ServiceNow Events SyncPack

Version 1.4.0

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Chapter 1

Introduction to the ServiceNow Events SyncPack

Overview

This chapter describes the "ServiceNow Events" SyncPack, which is the ScienceLogic integration with the ServiceNow Events Module. This SyncPack provides a bi-directional sync of Skylar One Events with ServiceNow Alerts, including event creation, acknowledgment, and resolution.

This SyncPack uses the "ScienceLogic Skylar One: Event Integration" certified application in ServiceNow and the latest "ServiceNow Base Pack" PowerPack in Skylar One.

Starting with version 1.1.0 of this SyncPack, you can use this SyncPack with or without a ServiceNow Management, Instrumentation, and Discovery (MID) Server. Do not use the "ServiceNow Events" SyncPack and the "ServiceNow Incident" SyncPack on the same Skylar Automation system.

This chapter covers the following topics:

What Can I Do with this SyncPack? 6

Contents of the SyncPack 7

What Can I Do with this SyncPack?

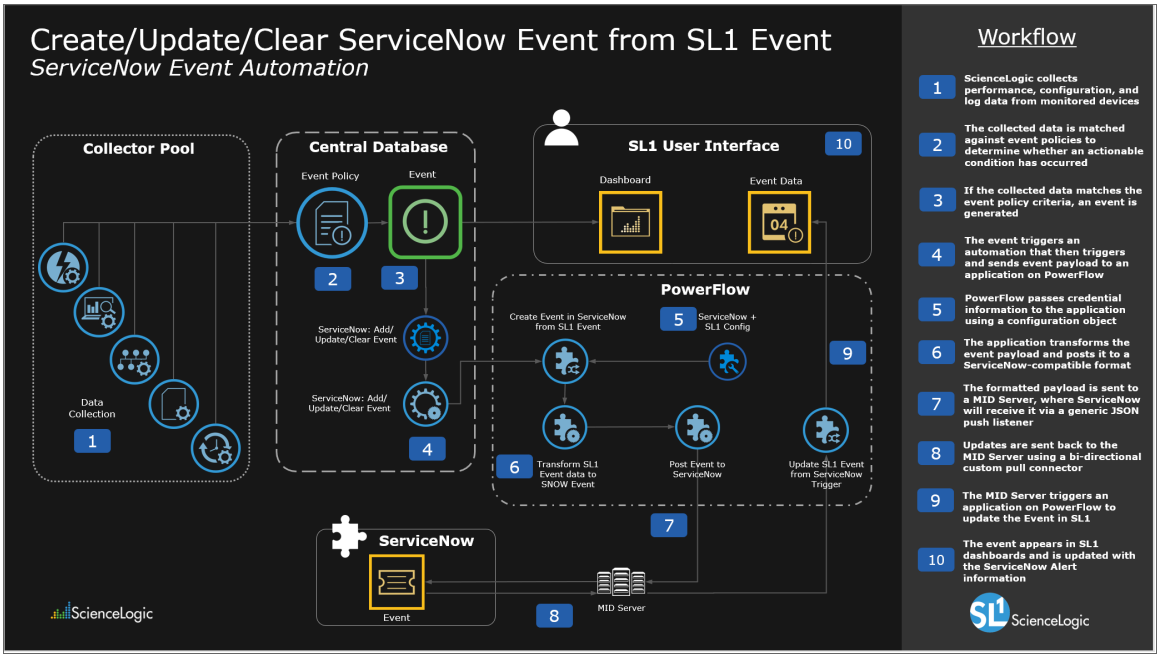
The "ServiceNow Events" SyncPack is the ScienceLogic integration with the ServiceNow Events Module. This SyncPack provides a bi-directional sync of Skylar One events with ServiceNow alerts, including event creation, acknowledgment, and resolution.

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

CAUTION: The run book automation policies could use considerable Skylar One resources if you configure the policies to trigger the "ServiceNow: Add/Update/Clear Event" action for every single Skylar One event. To avoid this, you will need to manage your event policies and ensure that your Skylar One instance is sized appropriately to handle the resources required for syncing events to ServiceNow. ScienceLogic recommends only forwarding actionable events from Skylar One to ServiceNow through Skylar Automation. Non-actionable events, including "Notice" and certain "Minor" events should be filtered depending on the needs of your organization.

Starting with version 1.1.0 of this SyncPack, you can use this SyncPack with or without a ServiceNow Management, Instrumentation, and Discovery (MID) Server.

The following diagram details the workflow and architecture for the bi-directional sync of Skylar One Events with ServiceNow Alerts, including event creation, acknowledgment, and resolution:



NOTE: This diagram is for environments that use a ServiceNow MID Server.

Contents of the SyncPack

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

Skylar Automation Applications

The following applications are included with the "ServiceNow Events" SyncPack:

- ***Create Event in ServiceNow from Skylar One Event***. Transforms Skylar One event data into a ServiceNow event, and then posts that event to ServiceNow.
- ***Process and Cache Skylar One Events***. The "ServiceNow: Add/Update/Clear Event" Run Book Action triggers this application whenever a Skylar One event is created, updated, or cleared. This application processes the Skylar One event and caches it to PowerFlow to allow for bulk processing for ServiceNow by the "Sync Cached Skylar One Events to ServiceNow" application.
- ***Remove Lock Documents***. Removes all stale lock documents in Couchbase that were created by the “Process and Cache Skylar One Events” application. This is a hidden application.

IMPORTANT: This application needs to be scheduled to run to clean up all the stale lock documents. See the *Configuring the Remove Lock Documents Application* section for more information.

- ***Sync Alert Details from ServiceNow to Skylar One Events***. Acknowledges or clears Skylar One events from ServiceNow, updates the user note, and populates the alert number in the external ticket reference. This application also includes the ***user_note_template*** field that accepts a Jinja2 template to generate custom user notes. ScienceLogic suggests that you schedule this application to run every 60 seconds. Also, you need to run the "Cache Skylar One Users" application before running this application.
- ***Sync Cached Skylar One Events to ServiceNow***. Bulk processes all of the cached Skylar One 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 suggests that you schedule this application to run every 60 seconds.
- ***Update Skylar One Event from ServiceNow Trigger***. Updates or clears a Skylar One Event based on a ServiceNow action.

For more information about configuring and running these applications, see *Configuring the Applications for Event Sync*.

Configuration Object

- ***ServiceNow Events SyncPack***. Version 1.1.0 and later of this SyncPack includes this example configuration object, which you can use to create an event-specific configuration object for your PowerFlow system.

Steps

- Compare ServiceNow and Skylar One Events
- Convert ScienceLogic Event Data to SNOW Event
- Process and Cache Event
- Process and Post Event to ServiceNow
- Process Event Trigger from ServiceNow
- Pull and Process ServiceNow Alerts

Chapter 2

Installing the Events SyncPack

Overview

This chapter describes how to install the "ServiceNow Events" SyncPack and the other applications needed to use the SyncPack, including the "ScienceLogic Skylar One: Event Integration" application and the "ServiceNow Base Pack" PowerPack.

This chapter covers the following topics:

Skylar One and ServiceNow Terminology 10

Dependency Map for ServiceNow SyncPacks 10

Prerequisites for ServiceNow SyncPacks 10

Downloading and Installing the SyncPack 11

Installing the ServiceNow Base Pack PowerPack in Skylar One 13

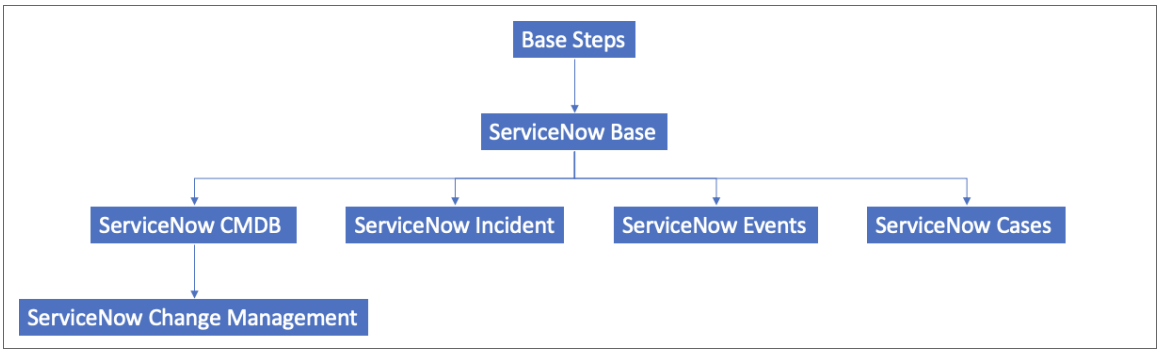
Skylar One and ServiceNow Terminology

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

Skylar One	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 *Default SyncPacks*.

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 latest release notes for this SyncPack on the *SyncPack Manuals and Release Notes* page.

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

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

TIP: 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.

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

Source IP	Skylar Automation Destination	Skylar Automation Source Port	Destination Port	Requirement
Skylar Automation	Skylar One API	Any	TCP 443	Skylar One API Access
Skylar Automation	ServiceNow API	Any	TCP 443	ServiceNow API Access

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

Downloading and Installing 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 Center at https://support.sciencelogic.com/s/.
2. Go to the **SyncPacks** page (Skylar Automation > SyncPacks).
3. In the ***Search*** 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 Skylar Automation system using the Skylar Automation user interface.

Importing the SyncPack

> **NOTE:** You must import and install the "ServiceNow Base" SyncPack before uploading and installing this SyncPack.

To import a SyncPack in the Skylar Automation user interface:

1. On the **SyncPacks** page (⚙) of the Skylar Automation 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. You can also drag and drop a **.whl** file to the **Import SyncPack** page.
3. Click **[Import]**. Skylar Automation registers and uploads the SyncPack. The SyncPack is added to the **SyncPacks** page.
4. You will need to activate and install the SyncPack in Skylar Automation. For more information, see the following topic.

> **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

> **WARNING:** If you are *upgrading* to this version of the SyncPack from a previous version, make a note of any settings you made on the **Configuration** pane of the various Skylar Automation applications in this SyncPack, as these settings are *not* retained when you upgrade.

To activate and install a SyncPack in the Skylar Automation user interface:

1. On the **SyncPacks** page of the Skylar Automation 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 Skylar Automation system.

> **TIP:** If you do not see the SyncPack 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 highlighted version in the **Installed SyncPack** 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, go to the hidden "activate & Install SyncPack" application on the **Applications** page and check the step logs.
4. If you have other versions of the same SyncPack on your Skylar Automation 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.

Installing the ServiceNow Base Pack PowerPack in Skylar One

The "ServiceNow Base" Pack PowerPack contains run book automations that you use to integrate with the ServiceNow Events module.

> **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 section on *Global Settings*.

To install the "ServiceNow Base Pack" PowerPack:

1. Search for and download the PowerPack from the **PowerPacks** page at the ScienceLogic Support Center (Skylar One > PowerPacks, login required).

2. In Skylar One, go to the **PowerPacks** page (System > Manage > PowerPacks).
3. Click the **[Actions]** button and choose *Import PowerPack*. The **Import PowerPack** dialog box appears.
4. Click **[Browse]** and navigate to the PowerPack file from step 1.
5. Select the PowerPack file and click **[Import]**. The **PowerPack Installer** modal displays a list of the PowerPack contents.
6. Click **[Install]**. The PowerPack is added to the **PowerPacks** page.

NOTE: If you exit the **PowerPack Installer** modal without installing the imported PowerPack, the imported PowerPack will not appear in the **PowerPacks** page. However, the imported PowerPack will appear in the **Imported PowerPacks** modal. This page appears when you click the **[Actions]** menu and select *Install PowerPack*.

Chapter 3

Configuring Applications for the Events SyncPack

Overview

This chapter describes how to configure the bi-directional Event Sync between ServiceNow and Skylar One.

If you are configuring *multiple*Skylar One servers to sync with a single ServiceNow instance, see *Additional Considerations for Multiple Skylar One Systems*.

This chapter covers the following topics:

Workflow for Configuring the SyncPack *16*

Configuring ServiceNow *17*

Configuring the ServiceNow MID Server *18*

Configuring Skylar One *27*

Configuring Skylar Automation *38*

Additional Considerations for Multiple Skylar OneSystems *48*

Workflow for Configuring the SyncPack

The following workflows cover how to configure ServiceNow, Skylar One, and Skylar Automation to work with Event Sync.

Configuring ServiceNow

1. *Install the ServiceNow Event Management plugin*
2. *Install the "ScienceLogic Skylar One: Event Integration" (Scoped) application*

Configuring the ServiceNow MID Server (if needed)

> **NOTE:** Starting with version 1.1.0 of this SyncPack, you can configure Event Sync without a ServiceNow MID Server. If you are not using a MID Server, skip the following section and go to *Configuring Skylar One*, below.

1. *Install the MID Server*
2. *Configure the Connector Definitions*
3. *Configure the Connector Instance*
4. *Configure the MID Web Server*
5. *Configure the MID WebService Event Collector*
6. *Start the MID Web Server and the Event Collector*
7. *Run an external test of the MID Server configuration*
8. *Review the MID Server Script Include (ScienceLogic_JS)*

Configuring Skylar One

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

Configuring Skylar Automation

1. *Create a configuration object in the Skylar Automation user interface*
2. *Align the new configuration file with the Skylar Automation applications*
3. Configure the Skylar Automation applications, depending on your ServiceNow setup:
    - *Configure the applications for ServiceNow with a MID Server*
    - *Configure the applications for ServiceNow without a MID Server*

Configuring ServiceNow

As a prerequisite for running Event Sync, you will need to install the ServiceNow Event Management plugin (**com.glideapp.itom.snac**). You can request this plugin directly from ServiceNow.

> **NOTE:** If you are *not* using a MID Server in ServiceNow, you will need to add the **x_sclo_powerflow.user** and **evt_mgmt_admin** roles to the ServiceNow user account or Integration user.

Installing the "ScienceLogic Skylar One: Event Integration" (Scoped) Application in ServiceNow

The "ServiceNow Events" SyncPack uses the "ScienceLogic Skylar One: Event Integration" application (also called the Scoped or Certified application) to sync event status updates from ServiceNow back to Skylar One. You must install the "ScienceLogic Skylar One: Event Integration" application on your ServiceNow instance to enable this SyncPack.

> **WARNING:** The "ScienceLogic Skylar One: Event Integration" application requires that you have already installed the ServiceNow Event Management plugin on the target ServiceNow instance. You can request this plugin directly from ServiceNow. Also, the MID Server must be configured.

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

You first request the "ScienceLogic Skylar One: Event Integration" application from the ServiceNow Store, and then you can install it.

To request and install the "ScienceLogic Skylar One: Event Integration" application:

1. Go to the ServiceNow Store at https://store.servicenow.com and search for "ScienceLogic Skylar One".

2. Select the "ScienceLogic Skylar One: Event Integration" 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 Skylar One: Event Integration" 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 "ScienceLogic Skylar One: Event Integration" 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 back in to see the updated left-hand navigation menu.

Configuring the ServiceNow MID Server

IMPORTANT: Starting with version 1.1.0 of this SyncPack, you can configure Event Sync without a ServiceNow MID Server. If you are not using a MID Server, skip this topic and go to *Configuring Skylar One*.

See the following link for instructions on installing and configuring the MID Server for your ServiceNow instance: MID Server installation.

After you set up the MID Server, you can use the following procedures to configure the ServiceNow MID Server to work with the *ServiceNow Events* SyncPack.

Configuring the MID Web Server

To configure the MID Web Server (a MID Server is required for this step):

1. In ServiceNow, install the Event Management plugin. You can request this plugin directly from ServiceNow.
2. Navigate to **Mid Server > Extensions > MID Web Server**. The **Mid Web Server Contexts** page appears.
3. Click **[New]** and complete the following fields on the new record:
   - ***Name***. Type a unique name. Required.
   - ***HTTP/HTTPS Port***: Specify a port number to listen on. The port number must be unique.
   - ***Authentication Type***: Select *Basic*. Currently Basic is the only supported Authentication method. Complete the ***Basic Auth User*** and ***Basic Auth User Password*** fields with the relevant credentials.

- ***Execute on***: Select a specific MID Server or Cluster of MID Servers.
- ***MID Server***: Specify the MID Server or Mid Server Cluster you will use.

4. Click **[Submit]** to save the new record.

> **NOTE:** In the **Related Links** section, the **Test parameters** option is not a valid test to confirm your setup.

Configuring the Connector Definitions in ServiceNow

> **IMPORTANT:** If you are not using a MID Server, skip this topic and go to *Configuring Skylar One*.

To configure the Connector Definitions used by the Update Sender transaction:

1. Navigate to **Event Management > Event Connectors (Pull) > Connector Definitions**. The **Connector Definitions** page appears.
2. Click **[New]** to create a new Connector Definition.

> **CAUTION:** When you create a Connector Definition, ServiceNow creates a template MID Server Script Include with the same name and "_JS" appended at the end of the name. This item is automatically attached to the new record in the ***JavaScript to run*** field after you click **[Submit]**.

3. In the ***Name*** field, type a unique name and click **[Submit]** to save the new Connector Definition record. The **Connector Definitions** page appears.
4. Open the Connector Definition you just created and complete the following fields:
   - ***Javascript to run***. Attach the JavaScript file provided by the Certified application: ScienceLogic Skylar One: Event Integration.
   - ***Default schedule (seconds)***. Specify the time in seconds between retrieval of events, such as "120". This field is not required for this integration specifically, but it is a required field. Events will not be pulled when this is triggered.
   - ***Bi-Directional***. Select this option to enable ServiceNow to send Alert changes back to the source instance. Enabling this allows Skylar One as an external monitoring system to receive changes made in ServiceNow that are specific to Alerts.
   - ***Alert field identifier***. Set to "Message Key". The field causes the source monitoring system to be updated.

5. In the ***Connector Parameters*** section, double-click to add one or more rows using the following parameters to enable correct formatting and communication with the source event system:

Name	Example	Required
application_path	**/api/v1/applications/update_sl1_event_from_snow_trigger**	No
configuration_path	**/api/v1/configurations/** + Configuration Name	Yes
log_level	**30** (Default Log level)	No
run_path	**/api/v1/applications/run**	No
sl1_userid	**1** (Default user_id in Skylar One)	No

> **NOTE:** The entries that are marked as not required are supplied by default.

6. Click **[Submit]** to save the updated Connector Definition.

Configuring the Connector Instance in ServiceNow

> **IMPORTANT:** If you are not using a MID Server, skip this topic and go to *Configuring Skylar One*.

Before you can set up a Connector Instance in ServiceNow, you need to create a ServiceNow credential that will be used by the Connector Instance.

Creating a ServiceNow Credential

To configure the ServiceNow credential that will be used by the Connector Instance:

1. Navigate to **Connections & Credentials > Credentials**. The **Credentials** page appears.
2. Click **[New]**.
3. Select **Basic Auth Credentials**. A new **Basic Auth Credentials** record appears.
4. Complete the following fields on the new record:
   - ***Name***. Type a unique name for the credential. Required.
   - ***User name***. Type the ServiceNow user name.
   - ***Password***: Type the ServiceNow password.
5. Click **[Submit]** to save the new record.
6. After the record is saved, open it again and check the ***Active*** field on the record.
7. Click **[Update]**.

Configuring the Connector Instance

To configure the Connector Instance:

1. Navigate to **Event Management > Event Connectors (Pull) > Connector Instances**.
2. Click **[New]** and complete the following fields on the new record:
   - ***Name***. Type a unique name. Required.

     WARNING: The value of the Connector Instance ***Name*** must be the *same* case-sensitive value used in the ***Source Instance*** (event_class) field. If the values do not match exactly, the bi-directional connection will not work. In the example below, "ScienceLogic" is the Connector Instance Name. For more information, see *External Testing of the MID Server Configuration.*

   - ***Connector definition***. Confirm that the Connector Definition you created is associated with this Connector Instance record.
   - ***Host IP***: Specify the host IP address for Skylar Automation.
   - ***Credential***. Select the credential for connection to Skylar Automation. For more information, see *Configuring the ServiceNow Credential*.
   - ***Bi-directional***. Select this option.
3. In the ***Connector Instance Values*** section, ensure that the values have been configured:

Name	Example	Required
application_path	**/api/v1/applications/update_sl1_event_from_snow_trigger**	No
configuration_path	**/api/v1/configurations/** + Configuration Name	Yes
log_level	**30** (Default Log level)	No
run_path	**/api/v1/applications/run**	No
sl1_userid	**1** (Default user_id in Skylar One)	No

4. In the ***MID Servers for Connectors*** section, select the MID Server.
5. Click **[Submit]** to save the new record.
6. After the record is saved, open it again and click **[Test Connector]** to confirm the correct configuration. This option is only available after you submit the record.
7. If you have a successful test connection, check the ***Active*** field on the record.
8. Click **[Update]**.

Configuring the MID WebService Event Collector

IMPORTANT: If you are not using a MID Server, skip this topic and go to *Configuring the ServiceNow Instance*.

To configure the MID WebService Event Collector:

1. In ServiceNow, navigate to **Mid Server > Extensions > MID WebService Event Listener**.
2. Click **[New]** and complete the following fields on the new record:
   - ***Name***. Type a unique name. Required.
   - ***MID Web Server Extension*** : Select the MID Web Server you created in *Configuring the MID Web Server*.
3. Click **[Submit]** to save the new record.

Starting the MID Web Server and the Event Collector

> **IMPORTANT:** If you are not using a MID Server, skip this topic and go to *Configuring Skylar One*.

To start the MID Web Server and the Event Listener:

1. Navigate the **MID Server > Extensions > Mid Web Server** and select the MID Web Server you set up in *Configuring the MID Web Server*.
2. In the **Related Links** section, click the **Start** link.
3. Navigate to the **MID Server > Extensions > MID WebService Event Listener** and select the MID WebService Event Listener you set up in *Configuring the MID WebService Event Collector*.
4. In the **Related Links** section, click the **Start** link.
5. Confirm that the MID Web Server and the MID WebService Event Listener has a Status of "Started".

External Testing of the MID Server Configuration

> **IMPORTANT:** If you are not using a MID Server, skip this topic and go to *Configuring Skylar One*.

ScienceLogic recommends that you test the MID Server connection by using an external testing source outside of ServiceNow, Skylar Automation, and Skylar One.

1. Post a message to **http://{MID_SERVER_IP}:{MID_Web_Server_port}/api/mid/em/jsonv2**
2. Example body:

```
{
    "records":
    [
       {
        "source" : "Simulated",
        "event_class": "ScienceLogic",
        "node" : "Postman",
        "type" : "High Virtual Memory",
        "resource" : "C:",
        "severity" : "2",
        "description" : "Test Event",
        "ci_type":"cmdb_ci_app_server_tomcat",
        "message_key": "Postman_109843242",
        "additional_info":{"name":"Create an event in snow"}
       }
   ]
}
```

IMPORTANT: The value of the ***Source Instance*** (event_class) field must be the *same* case-sensitive value used in the Connector Instance ***Name***. If the values do not match exactly, the bi-directional connection will not work. In the example above, "ScienceLogic" is the ***Source Instance*** (event_class) name. For more information, see *Configuring the Connector Instances.*

3. Verify that the Send resulted in an **HTTPS Status 200**.

Using the MID Server Script Include (ScienceLogic_JS) in ServiceNow

IMPORTANT: If you are not using a MID Server, skip this topic and go to *Configuring Skylar One*.

The MID Server Script Include is provided with the "ScienceLogic Skylar One: Event Automation" application (also called the Certified Application), and it requires the ServiceNow Event Management plugin (**com.glideapp.itom.snac**). You can request the ServiceNow Event Management plugin directly from ServiceNow.

The MID Server Script Include contains the following main parts:

- Test Connection
- Execute
- Update Source

Test Connection is for validating that setup is complete for returning delta changes back to the source instance.

The Test Connection process includes the following steps:

1. The Initialize step pulls in the required functions and defines default variables.
2. The Test Connection is a two-part requirement that checks for the application and configuration availability:
    - Validates Application is available via GET HTTP request to Skylar Automation.
    - Validates Configuration is available via Get HTTP request to Skylar Automation.
3. For the Logs step, because the script is run on the MID Server, all logs are submitted to **ms.log()**.

Execute: The part of the Script is currently is not in use, but it runs the same process as test Connection step. At this time the execute step does not pull down events from ScienceLogic with the MID Server Script Include. Events are delivered using a push methodology to the MID Server Listener.

Update Source: Picks up pending updates on the Connector Update Queues (**em_connector_update_queue**) table and sends them back to the configured source instance.

The Update Source process includes the following steps:

1. The Initialize step pulls in the required functions and defines default variables.
2. Builds the URL.
3. Validates the URL.
4. Pulls all Records matching even_class, source instance and connector Instance name sitting in pending.
5. For each record, checks to see if the record matches the following criteria:
    - *New*: Checks the ***Number*** field being null and a value being assigned.
    - *Open*: Checks for field change on the ***State*** field from Closed to a new value of Reopen or Open.
    - *Closed*: Checks for field change on the ***State*** field from Open or Reopen to a new value of Closed.
    - *Acknowledge*: Due the difference in how acknowledgments are handled in the two platforms, the Acknowledged criteria tracks the boolean value flipping to true and will return either the default ScienceLogic user_id of 1 or a defined user id.
6. Matching values are written to new JSON code.
7. Matching JSON code is validated to ensure that it has information that needs to be sent back to source.
8. Posts the Request back to Skylar Automation.
9. For the Logs step, because the script is run on the MID Server, all logs are submitted to **ms.log()**.

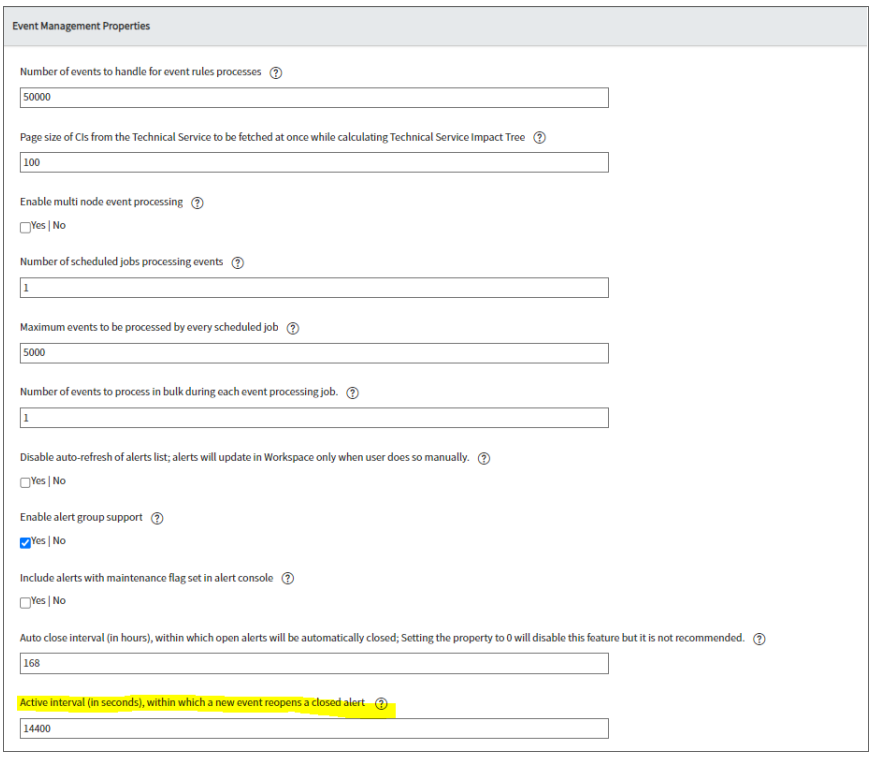
Event and Alert Alignment in ServiceNow

PowerFlow posts cached events to ServiceNow with an unique message Key. Events are created in ServiceNow with the payload data from Skylar Automation. Based on the event rule conditions, the alert gets created automatically within ServiceNow, and events align to an alert based on the ***message Key*** unique identifier. All of the events that are aligned to an alert should have the same message Key.

A New Event Reopens a Closed Alert or Creates a New Alert Based on the Time of the Incoming Event

In ServiceNow, go to the *Event Management Properties* module under the *Event Management* application. On this page, you can access the ***Active interval (in seconds) within which a new event reopens a closed alert*** field (**evt_mgmt.active_interval**). In this field, you can set a time period in seconds within which an incoming event can either re-open a closed alert or create a new alert event with same message Key.

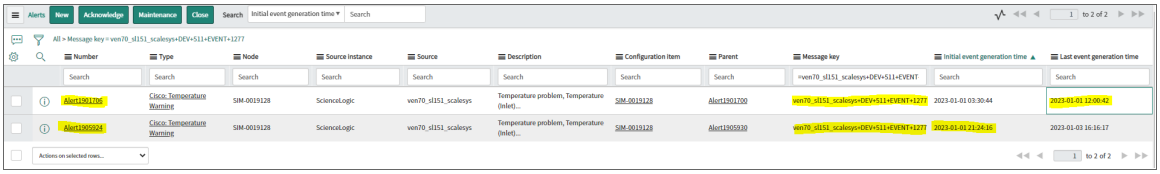
In the following image, this field has a value of 14400 seconds (4 hours):



You can configure these properties for each customer instance. You can have two different alerts with the same message Key. Consider the following scenarios:

- When an event clear occurs to close the alert associated to it, and the next open event occurs within 4 hours (based on the setting in the image above), then this event would re-open the same alert.
- When an event clear occurs to close the alert associated to it, and the next open event occurs after 4 hrs, then this event would not re-open the same alert. Instead, a new alert is created with the same message Key.

The following image shows an example of the second scenario:



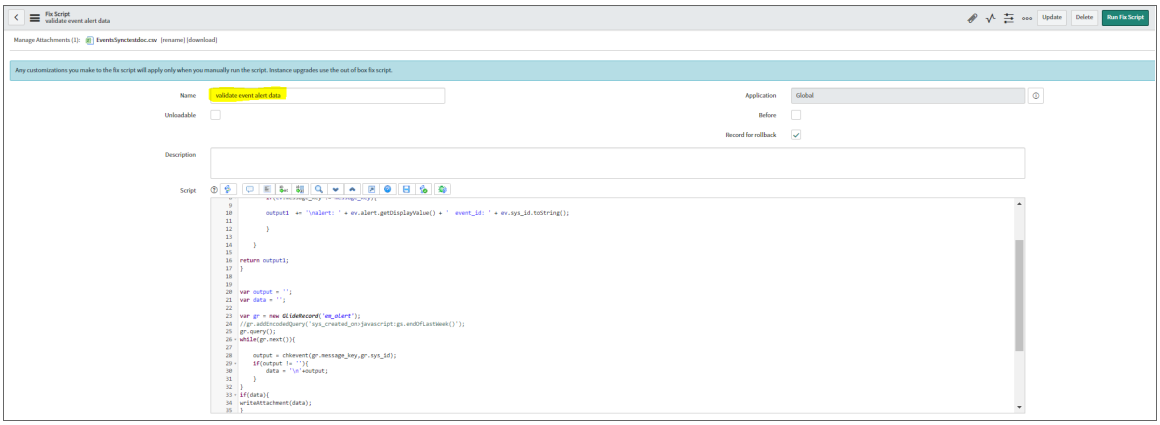
In the above example, a clear event came in and closed the corresponding alert, **Alert1901706** at *2023-01-01 12:00:42*. The next open event that triggered with the same message Key was at *2023-01-01 21:24:16*. The time difference was more than 4 hours, so as a result, this event created a different alert , **Alert1905924** and did not re-open **Alert1901706**.

Fix Scripts to Validate the Above Scenarios in ServiceNow

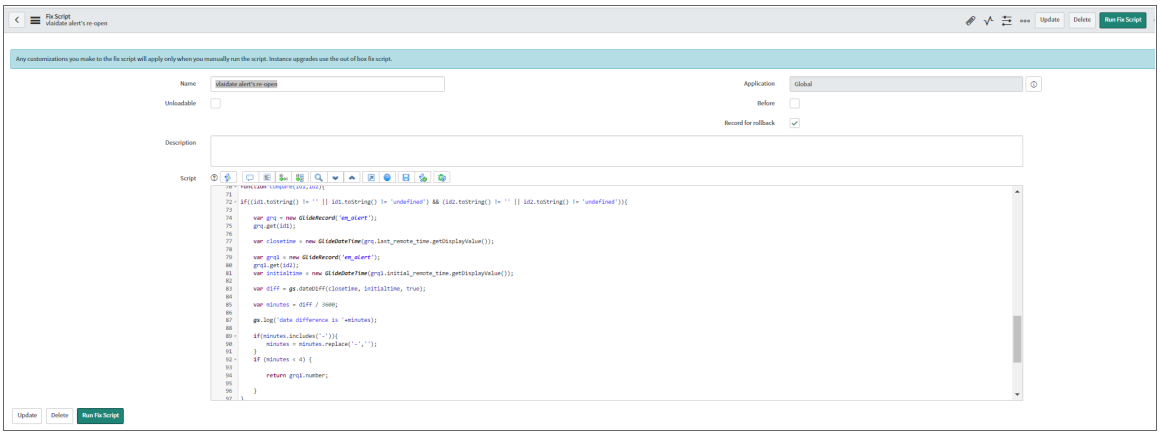
When you have large-scale data in event and alert tables in ServiceNow, it can be difficult to manually test the alignment of events and alerts, as well as alerts re-opening or creating a new alert, as mentioned in the scenarios, above.

To address this issue, ScienceLogic created Fix Scripts that you can use to validate the output and see if there are any misconfigured event/alert alignment or any mismatched alert re-openings.

To validate the event alert data, the following Fix Script checks to see if events that are aligned to alerts have the same message Key; if not, the script it pulls misconfigured alert numbers and Event sysIDs and creates a .CSV file with this data and attaches it to the same fix script. You can look at the .CSV file to check if there are any misconfigurations.



To validate alert re-openings, the following Fix Script checks for the date/time differences between alerts with same message Key. The Script pulls out any misconfigured alerts, creates a .CSV file with this data, and attaches it to the same Fix Script. You can look at the .CSV file to check if there are any misconfigurations for the alert re-opening/new alert scenario.



Configuring Skylar One

The following topics cover how to set up your Skylar One instance for Event Sync.

> **IMPORTANT:** You must install the latest "ServiceNow Base Pack" PowerPack before you can perform the following procedures. For more information, see *Installing the ServiceNow Base Pack PowerPack*.

Creating a ServiceNow Credential in Skylar One

To configure Skylar One 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 Skylar One event data to Skylar Automation, 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 Skylar One, 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 Skylar Automation instance.
- ***HTTP Auth User***. Type the username of your Skylar Automation instance.
- ***HTTP Auth Password***. Type the password of your Skylar Automation 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 in Skylar One

> **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: **[Events]** - Add/Update".

Before you can run the "ServiceNow: Add/Update/Clear Event" run book action, you must enable the three event-specific run book automation policies in Skylar One:

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

> **CAUTION:** These run book automation policies could use considerable Skylar One resources if you configure the policies to trigger the "ServiceNow: Add/Update/Clear Event" Action for every single Skylar One event. To avoid this, you will need to manage your event policies and ensure that your Skylar One instance is sized appropriately to handle the resources required for syncing events to ServiceNow. ScienceLogic recommends only forwarding actionable events from Skylar One to ServiceNow through Skylar Automation. Non-actionable events, including "Notice" and certain "Minor" events should be filtered depending on the needs of your organization.

To enable the three ServiceNow run book automation policies:

1. In Skylar One, go to the **Automation Policy Manager** page (Registry > Run Book > Automation).
2. Locate the "ServiceNow: [Events] 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 Skylar Automation 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 and add it to the **Aligned Actions** column.

> **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: Event Acknowledged" and "ServiceNow: Event Cleared" run book automation policies.

Enabling and Customizing the Run Book Action Policy

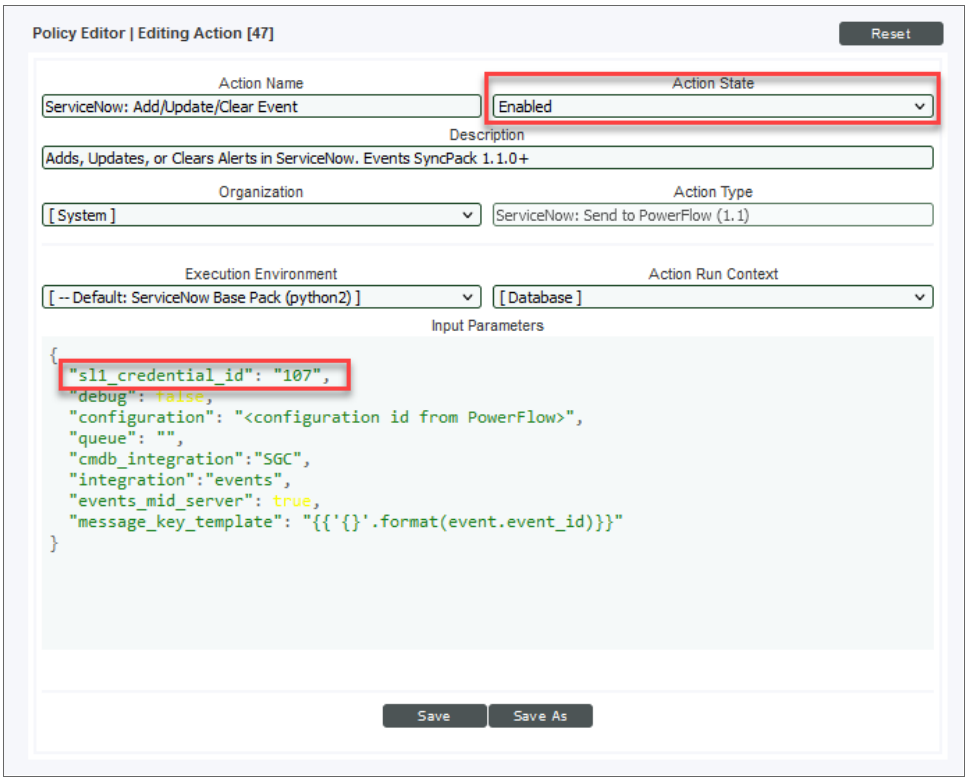
The "ServiceNow: Add/Update/Clear Event" run book action policy contains several default values in the snippet code for the policy that you can customize to use with the "ServiceNow Events" SyncPack.

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 Event run book action policy:

1. In Skylar One, go to the **Actions** page (Registry > Run Book > Actions).
2. Locate the **ServiceNow: Add/Update/Clear Event** 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. In the **Input Parameters** pane, 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

Skylar One 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:** 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.

You can customize the following values in the "ServiceNow: Add/Update/Clear Event" 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 Skylar One. For example: `"sl1_credential_id": "101"`
- ***debug***. A true/false value that determines if the action is logged in Skylar One and if the application is run in Debug Mode on Skylar Automation. Troubleshooting logs are written to **/data/tmp/servicenow_rba.log**.
- ***configuration***. Specifies the ID of the configuration object used on Skylar Automation. The configuration ID is all lower-case, with spaces in the configuration object "friendly" name replaced by underscores. For example: `"configuration": "docs_configs"`.

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

- ***queue***. Specifies the worker queue on which the application runs. Leave this as default.
- ***discard_if_no_ci***. *Deprecated*. Previous versions let you specify whether Skylar Automation should create cases, events, or incidents in ServiceNow for devices that do not have a matching CI record.
- ***cmdb_integration***. Specifies which CMDB SyncPack you are using to ensure that Skylar Automation 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"`.
- ***integration***. Specifies the SyncPack you are using for this run book action. For example: `"integration": "events"`.
- ***events_mid_server***. Set this field to *true* if you are using a ServiceNow MID Server with the Event Sync, or set it to *false* if you are not using a MID Server.
- ***message_key_template***. This field lets you customize the message key used by PowerFlow to correlate Skylar One events with ServiceNow alerts. This field is used with the Event Sync.
  - By default the value is `"{{'{}'.format(event.event_id)}}"`, which creates a ServiceNow alert for each Skylar One event; this is the existing MID Server flow behavior.

- A suggested alternative value is `"{{'{}+EVENT+{}'.format(event.node_id,event.event_policy_id)}}"`, which groups the events by parent entity, such as device or interface, and event policy ID. The Skylar One region used in the aligned configuration object in PowerFlow will be prepended to this value to ensure it is unique across stacks.

> **TIP:** If you are using the MID Server and you use the ***message_key_template*** field to configure a message key with a one-to-many correlation between a single ServiceNow alert and multiple Skylar One events, you should schedule the "Sync Alert Details from ServiceNow to Skylar One Events" PowerFlow application to run, with the ***events_mid_server*** parameter selected on the **Configuration** pane for the "Sync Alert Details" application. These settings ensure that the ***ext_ticket_ref*** is populated when the ServiceNow alert re-opens. If you are using a message key with a one-to-one relationship between alerts and events, you do not need to schedule the "Sync Alert Details from ServiceNow to Skylar One Events" application.

- ***disable_tls***. The default value for this variable is *false*. Set this field to *true* if you want to disable TLS verification.

Customizing Logging in the Run Book Action

You can customize the following logging-related items in the "ServiceNow: Add/Update/Clear Event" 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 (Optional)

Passing Custom Data to ServiceNow

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 Skylar One cases, events, or incidents to ServiceNow (depending on the SyncPack you are using with Skylar Automation).

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 Skylar One, 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"}
   ```

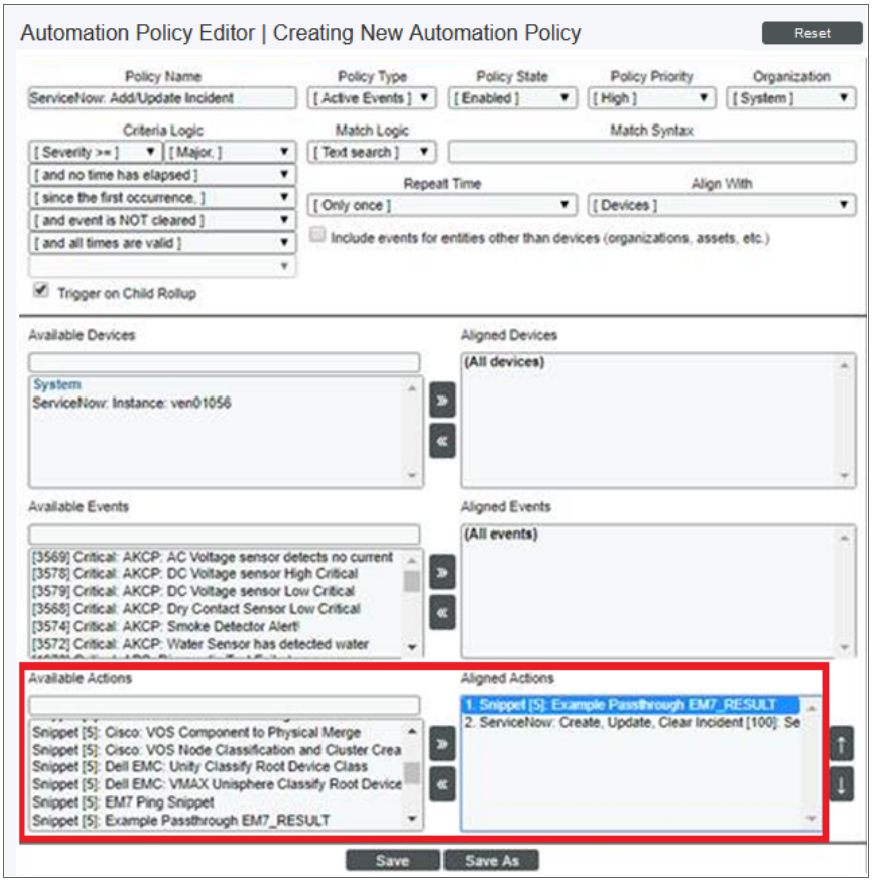
   Additional notes about the structure of the EM7_RESULT dictionary:

   - `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.

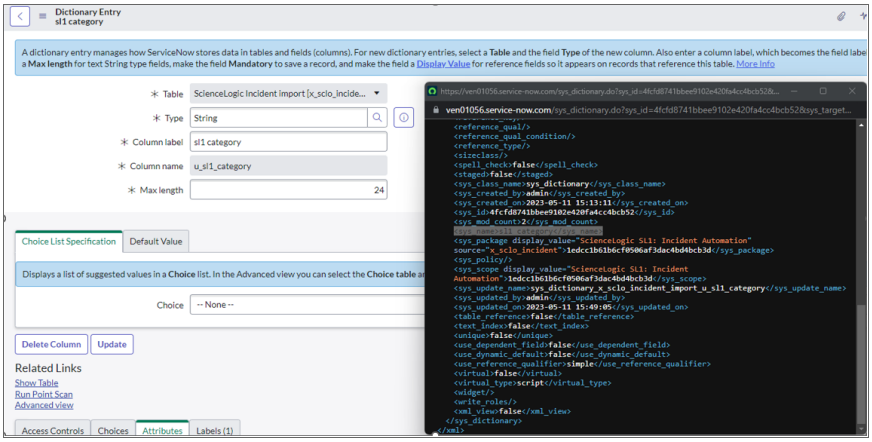
7. You can add additional run book actions to the run book automation Policy for any additional workflows that you might want to run. The Automation Policy execute these Actions in a sequential, top-down order. However, the "ServiceNow: Create, Update, Clear Incident" run book action only consumes the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

Enabling the "ServiceNow: [Events] - Click to Create" Automation Policy (Optional)

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 Skylar One 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 Skylar One, 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 Skylar One and log back into Skylar One 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 Skylar One 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 Skylar Automation: 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 Skylar Automation is unavailable. Those pending Skylar Automation 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 Skylar Automation

The following topics cover how to set up your Skylar Automation instance for Event Sync.

> **IMPORTANT:** You must install the ServiceNow Events SyncPack before you can perform the following procedures. For more information, see *Installing the ServiceNow Events SyncPack*.

Creating and Aligning a Configuration Object in Skylar Automation

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

You can create as many configuration objects as you need. A Skylar Automation 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 Skylar Automation 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 Skylar One.

> **TIP:** Depending on your Skylar One 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.

Creating a Configuration Object for Event Sync

For the ServiceNow Events SyncPack, you will need to make a copy of the "ServiceNow SyncPack" configuration object, which is the sample configuration file that was installed with the "ServiceNow Base" SyncPack. After you create the new configuration object, you will need to add specific name-value pairs as variables for this SyncPack. These variables are listed in the following procedure.

> **TIP:** If you have already set up a configuration object that you are using for other ServiceNow SyncPacks, you can use that configuration object for Event Sync. Go to step 7 in the following procedure to add the variables needed for this SyncPack.

To create a configuration object for the Events SyncPack:

1. In the Skylar Automation user interface, go to the **Configurations** page (⚙).
2. Click the **[Actions]** button (⋮) for the "ServiceNow SyncPack" configuration object and select *Edit*. The **Configuration** pane appears.
3. Click **[Copy as]**. The **Create Configuration** pane appears.
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. Click **[Toggle JSON Editor]** to show the JSON code.
6. In the ***Configuration Data*** field, be sure to 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"
}
```

> **NOTE:** If you are using Skylar One with an External Database (Skylar One Extended architecture or a cloud-based architecture), update the `"value"` of that block of code to be the host of your database. This field accepts IP addresses. For example: `"value": "db.sciencelogic.com"`. If you are *not* using the Skylar One Extended architecture or a cloud-based architecture, you do not need to make any changes to the block of code other than pasting the code into the configuration object.

7. In the ***Configuration Data*** field, update the default name-value pairs or add your own to match your Skylar Automation configuration. The Events SyncPack requires the following name-value pairs as variables:

> **NOTE:** The ***mid_server*** name-value pairs are not needed in the configuration object if your ServiceNow configuration does not include a MID Server.

- ***mid_server_api_protocol***. The protocol used by the API of your MID Server. The default is http.
- ***mid_server_host***. The IP address of the ServiceNow MID Server, along with the port number of the listener. In ServiceNow, go to the **MID Web Server Contexts** page (MID Server > Extensions > MID Web Server) and select the record you are using for Event Sync. The port number is defined in the ***HTTP/HTTPS Port*** field (port_number) on the **MID Web Server Context** record form. For example: **192.168.1.1:1773**.
- ***mid_server_user***. The MID Server user account. In ServiceNow, go to the **MID Web Server Contexts** page (MID Server > Extensions > MID Web Server) and select the record you are using for Event Sync. The user is defined in the ***Basic Auth User*** field (basic_auth_user) on the **MID Web Server Context** record form.

- ***mid_server_password***. The MID Server account password. In ServiceNow, go to the **MID Web Server Contexts** page (MID Server > Extensions > MID Web Server) and select the record you are using for Event Sync. The password is defined in the ***Basic Auth User Password*** field (basic_auth_user_password) on the **MID Web Server Context** record form. This is not a User on the sys_user table.
- ***region***. Unique identifier that identifies your Skylar One instance within ServiceNow.
- ***sl1_host***. The URL or IP address for the target Skylar One system.
- ***sl1_user***. User id of the user account the Skylar Automation will use to log in to Skylar One.
- ***sl1_password***. Password for the user account that Skylar Automation will use to log in to Skylar One.
- ***snow_host***. The URL for the target ServiceNow instance. For example: **sciencelogic.service-now.com**.
- ***snow_user***. User id of the user account that PowerFlow will use to log in to ServiceNow.
- ***snow_password***. Password of the user account that PowerFlow will use to log in to ServiceNow.
- ***snow_event_class***. Unique identifier for the Skylar Automation host that specifies which Skylar Automation host should receive updates from ServiceNow. For bi-directional functionality to work, the connector instance name needs to match the source instance (**snow_event_class**) field exactly. These fields are case-sensitive.
- ***mid_rel_url***. The relative URL for the Events Endpoint on the MID Server. Set this value to the following: `/api/mid/em/inbound_event?Transform=jsonv2`.

8. If you want to use OAuth2 for authentication with ServiceNow, complete the following Configuration Data Values fields:
   - ***snow_oauth_client_id***. Enter the OAuth2 Client ID from ServiceNow.
   - ***snow_oauth_client_secret***. Enter the OAuth2 Client secret from ServiceNow.
   - ***snow_oauth_token_url***. Enter the full authentication URL, including host and protocol from ServiceNow. For example, "https://<test-instance-name>.service-now.com/oauth_token.do"
   - ***snow_auth_method***: Enter *oauth* or *http_basic*. If no value is provided, *http_basic* will be used for connection.

> **NOTE:** The configuration options listed above are included by default with the sample configuration object provided in the "ServiceNow Base" SyncPack. The configuration options are only required in the configuration object if you plan to use OAuth2 to authenticate. If the values are not present in the configuration object, normal "http_basic" authentication will be used.

9. Click **[Save]**. You can now *align the new configuration object* with the relevant Skylar Automation applications:

The following code is an example of the JSON configuration data for this configuration object:

```
[
{
```

```
"name": "mid_server_api_protocol",
"value": "http"
},
{
"name": "mid_server_host",
"value": "10.2.2.150"
},
{
"name": "mid_server_user",
"value": "midserveruserexample"
},
{
"name": "region",
"value": "example_region"
},
{
"name": "mid_server_password",
"value": "example_password",
"encrypted": true
},
{
"name": "sl1_host",
"value": "10.2.2.89"
},
{
"name": "sl1_password",
"value": "example_password",
"encrypted": true
},
{
"name": "sl1_user",
"value": "em7admin"
},
{
"name": "snow_host",
"value": "example.service-now.com"
},
{
"name": "snow_event_class",
"value": "example_val"
```

```
},
{
"name": "mid_rel_url",
"value": "/api/mid/em/inbound_event?Transform=jsonv2"
},
{
"name": "snow_password",
"value": "snowpassword",
"encrypted": true
},
{
"name": "snow_user",
"value": "snowadmin"
}
```

Creating an OAuth2 Credential Record in ServiceNow

In order to use OAuth2 for authentication with ServiceNow, you must create an OAuth2 credential record in ServiceNow. To configure the ServiceNow credential that will be used by the Connector Instance:

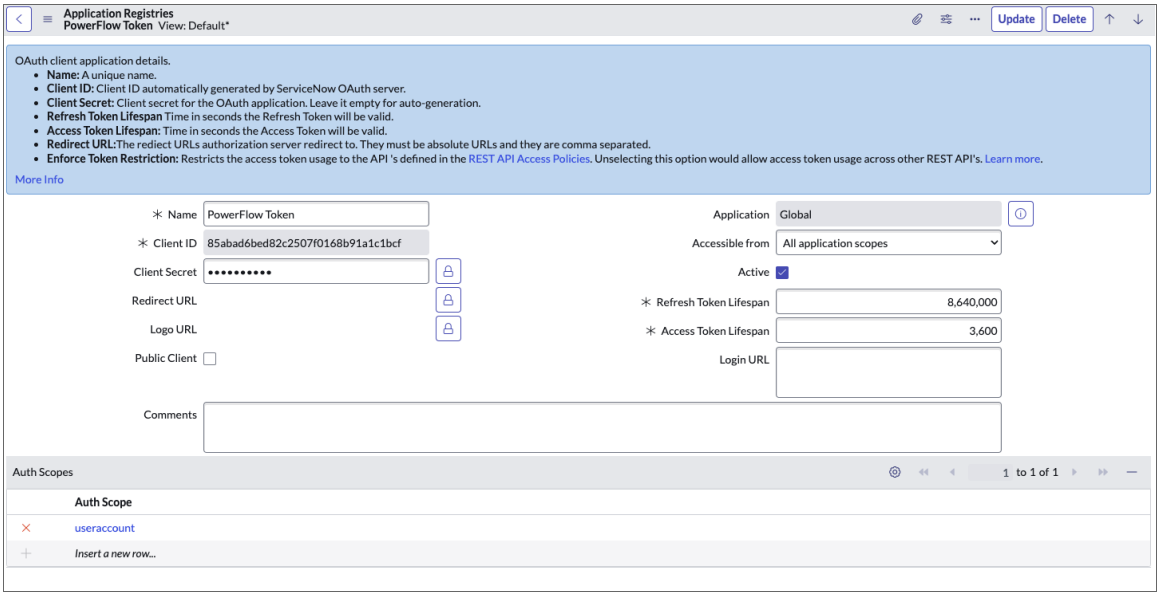
1. Navigate to **System OAuth > Application Registry**. The **Application Registries** page appears.
2. Click **[New]**.
3. Select **Create an OAuth API endpoint for external clients**. A new record appears.
4. Complete the following fields on the new record:
    - ***Name***. Type a unique name for the credential. Required.
    - ***Client ID***. The Client ID is automatically generated by the ServiceNow OAuth server.
    - ***Client Secret***. Leave this empty. ServiceNow will auto-generate this when the record is saved.
    - ***Refresh Token Lifespan***. Enter the length of time in seconds the Refresh Token will be valid.
    - ***Access Token Lifespan***. Type the length of time in seconds that the Access Token will be valid. ScienceLogic recommends setting this to 3,600 seconds to avoid known issues for longer ServiceNow REST interactions.

> **NOTE:** In a scenario where the **[Access Token Lifespan]** value is shorter than the duration of a Skylar Automation step that makes multiple REST interactions with ServiceNow, the access token will expire and need to be refreshed. As a result, retries were added to several Skylar Automation steps where this issue may occur. This issue will hopefully be addressed in future versions of the Base Steps SyncPack.

5. Under the **Auth Scope** section at the bottom of the page, double click ***Insert a new row***.
6. In the search box that appears, click the magnifying glass icon, select the *useraccount* record, and

click the checkmark icon to save.

7. Click **[Submit]** to save the new record.



Configuring the Skylar Automation Applications for Event Sync

The workflows for configuring Skylar Automation applications for Event Sync are different based on whether your ServiceNow environment uses a MID Server. Both workflows are included in the following sections.

Configuring Skylar Automation Applications for ServiceNow with a MID Server

To run Event Sync, you must "align" the configuration object to run with the following Skylar Automation applications:

- Cache Skylar One Users
- Create Event in ServiceNow from Skylar One Event
- Update Skylar One Event from ServiceNow Trigger
- Sync Alert Details from ServiceNow to Skylar One Events

NOTE: You only need to run the "Sync Alert Details from ServiceNow to Skylar One Events" application if you use a message key in the "ServiceNow: Add/Update/Clear Event" Run Book Action that has a one-to-many correlation between a single ServiceNow alert and multiple Skylar One events. See the following procedure for more information.

> **NOTE:** If you want to link events with ServiceNow Configuration Items (CIs), you will need to run the "Sync Devices from Skylar One to ServiceNow" application from the "ServiceNow CMDB" SyncPack. For more information, see *Running a Device Sync*.

To configure PowerFlow applications for ServiceNow with a MID Server:

1. On the **Applications** page of the Skylar Automation user interface, open the "Create Event in ServiceNow from Skylar One Event" 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 with the application.
4. Repeat this process for the "Update Skylar One Event from ServiceNow Trigger" application and the "Cache Skylar One Users" application. The "Cache Skylar One Users" application is in the "System Utils" SyncPack. ScienceLogic recommends that you schedule the "Cache Skylar One Users" application to run at least once a week.
5. If you use a message key that does not have a one-to-one correlation between Skylar One events and ServiceNow alerts, you will need to open the "Sync Alert Details from ServiceNow to Skylar One Events" application and edit the following parameters on the **Configuration** pane:
   - ***events_mid_server*** parameter for this application should be selected.
   - ***user_note_template*** field that accepts a Jinja2 template to generate custom user notes.
6. Click **[Save]**.
7. If you are linking multiple ServiceNow tickets to a single event in Skylar One, you will need to open the "Update Skylar One Event from ServiceNow Trigger" application and the "Sync Alert Details from ServiceNow to Skylar One Events" application and click the ***enable_expanded_references*** toggle to turn it blue for both applications. Click **[Save]**.
8. ScienceLogic recommends that you schedule the following Skylar Automation applications:
   - Cache Skylar One Users: at least once a week
   - Sync Alert Details from ServiceNow to Skylar One Events: every 60 seconds

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

Configuring PowerFlow Applications for ServiceNow without a MID Server

To run Event Sync for ServiceNow without a MID Server, you must "align" the configuration object to run with the following Skylar Automation applications:

- Cache Skylar One Users (from the "ServiceNow Base" SyncPack)
- Sync Alert Details from ServiceNow to Skylar One Events

- Sync Cached Skylar One Events to ServiceNow
- Process and Cache Skylar One Events

To configure PowerFlow applications for ServiceNow without a MID Server:

1. On the **Applications** page of the PowerFlow user interface, open the "Sync Alert Details from ServiceNow to Skylar One Events" 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. For only the "Sync Alert Details from ServiceNow to Skylar One Events" application, make sure that the ***events_mid_server*** parameter selected is *not* selected.
4. Click **[Save]** to save the configuration settings.
5. Repeat steps 1-4 for the "Cache Skylar One Users" application, the "Sync Cached Skylar One Events to ServiceNow" application and the "Process and Cache Skylar One Events" application. The "Cache Skylar One Users" application is in the "System Utils" SyncPack.
6. If you are linking multiple ServiceNow tickets to a single event in Skylar One, you will need to open the "Update Skylar One Event from ServiceNow Trigger" application and the "Sync Alert Details from ServiceNow to Skylar One Events" application and click the ***enable_expanded_references*** toggle to turn it blue for both applications. Click **[Save]**.
7. ScienceLogic recommends that you schedule the following Skylar Automation applications:
   - Cache Skylar One Users: at least once a week
   - Sync Alert Details from ServiceNow to Skylar One Events: every 60 seconds
   - Sync Cached Skylar One Events to ServiceNow: every 60 seconds

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

TIP: You do not need to schedule or run the "Process and Cache Skylar One Events" application, as that is triggered by the "ServiceNow: Add/Update/Clear Event" Run Book Action in Skylar One.

Removing Lock Documents

The "Remove Lock Documents" application lets you remove the stale lock documents in Couchbase that were created by the "Process and Cache Skylar One Events" application. ScienceLogic recommends that you schedule the application every five minutes with the default configurations. Fifty thousand lock documents are removed in every application run. This could take, for example, an hour and 30 minutes when removing one million lock documents. Running this application will not impact other applications running in PowerFlow.

Does this application needs to be run in all systems?

The previous versions of the "Process and Cache Skylar One Events" application generated stale lock documents, so you might need to schedule this application to clean up those stale documents. To confirm that they are present in your system, navigate to the Couchbase user interface (https://<powerflow_IP>:Port 8091), go to the **[Bucket]** tab, and check the ***Items*** column for the content bucket. This value should be around 3,000 or less if no stale lock documents are present. If the number is higher and keeps growing,you should run the the "Process and Cache Skylar One Events"application.

Will the stale lock documents still be created?

No. The "Process and Cache Skylar One Events" application uses a Redis lock as of version 1.2.1 of the ServiceNow Events SyncPack, which cleans the locks that have been set. As of version 1.2.1, PowerFlow will not create any more stale lock documents in Couchbase or Redis.

Configuring the Remove Lock Documents Application

To configure the "Remove Lock Documents" application:

1. On the **Applications** page of the Skylar Automation user interface, click the Filter icon ( ) at the top right of the **SyncPacks** page and select *Show Hidden Applications* to show all of the applications.
2. Open the "Remove Lock Documents" application and click **[Configure]**. The **Configuration** pane for that application appears.
3. From the ***Configurations*** drop-down, select the same configuration object you aligned to the "Process and Cache Skylar One Events" application.

CAUTION: If for some reason the lock documents need to be deleted in less runs, you can increase the ***high_limit*** parameter, but be advised that the application can take longer than ~4 minutes(50K) to run, since more documents will be marked for deletion in one run. This can also cause more overhead in the database.

4. Click **[Save]** to align that configuration object with the "Remove Lock Documents" application. You do not need to edit any other fields for that application.
5. Schedule the application to run every five minutes, if the default parameters were not changed. For more information about scheduling applications, see *Scheduling a PowerFlow Application*.

IMPORTANT: After all of the stale lock documents are removed, you need to remove the schedule. You can check the application logs to see if any more lock documents are deleted, and the message "0 documents were deleted successfully" will display in the logs when no more lock documents exist. You can also check in the Couchbase user interface (https://<powerflow_IP>:Port 8091) to confirm that the number of lock documents is correct.

Additional Considerations for Multiple Skylar OneSystems

If you are using this SyncPack with *multiple* Skylar One systems to monitor events from a *single* ServiceNow instance, you will need to review this section to ensure your systems are properly configured.

Using Multiple Skylar Automation Configuration Objects

The "ServiceNow: Add/Update/Clear Event" run book action requires you to create a unique configuration object for each Skylar One system. Each Skylar One system must have a unique ***region*** value in their corresponding configuration object.

For more information, see *Creating a Configuration Object for Event Sync*.

Configuring Skylar Automation Applications

The following Skylar Automation applications were updated to prevent multiple Skylar One systems from editing the same ServiceNow event at the same time.

Process and Cache Skylar One Events

The "ServiceNow: Add/Update/Clear Event" run book action triggers this application whenever a Skylar One event is created. In the case where multiple Skylar One systems are syncing an event with a single ServiceNow event, the application will be "locked" to protect against unwanted behavior in ServiceNow caused by constantly posting events.

The lock in this application is unique to the event's message key, with the region prepended. The message key is set in the ***message_key_template*** parameter in the **Input Parameters** section of the "ServiceNow: Add/Update/Clear Event" run book action. For more information, see *Customizing the Snippet Code in the Input Parameters Pane*.

The "Process and Cache Skylar One Event" step will fail if an event with a matching message key is trying to be written to the cache at the same time as another event. In other words, two events with the same message key cannot be processed and put into the cache at the exact same time.

The length of the lock is tied to the ***lock_timeout*** parameter on the **Configuration** tab for this application, which specifies how long Skylar Automation should wait if the application has not completed before running again. The default is lock timeout is 25 seconds, and you can edit this value on the **Configuration** tab if needed. The lock timeout gives ServiceNow time to process the data from the event.

To retrieve the number of events in the cache, run the following command:

```
select count(*) from logs where meta().id like "SL1_EVENT%"
```

To delete all events from the cache, run the following command:

```
delete from logs where meta().id like "SL1_EVENT%"
```

Sync Cached Skylar One Events to ServiceNow

The lock created in this application is tied the ServiceNow hostname to protect against unwanted behavior in ServiceNow caused by constantly posting events. This spacing gives ServiceNow time to process the events. The lock is released when PowerFlow gets a response from ServiceNow on the post, or the timeout is reached.

The length of the lock is tied to the ***lock_timeout*** parameter on the **Configuration** tab for this application, which specifies how long Skylar Automation should wait if the application has not completed before running again. The default is lock timeout is 25 seconds, and you can edit this value on the **Configuration** tab if needed. The lock timeout gives ServiceNow time to process the data from the event.

```
"save_key": "SL1_EVENT+${appvar.region}+%"
```

Sync Alert Details from ServiceNow to Skylar One Events

The lock created in this application is tied the ServiceNow hostname to protect multiple API calls from ServiceNow, as this call will increase in time as the number of events grows. The alerts are pulled by region from ServiceNow. The lock is released when Skylar Automation gets a response from ServiceNow on the GET API call, or the timeout is hit. This is a redis lock with no upper limit.

Scheduling Considerations and Options

Limitations

Event Sync relies on receiving a response from ServiceNow to update back to Skylar One. Sending multiple payloads at the same time, such as in Option 2, below, causes inconsistency and long completion times in ServiceNow processing.

The processing put in between writing directly to the target table, such as large table lookups, or other custom actions, will impact the number of records that Skylar Automation is able to send over.

Also, when sending a batch of 200 events, some customers' custom ServiceNow endpoint can take 108 seconds to complete processing. This means that if Skylar Automation sends more than 200 events in a minute, ServiceNow will become backlogged, becauase the processing time takes longer than how often Skylar Automation is posting.

As a result, if the overall throughput of events from Skylar One is more than 200 a minute, events could potentially continue to get backlogged and may never get processed by ServiceNow until throughput is reduced.

Option 1: Staggered Schedules

In a multiple-stack setup using an "out-of-the-box" version of the "ServiceNow Events" SyncPack, if all the events are going to the same ServiceNow instance, then you cannot run each stack every minute, because the lock is not region-specific.

One option is to run the stacks with separate queues, staggered every minute, meaning that each stack gets posted every 5 minutes.

Pros:

- Optimized process that ensures no possibility of SNOW ever being overloaded.
- Ensures complete separation of event queues between Skylar One stacks. An event flood from one Skylar One will not affect or delay eventing from any other stack

Con:

- Events are sent only every 5 minutes per stack.

Option 2: Separate Queues, Send All Events Every Minute

This option involves modifying the lock of the "Sync Cached Skylar One Events to ServiceNow" application to be the region instead of the ServiceNow hostname.

Pros:

- Events are sent every minute.
- Due to the separation of queues between SL1s, an event flood from one Skylar One will not affect or delay eventing from other stacks.

Cons:

- Sending multiple payloads of events to ServiceNow at the same time is known to cause performance delays, and inconsistencies.
- Might cause ServiceNow to not complete processing before the next minute run, creating a backlog.
- Might also cause invalid data.

Option 3: One Queue, Send All Events Every Minute

Pros:

- Events sent every minute

Cons:

- Possibility of an event flood from one Skylar One to impact other SL1s.
- If there are in total more than 200 events from all stacks, ServiceNow will take more than one minute to respond, meaning that the next payload will not be received until after that or the lock timeout expires.
- A backlog of events from one Skylar One might cause events from other SL1s to be delayed in processing.

Summary of Options and Benefits

With the consideration of the current custom ServiceNow API endpoint, the following table presents options and considerations:

Implementation + scheduling	Event Frequency	Possibility for increased ServiceNow race condition/delay	Possibility for one stack event flood to impact another
Option 1: Staggered runs, SL-recommended timing	4 minutes per stack (1 stack worth of events every minute)	No	No
Option 2: Separate queue runs every minute)	1 minute per stack (all events every minute)	Yes	No
Option3: Single queue consolidated event pushing	1 minute per stack (all events every minute)	No	Yes

Chapter

4

Troubleshooting the Events SyncPack

Overview

This chapter includes troubleshooting resources and procedures to use with the "ServiceNow Events" SyncPack.

This chapter covers the following topics:

Initial Troubleshooting Steps *53*

Resources for Troubleshooting *53*

Initial Troubleshooting Steps

Skylar Automation 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 Skylar Automation is talking. There might be additional configurations or actions enabled on ServiceNow or Skylar One that result in unexpected behavior. For detailed information about how to perform the steps below, see *Resources for Troubleshooting*.

Skylar Automation

1. Run `docker service ls` on the Skylar Automation server:
   - Note the Docker container version.
   - Verify that the Docker services are running.
2. If a certain service is failing, make a note of the service name and version.
3. 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`.
4. 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 if you are running a ServiceNow certified application or a Service Graph SyncPack.
3. Make a note of the SyncPack application that is failing in Skylar Automation.
4. 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 Skylar Automation and troubleshooting commands for Docker, Couchbase, and the Skylar Automation API.

Useful Skylar Automation Ports

- **https://***<IP of Skylar Automation>***:8091**. Provides access to Couchbase, a NoSQL database for storage and data retrieval.
- **https://***<IP of Skylar Automation>***:15672**. Provides access to the RabbitMQ Dashboard, which you can use to monitor the service that distributes tasks to be executed by Skylar Automation workers.

- **https://**<*IP of Skylar Automation*>**/flower/workers**. Provides access to Flower, a tool for monitoring and administrating Celery clusters.
- **https://**<*IP of Skylar Automation*>*:3141*. Provides access to the pypiserver service. which you can use to see if SyncPacks have been correctly uploaded to Devpi container.

> **IMPORTANT:** Port 5556 must be open for both Skylar Automation and the client.

Helpful Docker Commands

Skylar Automation 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 Skylar Automation:

Viewing Container Versions and Status

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

```
rpm -qa | grep powerflow
```

To view the individual services with their respective image versions, SSH to your Skylar Automation 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 Skylar Automation:

```
[root@fsunis4lab ~]# docker service ls
ID                  NAME                MODE              REPLICAS          IMAGE                                                  PORTS
ommihuj5v30i        iservices_gui       replicated        1/1               repository.auto.sciencelogic.local:5000/is-gui:1.7.0       *:80->80/tcp,*:443->443/tcp
10vs91t1wnh3        iservices_redis     replicated        1/1               redis:4.0.2
j1m6h1jtumlf        iservices_flower    replicated        1/1               repository.auto.sciencelogic.local:5000/is-worker:1.7.0    *:5555->5555/tcp
1h3pt2181rsf        iservices_scheduler replicated        1/1               repository.auto.sciencelogic.local:5000/is-worker:1.7.0
htimltvg6xhx        iservices_contentapi replicated       1/1               repository.auto.sciencelogic.local:5000/is-api:1.7.0       *:5000->5000/tcp
ryln9qgsudmi        iservices_rabbitmq  replicated        1/1               rabbitmq:3
xlu19h8jsfs6        iservices_visual    replicated        2/1               dockersamples/visualizer:latest                            *:8081->8080/tcp
ycy38w8buauw        iservices_couchbase replicated        1/1               repository.auto.sciencelogic.local:5000/is-couchbase:1.7.0 *:8091->8091/tcp,*:8092->8092/
3->8093/tcp,*:8094->8094/tcp,*:11210->11210/tcp
zlbxstxoz7uf        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 Skylar Automation Services

Run the following command to stop all Skylar Automation 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 Skylar Automation platform:

- ***Docker PowerPack***. This PowerPack monitors your Linux-based Skylar Automation server with SSH (the Skylar Automation ISO is built on top of an Oracle Linux Operating System). This PowerPack provides key performance indicators about how your Skylar Automation server is performing. For more information on the Docker PowerPack and other PowerPacks that you can use to monitor Skylar Automation, see the *Using Skylar One to Monitor Skylar Automation*.
- ***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 Skylar Automation 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 Skylar Automation 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 Skylar Automation 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 Skylar Automation 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 Skylar Automation user interface:

1. Select the Skylar Automation 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:

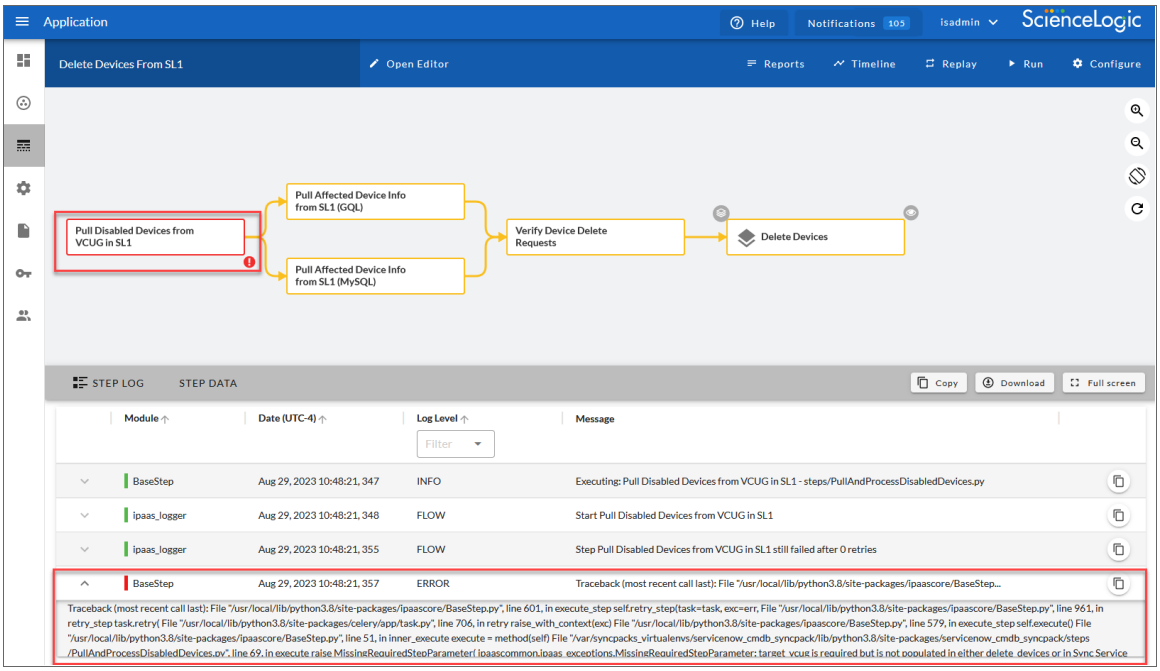
1. POST the following to the API endpoint:

```
https://<Skylar Automation_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 Skylar Automation 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 Skylar Automation 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}}'
```

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