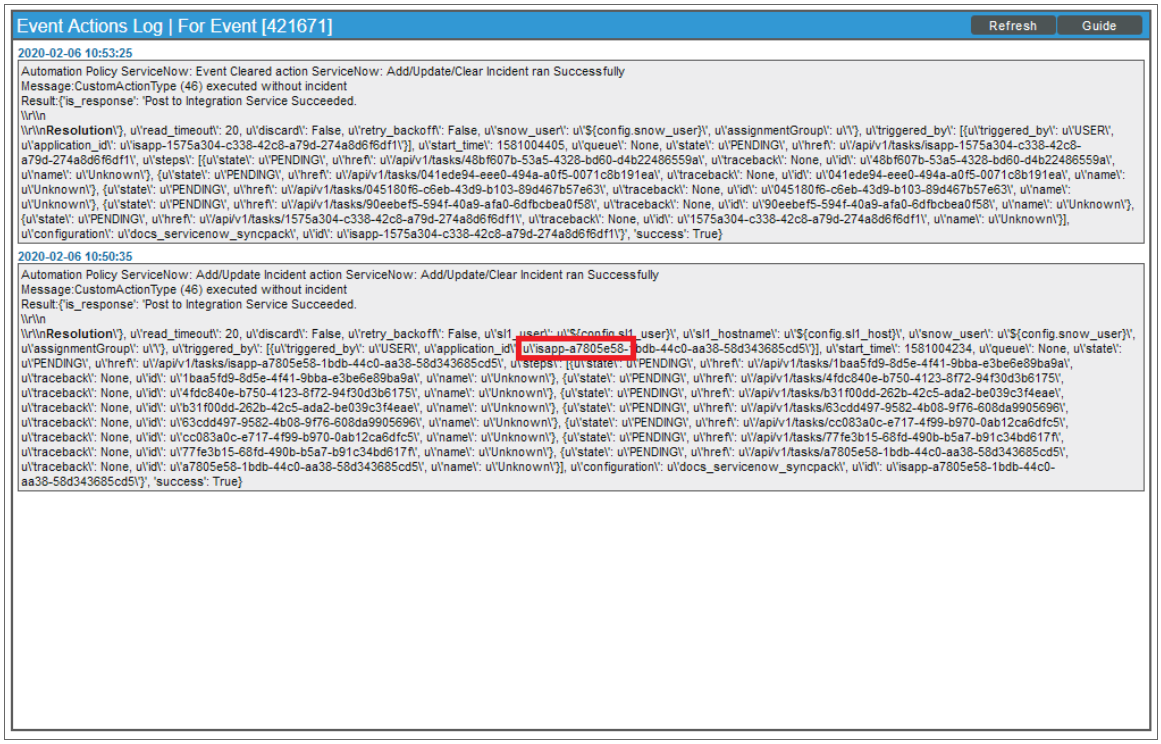
Frequently Asked Questions

This section contains a set of frequently asked questions (FAQs) and the answers to address those situations.

Why are Incidents not getting created in ServiceNow?

1. In SL1, go to the **[Events Console]** (Classic user interface) or the **Events** page (SL1 user interface) and locate the event that was created.
   - In the SL1 user interface, click the **[Actions]** button (•••) for that event and select *View Automation Actions*.
   - In the Classic user interface, click the **View Notification Log** mailbox icon ( ) for that event.

   The **Event Actions Log** window appears:



2. On the **Event Actions Log** window, verify that the Run Book Action was triggered, and that the Run Book Action successfully posted to PowerFlow.
3. In the "Add/Update Incident action" pane, locate the PowerFlow run ID, which is the first six or seven characters of the "isapp" integration ID associated with that run of the integration. For example: *isapp-a7805e58*.
4. In the PowerFlow user interface, go to the **Applications** page and open the "Create or Update ServiceNow Incident from SL1 Event" application.
5. Click the **[Timeline]** button ( ) to locate the run that contains the PowerFlow run ID associated with that run of the integration (from step 3, above).
6. Click **[View Run]** for that run on the **Timeline** and review the logs in the **Step Log** panel to see where the application failed.

What if my Incident does not have a CI?

For an incident with an active event:

1. In SL1, go to the **[Events Console]** (classic user interface) or the **Events** page (new user interface) and locate the event that was created.
   - In the SL1 user interface, click the **[Actions]** button (***) for that event and select *View Automation Actions*.
   - In the Classic user interface, click the **View Notification Log** mailbox icon ( ) for that event.

   The **Event Actions Log** window appears
2. On the **Event Actions Log** window, locate the PowerFlow run ID, which is the first six or seven characters of the "isapp" integration ID associated with that run of the integration. For example: *isapp-a7805e58*.
3. In the PowerFlow user interface, go to the **Applications** page and open the application that used that run.
4. Review the Step Log and confirm that the device class was mapped in the "Sync Devices from SL1 to ServiceNow" application.
5. Confirm that the "Sync Devices from SL1 to ServiceNow" application is running at least every 24 hours, and that the "Sync Devices from SL1 to ServiceNow" application has run within 24 hours of that event sync run.

What if the PowerFlow user interface is unresponsive and Incidents are not being generated in ServiceNow?

If the PowerFlow user interface is unresponsive, and Incidents are not being generated in ServiceNow, this might mean that during the deployment process, a change to the firewall rules for monitoring broke the ingress network for Docker.

To address this issue, run the following command to restart Docker every time you make a firewall or network configuration change:

```
systemctl restart docker
```

Why are Incident numbers not populated in SL1 on Incident creation in ServiceNow?

If an incident exists in ServiceNow, but incident data is not getting back to SL1, first make sure that the "Sync Incident Details from ServiceNow to SL1 Events" PowerFlow application was set up on a schedule. Next, run the application in Debug mode and view the step logs as needed to further troubleshoot the issue.

Why am I not getting any Incidents after disabling the firewall?

If you disabled the firewall to enable SNMP monitoring on PowerFlow, but were not able to connect, you should add the additional rule you need.

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