



Cisco DNA Center ITSM Integration Guide, Release 2.2.2

First Published: 2021-04-23

Last Modified: 2023-11-28

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CHAPTER 1

New and Changed Information

- [New and Changed Information](#), on page 1

New and Changed Information

This table summarizes the new and changed features for this release and tells you where they are documented.

Table 1: New and Changed Features

Feature	Description	Where Documented
New PagerDuty integration with Cisco DNA Center.	<p>This release supports a new PagerDuty integration with Cisco DNA Center. You configure the PagerDuty settings in the selected event.</p> <p>Click Subscribe to configure the event for a subscription. The following required data must be entered in the Cisco DNA Center platform GUI:</p> <ul style="list-style-type: none">• PagerDuty Events REST API URL• PagerDuty Integration key (routing key)	See Appendix B, Cisco DNA Center to PagerDuty Integration , on page 55.



Note The documentation set for this product strives to use bias-free language. For purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. Exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.



CHAPTER 2

About Cisco DNA Center ITSM Integration

- [Cisco DNA Center ITSM Integration Use Cases, on page 3](#)
- [Cisco DNA Center ITSM Support, on page 3](#)

Cisco DNA Center ITSM Integration Use Cases

Cisco DNA Center supports the following types of integration use cases with other third-party applications:

- Network management integrations:
 - Bidirectional IP grid synchronization
 - Integration with third-party IP Address Management (IPAM) systems
- Operation integrations:
 - ITSM event, problem, and incident management
 - Approvals and schedule window information
 - Assistance in issue triage and association
 - Data exports for building custom dashboards and reports

Cisco DNA Center ITSM Support

Cisco DNA Center supports the following capabilities:

- Integrating Cisco DNA Center into ITSM processes of incident, event, change, and problem management.
- Integrating Cisco DNA Center into ITSM approval and preapproval chains.
- Integrating Cisco DNA Center with formal change and maintenance window schedules.

The scope of the integration is primarily to monitor your network for assurance and maintenance issues, as well as for events that require software image updates for compliance, security, or any other operational triggers. Details about these issues are then published to an ITSM (ServiceNow) system or any REST endpoint.

Cisco DNA Center bundles are prebuilt solutions that enable integration between DNA capabilities and specific IT domains. The following bundles can be configured and used:

- **Basic ITSM (ServiceNow) CMDB Synchronization**
- **Cisco DNA Center REST API**
- **Endpoint Attribute Retrieval with ITSM (ServiceNow)**
- **Network Issue Monitor and Enrichment for ITSM (ServiceNow)**
- **Rogue and aWIPS**
- **Cisco DNA Center Automation Events for ITSM (ServiceNow)**



CHAPTER 3

Cisco DNA Center ITSM Integration Workflows

- [Cisco DNA Center Integration Supported Workflows, on page 5](#)
- [Cisco DNA Center Integration with a Generic REST Endpoint, on page 5](#)
- [Cisco DNA Center Integration with ServiceNow Without the Cisco DNA App, on page 11](#)
- [Cisco DNA Center Integration with ServiceNow Using the Cisco DNA App, on page 21](#)
- [Cisco DNA Center Endpoint Attribute Retrieval with ServiceNow, on page 41](#)

Cisco DNA Center Integration Supported Workflows

The following Cisco DNA Center ITSM integration workflows are supported:

- Cisco DNA Center ITSM integration with a generic REST endpoint: For information about this workflow, see [Cisco DNA Center Integration with a Generic REST Endpoint, on page 5](#).
- Cisco DNA Center ITSM integration with ServiceNow without using the Cisco DNA application for ServiceNow: For information about this workflow, see [Cisco DNA Center Integration with ServiceNow Without the Cisco DNA App, on page 11](#).
- Cisco DNA Center ITSM integration with ServiceNow using the Cisco DNA application for ServiceNow: For information about this workflow, see [Cisco DNA Center Integration with ServiceNow Using the Cisco DNA App, on page 21](#).
- Cisco DNA Center ITSM endpoint attribute retrieval with ServiceNow using the Cisco DNA application for ServiceNow: For information about this workflow, see [Cisco DNA Center Endpoint Attribute Retrieval with ServiceNow, on page 41](#).

Cisco DNA Center Integration with a Generic REST Endpoint

The following table describes the procedure for configuring Cisco DNA Center integration with a generic REST endpoint. You may wish to publish network and SWIM events to a REST endpoint (outside of a configuration management database) for performance, security, event response, or other reasons.

Table 2: Cisco DNA Center to Generic REST Endpoint Integration Procedure

Step	Description
Step 1	Install or upgrade to Cisco DNA Center, Release 2.2.2. For information about installing Cisco DNA Center, see the Cisco DNA Center Installation Guide .
Step 2	Determine the REST endpoint (system location and IP address) for the publication of the Assurance (network) events and/or SWIM events.
Step 3	Configure network events using Events window in the Cisco DNA Center GUI. You can configure REST API endpoints for events using the GUI. Click Platform > Developer Toolkit > Events . Review the network events listed in the window and click a specific event to configure, then click Subscribe to create a REST API endpoint. For information, see Configure Network Events, on page 6 . Important Network event notifications are sent when the event actually occurs and not according to any polling schedule that you configure.
Step 4	Configure network event settings in Event Settings . The Cisco DNA Center platform and ITSM integration allows the user to choose from a list of possible issues to create and modify the severity of events, incidents, or problems to match business priorities. For information, see Configure Event Settings, on page 10 .
Step 5	Access the REST endpoint and review the network event data that has been posted using the REST APIs in this procedure. Begin to review and manipulate this data according to your business or network needs.

Configure Network Events

You can subscribe to specific events that may occur in your network. After you subscribe, you receive a notification by REST API whenever the event occurs. You subscribe to an event using the **Events** window in the Cisco DNA Center platform GUI.

Figure 1: Cisco DNA Center Platform Events Window

Event ID	Name	Type	Category	Severity
INTEGRATIONS-ITSM-842	Publish CMDB sync failure	INTEGRATIONS	INFO	3
LICMGMT-DEV-DEREG-FAILURE	Device de-registration failed	APP	TASK_FAILURE	3
LICMGMT-DEV-DEREG-SUCCESS	Device de-registration succeeded	APP	TASK_COMPLETE	4
LICMGMT-DEV-REG-FAILURE	Device registration failed	APP	TASK_FAILURE	3
LICMGMT-DEV-REG-	Device registration			

Before you begin

- For a REST API subscription of events, you have configured the REST API event notifications in the **Webhook** window in Cisco DNA Center. You access the **Webhook** window by clicking the **Menu** icon (**☰**) > **System** > **Settings** > **External Services** > **Destinations** > **Webhook**.
- You must have the appropriate permissions to perform the tasks described in this procedure. For information about Role-Based Access Control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).

Step 1 In the Cisco DNA Center GUI, click the **Menu** icon (**☰**) and choose **Platform** > **Developer Toolkit** > **Events**.

Step 2 In the **Events** window, review the events displayed in the table.

Note You can adjust the events that are displayed by entering a keyword in the **Find** field.

Step 3 Review the data on an individual event within the table.

The following **Events** data is provided:

- **Event ID:** Identification number for the event.
- **Name:** Name of the event (link).
If you click this link, the **Name** slide-in pane opens for the selected event. The **Name** slide-in pane consists of two tabs: **Events Details** and **Active Subscriptions**.
- **Description:** Brief description of the event.
- **Type:** Network, App, System, Security, or Integrations type of event.
- **Category:** Error, Warn, Info, Alert, Task Progress, or Task Complete.
- **Severity:** 1 through 5.

Note Severity 1 is the most important or critical priority and should be assigned for this type of event.

- **Status:** Subscription status (whether a user has subscribed to the event and will appear in the **Active Subscriptions** tab). If subscribed to an event, the type of notification also appears in the **Broadcast Methods** column (REST URL, email, or SNMP trap).

Step 4 Click a **Name** link to open an event subscription slide-in pane.

Figure 2: Individual Event Window

The screenshot shows the 'WLC Reboot Crash' event subscription slide-in pane. The 'Event Details' tab is active, displaying the following information:

GENERAL INFORMATION			
Description: WLC has rebooted due to a hardware or software crash			
Event Id	NETWORK-DEVICES-2-152	Version	1.0.0
Namespace	ASSURANCE	Domain	Know Your Network
Sub Domain	Devices	Type	NETWORK
Category	ERROR	Severity	2
Cisco DNA Event Link	dna/assurance/issueDetails?issuelid=\$instancelid\$		

Below the general information, the 'TAGS' section shows 'ASSURANCE' and 'wlc_reboot_crash_trigger'. The 'MODEL SCHEMA' section displays a REST API schema:

```

1 * {}
2   "Type": "EventSource$",
3   "Assurance Issue Priority": "Priority$",

```

At the bottom right of the pane are 'Cancel' and 'Subscribe' buttons.

Step 5 Review the data displayed in the event subscription slide-in pane.

The following **Event Details** tab data is displayed:

- **Description:** Brief description of the event and how it is triggered.
- **Event ID:** Identification number of the event.
- **Version:** Version number of the event.
- **Namespace:** Namespace of the event.
The default value for all events is ASSURANCE.
- **Domain:** REST API domain to which the event belongs.
- **Sub Domain:** Sub-group under the REST API domain to which the event belongs.
- **Type:** Network, App, System, Security, or Integrations type of event.
- **Category:** Error, Warn, Info, Alert, Task Progress, Task Complete.
- **Severity:** 1 through 5.

Note Severity 1 is the most important or critical priority and should be assigned for this type of event.

- **Cisco DNA Event Link:** Event broadcast using REST URL.

- **Note:** Additional information about the event or to assist in further understanding the event.
- **Tags:** Cisco DNA Center component that is affected by the event. The default value is ASSURANCE with additional syntax for the specific Assurance issue.
- **Model Schema:** Model schema about the event:
 - **Details:** Example of model schema detail for the event.
 - **REST Schema:** REST schema format for the event.

Step 6 Click the **Active Subscriptions** tab.

The following data is displayed:

- **Broadcast Methods:** Email, REST API, or SNMP trap.
- **Count and Instances:** Number of instances of notifications for emails, REST APIs, or SNMP traps.

Click the subscription count under **Count and Instances**. To edit the subscription, click **Edit**. To unsubscribe, click **Unsubscribe**. For multiple subscriptions, you need to unsubscribe from each subscription one at a time. The ability to subscribe to or unsubscribe from multiple subscriptions is not supported using the GUI.

- **Actions:** Either unsubscribe or edit the active subscription.

Note After subscribing to an event, a **Try It** button appears in the **Active Subscriptions** tab. To run an event simulation, click **Try It**. For information about this feature, see the [Cisco DNA Center Platform User Guide](#).

Step 7 To add the event to your active subscription of events and receive future notifications, click **Subscribe**.

You subscribe to an event to receive either an email, REST API endpoint, or SNMP trap notification. If you subscribe to a REST API endpoint notification (for example for a web hook), then configure the following fields:

- **Name:** Name of the event.
- **Subscription Type: REST**
Subscription type can be set for either email, REST API endpoint, or SNMP trap.
- **Select an existing endpoint:** Select the Subscription Endpoint and URL by using the drop down arrow.
- **Create a new endpoint:** Click the active link to access the **Webhook** tab and configure the settings for the REST API endpoint.

Note After you configure the values in the **Webhook** tab, return to the event and select it as your configured REST API endpoint.

- **Trust certificate:** Choose whether a trust certificate is required for REST API endpoint notification.
- **HTTP Method:** Choose either the PUT or POST method.
- **Authentication:** Select the Authentication type:
 - **Basic:** Authentication where the client sends HTTP requests with the Authorization header that contains the word 'Basic', followed by a space and a base64-encoded string 'username:password'. If you select **Basic**, then the **Header Key** field is automatically populated with the **Authorization** value.
 - **Token:** Authentication where users are authenticated using a security token provided by the server. If you select **Token**, the **Header Key** field is automatically populated with the **X-Auth-Token** value.

- **No Authentication:** No authentication needed.
- **Headers:** Enter the **Header Name** and **Header Value**. Click **Add** to add the header values.

Note The **Header Name** field may be auto-populated depending upon your **Authentication** selection above.

Click **Subscribe** to save and enable the subscription or **Cancel** to cancel and exit the window.

Configure Event Settings

The Cisco DNA Center platform and ITSM integration permits you to choose from a list of possible issues to create and modify the severity of events, incidents, or problems in ServiceNow to match your business priorities. You perform these tasks in the **Events Settings** window. The **Events Settings** window is accessible from the **Configurations** menu option in the Cisco DNA Center platform.



Note For this release, there are no SWIM events to configure in **Event Settings**, you only configure network assurance events.



Important The **Event Settings** window and its functionality are applicable only to events for an ITSM (ServiceNow) integration and not for events configured to other destinations. To configure events to a webhook or other destination, click the link above the columns. Use the **Events** window to configure events for an email, webhook, or SNMP trap.

Figure 3: Events Settings Window

Event Name	Domain	Type	Category	Severity	Workflow	Actions
AP Coverage Hole	Know Your Network	NETWORK	WARN	3	Incident	Edit
AP CPU High Utilization	Know Your Network	NETWORK	WARN	3	Incident	Edit
AP License Exhausted on WLC	Know Your Network	NETWORK	WARN	3	Incident	Edit
AP Memory High Utilization	Know Your Network	NETWORK	WARN	3	Incident	Edit
AP Reboot Crash	Know Your Network	NETWORK	WARN	3	Incident	Edit
BGP Tunnel Connectivity	Know Your Network	NETWORK	ERROR	2	Incident	Edit

Before you begin

You must have the appropriate permissions to perform the tasks as described in this procedure. For information about Role-Based Access Control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).

Step 1 In the Cisco DNA Center GUI, click the **Menu** icon (☰) and choose **Platform > Manage > Configurations**. A **Configurations** window that contains an **Events Settings** section is displayed.

Step 2 Review the information presented in the **Event Settings** section:

- **Event Name:** Name of the Cisco DNA Center event.
- **Domain:** Domain of the Cisco DNA Center event.
- **Type:** Network, App, System, Security, or Integrations.
- **Category:** Error, Warn, Info, Alert, Task Progress, or Task Complete.
- **Severity:** P1 (Severity 1) through P5 (Severity 5).

Note Severity 1 is the most important or critical priority and should be assigned for this type of event.

- **Workflow:** Incident, Problem, Event, or RFC (Request for Change).
- **Actions:** Edit.

To adjust what is displayed in the table, click the **Filter** icon or enter a keyword in the **Find** field. For example, to display all access point notifications, enter **AP** in the **Find** field. To view all network notifications, enter **Network** in the **Find** field. To view all severity notifications, enter **1** in the **Find** field.

Step 3 To edit an event, click **Edit** in the **Actions** column.

To choose a setting, click the down-arrow and adjust the value. For example, click **Network** and adjust to **App**. This changes the event type from a network type to an application type. Click **Severity** and adjust the setting from **5** to **1**. The severity level is raised from 5 to 1.

Step 4 Click the box next to the event name to enable notifications.

This enables notifications through Cisco DNA Center when the event occurs in the future.

Step 5 Click **Save**.

Cisco DNA Center Integration with ServiceNow Without the Cisco DNA App

The following table describes the procedure for configuring Cisco DNA Center integration with ServiceNow without using the Cisco DNA app. Follow the procedure to configure integration for network events, SWIM events, or both event types depending upon the functionality that you require.



Note You can also use the **Basic ITSM (ServiceNow) CMDB synchronization** bundle with this workflow. If you use this bundle, be sure to choose **Post device inventory details to a staging table** as the destination type. The other destination type (**Synchronize device inventory directly with CMDB**) requires the Cisco DNA App. Additionally, the **Post device inventory details to a staging table** destination type only sends data to the REST API endpoint. You will need to create a script to perform any further action on the data.

Table 3: Cisco DNA Center to ServiceNow Integration without the Cisco DNA App Procedure

Step	Description
Step 1	Install or upgrade to Cisco DNA Center, Release 2.2.2. For information about <i>installing</i> Cisco DNA Center, see the Cisco DNA Center Installation Guide .
Step 2	Install or upgrade to ServiceNow running the following version: <ul style="list-style-type: none"> • Paris • Orlando • New York Patch 1 Refer to your ServiceNow documentation for its installation and upgrade procedures. Note This procedure needs to be performed by a ServiceNow administrator.
Step 3	Configure the Network Issue Monitor and Enrichment for ITSM (ServiceNow) bundle. For information, see Configure the Network Issue Monitor and Enrichment for ITSM (ServiceNow) Bundle, on page 13 . This bundle enables Change Management between the two systems (Cisco DNA Center and ServiceNow). Change Management and Incident/Problem Management workflows should be enabled based on the automation or assurance use cases that you want to log tickets to in ServiceNow.
Step 4	Configure network event settings in Event Settings . For information, see Configure Event Settings, on page 16 . Note The Cisco DNA Center platform and ITSM integration allows the user to choose from a list of possible issues to create and modify the severity of events, incidents, or problems in ServiceNow to match business priorities.

Step	Description
Step 5	<p>Configure the Cisco DNA Center Automation events for ITSM (ServiceNow) bundle.</p> <p>For information, see Configure the Cisco DNA Center Automation Events for ITSM (ServiceNow) Bundle, on page 18.</p> <p>The Cisco DNA Center Automation events for ITSM (ServiceNow) bundle has been improved for this release. This bundle retrieves events relating to software image updates required for compliance, security or any other operational triggers from Cisco DNA Center. With past releases, the bundle published the event data on a user-defined recurring schedule to an ITSM (Service Now) system. In this release, SWIM event notifications are sent from Cisco DNA Center to ServiceNow when they occur and not on a polling and notify schedule. Additionally, for this release there is no SWIM event that you must configure in Event Settings. Previous releases required that you configure a single SWIM event (Device Image Outdated).</p> <p>For additional information about this improved bundle and feature, see About SWIM Closed Loop Automation, on page 47.</p>
Step 6	<p>Access your ServiceNow instance and review the network and SWIM event data that has been posted using the REST APIs in this procedure. Begin to review and manipulate this data in ServiceNow per your business or network needs.</p> <p>Note The ServiceNow user must have the role of <code>evt_mgmt_integration</code> to post events to the event table (<code>em_event</code>).</p>

Configure the Network Issue Monitor and Enrichment for ITSM (ServiceNow) Bundle


Perform this procedure to set up monitoring for network for assurance and maintenance issues, as well as publishing event details to a ServiceNow system.



Note Event data can be published to the **Event** table in ServiceNow. This requires that you have the Event Management plugin in your ServiceNow instance. If you do not have the Event Management plugin in your ServiceNow instance, the bundle can be configured to send the data to a REST API endpoint in the Cisco DNA App.

Before you begin

You must have the appropriate permissions to perform the tasks as described in this procedure. For information about Role-Based Access Control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).

Step 1 In the Cisco DNA Center GUI, click the **Menu** icon () and choose **Platform > Manage > Bundles**.
Review the displayed bundles and their current status.

Step 2 Click the **Network Issue Monitor and Enrichment for ITSM (ServiceNow)** bundle link or icon (colored square with initial) for additional information about the bundle.

Additional information provided may include the following:

- **General information:** Vendor, version, platform, tags displayed under the square icon.
- **Information:** Tab that displays general information (purpose of bundle and how bundle works in the network), sample schemas, configuration notes, and other data about the bundle.
- **Contents:** Tab that accesses the APIs and integration flows that make up the bundle, or provides information about the integration flows that make up the bundle.
- **Release Notes:** Tab that displays latest release information about the bundle, including its version.

Step 3 Click each of the above tabs and review the information about the bundle.

Step 4 Click the **Enable** button to enable the bundle.

An **Information** field appears in the window.

Step 5 In the **Information** field, click the **Enable** button to confirm enabling the bundle.

After clicking the **Enable** button to confirm, a success message appears.

Step 6 Click **OK** in the success message.

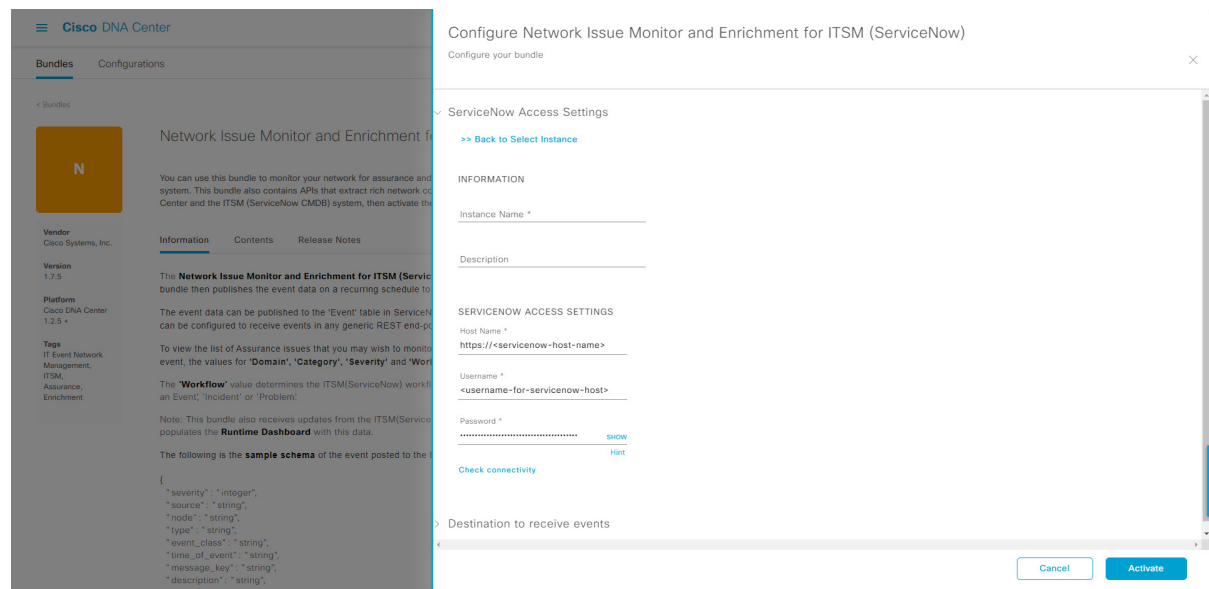
Step 7 Click the **Configure** button to configure at the bundle level.

A configuration slide-in pane appears.

Step 8 In the configuration slide-in pane, click **ServiceNow Access Settings** to configure a ServiceNow Connection instance.

Step 9 Click the radio button to configure either an existing ServiceNow Connection instance or configure a new instance.

Figure 4: Example of ServiceNow Instance Configuration Fields



For configuring an existing ServiceNow Connection instance, choose it from the drop-down menu in the window and click **Activate**.

Step 10 For configuring a new ServiceNow Connection instance, the following additional information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.
- **Host name:** Host name for the ServiceNow system.
- **Username:** Username required to access the ServiceNow system.
- **Password:** Password required to access the ServiceNow system.

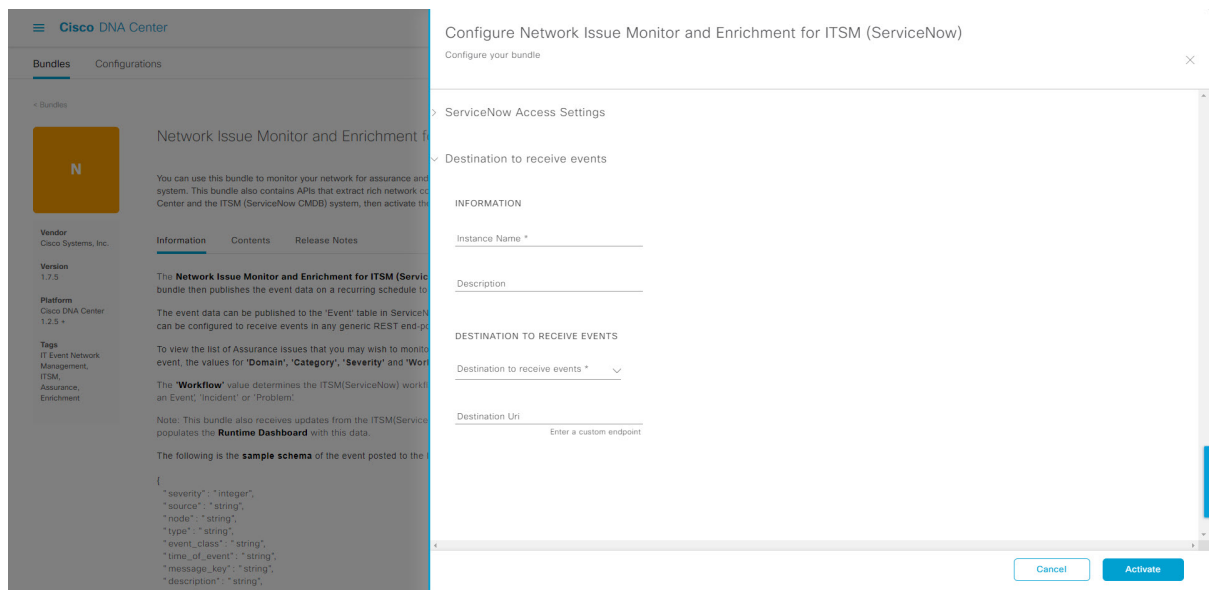
Step 11 Click **Check Connectivity** to test whether you can connect to the server where the endpoint is located.

After a successful test of connectivity to the server, proceed to configure **Destination to receive events**.

Step 12 In the configuration slide-in pane, click **Destination to receive events** to configure a Destination Connection instance.

Step 13 Click the radio button to configure either an existing Destination Connection instance or configure a new instance.

Figure 5: Example of Destination to Receive Events Configuration Fields



For configuring an existing Destination Connection instance, choose it from the drop-down menu in the window and click **Activate**.

Step 14 For configuring a new Destination instance, the following additional information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.
- **Destination to receive events:** Choose one of the following:
 - **Event Management:** When setting up Cisco DNA Center integration with ServiceNow without using the Cisco DNA App, choose the **Event Management** option. The **Event Management** option also requires that you have the Event Management plugin configured within the ServiceNow instance.
 - **REST API Endpoint:** The **REST API Endpoint** option can be used with the Cisco DNA App. Data is sent to a REST API endpoint within the Cisco DNA App with the **REST API Endpoint** option.

- **Generic REST Endpoint in ServiceNow:** For the **Generic REST Endpoint in ServiceNow** option, you can send the data to a different staging table in ServiceNow.
- **Destination URI:** Enter a destination URI (Uniform Resource Indicator) for the **Generic REST Endpoint in ServiceNow** option. This field is mandatory for this option.

After entering this information, proceed to the next step.

Step 15 Click **Activate** to save your changes and activate the bundle or click **Cancel** to cancel the configuration and close the slide-in pane.

The changes made to the bundle begin to take effect immediately. Additionally, the bundle status changes from **ENABLED** to **ACTIVE**.

Configure Event Settings

The Cisco DNA Center platform and ITSM integration permits you to choose from a list of possible issues to create and modify the severity of events, incidents, or problems in ServiceNow to match your business priorities. You perform these tasks in the **Events Settings** window. The **Events Settings** window is accessible from the **Configurations** menu option in the Cisco DNA Center platform.

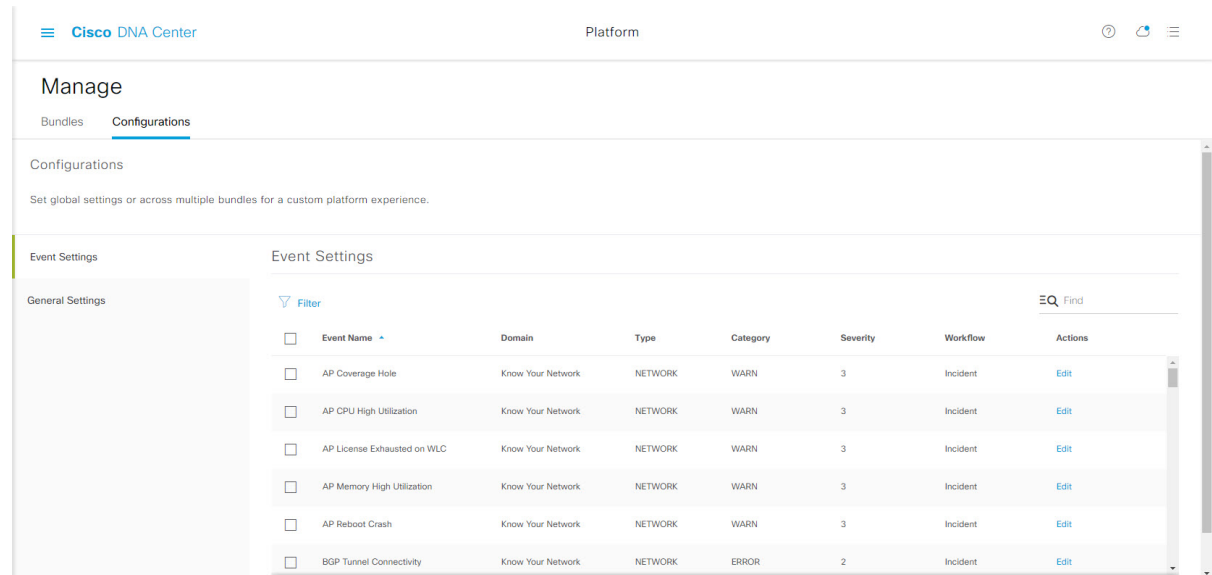


Note For this release, there are no SWIM events to configure in **Event Settings**, you only configure network assurance events.



Important The **Event Settings** window and its functionality is only applicable to events for an ITSM (ServiceNow) integration and not for events configured to other destinations. For events being configured to a webhook or other destination, click the link above the columns to access the **Events** window. Use the **Events** window to configure events for an email, webhook, or SNMP trap.

Figure 6: Events Settings Window



Before you begin

You must have the appropriate permissions to perform the tasks as described in this procedure. For information about Role-Based Access Control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).

Step 1 In the Cisco DNA Center GUI, click the **Menu** icon (☰) and choose **Platform** > **Manage** > **Configurations**.

A **Configurations** window opens that contains an **Events Settings** section.

Step 2 Review the **Event Settings** section that appears.

The following **Event Settings** information is displayed:

- **Event Name:** Name of the Cisco DNA Center event.
- **Domain:** Domain of the Cisco DNA Center event.
- **Type:** Network, App, System, Security, Integrations type.
- **Category:** Error, Warn, Info, Alert, Task Progress, Task Complete
- **Severity:** P1 (Severity 1) through P5 (Severity 5).

Note Severity 1 is the most important or critical priority and should be assigned as such.

- **Workflow:** Incident, Problem, Event, or RFC (Request for Change)
- **Actions:** Edit

You can adjust what is displayed in the table by clicking the **Filter** icon and using the filter, or by typing a keyword in the **Find** field. For example, to display all access point notifications, type 'AP' in the **Find** field. To view all network notifications, type 'Network' in the **Find** field. To view all severity notifications, type '1' in the **Find** field.

Step 3 Click **Edit** in the **Actions** column to edit an event.

Choose a setting by clicking on the downward pointing angle and adjust the value. For example, click **Network** and adjust to **App**. This changes the event type from a network type to an application type. Click **Severity** and adjust to **1** from **5**. This raises the severity level from 5 to 1.

Step 4 Click the box next to the Event name to enable notifications.

This enables notifications through Cisco DNA Center when the event occurs in the future.

Step 5 Click **Save** to save your configuration.

Configure the Cisco DNA Center Automation Events for ITSM (ServiceNow) Bundle

Perform this procedure to set up monitoring and publishing events requiring software image updates for compliance, security, or other operational triggers to a ServiceNow system.



Note Event data can be published to the **Event** table in ServiceNow. This requires that you have the Event Management plugin in your ServiceNow instance. If you do not have the Event Management plugin in your ServiceNow instance, the bundle can be configured to send the data to a REST API endpoint in the Cisco DNA App.

Before you begin

You must have the appropriate permissions to perform the tasks as described in this procedure. For information about Role-Based Access Control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).

Step 1 In the Cisco DNA Center GUI, click the **Menu** icon (☰) and choose **Platform > Manage > Bundles**.

Review the displayed bundles and their current status.

Step 2 Click the **Cisco DNA Center Automation events for ITSM (ServiceNow)** bundle link or icon (colored square with initial) for additional information about the bundle.

Additional information provided may include the following:

- **General information:** Vendor, version, platform, tags displayed under the square icon.
- **Information:** Tab that displays general information (purpose of bundle and how bundle works in the network), sample schemas, configuration notes, and other data about the bundle.
- **Contents:** Tab that accesses the APIs and integration flows that make up the bundle, or provides information about the integration flows that make up the bundle.
- **Release Notes:** Tab that displays latest release information about the bundle, including its version.

Step 3 Click each of the above tabs and review the information about the bundle.

Step 4 Click the **Enable** button to enable the bundle.

An **Information** field appears in the window.

Step 5 Click the **Enable** button in the **Information** field to confirm enabling the bundle.

After clicking the **Enable** button to confirm, a success message appears.

Step 6 Click **OK** in the success message.

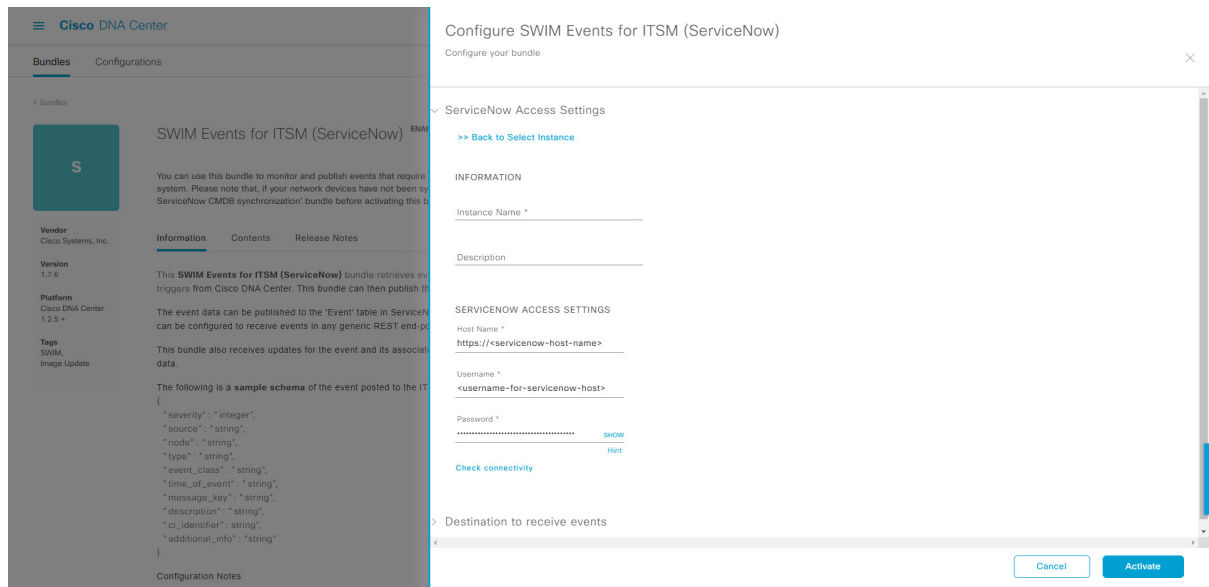
Step 7 Click the **Configure** button to configure at the bundle level.

A configuration slide-in pane appears.

Step 8 In the configuration slide-in pane, click **ServiceNow Access Settings** to configure a ServiceNowConnection instance.

Step 9 Click the radio button to configure either an existing ServiceNow Connection instance or configure a new instance.

Figure 7: Example of ServiceNow Instance Configuration Fields



For configuring an existing ServiceNow Connection instance, choose it from the drop-down menu in the window and click **Activate**.

Step 10 For configuring a new ServiceNowConnection instance, the following additional information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.
- **Host name:** Host name for the ServiceNow system.
- **Username:** Username required to access the ServiceNow system.
- **Password:** Password required to access the ServiceNow system.

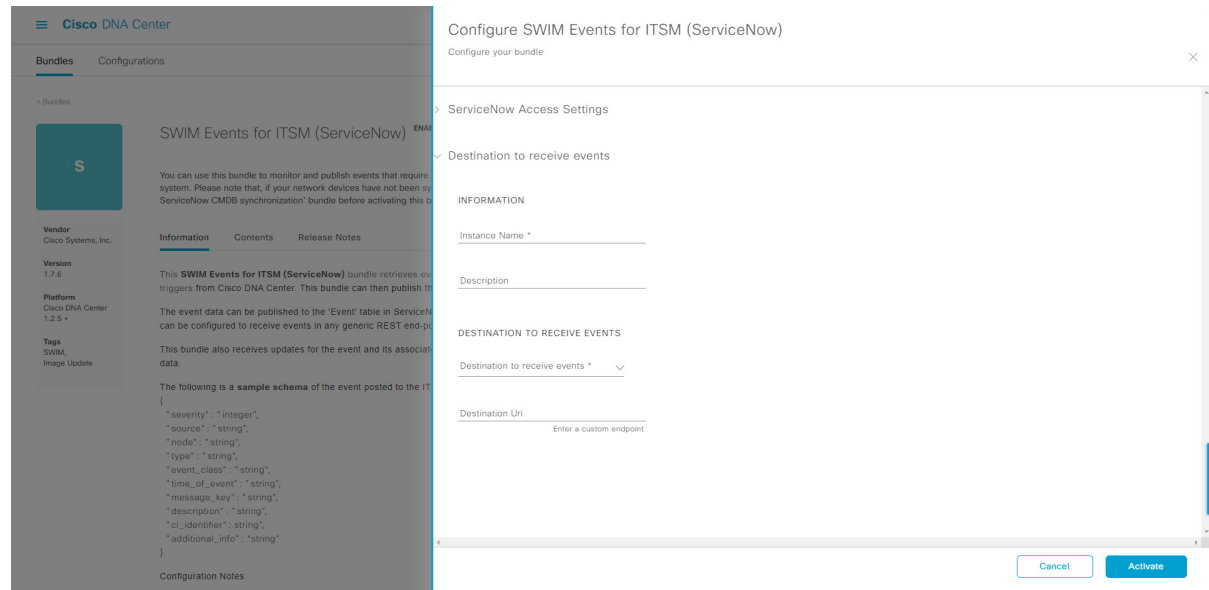
Step 11 Click **Check Connectivity** to test whether you can connect to the server where the endpoint is located.

After a successful test of connectivity to the server, proceed to activate the bundle.

Step 12 In the configuration slide-in pane, click **Destination to receive events** to configure an Destination Connection instance.

Step 13 Click the radio button to configure either an existing Destination Connection instance or configure a new instance.

Figure 8: Example of Destination to Receive Events Configuration Fields



For configuring an existing Destination Connection instance, choose it from the drop-down menu in the window and click **Activate**.

Step 14 For configuring a new Destination instance, the following additional information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.
- **Destination to receive events:** Choose one of the following:
 - **Event Management:** When setting up Cisco DNA Center integration with ServiceNow without using the Cisco DNA App, choose the **Event Management** option. The **Event Management** option also requires that you have the Event Management plugin configured within the ServiceNow instance.
 - **REST API Endpoint:** The **REST API Endpoint** option can be used with the Cisco DNA App. Data is sent to a REST API endpoint within the Cisco DNA App with the **REST API Endpoint** option.
 - **Generic REST Endpoint in ServiceNow:** For the **Generic REST Endpoint in ServiceNow** option, you can send the data to a different staging table in ServiceNow.
- **Destination URI:** Enter a destination Uniform Resource Indicator (URI) for the **Generic REST Endpoint in ServiceNow** option. This field is mandatory for this option.

After entering this information, proceed to the next step.

Step 15 Click **Activate** to save your changes and activate the bundle or click **Cancel** to cancel the configuration and close the slide-in pane.

Note By clicking **Activate**, you enable the changes made to the bundle and the changes take effect immediately. Additionally, the bundle's status changes from **ENABLED** to **ACTIVE**.

Cisco DNA Center Integration with ServiceNow Using the Cisco DNA App

Cisco DNA Center supports an application (Cisco DNA) that facilitates integration with ServiceNow. This application or app is designed to work with ServiceNow *without* its Event Management plugin.

The Cisco DNA app is installed within the ServiceNow instance and performs the following tasks:

- Schedules the basic one-way synchronization of Cisco DNA Center discovered devices into the ServiceNow Configuration Management Database (CMDB) using Cisco DNA Center inventory as a source of truth. The Cisco DNA app supports CMDB synchronization from Cisco DNA Center to ServiceNow.
- Automatically triggers problem, incident, and change workflows for network events published by Cisco DNA Center.
- Enriches ITSM tickets with network details from Cisco DNA Center. The Cisco DNA app makes REST API calls into Cisco DNA Center for fetching enrichment information of various types such as device, issue, user, and client for a user created ticket.
- Supports integration of the Cisco DNA Center platform with ServiceNow for an automated way to create change request (CR) tickets in ServiceNow for network events.

The following table describes the procedure for configuring Cisco DNA Center integration with ServiceNow using the Cisco DNA app. Follow the procedure to configure integration for network events, SWIM events, or both event types depending upon the functionality that you require.

Table 4: Cisco DNA Center to ServiceNow Integration with Cisco DNA App Procedure

Step	Description
Step 1	Install or upgrade to Cisco DNA Center, Release 2.2.2. For information about <i>installing</i> Cisco DNA Center, see the Cisco DNA Center Installation Guide .
Step 2	Install or upgrade to ServiceNow running the following version: <ul style="list-style-type: none"> • Paris • Orlando Refer to your ServiceNow documentation for its installation and upgrade procedures. Note This procedure is to be performed by a ServiceNow administrator.

Step	Description
Step 3	<p>Click the following link to access the ServiceNow Store website where the Cisco DNA app is located:</p> <p>https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddb6ba00f27978b5ae96197b/2.0.0</p> <p>Proceed to download and install the Cisco DNA app (version 2.0.0) into ServiceNow by following the documentation available at the website.</p> <p>Note This procedure is to be performed by a ServiceNow administrator.</p>
Step 4	<p>Review and ensure that the requirements are met for the Cisco DNA Center to ServiceNow integration.</p> <p>For information, see Requirements, on page 23.</p>
Step 5	<p>Access the Cisco DNA Center platform GUI and configure the Basic ITSM (ServiceNow) CMDB Synchronization bundle.</p> <p>For information, see Configure the Basic ITSM (ServiceNow) CMDB Synchronization Bundle, on page 24.</p> <p>Note Synchronizing the network device inventory with the ServiceNow CMDB is a prerequisite to enable the auto-generation of ITSM tickets. Therefore, the CMDB Sync must be enabled first (if it is not already done outside of Cisco DNA Center). Check with your ServiceNow administrator to see whether the CMDB Sync is being done elsewhere.</p>
Step 6	<p>Configure the Network Issue Monitor and Enrichment for ITSM (ServiceNow) bundle. For information, see Configure the Network Issue Monitor and Enrichment for ITSM (ServiceNow) Bundle, on page 13.</p> <p>This bundle enables data to be sent from Cisco DNA Center to create any type of workflow in ServiceNow. Change Management and Incident/Problem Management workflows should be enabled based on the automation or assurance use cases that you want to log tickets to in ServiceNow.</p>
Step 7	<p>Configure network event settings in Event Settings.</p> <p>For information, see Configure Event Settings, on page 36.</p> <p>Note The Cisco DNA Center platform and ITSM integration allows the user to choose from a list of possible issues to create and modify the severity of events, incidents, or problems in ServiceNow to match business priorities.</p>
Step 8	<p>Configure the Cisco DNA Center Automation events for ITSM (ServiceNow) bundle.</p> <p>For information, see Configure the Cisco DNA Center Automation Events for ITSM (ServiceNow) Bundle, on page 18.</p>

Step	Description
Step 9	Access your ServiceNow instance and review the network and SWIM event data that has been posted using the Cisco DNA Center REST APIs in this procedure. Begin to review and utilize this data per your business or network needs.

Requirements

Review and ensure that the following networking and systems requirements are met for the Cisco DNA Center-to-ServiceNow integration:

- Networking:
 - The Cisco DNA app is configured with the IP address and access information of the Cisco DNA Center installation that it is being integrated with.



Note Contact your Cisco DNA Center administrator to obtain this information.

- HTTPS network access between Cisco DNA Center and ServiceNow (including the MID server) is established.



Note Contact and work with your network administrator to establish this.

- Management, Instrumentation, and Discovery (MID) Server:
 - The MID server is up and running, as well as accessible from the ServiceNow instance.
 - The Cisco DNA Center platform is accessible from the MID server.
 - The Cisco DNA Center platform REST APIs are allowed from the MID server.



Note The MID server is used to proxy the REST requests from the ServiceNow instance.

See the *Scope Certified Application Installation and Configuration Guide* on the ServiceNow Store website for MID server configuration information: https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddb6ba00f27978b5ae96197b/2.0.0

- Cisco DNA Center Platform:
 - The Cisco DNA Center platform is enabled in Cisco DNA Center.
 - The requisite bundle or bundles in the Cisco DNA Center platform are configured and activated (as described in the following procedures).



Note These bundles have the required APIs that integrate with the Cisco DNA app in ServiceNow.

Configure the Basic ITSM (ServiceNow) CMDB Synchronization Bundle

Perform this procedure to either trigger or schedule a synchronization between the Cisco DNA Center devices and your ServiceNow CMDB system. If devices have not been synchronized between Cisco DNA Center and the ServiceNow CMDB system, this bundle must be activated as a prerequisite, before activating any other bundles.



Note The Cisco DNA Center CMDB synchronization cannot detect multiple instances of Cisco DNA Center:

- To identify the attributes that were synchronized from a particular Cisco DNA Center instance, each attribute is tagged with a Cisco DNA Center IP address.
- ServiceNow can now identify which Cisco DNA Center instance the attribute came from. An extra attribute for the Configuration Item (CI) has been added to retain the Cisco DNA Center IP address or hostname information.

Before you begin

- Ensure that you have ServiceNow running on a system that you will integrate with Cisco DNA Center platform.
- Run a successful **Discovery** job in Cisco DNA Center. You can check whether a **Discovery** job is successful in **Device Inventory**. In the Cisco DNA Center GUI, click the **Menu** icon (☰) and choose **Provision > Inventory** to view the results.
- You must have the appropriate permissions to perform the tasks as described in this procedure. For information about role-based access control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).

Step 1 In the Cisco DNA Center GUI, click the **Menu** icon (☰) and choose **Platform > Manage > Bundles**.

Review the displayed bundles and their current status.

Step 2 Click the **Basic ITSM (ServiceNow) CMDB synchronization** bundle link or icon (colored square with initial) for additional information about the bundle.

Additional information provided may include the following:

- **General information:** Vendor, version, platform, tags displayed under the square icon.
- **Information:** Tab that displays general information (purpose of bundle and how bundle works in the network), sample schemas, configuration notes, and other data about the bundle.

- **Contents:** Tab that accesses the integration flows and APIs that make up the bundle.
- **Release Notes:** Tab that displays latest release information about the bundle, including its version.

Step 3 Click the **Contents** tab.

Step 4 Click the **Integration Flows** header.

An integration flow or list of integration flows appear underneath the header.

Step 5 Click the **Enable** button to activate the integration flow links.

An **Information** field appears in the window.

Step 6 In the **Information** field, click the **Enable** button to confirm enabling the bundle.

After clicking the **Enable** button to confirm, a success message appears.

Step 7 Click **Okay** in the success message.

Step 8 Click the integration flow link to perform the tasks listed below:

- Review the **Description**, **Tags**, **How to Use this Flow**, and scheduler.
- Click **Run Now** (to run the scheduler now), **Run Later** (to schedule for a later time), or **Recurring** (to set up a recurring schedule).
For **Run Later**, you need to select a date, time, and time zone. For **Recurring**, you need to set a repeating interval (daily or weekly), an interval duration (minutes or hours), and a start and end date.
- Click **Schedule** to enable the scheduler.

Important Only configure and enable an integration flow schedule, after you have finished configuring the bundle itself as described in this procedure. You configure and enable an integration flow schedule by returning to this view and clicking **Schedule**, or by clicking the **View Flows** link in the **Configure Basic ITSM (ServiceNow) CMDB synchronization** slide-in pane (see following steps), or by clicking the menu icon (☰) > **Platform** > **Developer Toolkit** > **Integration Flows** > **Schedule to Publish Inventory Details-ServiceNow Connector**.

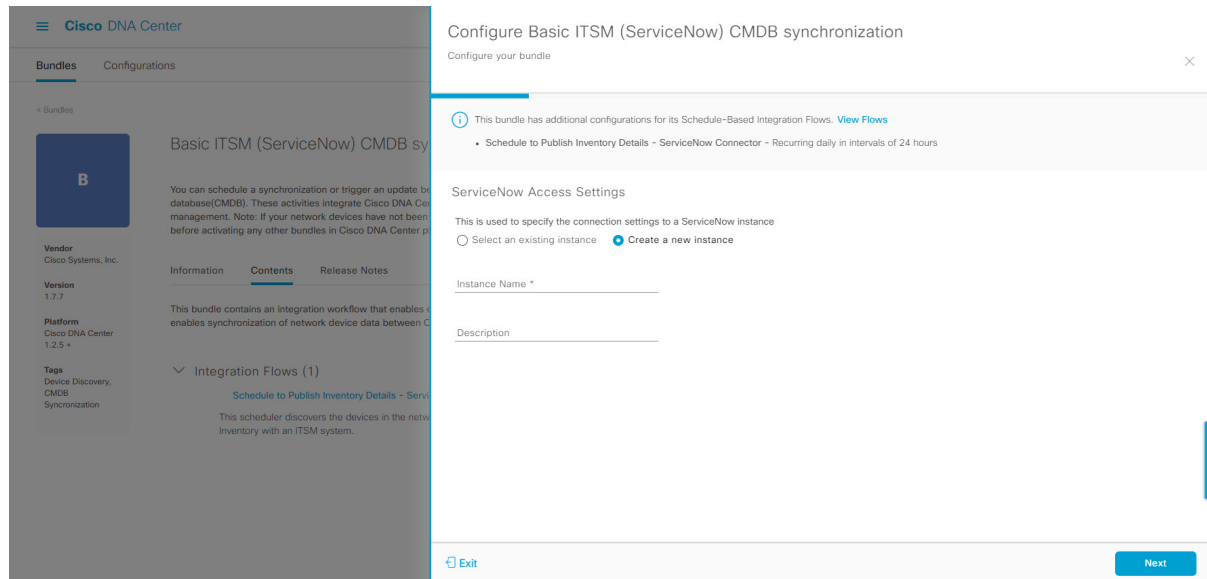
Step 9 Click the **X** icon to return to the previous bundle window.

Step 10 Click the **Configure** button to configure at the bundle level.

A configuration slide-in pane appears. Review the CMDB synchronization information.

Step 11 Click the radio button to configure either existing or new ServiceNow access settings for the CMDB synchronization.

Figure 9: ServiceNow Access Settings



For configuring an existing setting, choose it from the drop-down menu in the window and click **Next**.

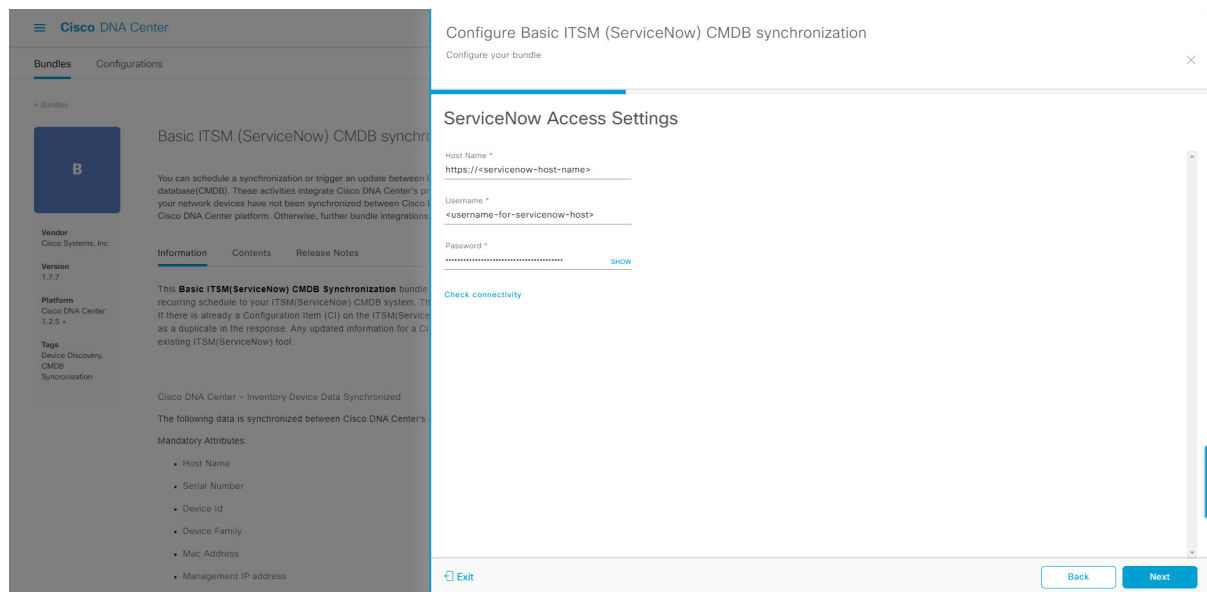
Step 12 For configuring a new access setting, the following instance information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.

Click **Next**.

Step 13 For configuring a new access setting, the following additional settings information must be entered.

Figure 10: ServiceNow Access Settings



- **Hostname:** Hostname or IP address of the ServiceNow server.
- **Username:** Username for access to the ServiceNow server.
- **Password:** Password for access to the ServiceNow server.

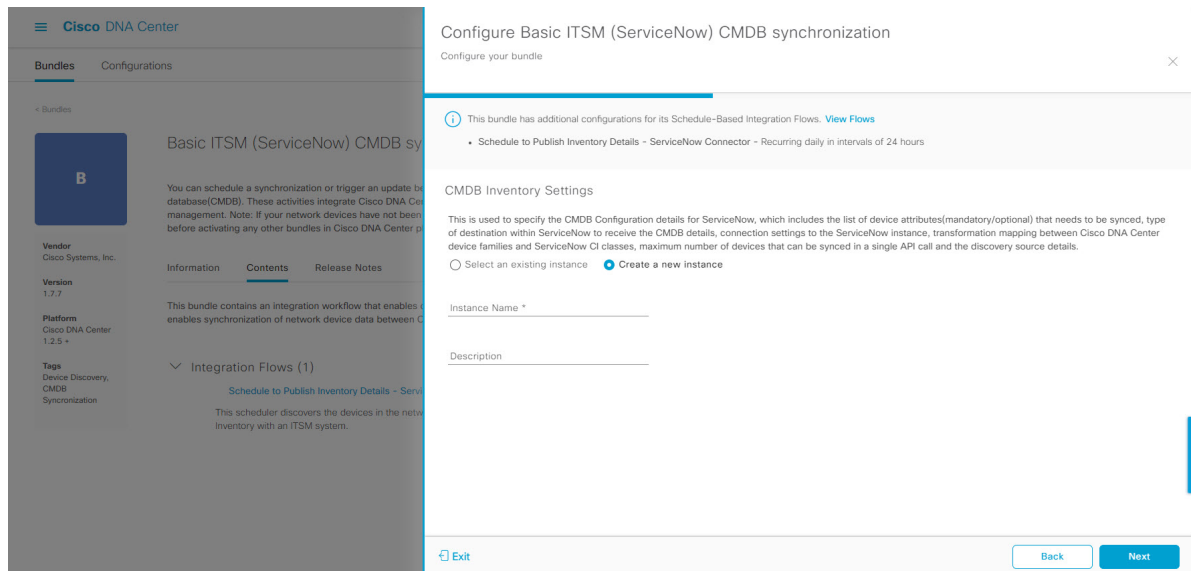
Click **Check Connectivity** to check access to the ServiceNow server.

Click **Next**.

Step 14

Click the radio button to configure either an existing instance or configure a new instance for the CMDB inventory settings.

Figure 11: CMDB Inventory Settings



For configuring an existing instance, choose it from the drop-down menu in the window and click **Configure**.

Step 15

For configuring a new instance, the following additional information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.

Click **Next**.

Step 16

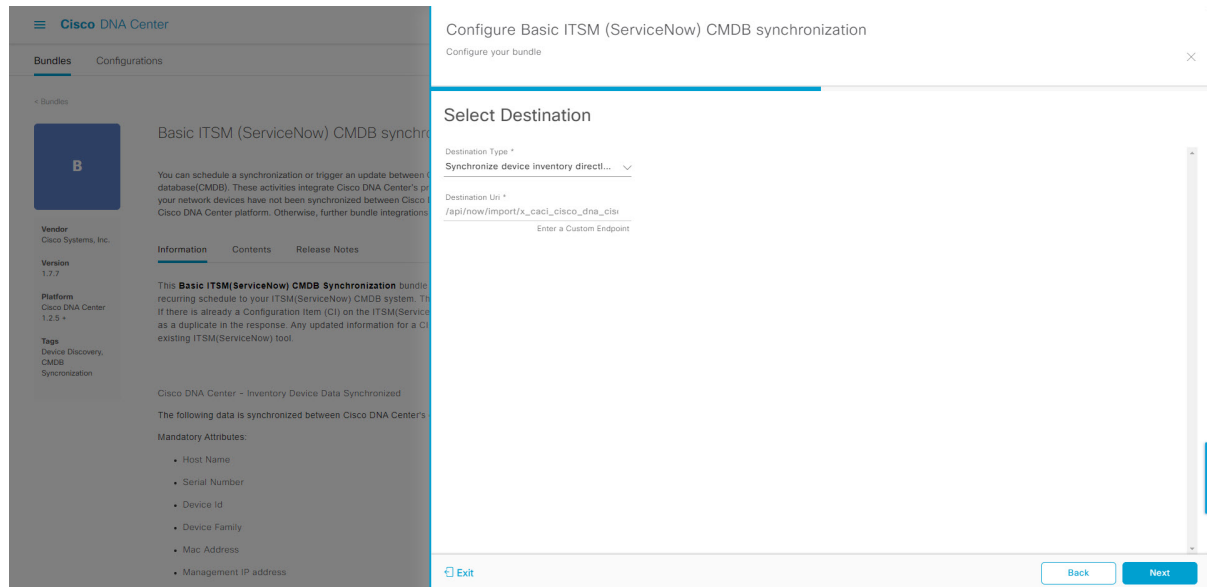
In the **Select Destination** window, enter the following information:

- **Destination Type:** There are two destination type options to choose from:
 - **Synchronize device inventory directly with CMDB**
 - **Post device inventory details to a staging table**

Note Use the **Synchronize device inventory directly with CMDB** destination type to send data to a REST API endpoint within the Cisco DNA app. You should use this destination type, if you are using the Cisco DNA app and do not have your own customized ServiceNow instance. Use the other destination type (**Post device inventory details to a staging table**) to send data to a REST API endpoint outside of the Cisco DNA app. Ensure that the created staging table has a field called `u_inventory_details`. The inventory details from the Cisco DNA app are mapped to this field. With the **Post device inventory details to a staging table** destination type, after data transfer you must write custom code to take the data from the staging table and map it to the ServiceNow CMDB.

- **Destination URI:** Uniform Resource Indicator of the ServiceNow server (CMDB) or staging table.

Figure 12: Select Destination Window



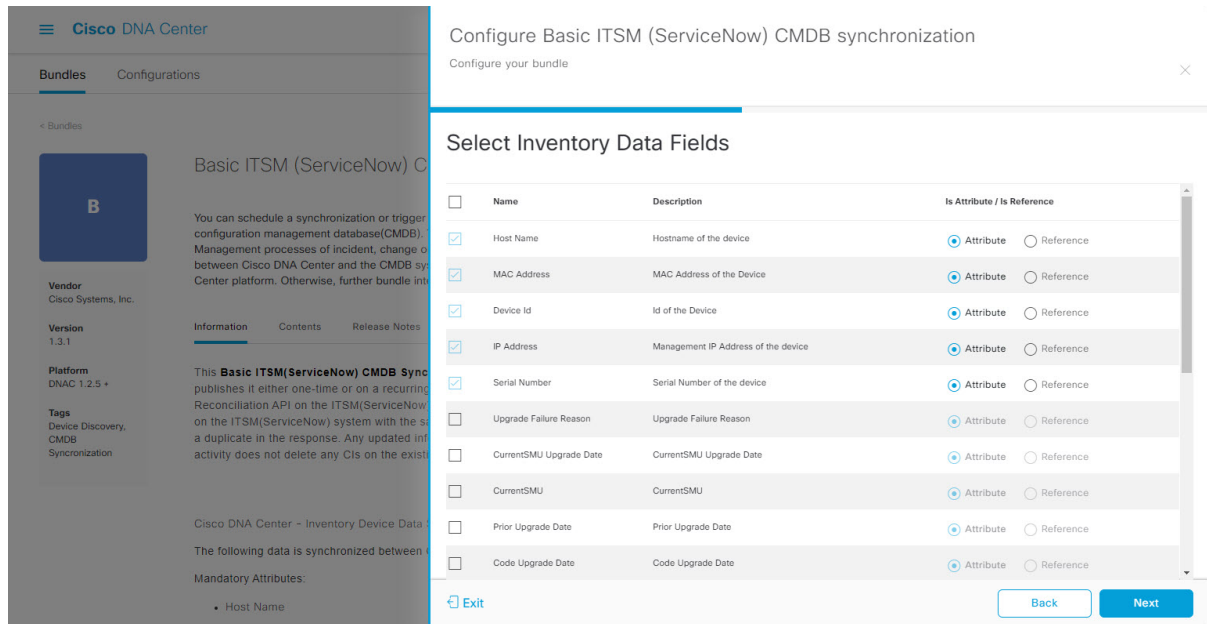
Click **Next**.

Step 17 In the **Select Inventory Data Fields** window, select the data fields to be synchronized.

Note Inventory data fields are Cisco created data types that can be designated as an attribute or reference to be synchronized into a CMDB or staging table.

Clicking the top check box in the **Select Inventory Data Fields** window will select all of the inventory data fields for synchronization. Click this top check box if you want to sync all of the inventory data fields. Otherwise, review and click one check box at a time to create a smaller subset of inventory data fields for synchronization.

Figure 13: Select Inventory Data Fields Window



The **Select Inventory Data Fields** window consists of the following columns:

- **Name:** Name of the inventory data field.
- **Description:** Brief description of the inventory data field.
- **Is Attribute/Is Reference:** Whether the inventory data field is an attribute or a reference. A reference data field is used to create a relationship between two tables in a database. This is used for querying purposes. An attribute data field is used to add more data to a table in a database.

Step 18 For the data fields selected to be synchronized in the preceding step, review their designation as either attribute or reference.

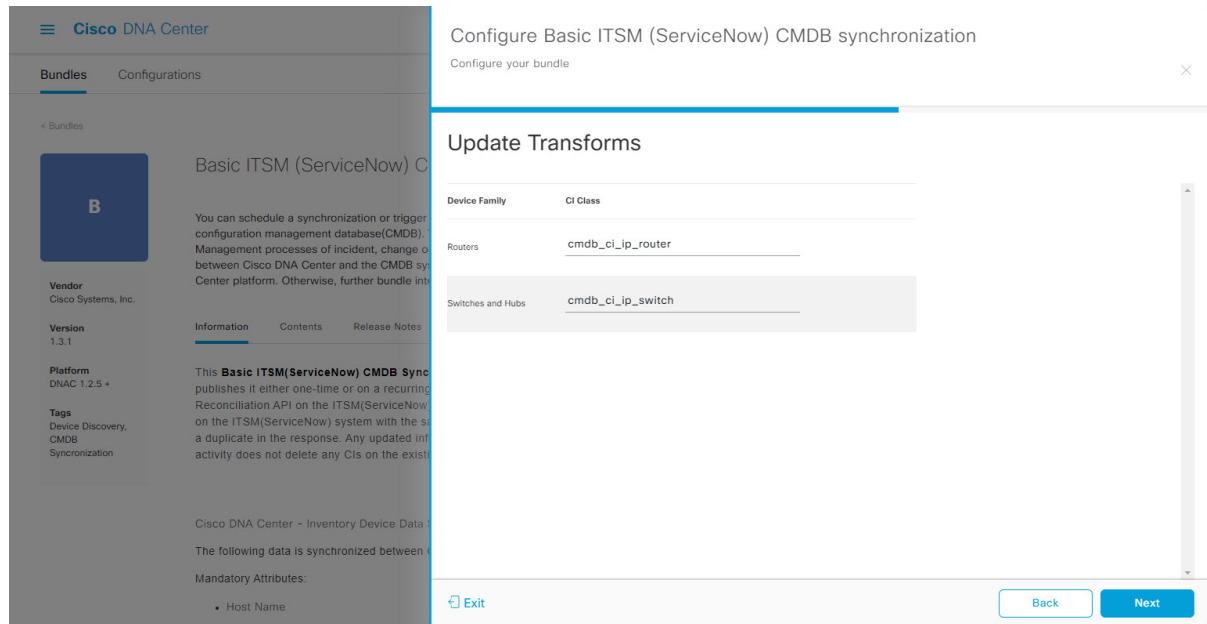
To change a data field's default designation, just click the desired data field designation (**Attribute** or **Reference**).

Currently, the integration only supports 'location', 'building', and 'part number' as reference fields.

After selecting the data fields to be synchronized and whether the data field is an attribute or reference, click **Next**.

Step 19 In the **Update Transforms** window, either accept or update the ServiceNow transformation mapping between Cisco DNA Center device families and ServiceNow CI classes.

Figure 14: Update Transforms Window



Device families are the Cisco DNA Center device classifications (for example, Unified AP, Routers, Wireless Controller, Switches, and Hubs), where the inventory attributes/references mapping to ServiceNow is already available in the existing Cisco DNA Center application in ServiceNow. The type and number of device families can vary depending upon the different Cisco devices in the user's network.

Note Cisco DNA Center platform is able to automatically retrieve all of the device families in the user's Cisco DNA Center network and display them in this GUI window.

CI classes are the database tables for ServiceNow (for example, cmdb_ci_wap_network, cmdb_ci_ip_router, cmdb_ci_ip_switch, and x_caci_cisco_dna_wireless_lan_controller). The **CI Class** column in the GUI window is used to map the CI classes to their respective device families.

The following table displays the Cisco DNA Center default CI classes for each device family. The default CI classes can be modified by the user. In case of other device families not listed below, Cisco will not have any default values specified in the **CI Class** column. The ServiceNow application user needs to either manually create the corresponding CI Classes and attributes/references mapping or use a pre-existing CI class a 'parent' CI class. Ensure the pre-existing or newly created class is inherited from the Network Gear (cmdb_ci_netgear) class.

Table 5: Default Device Family to CI Class Mapping List

Device Family	Corresponding CI Class
Unified AP	cmdb_ci_wap_network
Wireless Controller	x_caci_cisco_dna_wireless_lan_controller
Routers	cmdb_ci_ip_router
Switches and Hubs	cmdb_ci_ip_switch
Meraki Access Point	cmdb_ci_wap_network

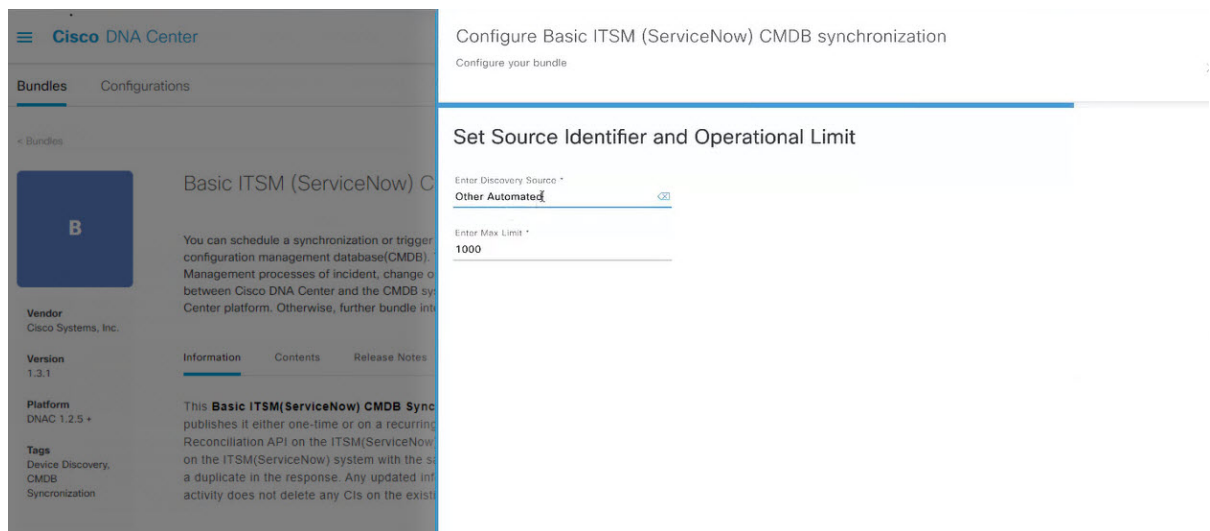
Device Family	Corresponding CI Class
Meraki Cameras	cmdb_ci_netgear
Meraki Dashboard	cmdb_ci_netgear
Meraki Security Appliances	cmdb_ci_netgear
Meraki Switches	cmdb_ci_ip_switch

After accepting or updating the information in this window, click **Next**.

Step 20

In the **Set Source Identifier and Operational Limit** window, configure the data source and maximum limit.

Figure 15: Set Source Identifier and Operational Limit Window



Configure the following values:

- **Enter Destination Type:** Enter the same value as previously selected or keep the value at its default, **Other Automated**.
 - **Synchronize device inventory directly with CMDB**
 - **Post device inventory details to a staging table**

Note **Other Automated** is a preconfigured value for the discovery source attribute in an OOB ServiceNow instance. This is the value that indicates the data source from where the ServiceNow CI was discovered. As a default, Cisco uses one of the existing preconfigured values for the integration.

We recommend that the user creates their own discovery source, so as to uniquely identify the source from where the devices were fetched to sync into the ServiceNow instance. The steps to create a new discovery source are described in the ServiceNow App 'Installation and Configuration guide'.

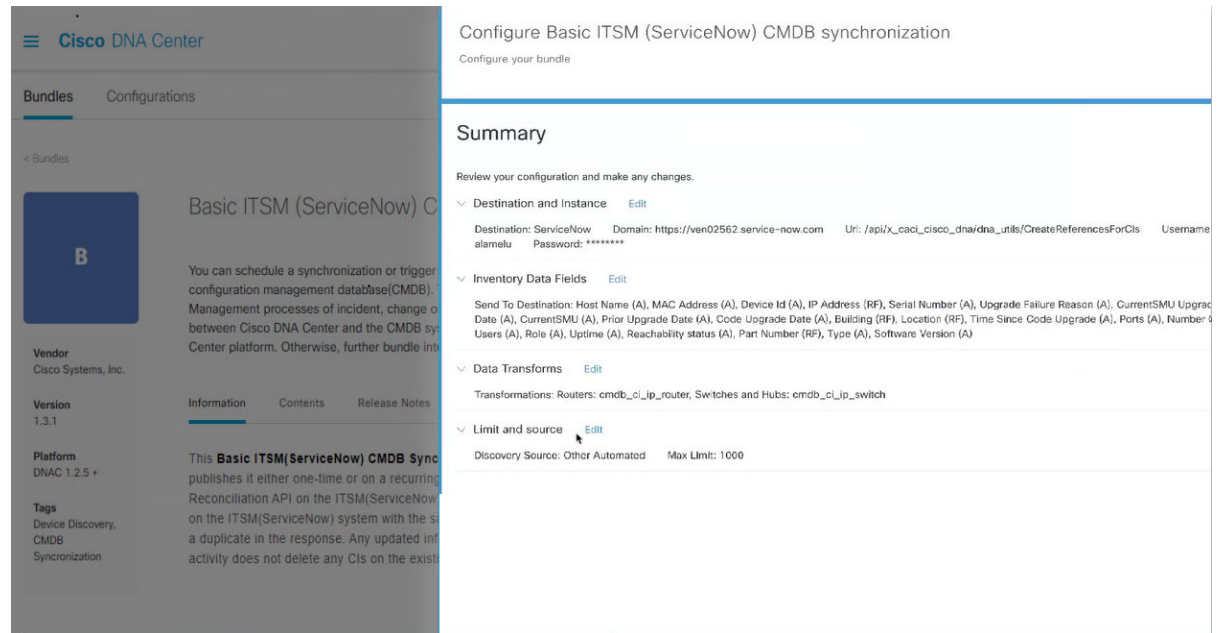
- **Enter the Max Limit:** Maximum number of devices that can be synchronized in an iteration (single API call).

After entering the above information, click **Next**.

Step 21

In the **Summary** window, review the configuration summary.

Figure 16: Summary Window



After reviewing the information, click **Configure**.

For a successful configuration, you will receive a **Done! Bundle Configured** message.

What to do next

Configure the Integration Flow for this bundle (**Schedule to Publish Inventory Details - ServiceNow Connector**), using one of the methods described in Step 8.

You can also test the CMDB synchronization by performing the following tasks:

- In the Cisco DNA Center GUI, click the **Menu** icon (☰) and choose **Platform > Runtime Dashboard > CMDB Synchronization Summary**. Click **Refresh** to refresh the GUI view. Review the inventory device synchronization status to ServiceNow.
- In the Cisco DNA Center GUI, click the **Menu** icon (☰) and choose **Platform > Runtime Dashboard > Event Summary**. Click **Refresh** to refresh the GUI view. Click the individual events in the window to view the event data and access links to ServiceNow.
- Go to ServiceNow and search for a synchronized device. Check the **Configuration** and **Other Attributes** tabs for synchronized data in that device's record.

Configure the Network Issue Monitor and Enrichment for ITSM (ServiceNow) Bundle

Perform this procedure to set up monitoring for network for assurance and maintenance issues, as well as publishing event details to a ServiceNow system.



Note Event data can be published to the **Event** table in ServiceNow. This requires that you have the Event Management plugin in your ServiceNow instance. If you do not have the Event Management plugin in your ServiceNow instance, the bundle can be configured to send the data to a REST API endpoint in the Cisco DNA App.

Before you begin

You must have the appropriate permissions to perform the tasks as described in this procedure. For information about Role-Based Access Control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).


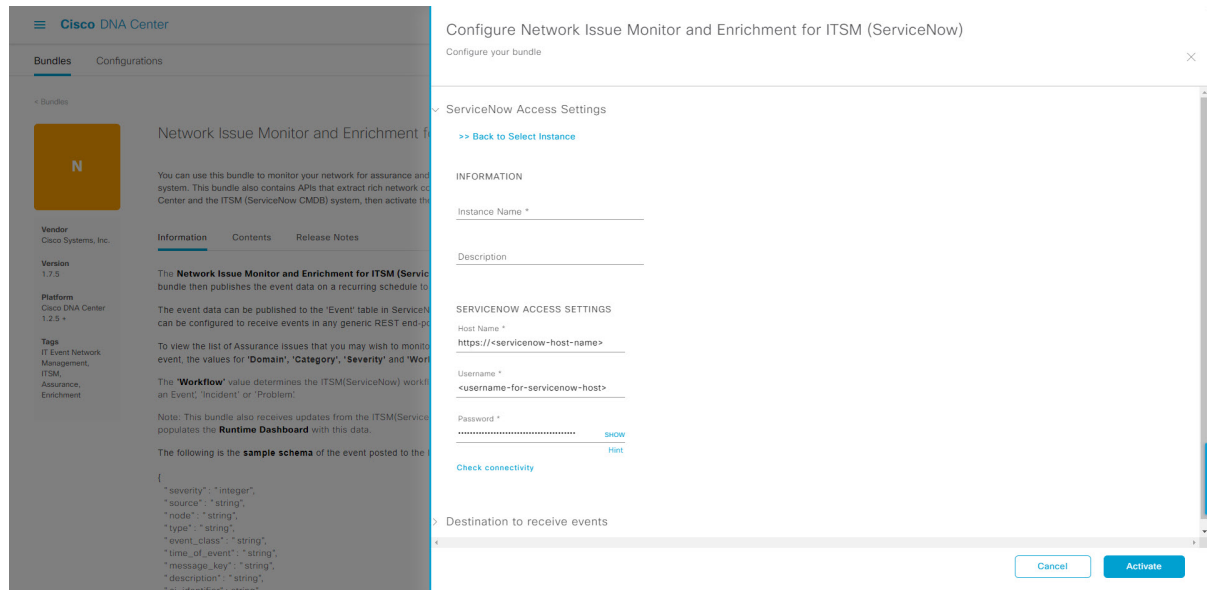
-
- Step 1** In the Cisco DNA Center GUI, click the **Menu** icon () and choose **Platform > Manage > Bundles**.
Review the displayed bundles and their current status.
- Step 2** Click the **Network Issue Monitor and Enrichment for ITSM (ServiceNow)** bundle link or icon (colored square with initial) for additional information about the bundle.
Additional information provided may include the following:
- **General information:** Vendor, version, platform, tags displayed under the square icon.
 - **Information:** Tab that displays general information (purpose of bundle and how bundle works in the network), sample schemas, configuration notes, and other data about the bundle.
 - **Contents:** Tab that accesses the APIs and integration flows that make up the bundle, or provides information about the integration flows that make up the bundle.
 - **Release Notes:** Tab that displays latest release information about the bundle, including its version.
- Step 3** Click each of the above tabs and review the information about the bundle.
- Step 4** Click the **Enable** button to enable the bundle.
An **Information** field appears in the window.
- Step 5** In the **Information** field, click the **Enable** button to confirm enabling the bundle.
After clicking the **Enable** button to confirm, a success message appears.
- Step 6** Click **OK** in the success message.
- Step 7** Click the **Configure** button to configure at the bundle level.
A configuration slide-in pane appears.
- Step 8** In the configuration slide-in pane, click **ServiceNow Access Settings** to configure a ServiceNow Connection instance.
- Step 9** Click the radio button to configure either an existing ServiceNow Connection instance or configure a new instance.

Figure 17: Example of ServiceNow Instance Configuration Fields



For configuring an existing ServiceNow Connection instance, choose it from the drop-down menu in the window and click **Activate**.

Step 10 For configuring a new ServiceNow Connection instance, the following additional information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.
- **Host name:** Host name for the ServiceNow system.
- **Username:** Username required to access the ServiceNow system.
- **Password:** Password required to access the ServiceNow system.

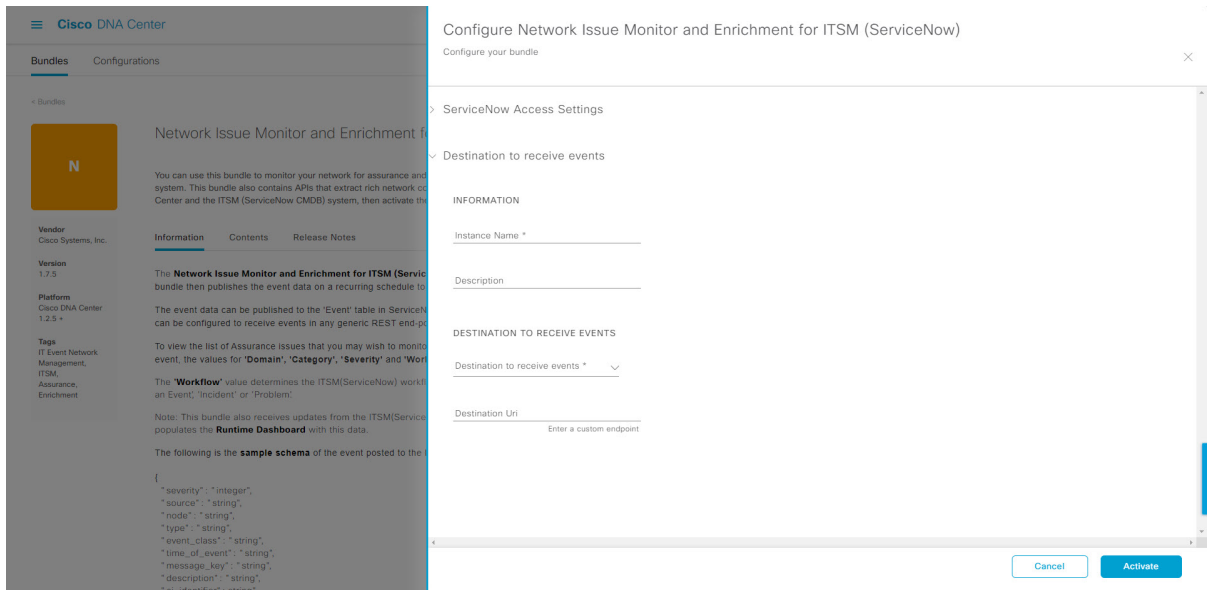
Step 11 Click **Check Connectivity** to test whether you can connect to the server where the endpoint is located.

After a successful test of connectivity to the server, proceed to configure **Destination to receive events**.

Step 12 In the configuration slide-in pane, click **Destination to receive events** to configure a Destination Connection instance.

Step 13 Click the radio button to configure either an existing Destination Connection instance or configure a new instance.

Figure 18: Example of Destination to Receive Events Configuration Fields



For configuring an existing Destination Connection instance, choose it from the drop-down menu in the window and click **Activate**.

Step 14 For configuring a new Destination instance, the following additional information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.
- **Destination to receive events:** Choose one of the following:
 - **Event Management:** When setting up Cisco DNA Center integration with ServiceNow without using the Cisco DNA App, choose the **Event Management** option. The **Event Management** option also requires that you have the Event Management plugin configured within the ServiceNow instance.
 - **REST API Endpoint:** The **REST API Endpoint** option can be used with the Cisco DNA App. Data is sent to a REST API endpoint within the Cisco DNA App with the **REST API Endpoint** option.
 - **Generic REST Endpoint in ServiceNow:** For the **Generic REST Endpoint in ServiceNow** option, you can send the data to a different staging table in ServiceNow.
- **Destination URI:** Enter a destination URI (Uniform Resource Indicator) for the **Generic REST Endpoint in ServiceNow** option. This field is mandatory for this option.

After entering this information, proceed to the next step.

Step 15 Click **Activate** to save your changes and activate the bundle or click **Cancel** to cancel the configuration and close the slide-in pane.

The changes made to the bundle begin to take effect immediately. Additionally, the bundle status changes from **ENABLED** to **ACTIVE**.

Configure Event Settings

The Cisco DNA Center platform and ITSM integration permits you to choose from a list of possible issues to create and modify the severity of events, incidents, or problems in ServiceNow to match your business priorities. You perform these tasks in the **Events Settings** window. The **Events Settings** window is accessible from the **Configurations** menu option in the Cisco DNA Center platform.



Note For this release, there are no SWIM event to configure in **Event Settings**, you only configure network assurance events.



Important The **Event Settings** window and its functionality is only applicable to events for an ITSM (ServiceNow) integration and not for events configured to other destinations. For events being configured to a webhook or other destination, click the link above the columns to access the **Events** window. Use the **Events** window to configure events for an email, webhook, or SNMP trap.

Figure 19: Events Settings Window

Event Name	Domain	Type	Category	Severity	Workflow	Actions
AP Coverage Hole	Know Your Network	NETWORK	WARN	3	Incident	Edit
AP CPU High Utilization	Know Your Network	NETWORK	WARN	3	Incident	Edit
AP License Exhausted on WLC	Know Your Network	NETWORK	WARN	3	Incident	Edit
AP Memory High Utilization	Know Your Network	NETWORK	WARN	3	Incident	Edit
AP Reboot Crash	Know Your Network	NETWORK	WARN	3	Incident	Edit
BGP Tunnel Connectivity	Know Your Network	NETWORK	ERROR	2	Incident	Edit

Before you begin

You must have the appropriate permissions to perform the tasks as described in this procedure. For information about Role-Based Access Control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).

- Step 1** In the Cisco DNA Center GUI, click the **Menu** icon () and choose **Platform** > **Manage** > **Configurations**. A **Configurations** window opens that contains an **Events Settings** section.
- Step 2** Review the **Event Settings** section that appears.

The following **Event Settings** information is displayed:

- **Event Name:** Name of the Cisco DNA Center event.
- **Domain:** Domain of the Cisco DNA Center event.
- **Type:** Network, App, System, Security, Integrations type.
- **Category:** Error, Warn, Info, Alert, Task Progress, Task Complete
- **Severity:** P1 (Severity 1) through P5 (Severity 5).

Note Severity 1 is the most important or critical priority and should be assigned as such.

- **Workflow:** Incident, Problem, Event, or RFC (Request for Change)
- **Actions:** Edit

You can adjust what is displayed in the table by clicking the **Filter** icon and using the filter, or by typing a keyword in the **Find** field. For example, to display all access point notifications, type 'AP' in the **Find** field. To view all network notifications, type 'Network' in the **Find** field. To view all severity notifications, type '1' in the **Find** field.

Step 3 Click **Edit** in the **Actions** column to edit an event.

Choose a setting by clicking on the downward pointing angle and adjust the value. For example, click **Network** and adjust to **App**. This changes the event type from a network type to an application type. Click **Severity** and adjust to **1** from **5**. This raises the severity level from 5 to 1.

Step 4 Click the box next to the Event name to enable notifications.

This enables notifications through Cisco DNA Center when the event occurs in the future.

Step 5 Click **Save** to save your configuration.

Configure the Cisco DNA Center Automation Events for ITSM (ServiceNow) Bundle

Perform this procedure to set up monitoring and publishing events requiring software image updates for compliance, security, or other operational triggers to a ServiceNow system.



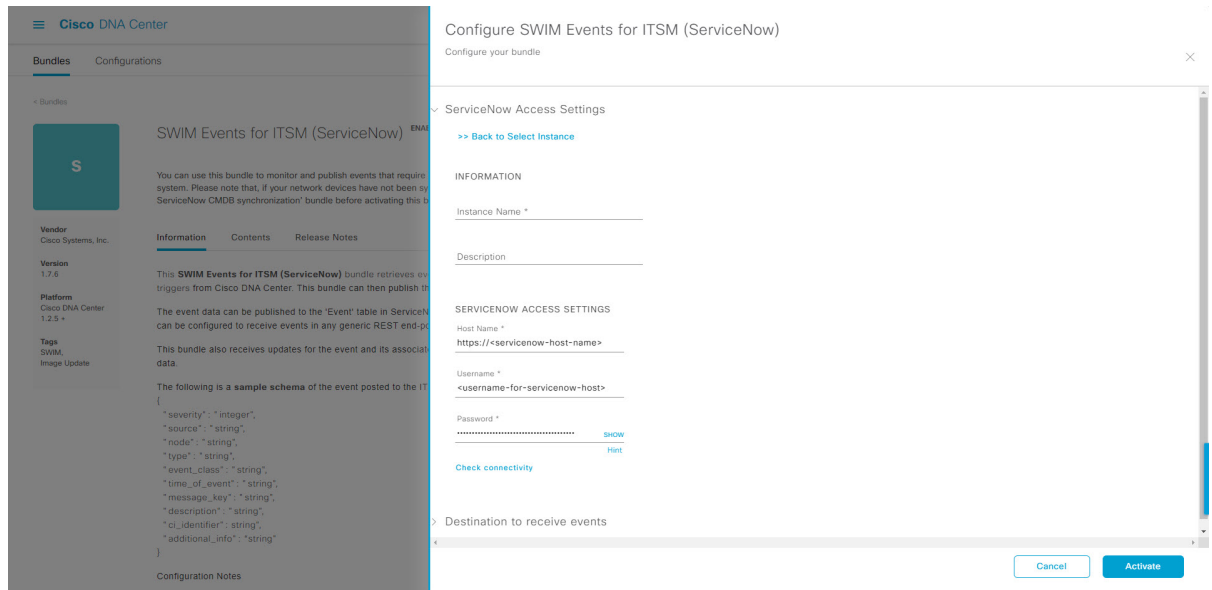
Note Event data can be published to the **Event** table in ServiceNow. This requires that you have the Event Management plugin in your ServiceNow instance. If you do not have the Event Management plugin in your ServiceNow instance, the bundle can be configured to send the data to a REST API endpoint in the Cisco DNA App.

Before you begin

You must have the appropriate permissions to perform the tasks as described in this procedure. For information about Role-Based Access Control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).

-
- Step 1** In the Cisco DNA Center GUI, click the **Menu** icon (☰) and choose **Platform > Manage > Bundles**.
Review the displayed bundles and their current status.
- Step 2** Click the **Cisco DNA Center Automation events for ITSM (ServiceNow)** bundle link or icon (colored square with initial) for additional information about the bundle.
Additional information provided may include the following:
- **General information:** Vendor, version, platform, tags displayed under the square icon.
 - **Information:** Tab that displays general information (purpose of bundle and how bundle works in the network), sample schemas, configuration notes, and other data about the bundle.
 - **Contents:** Tab that accesses the APIs and integration flows that make up the bundle, or provides information about the integration flows that make up the bundle.
 - **Release Notes:** Tab that displays latest release information about the bundle, including its version.
- Step 3** Click each of the above tabs and review the information about the bundle.
- Step 4** Click the **Enable** button to enable the bundle.
An **Information** field appears in the window.
- Step 5** Click the **Enable** button in the **Information** field to confirm enabling the bundle.
After clicking the **Enable** button to confirm, a success message appears.
- Step 6** Click **OK** in the success message.
- Step 7** Click the **Configure** button to configure at the bundle level.
A configuration slide-in pane appears.
- Step 8** In the configuration slide-in pane, click **ServiceNow Access Settings** to configure a ServiceNowConnection instance.
- Step 9** Click the radio button to configure either an existing ServiceNow Connection instance or configure a new instance.

Figure 20: Example of ServiceNow Instance Configuration Fields



For configuring an existing ServiceNow Connection instance, choose it from the drop-down menu in the window and click **Activate**.

Step 10 For configuring a new ServiceNowConnection instance, the following additional information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.
- **Host name:** Host name for the ServiceNow system.
- **Username:** Username required to access the ServiceNow system.
- **Password:** Password required to access the ServiceNow system.

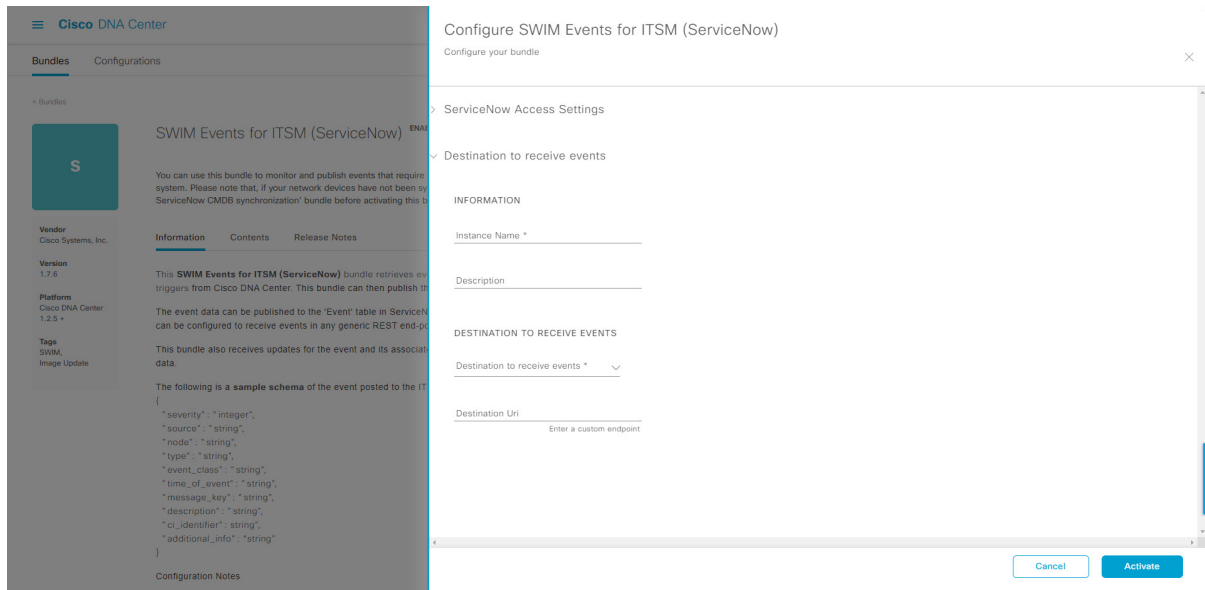
Step 11 Click **Check Connectivity** to test whether you can connect to the server where the endpoint is located.

After a successful test of connectivity to the server, proceed to activate the bundle.

Step 12 In the configuration slide-in pane, click **Destination to receive events** to configure an Destination Connection instance.

Step 13 Click the radio button to configure either an existing Destination Connection instance or configure a new instance.

Figure 21: Example of Destination to Receive Events Configuration Fields



For configuring an existing Destination Connection instance, choose it from the drop-down menu in the window and click **Activate**.

Step 14 For configuring a new Destination instance, the following additional information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.
- **Destination to receive events:** Choose one of the following:
 - **Event Management:** When setting up Cisco DNA Center integration with ServiceNow without using the Cisco DNA App, choose the **Event Management** option. The **Event Management** option also requires that you have the Event Management plugin configured within the ServiceNow instance.
 - **REST API Endpoint:** The **REST API Endpoint** option can be used with the Cisco DNA App. Data is sent to a REST API endpoint within the Cisco DNA App with the **REST API Endpoint** option.
 - **Generic REST Endpoint in ServiceNow:** For the **Generic REST Endpoint in ServiceNow** option, you can send the data to a different staging table in ServiceNow.
- **Destination URI:** Enter a destination Uniform Resource Indicator (URI) for the **Generic REST Endpoint in ServiceNow** option. This field is mandatory for this option.

After entering this information, proceed to the next step.

Step 15 Click **Activate** to save your changes and activate the bundle or click **Cancel** to cancel the configuration and close the slide-in pane.

Note By clicking **Activate**, you enable the changes made to the bundle and the changes take effect immediately. Additionally, the bundle's status changes from **ENABLED** to **ACTIVE**.

Cisco DNA Center Endpoint Attribute Retrieval with ServiceNow

With this Cisco DNA Center release, you can schedule a synchronization or trigger an update between the endpoint inventory and your ITSM (ServiceNow) configuration management database (CMDB). Endpoint attribute information from ServiceNow can be used to help profile endpoints in your network. ServiceNow appears in the endpoint profiling workspace as an additional probe. You may create custom profiling rules leveraging the attributes sent by ServiceNow.

Mapping between the ServiceNow CMDB fields and endpoint attributes occur at the platform level and is accomplished using the new **Endpoint Attribute Retrieval with ITSM (ServiceNow)** bundle. This bundle supports a new integration flow, **Scheduler for ServiceNow Asset Sync**. The **Scheduler for ServiceNow Asset Sync** integration flow can be configured to run on a set schedule to invoke an internal Cisco API to retrieve the endpoint attribute information from ServiceNow.

The following table describes the procedure for configuring Cisco DNA Center endpoint attribute retrieval with ServiceNow.



Note This procedure does not modify or delete any CIs on the existing ITSM (ServiceNow) tool.

Table 6: Cisco DNA Center Endpoint Attribute Retrieval with ServiceNow

Step	Description
Step 1	Install or upgrade to Cisco DNA Center, Release 2.2.2. For information about installing Cisco DNA Center, see the Cisco DNA Center Installation Guide .
Step 2	Install or upgrade to ServiceNow running the following version: <ul style="list-style-type: none"> • Paris • Orlando • New York Patch 1 Refer to your ServiceNow documentation for its installation and upgrade procedures. Note This procedure is to be performed by a ServiceNow administrator.

Step	Description
Step 3	<p>Download and install the Cisco DNA app (version 2.0.0) into ServiceNow by following the documentation available at the ServiceNow website.</p> <p>Note Cisco DNA Center supports an application (Cisco DNA) that facilitates endpoint attribute retrieval with an ITSM (ServiceNow). This application or app is designed to work with ServiceNow <i>without</i> its Event Management plugin.</p> <p>Click this link to access the ServiceNow Store website where the Cisco DNA app is located:</p> <p>https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddb6ba00f27978b5ae96197b/2.0.0</p> <p>Note This procedure is to be performed by a ServiceNow administrator.</p>
Step 4	<p>Review and ensure that the requirements are met for the Cisco DNA Center to ServiceNow integration.</p> <p>For information, see Requirements, on page 23.</p>
Step 5	<p>Configure the Endpoint Attribute Retrieval with ITSM (ServiceNow) bundle.</p> <p>For information, see Configure the Endpoint Attribute Retrieval Bundle with ITSM (ServiceNow), on page 43.</p>

Requirements

Review and ensure that the following networking and systems requirements are met for the Cisco DNA Center-to-ServiceNow integration:

- Networking:

- The Cisco DNA app is configured with the IP address and access information of the Cisco DNA Center installation that it is being integrated with.



Note Contact your Cisco DNA Center administrator to obtain this information.

- HTTPS network access between Cisco DNA Center and ServiceNow (including the MID server) is established.



Note Contact and work with your network administrator to establish this.

- Management, Instrumentation, and Discovery (MID) Server:

- The MID server is up and running, as well as accessible from the ServiceNow instance.
- The Cisco DNA Center platform is accessible from the MID server.

- The Cisco DNA Center platform REST APIs are allowed from the MID server.



Note The MID server is used to proxy the REST requests from the ServiceNow instance.

See the *Scope Certified Application Installation and Configuration Guide* on the ServiceNow Store website for MID server configuration information: https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddb6ba00f27978b5ae96197b/2.0.0

- Cisco DNA Center Platform:
 - The Cisco DNA Center platform is enabled in Cisco DNA Center.
 - The requisite bundle or bundles in the Cisco DNA Center platform are configured and activated (as described in the following procedures).



Note These bundles have the required APIs that integrate with the Cisco DNA app in ServiceNow.

Configure the Endpoint Attribute Retrieval Bundle with ITSM (ServiceNow)

Perform this procedure to configure the Cisco DNA Center endpoint attribute retrieval from the ServiceNow CMDB.

Before you begin

- Ensure that you have ServiceNow running on a system that you will integrate with Cisco DNA Center platform
- You must have the appropriate permissions to perform the tasks as described in this procedure. For information about Role-Based Access Control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).

Step 1 In the Cisco DNA Center GUI, click the **Menu** icon () and choose **Platform > Manage > Bundles**.

Review the displayed bundles and their current status.

Step 2 Click the **Endpoint Attribute Retrieval with ITSM (ServiceNow)** bundle link or icon (colored square with initial) for additional information about the bundle.

Additional information provided may include the following:

- **General information:** Vendor, version, platform, tags displayed under the square icon.
- **Information:** Tab that displays general information (purpose of bundle and how bundle works in the network), sample schemas, configuration notes, and other data about the bundle.

Note The specific endpoint attribute data that is retrieved is displayed in the **Information** tab. The following endpoint attribute data will be retrieved from ServiceNow (with the display name in Cisco DNA Center within the parenthesis):

- Asset Tag (CMDB asset tag)
 - Model Category (CMDB model category)
 - Model (CMDB model)
 - Managed by (CMDB managed by)
 - Serial Number (CMDB serial number)
 - Location (CMDB location)
 - Department (CMDB department)
 - MAC address (CMDB MAC address)
 - Display name (CMDB display name)
- **Contents:** Tab that accesses the APIs and integration flows that make up the bundle, or provides information about the integration flows that make up the bundle.
 - **Release Notes:** Tab that displays latest release information about the bundle, including its version.

Step 3 Click the **Contents** tab.

Step 4 Click the **Integration Flows** header.

An integration flow or list of integration flows appear underneath the header.

Step 5 Click the **Enable** button to activate the integration flow links.

An **Information** field appears in the window.

Step 6 In the **Information** field, click the **Enable** button to confirm enabling the bundle.

After clicking the **Enable** button to confirm, a success message appears.

Step 7 Click **Okay** in the success message.

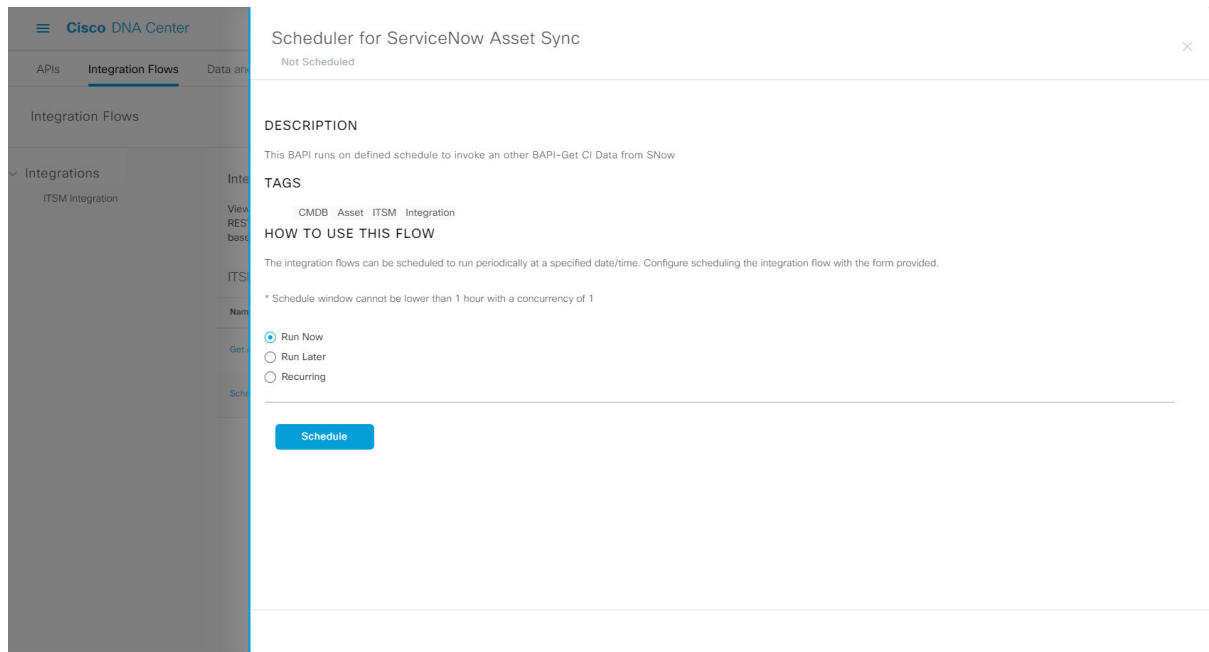
Step 8 Click the link for the individual integration flow to perform the tasks listed below:

For Schedule-based integration flow (**Scheduler for ServiceNow Asset Sync**), perform the following tasks:

- Review the **Description**, **Tags**, **How to Use this Flow**, and scheduler.
- Click **Run Now** (to run the scheduler now), **Run Later** (to schedule for a later time), or **Recurring** (to set up a recurring schedule).
For **Run Later**, you need to select a date, time, and time zone. For **Recurring**, you need to set a repeating interval (daily or weekly), an interval duration (minutes or hours), and a start and end date.
- Click **Schedule** to enable the scheduler.

Important Only configure and enable an integration flow schedule, after you have finished configuring the bundle itself as described in this procedure. You can configure and enable an integration flow schedule by returning to this view and clicking **Schedule**, or by clicking the **View Flows** link in the **Endpoint Attribute Retrieval with ITSM (ServiceNow)** slide-in pane (see following steps), or by clicking the **Menu icon** (☰) > **Platform** > **Developer Toolkit** > **Integration Flows** > **Scheduler for ServiceNow Asset Sync**.

Figure 22: Scheduler for ServiceNow Asset Sync



Step 9 Click the **X** icon at the upper right of the window to close it and return to the previous bundle window.

Step 10 Click the **Configure** button to configure at the bundle level.

A configuration slide-in pane appears. Proceed to review the **Configure Endpoint Attribute Retrieval with ITSM (ServiceNow)** information.

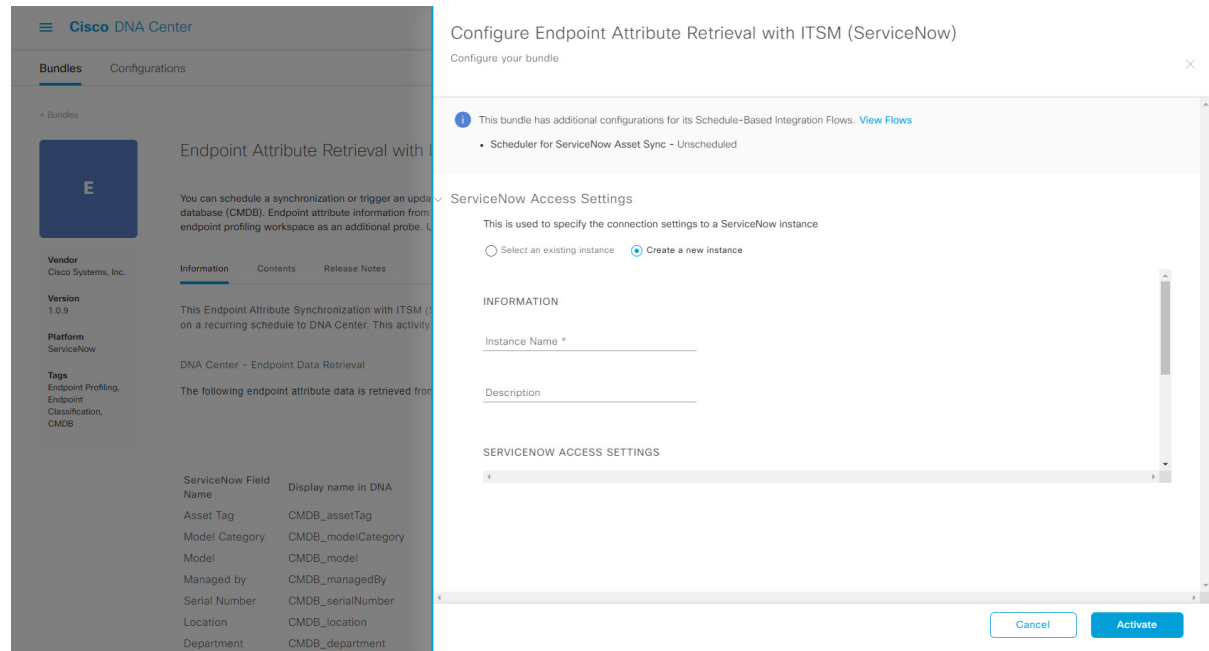
Step 11 Click the **Configure** button to configure at the bundle level.

A configuration slide-in pane appears.

Step 12 In the configuration slide-in pane, click **ServiceNow Access Settings** to configure a ServiceNow Connection instance.

Step 13 Click the radio button to configure either an existing ServiceNow Connection instance or configure a new instance.

Figure 23: Example of ServiceNow Instance Configuration Fields



For configuring an existing ServiceNow Connection instance, choose it from the drop-down menu in the window and click **Activate**.

Step 14 For configuring a new ServiceNow Connection instance, the following additional information must be entered.

- **Instance Name:** Name of the instance.
- **Description:** Descriptive text of the instance.
- **Host name:** Host name for the ServiceNow system.
- **Username:** Username required to access the ServiceNow system.
- **Password:** Password required to access the ServiceNow system.

Step 15 Click **Check Connectivity** to test whether you can connect to the server where the endpoint is located.

Step 16 Click **Activate** to activate the bundle.

What to do next

Configure the integration flow (**Scheduler for ServiceNow Asset Sync**) for this bundle, using one of the methods described in Step 8 above.



APPENDIX **A**

SWIM Closed Loop Automation

- [About SWIM Closed Loop Automation, on page 47](#)
- [SWIM Closed Loop Automation Requirements, on page 48](#)
- [SWIM Closed Loop Automation Workflow, on page 48](#)

About SWIM Closed Loop Automation

This release supports closed loop automation for software image management (SWIM) between Cisco DNA Center and ServiceNow. Closed-loop automation consists of a user configuring the provisioning of software device images in Cisco DNA Center. This configuration information is then communicated directly from Cisco DNA Center to ServiceNow as an immediate or scheduled change request. The ServiceNow administrator reviews the change request and either approves or rejects it in ServiceNow. The change request acceptance or rejection is then communicated back to Cisco DNA Center.

After receipt of an approved change request from ServiceNow, Cisco DNA Center performs the software update at that time (immediately) or at its scheduled future time.

After Cisco DNA Center successfully performs the software update, a notification (task completed) is sent back to ServiceNow. If the software update fails, then this is also communicated back to ServiceNow (task fail), so that the user can then manually perform the software update in Cisco DNA Center.



Note If the SWIM provisioning is stopped by the user in Cisco DNA Center during this process, a task termination notification is sent to ServiceNow.

Perform the following procedures to enable SWIM closed loop automation between Cisco DNA Center and ServiceNow:

1. Review the requirements to ensure that the prerequisites for this feature have been met. See [SWIM Closed Loop Automation Requirements, on page 48](#).
2. Review the SWIM closed loop automation workflow to ensure that the required Cisco DNA Center admin and ServiceNow admin tasks are performed for this feature. See [SWIM Closed Loop Automation Workflow, on page 48](#).

SWIM Closed Loop Automation Requirements

The following table lists the requirements for SWIM closed loop automation feature.

Table 7: SWIM Closed Loop Automation Requirements

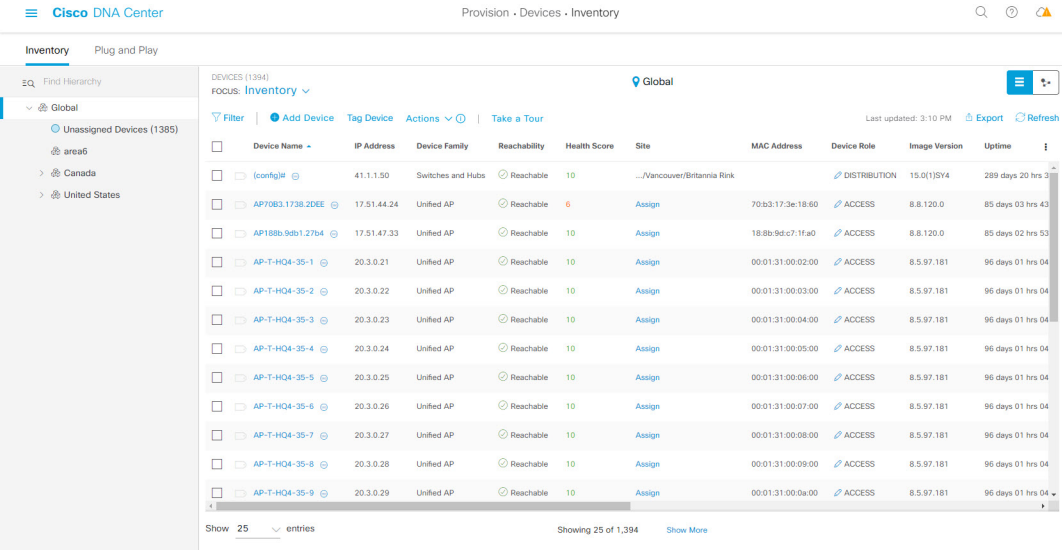
Software Product, App, or Procedure	Requirement
Cisco DNA Center	Release 2.2.2.
Service Now	The following ServiceNow release versions support this feature: <ul style="list-style-type: none"> • Paris • Orlando
Cisco DNA Center app	Cisco DNA app (version 2.0.0) This app is available through the ServiceNow website located at: https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddb6ba00f27978b5ae96197b/2.0.0 The Cisco DNA app is to be installed in your ServiceNow instance by a ServiceNow administrator.
Cisco DNA Center to ServiceNow ITSM integration	Review the <i>Cisco DNA Center Integration with ServiceNow using the Cisco DNA App</i> workflow and use it to set up the integration. See Cisco DNA Center Integration with ServiceNow Using the Cisco DNA App , on page 21.

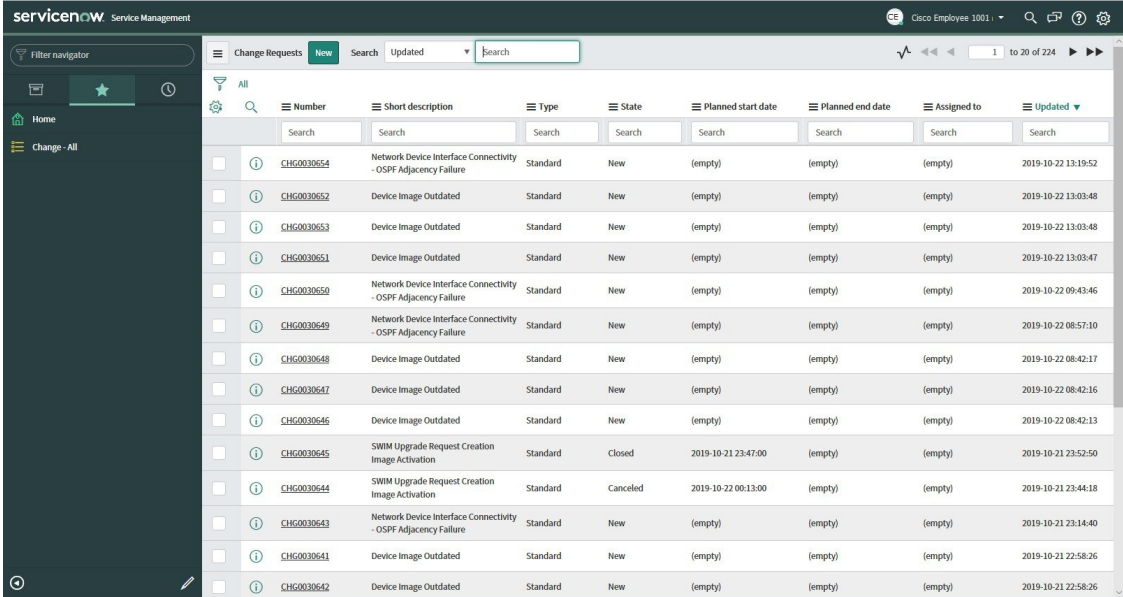
SWIM Closed Loop Automation Workflow

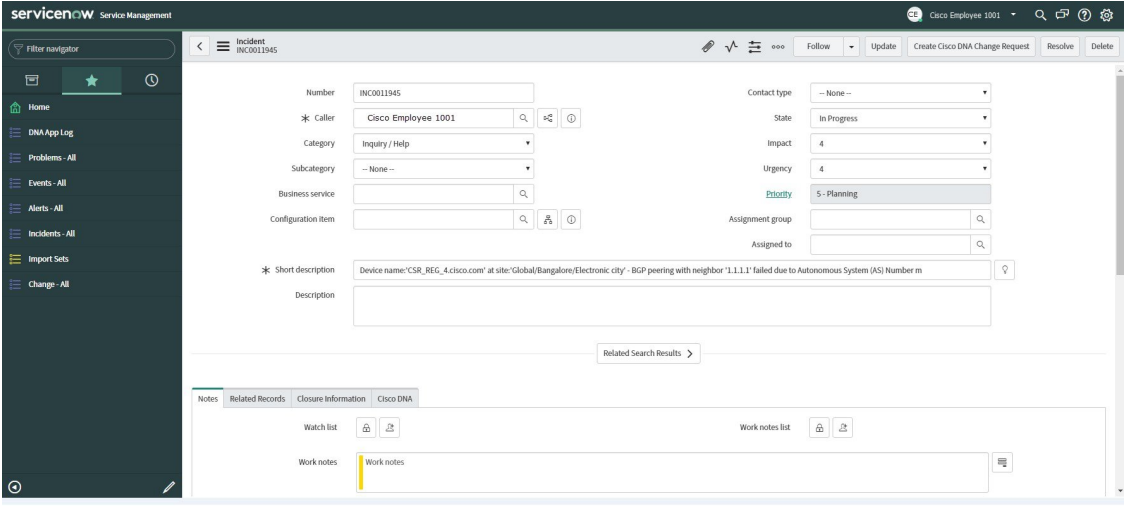
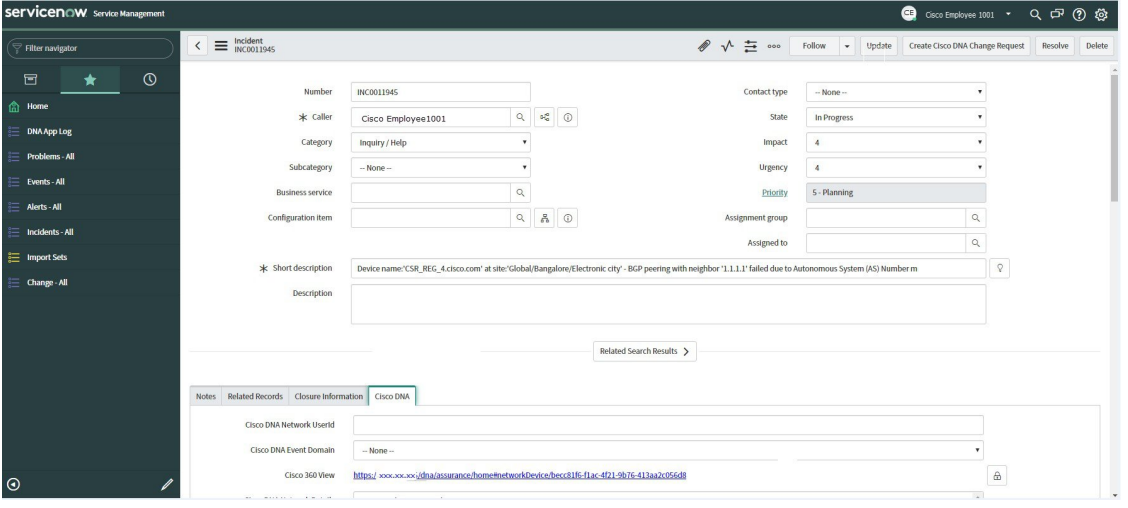
The following table describes the SWIM closed loop automation workflow between Cisco DNA Center and ServiceNow.

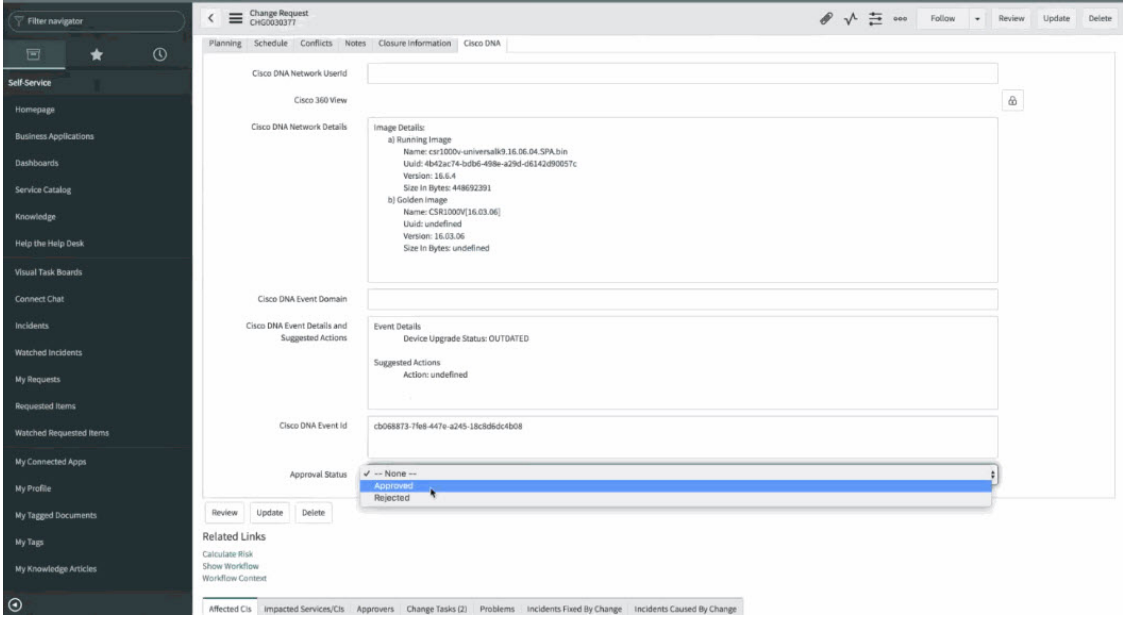
Table 8: SWIM Closed Loop Automation Workflow

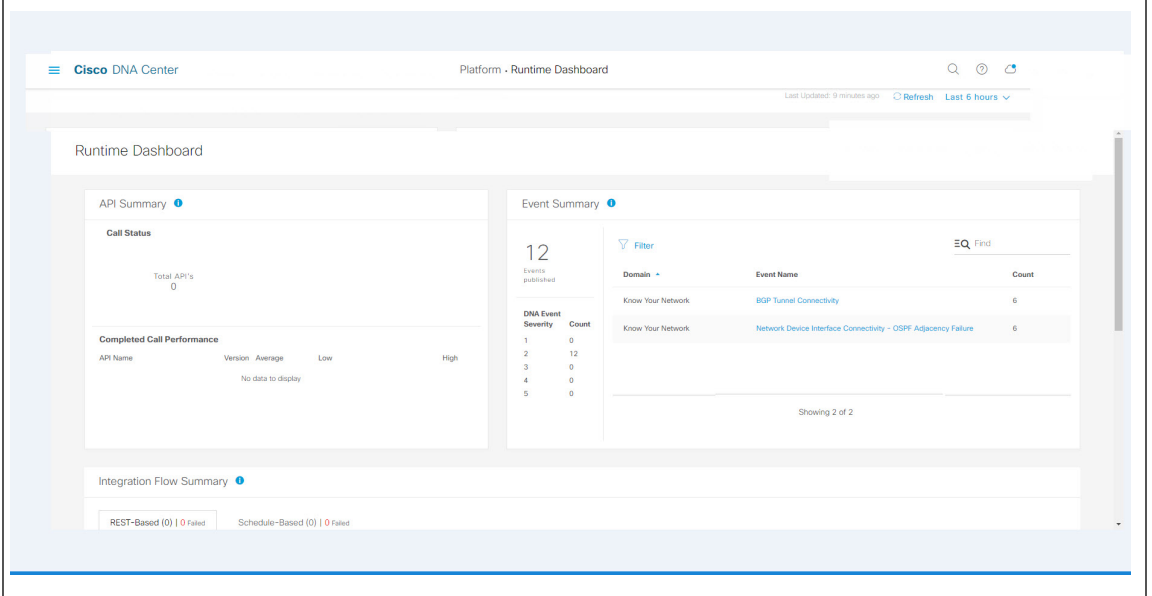
Step	Description
Step 1	The Cisco DNA Center admin configures the Image Repository to prepare for the provisioning of devices in the network. Note See the Manage Software Images chapter in the Cisco DNA Center User Guide for information about setting up the Image Repository, as well as to review the software image provisioning process.

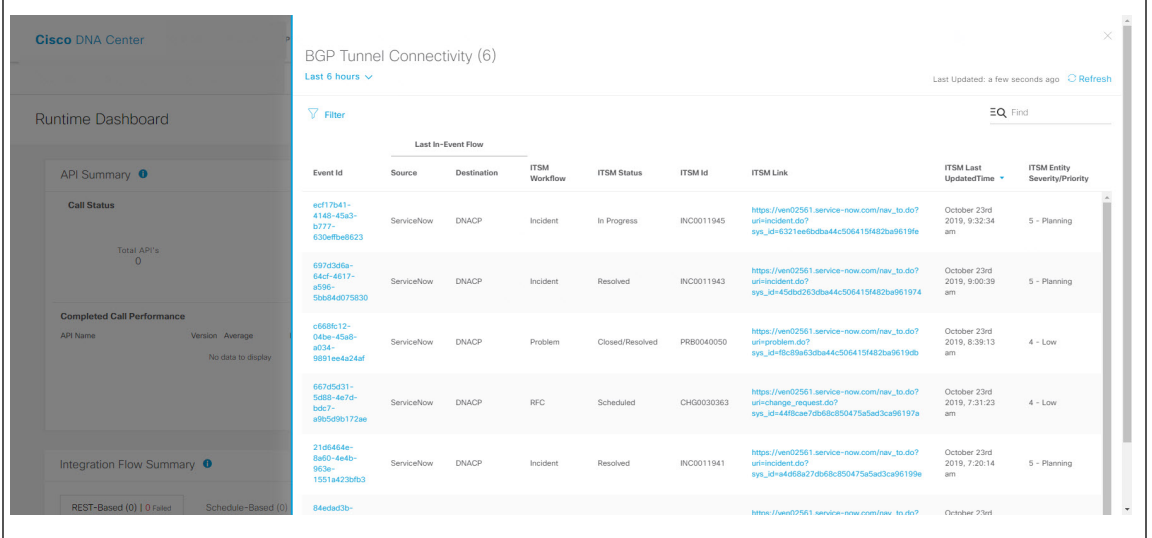
Step	Description
Step 2	<p>The Cisco DNA Center admin distributes the software image to a device or devices at the present time or schedules this activity for a later time.</p> <p>Note Before this step is done, ensure that the Cisco DNA Center Automation events for ITSM (ServiceNow) bundle is configured and activated.</p> <ul style="list-style-type: none"> From the Cisco DNA Center home page, the admin clicks Provision. From the Focus drop-down list, the admin chooses Software Images and selects the device with the image to upgrade. From the Actions drop-down list, the admin chooses Software Images > Update Image and does the following: <ul style="list-style-type: none"> Distribute: Clicks Now to start the distribution immediately or clicks Later to schedule the distribution at a specific time. Clicks Next. Activate: Clicks Now to start the activation immediately or clicks Later to schedule the activation at a specific time. Confirm: Clicks Confirm to confirm the update. <p>Figure 24: Cisco DNA Assurance Provision</p>  <p>Note See the Manage Software Images chapter in the Cisco DNA Center User Guide for detailed information about this step.</p>

Step	Description																																																																																																																								
Step 3	<p>Once a software image distribution is created in Cisco DNA Center (software image update to be activated immediately or later), then a SWIM event is created and communicated directly to the ServiceNow ITSM as a change request ticket. This is done through the use of APIs from the DNA app. The change request ticket status is new.</p> <p>The SWIM event appears in the ServiceNow GUI in the ServiceNow Change Requests table.</p> <p>Figure 25: ServiceNow Change Requests</p>  <table border="1" data-bbox="358 531 1474 1123"> <thead> <tr> <th>Number</th> <th>Short description</th> <th>Type</th> <th>State</th> <th>Planned start date</th> <th>Planned end date</th> <th>Assigned to</th> <th>Updated</th> </tr> </thead> <tbody> <tr> <td>CHG0030654</td> <td>Network Device Interface Connectivity - OSPF Adjacency Failure</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-22 13:19:52</td> </tr> <tr> <td>CHG0030652</td> <td>Device Image Outdated</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-22 13:03:48</td> </tr> <tr> <td>CHG0030653</td> <td>Device Image Outdated</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-22 13:03:48</td> </tr> <tr> <td>CHG0030651</td> <td>Device Image Outdated</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-22 13:03:47</td> </tr> <tr> <td>CHG0030650</td> <td>Network Device Interface Connectivity - OSPF Adjacency Failure</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-22 09:43:46</td> </tr> <tr> <td>CHG0030649</td> <td>Network Device Interface Connectivity - OSPF Adjacency Failure</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-22 08:57:10</td> </tr> <tr> <td>CHG0030648</td> <td>Device Image Outdated</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-22 08:42:17</td> </tr> <tr> <td>CHG0030647</td> <td>Device Image Outdated</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-22 08:42:16</td> </tr> <tr> <td>CHG0030646</td> <td>Device Image Outdated</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-22 08:42:13</td> </tr> <tr> <td>CHG0030645</td> <td>SWIM Upgrade Request Creation Image Activation</td> <td>Standard</td> <td>Closed</td> <td>2019-10-21 23:47:00</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-21 23:52:50</td> </tr> <tr> <td>CHG0030644</td> <td>SWIM Upgrade Request Creation Image Activation</td> <td>Standard</td> <td>Canceled</td> <td>2019-10-22 00:13:00</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-21 23:44:18</td> </tr> <tr> <td>CHG0030643</td> <td>Network Device Interface Connectivity - OSPF Adjacency Failure</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-21 23:14:40</td> </tr> <tr> <td>CHG0030641</td> <td>Device Image Outdated</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-21 22:58:26</td> </tr> <tr> <td>CHG0030642</td> <td>Device Image Outdated</td> <td>Standard</td> <td>New</td> <td>(empty)</td> <td>(empty)</td> <td>(empty)</td> <td>2019-10-21 22:58:26</td> </tr> </tbody> </table>	Number	Short description	Type	State	Planned start date	Planned end date	Assigned to	Updated	CHG0030654	Network Device Interface Connectivity - OSPF Adjacency Failure	Standard	New	(empty)	(empty)	(empty)	2019-10-22 13:19:52	CHG0030652	Device Image Outdated	Standard	New	(empty)	(empty)	(empty)	2019-10-22 13:03:48	CHG0030653	Device Image Outdated	Standard	New	(empty)	(empty)	(empty)	2019-10-22 13:03:48	CHG0030651	Device Image Outdated	Standard	New	(empty)	(empty)	(empty)	2019-10-22 13:03:47	CHG0030650	Network Device Interface Connectivity - OSPF Adjacency Failure	Standard	New	(empty)	(empty)	(empty)	2019-10-22 09:43:46	CHG0030649	Network Device Interface Connectivity - OSPF Adjacency Failure	Standard	New	(empty)	(empty)	(empty)	2019-10-22 08:57:10	CHG0030648	Device Image Outdated	Standard	New	(empty)	(empty)	(empty)	2019-10-22 08:42:17	CHG0030647	Device Image Outdated	Standard	New	(empty)	(empty)	(empty)	2019-10-22 08:42:16	CHG0030646	Device Image Outdated	Standard	New	(empty)	(empty)	(empty)	2019-10-22 08:42:13	CHG0030645	SWIM Upgrade Request Creation Image Activation	Standard	Closed	2019-10-21 23:47:00	(empty)	(empty)	2019-10-21 23:52:50	CHG0030644	SWIM Upgrade Request Creation Image Activation	Standard	Canceled	2019-10-22 00:13:00	(empty)	(empty)	2019-10-21 23:44:18	CHG0030643	Network Device Interface Connectivity - OSPF Adjacency Failure	Standard	New	(empty)	(empty)	(empty)	2019-10-21 23:14:40	CHG0030641	Device Image Outdated	Standard	New	(empty)	(empty)	(empty)	2019-10-21 22:58:26	CHG0030642	Device Image Outdated	Standard	New	(empty)	(empty)	(empty)	2019-10-21 22:58:26
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CHG0030645	SWIM Upgrade Request Creation Image Activation	Standard	Closed	2019-10-21 23:47:00	(empty)	(empty)	2019-10-21 23:52:50																																																																																																																		
CHG0030644	SWIM Upgrade Request Creation Image Activation	Standard	Canceled	2019-10-22 00:13:00	(empty)	(empty)	2019-10-21 23:44:18																																																																																																																		
CHG0030643	Network Device Interface Connectivity - OSPF Adjacency Failure	Standard	New	(empty)	(empty)	(empty)	2019-10-21 23:14:40																																																																																																																		
CHG0030641	Device Image Outdated	Standard	New	(empty)	(empty)	(empty)	2019-10-21 22:58:26																																																																																																																		
CHG0030642	Device Image Outdated	Standard	New	(empty)	(empty)	(empty)	2019-10-21 22:58:26																																																																																																																		

Step	Description
<p>Step 4</p>	<p>In the Change Requests table, the ServiceNow admin clicks on the change request number (identifier) to open and review its status and data. In the ServiceNow GUI, the ServiceNow admin can edit the change request. For example, the admin can change the State from 'New' to 'Scheduled' and enter 'Change Management' for the Assignment group. The ServiceNow admin can also identify the SWIM change request with information in the Short Description field.</p> <p>Figure 26: Change Request</p>  <p>The screenshot shows the ServiceNow interface for an incident (INC0011945). The form includes fields for Number, Caller (Cisco Employee 1001), Category (Inquiry / Help), Subcategory, Business service, Configuration item, Contact type, State (In Progress), Impact (4), Urgency (4), Priority (5 - Planning), Assignment group, and Assigned to. The Short description field contains: "Device name:'CSR_REG_4.cisco.com' at site:'Global/Bangalore/Electronic city' - BGP peering with neighbor '1.1.1.1' failed due to Autonomous System (AS) Number m".</p>
<p>Step 5</p>	<p>The ServiceNow admin now clicks the Cisco DNA tab in the change request. Important additional data synchronized from Cisco DNA Center to ServiceNow can be viewed in this tab.</p> <p>Figure 27: Cisco DNA Tab</p>  <p>The screenshot shows the same ServiceNow interface, but the 'Cisco DNA' tab is selected in the bottom navigation bar. This tab displays additional fields: Cisco DNA Network Userid, Cisco DNA Event Domain (set to -- None --), and Cisco 360 View with a URL: "https://xxx.xx.xx/dna/assurance/home/networkDevice/bcc818f-11ac-4721-9b7c-613aa2c056d8".</p>

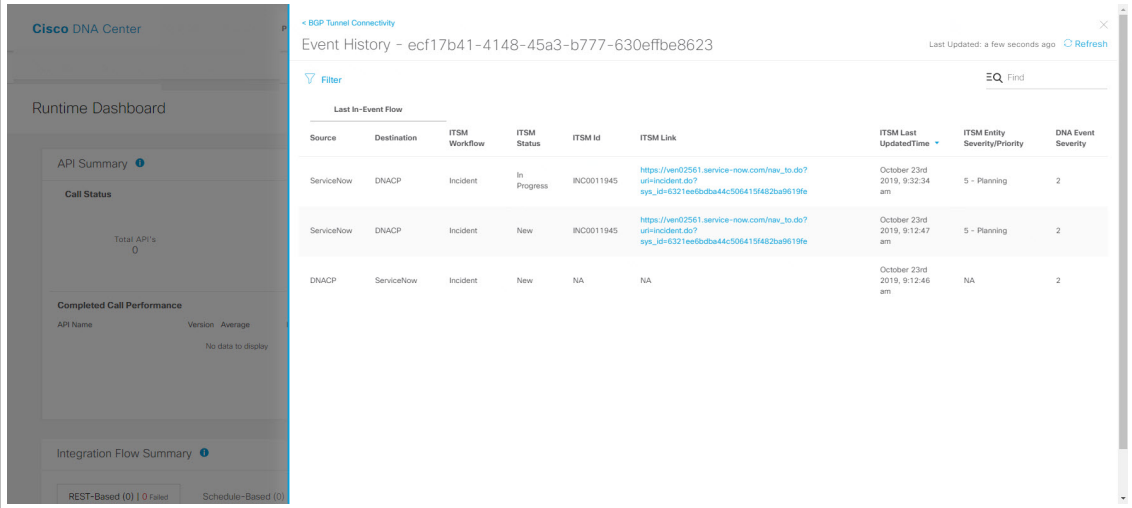
Step	Description
<p>Step 6</p>	<p>The ServiceNow admin now either approves or rejects the change request ticket in the ServiceNow GUI. In the Cisco DNA tab, the ServiceNow admin clicks the Approval Status field and clicks either Approved to approve the request or Rejected to reject the request.</p> <p>Note Before the change request is executed, it must be approved in ServiceNow. Only after an approval in ServiceNow will the change request be executed in Cisco DNA Center.</p> <p>Figure 28: Cisco DNA Approval Status Field</p>  <p>The screenshot shows the Cisco DNA GUI for a 'Change Request' (CR020317). The 'Approval Status' field is highlighted with a dropdown menu open, showing three options: 'None' (selected), 'Approved', and 'Rejected'. The background shows various fields like 'Cisco DNA Network User Id', 'Cisco 360 View', 'Image Details', 'Cisco DNA Event Domain', and 'Cisco DNA Event Details and Suggested Actions'.</p>
<p>Step 7</p>	<p>After the ServiceNow admin approves the ticket and the status of the change request is changed to 'Implement', a notification is sent to Cisco DNA Center. In case the ticket is rejected, then the update is sent to Cisco DNA Center in 'Scheduled' state itself and the ServiceNow ticket is automatically canceled.</p>
<p>Step 8</p>	<p>After a successful software image update in Cisco DNA Center, a notification (task completed) is sent back to ServiceNow. ServiceNow then closes the change request ticket. The change request ticket closure is done through the use of APIs from the DNA app.</p> <p>Note For a failed software update, ServiceNow proceeds to report the failure so that the ServiceNow admin can manually take action on the change request ticket. For a terminated software update, the change request ticket is canceled in ServiceNow. The reporting of both a failed software image update and a terminated software image update are also done through the use of APIs from the DNA app.</p>

<p>Step 9</p>	<p>Description</p> <p>The Cisco DNA Center admin can review the SWIM event by clicking on Runtime Dashboard > Event Summary.</p> <p>Note By clicking the on individual events in the GUI window, the admin accesses additional GUI windows that permit direct access to the event in ServiceNow.</p> <p>Figure 29: Event Summary</p> 
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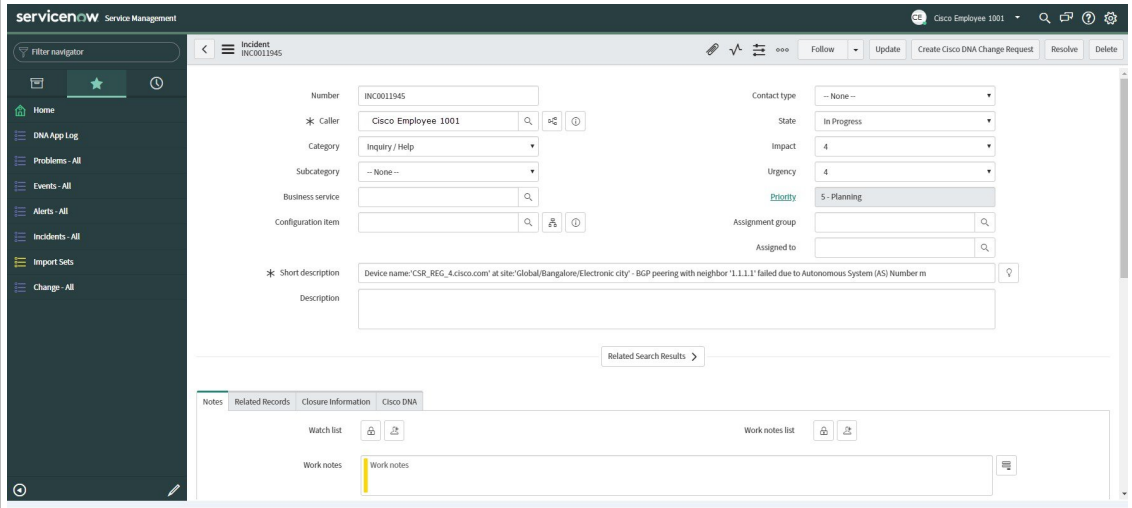
<p>Step 10</p>	<p>The Cisco DNA Center admin clicks on an event name (link) to view additional detailed data.</p> <p>Figure 30: Event History</p>  <table border="1"> <thead> <tr> <th>Event Id</th> <th>Source</th> <th>Destination</th> <th>ITSM Workflow</th> <th>ITSM Status</th> <th>ITSM Id</th> <th>ITSM Link</th> <th>ITSM Last UpdatedTime</th> <th>ITSM Entity Severity/Priority</th> </tr> </thead> <tbody> <tr> <td>4e1f17b41-4143-45a3-b773-630ef0e8623</td> <td>ServiceNow</td> <td>DNACP</td> <td>Incident</td> <td>In Progress</td> <td>INC0011945</td> <td>https://ven02561.service-now.com/nav_to.do?uri=incident.do?sys_id=6321ee6dbd44c506415f482ba9619fe</td> <td>October 23rd 2019, 9:32:34 am</td> <td>5 - Planning</td> </tr> <tr> <td>697d35fa-64c-4617-e596-50e64d079830</td> <td>ServiceNow</td> <td>DNACP</td> <td>Incident</td> <td>Resolved</td> <td>INC0011943</td> <td>https://ven02561.service-now.com/nav_to.do?uri=incident.do?sys_id=45db2c23db44c506415f482ba961974</td> <td>October 23rd 2019, 9:00:39 am</td> <td>5 - Planning</td> </tr> <tr> <td>c6686c12-04ba-45a8-8034-9891ee4224af</td> <td>ServiceNow</td> <td>DNACP</td> <td>Problem</td> <td>Closed/Resolved</td> <td>PRB0040050</td> <td>https://ven02561.service-now.com/nav_to.do?uri=problem.do?sys_id=8c89a63db44c506415f482ba9619db</td> <td>October 23rd 2019, 8:39:13 am</td> <td>4 - Low</td> </tr> <tr> <td>667d5d31-5d8b-4e7d-bdc7-495d59b172ae</td> <td>ServiceNow</td> <td>DNACP</td> <td>RFC</td> <td>Scheduled</td> <td>CHG0030363</td> <td>https://ven02561.service-now.com/nav_to.do?uri=change_request.do?sys_id=44f8cae75b68c950475b5ad3ca96197a</td> <td>October 23rd 2019, 7:31:23 am</td> <td>4 - Low</td> </tr> <tr> <td>2195484e-2b00-4e40-9c3c-1551a4230f03</td> <td>ServiceNow</td> <td>DNACP</td> <td>Incident</td> <td>Resolved</td> <td>INC0011941</td> <td>https://ven02561.service-now.com/nav_to.do?uri=incident.do?sys_id=a48f9ae27db6bc850475a5ad3ca96199e</td> <td>October 23rd 2019, 7:20:14 am</td> <td>5 - Planning</td> </tr> <tr> <td>84edec3b-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>https://ven02561.service-now.com/nav_to.do?uri=incident.do?sys_id=...</td> <td>October 23rd</td> <td></td> </tr> </tbody> </table>	Event Id	Source	Destination	ITSM Workflow	ITSM Status	ITSM Id	ITSM Link	ITSM Last UpdatedTime	ITSM Entity Severity/Priority	4e1f17b41-4143-45a3-b773-630ef0e8623	ServiceNow	DNACP	Incident	In Progress	INC0011945	https://ven02561.service-now.com/nav_to.do?uri=incident.do?sys_id=6321ee6dbd44c506415f482ba9619fe	October 23rd 2019, 9:32:34 am	5 - Planning	697d35fa-64c-4617-e596-50e64d079830	ServiceNow	DNACP	Incident	Resolved	INC0011943	https://ven02561.service-now.com/nav_to.do?uri=incident.do?sys_id=45db2c23db44c506415f482ba961974	October 23rd 2019, 9:00:39 am	5 - Planning	c6686c12-04ba-45a8-8034-9891ee4224af	ServiceNow	DNACP	Problem	Closed/Resolved	PRB0040050	https://ven02561.service-now.com/nav_to.do?uri=problem.do?sys_id=8c89a63db44c506415f482ba9619db	October 23rd 2019, 8:39:13 am	4 - Low	667d5d31-5d8b-4e7d-bdc7-495d59b172ae	ServiceNow	DNACP	RFC	Scheduled	CHG0030363	https://ven02561.service-now.com/nav_to.do?uri=change_request.do?sys_id=44f8cae75b68c950475b5ad3ca96197a	October 23rd 2019, 7:31:23 am	4 - Low	2195484e-2b00-4e40-9c3c-1551a4230f03	ServiceNow	DNACP	Incident	Resolved	INC0011941	https://ven02561.service-now.com/nav_to.do?uri=incident.do?sys_id=a48f9ae27db6bc850475a5ad3ca96199e	October 23rd 2019, 7:20:14 am	5 - Planning	84edec3b-						https://ven02561.service-now.com/nav_to.do?uri=incident.do?sys_id=...	October 23rd	
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Step | **Description**

Step 11 | The Cisco DNA Center admin clicks on an event ID number (link) to view only data associated with that specific event.
Figure 31: Event ID Data



Step 12 | The Cisco DNA Center admin clicks on the ITSM Link to return to the ServiceNow Service Management GUI and specific incident.
Figure 32: ServiceNow Incident





APPENDIX **B**

Cisco DNA Center to PagerDuty Integration

- [About Cisco DNA Center to PagerDuty Integration, on page 55](#)
- [Subscribe Cisco DNA Center Event Notifications to PagerDuty, on page 57](#)

About Cisco DNA Center to PagerDuty Integration

You can now integrate Cisco DNA Center with PagerDuty.



Note PagerDuty is an incident management platform that provides reliable notifications to help detecting and correcting infrastructure problems. For information about PagerDuty, see <https://www.pagerduty.com/>.

The following table displays the supported Cisco DNA Center to PagerDuty integration workflow.

Table 9: Cisco DNA Center to PagerDuty Integration Workflow

Step	Description
Step 1	<p>Review the Cisco DNA Center to PagerDuty integration requirements.</p> <p>The following are the requirements for an integration:</p> <ul style="list-style-type: none">• Cisco DNA Center, Release 2.2.2• PagerDuty <p>Note PagerDuty integration with Cisco DNA Center is accomplished using REST APIs and webhooks. For information about the PagerDuty integration with Cisco DNA Center using these APIs, see https://developer.pagerduty.com/docs/events-api-v2/overview/.</p>

Step	Description
Step 3	<p>Select and subscribe one or more event notifications from Cisco DNA Center to PagerDuty.</p> <p>To access an event in Cisco DNA Center, click the Menu icon > Platform > Developer Toolkit > Events. Review and select an event from the Events table that supports PagerDuty integration. For example, from the list of events in the window, select AP Down and proceed to subscribe to that event.</p> <p>Click Subscribe to configure the event for a subscription.</p>
Step 4	<p>Configure the PagerDuty settings in the selected event.</p> <p>The following data must be entered in the Cisco DNA Center platform GUI for the selected event:</p> <ul style="list-style-type: none"> • PagerDuty Events REST API URL • PagerDuty Integration key (routing key) <p>For detailed information about this event configuration procedure, see Subscribe Cisco DNA Center Event Notifications to PagerDuty, on page 57.</p>
Step 5	<p>Notifications for the selected event are now forwarded to PagerDuty from Cisco DNA Center.</p> <p>The following are the supported workflow connections between Cisco DNA Center issues and PagerDuty events:</p> <ul style="list-style-type: none"> • Open Cisco DNA Center to trigger PagerDuty.
Step 6	<p>PagerDuty responds to Cisco DNA Center with one of the following REST API responses:</p> <ul style="list-style-type: none"> • 202: The event has been accepted by PagerDuty. • 400: Bad Request - Check that the JSON is valid. • 429: Too many API calls at a time. • 500 or other 5xx: Internal Server Error - the PagerDuty server experienced an error while processing the event. • Networking Error: Error while trying to communicate with PagerDuty servers.
Step 7	<p>Review and change (if necessary) the incident status in PagerDuty.</p> <p>Note Refer to your PagerDuty documentation for information about performing this step.</p>

Step	Description
Step 8	<p>Close the incident in PagerDuty.</p> <p>Note Refer to your PagerDuty documentation for information about performing this step.</p>
Step 9	<p>PagerDuty integration is a one-way notification from Cisco DNA Center to PagerDuty. Cisco DNA Center is not dependent on Pagerduty status to close an issue.</p>

Subscribe Cisco DNA Center Event Notifications to PagerDuty

You can configure a Cisco DNA Center platform event notification to appear in PagerDuty as an alert. Follow the steps described in this procedure to configure a Cisco DNA Center event notification so that it appears in PagerDuty.

Before you begin

Ensure that you have PagerDuty running on a system that you will integrate with Cisco DNA Center platform. Refer to your PagerDuty documentation for instructions on setting up PagerDuty.

You must have the appropriate permissions to perform the tasks as described in this procedure. For information about Role-Based Access Control for the Cisco DNA Center platform, see the [Cisco DNA Center Platform User Guide](#).

Step 1 In the Cisco DNA Center GUI, click the **Menu** icon (☰) and choose **Platform > Developer Toolkit > Events**. The **Events** window appears.

Step 2 In the **Events** window, review the events table that is displayed by the GUI.

Note You can adjust the events that are displayed in the GUI by entering a keyword in the **Find** field.

Step 3 Review the data on an individual event within the table.

The following **Events** data is provided:

- **Event ID:** Identification number for the event.
- **Name:** Name of the event (link).
If you click this link, the **Name** slide-in pane opens for the event. The **Name** slide-in pane consists of two tabs: **Events Details** and **Active Subscriptions**.
- **Description:** Brief description of the event.
- **Type:** Network, App, System, Security, or Integrations type of event.
- **Category:** Error, Warn, Info, Alert, Task Progress, Task Complete.
- **Severity:** 1–5.

Note Severity 1 is the most important or critical priority and should be assigned for this type of an event.

- **Status:** Subscription status (whether a user has subscribed to the event). If subscribed to an event, then a link appears in this column to the **Active Subscription** tab.

Step 4 Click a **Name** link to open an event subscription slide-in pane.

Step 5 Review the data displayed in the event subscription slide-in pane.

The following **Event Details** tab data is displayed:

- **Description:** Brief description of the event and how it is triggered.
- **Event ID:** Identification number of the event.
- **Version:** Version number of the event.
- **Namespace:** Namespace of the event.
The default value for this release for all of the events is ASSURANCE.
- **Domain:** REST API domain to which the event belongs.
- **Sub Domain:** Subgroup under the REST API domain to which the event belongs.
- **Type:** Network, App, System, Security, or Integrations type of event.
- **Category:** Error, Warn, Info, Alert, Task Progress, Task Complete.
- **Severity:** 1 through 5.

Note Severity 1 is the most important or critical priority and should be assigned for this type of an event.

- **Cisco DNA Event Link:** Event broadcast using REST URL.
- **Note:** Additional information about the event or to help further understanding the event.
- **Tenant Aware:** Whether the event is tenant aware or not.
- **Tags:** Tags indicate what Cisco DNA Center component is affected by the event. The default value for tags for this release is ASSURANCE with more syntax for the specific Assurance issue.
- **Supported Endpoints:** What endpoint types are supported for the event notifications. The following endpoints are supported with this release:
 - REST API
 - Syslog server
 - Email
 - SNMP trap
- **Model Schema:** Presents model schema about the event:
 - **Details:** Example of model schema detail for the event.
 - **REST Schema:** REST schema format for the event.

Step 6 Click the **Active Subscriptions** tab.

The following **Active Subscriptions** tab data is displayed:

- **Broadcast Methods:** Email, REST API, or SNMP trap
- **Count and Instances:** Number of instances of notifications for emails, REST APIs or SNMP traps.

Note After subscribing to an event, click the subscription count under **Count and Instances** to edit or unsubscribe to the active subscription. After clicking on the individual subscription count, click **Unsubscribe** to unsubscribe or **Edit** to further edit it. For multiple subscriptions, you will need to unsubscribe to each subscription one at a time. The ability for multiple subscribing or unsubscribing is not supported using the GUI.

- **Actions:** Either unsubscribe or edit the active subscription.

Note After subscribing to an event, a **Try It** button will appear in the **Active Subscriptions** tab. By clicking on this button, you are able to run an event simulation.

Step 7 Click the **Subscribe** button to add this event to your active subscription of events. For a *PagerDuty subscription*, configure the following fields:

- **Name:** Name of the event.
 - **Subscription Type:** **PAGER_DUTY**
- Note** Subscription type can be set for either email, REST API endpoint (webhook), syslog server, SNMP trap, or PagerDuty.
- **Select an existing endpoint:** Select the Subscription Endpoint by using the drop-down arrow.
 - **Create a new endpoint:** Enter a new **Endpoint Name** and **Endpoint Description**.

Enter values for the following fields:

- **PagerDuty Events API URL**
- **PagerDuty Integration Key**
- **PagerDuty Events API Version**

Click **Subscribe** to save and enable the subscription or **Cancel** to cancel and exit the window.

Step 8 Review your subscriptions in the **Active Subscriptions** tab.

The following information is provided for a subscription:

- **Broadcast Method:** Email, REST API, or SNMP trap notification.
- **Counts and Instances:** Number of instances of notification.

Click the **Unsubscribe** and **Edit** links to unsubscribe or edit the subscription respectively.

- **Actions:** Actions taken for the events.

Note You can adjust the subscriptions that are displayed in the GUI by clicking the **Filter** icon and using the filter, or entering a keyword in the **Find** field.

What to do next

Proceed to access PagerDuty to review the events.

The Cisco DNA Center events will appear in PagerDuty as alerts within the PagerDuty **INCIDENTS** window. You can review and mark the alert as **Resolved** in this window.