

Monitor Catalyst Center Automation (SWIM) Events for ITSM

Contents

[Introduction](#)

[Background Information](#)

[Cisco Catalyst Center-ITSM \(ServiceNow\) Integration](#)

[Architecture: Automation Event \(SWIM\)](#)

[SWIM Automation Workflow: High-Level Architecture](#)

[SWIM Automation Workflow: Under the Hood](#)

[Events Flow: Catalyst Center](#)

[Events Flow: ITSM \(ServiceNow\)](#)

[Automation Event \(SWIM\) Bundle Configuration](#)

[Automation Event \(SWIM\) Workflow Execution](#)

[Catalyst Center](#)

[ITSM-ServiceNow](#)

[Automation Event \(SWIM\) Workflow Execution Validation](#)

Introduction

This document describes how to monitor Automation events such as SWIM use case of Catalyst Center and ITSM (ServiceNow) integration.

Background Information

The document covers all the details pertaining to the SWIM Closed Loop operation starting from components involved, pre-requisites, events flow, configurations, workflow execution and troubleshooting scenarios. This document is relevant if Cisco DNA App is installed on the ServiceNow instance.

The closed loop integration with ServiceNow for SWIM events enables the ticket creation, approval, implementation to closure process automated. The Change request opened for a SWIM update is approved/rejected by the change owner in ServiceNow and the ticket moves to the next states based on the approval status.

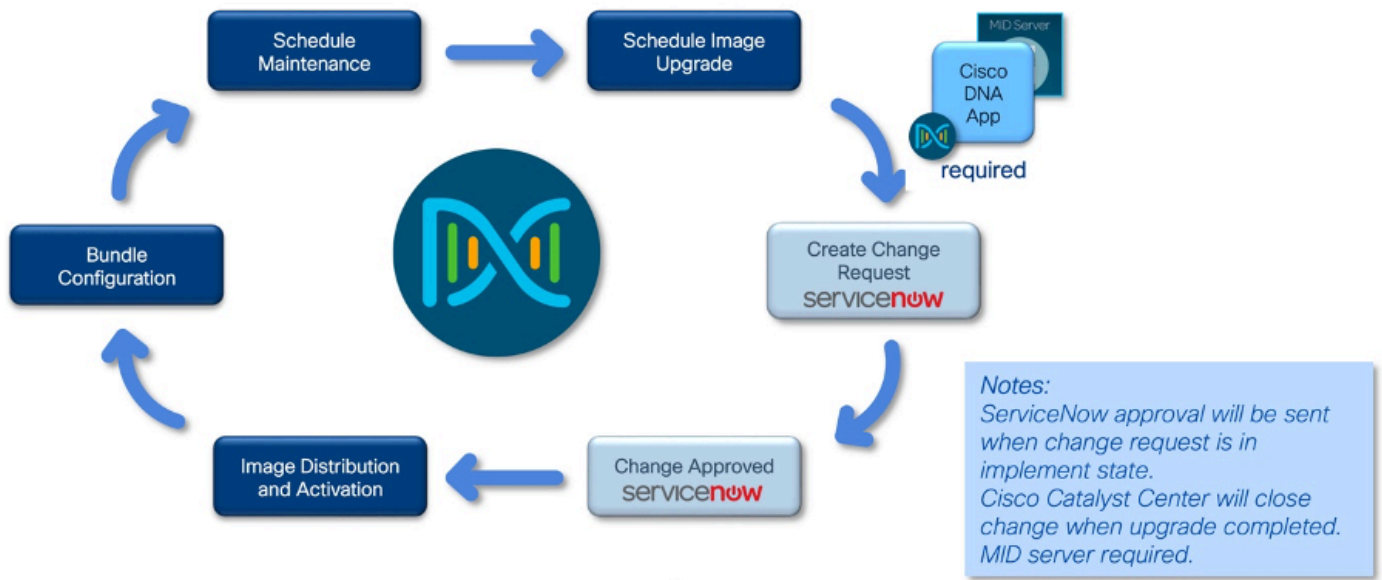
Cisco Catalyst Center-ITSM (ServiceNow) Integration

Refer to this TechZone for details on Catalyst Center-ITSM integration:

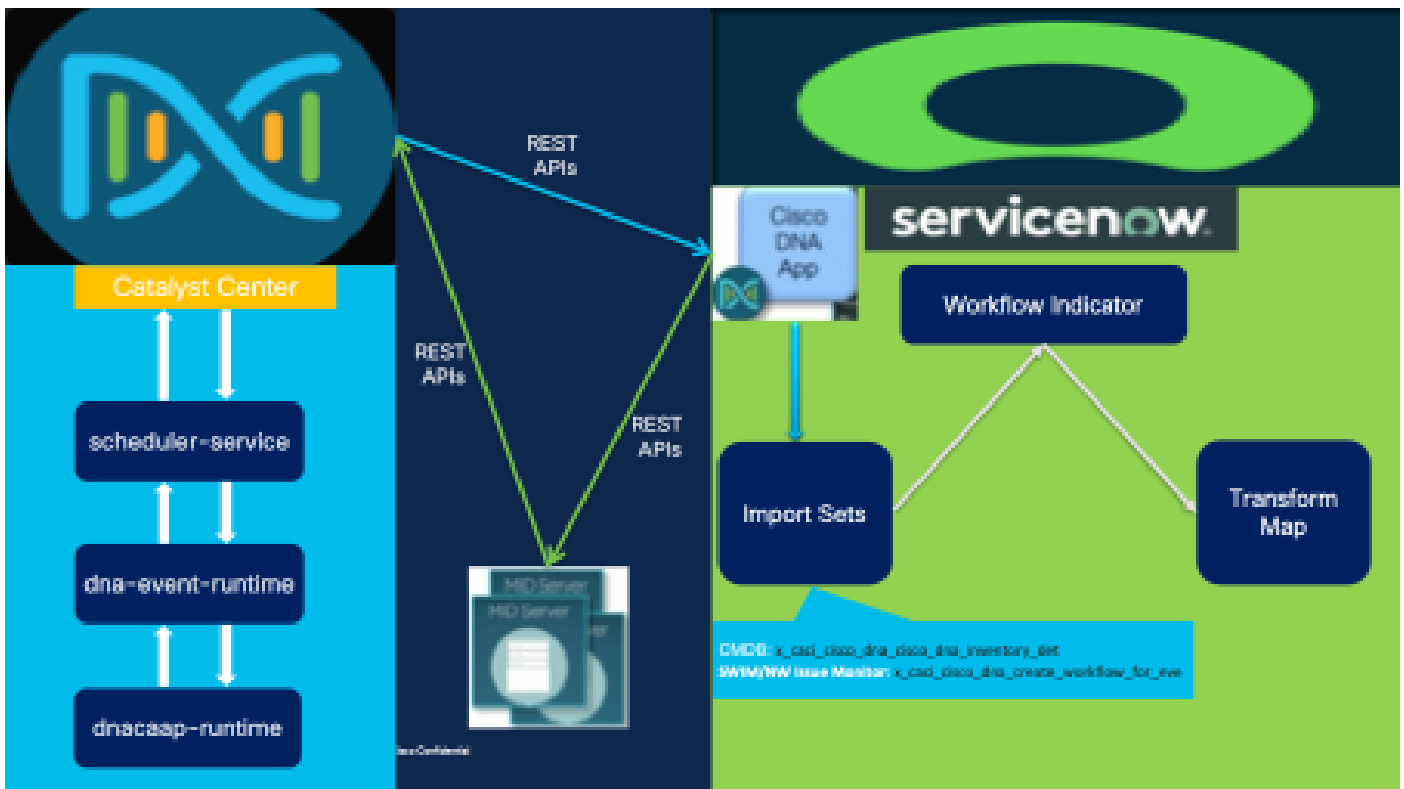
[Scope Underlying Concepts of Catalyst Center and ITSM Integration](#)

Architecture: Automation Event (SWIM)

SWIM Automation Workflow: High-Level Architecture



SWIM Automation Workflow: Under the Hood



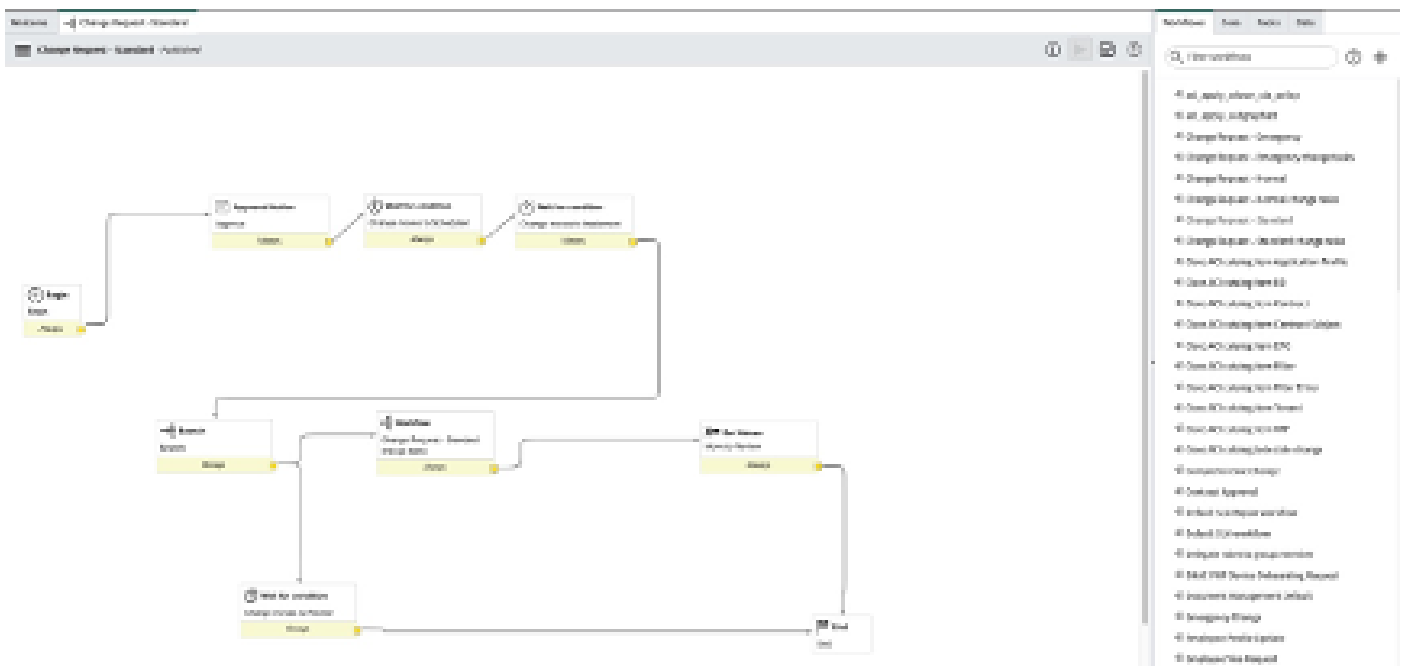
Events Flow: Catalyst Center

- When a SWIM event is scheduled from the Inventory Dashboard of Catalyst Center a Task gets created and via scheduler-service, the task gets scheduled; details of this task are communicated to ServiceNow instance via dnacaap-runtime service. Catalyst Center then makes REST API call to the Cisco DNA App installed on ServiceNow Instance.
- ServiceNow instance receives this event and Cisco DNA App automatically triggers the Change request workflow for network SWIM event published by Cisco DNA Center. This Change Request needs to be reviewed by the Network Ops team and needs to further update the Change Request's status.

- The approval status attribute of Change Request is mandatory when the change ticket is in Scheduled state. The approval/rejection provided by ServiceNow admin/network ops team for the schedule window is essential for the ticket to progress. Once the ticket is moved to implement state, there are triggers in ServiceNow to notify Cisco Catalyst Center to start the image distribution and upgrade based on the approval provided.
- Catalyst Center then triggers the SWIM activity at the stipulated Scheduled time and upon successful completion of the task the Change Request gets closed on ServiceNow via Closed Loop Automation workflow.

Events Flow: ITSM (ServiceNow)

- The SWIM Event scheduled on Cisco Catalyst Center is pushed to ServiceNow using ServiceNow Import Set APIs or Scripted REST APIs or Generic REST API endpoints in ServiceNow. The Import Set Table to which the data is posted to is `x_caci_cisco_dna_create_workflow_for_eve`.
- Based on the Workflow Indicator value set in the event configuration, a Change Request is created in ServiceNow based on transform scripts.
- Every SWIM event record from DNA has an associated Workflow Indicator that determines what kind of workflow the event goes through in ServiceNow. This snippet is an example of Workflow Indicator.



- Based on the workflow indicator decision, one of the transform maps gets executed and the data in the staging table is parsed and mapped to the appropriate target table that is Change in case of SWIM event.

Name	Source table	Target table
Change CommandOutputUpdate	Change CommandOutputUpdate [x_caci_cisco_dna_change_commandoutputupdate]	Change Request [change_request]
Change DNA Update	Change DNA Update [x_caci_cisco_dna_change_dna_update]	Change Request [change_request]
Change Status Update	Ticket Status Update [x_caci_cisco_dna_ticket_status_update]	Change Request [change_request]

- Cisco DNA App in the target artifacts enriches ITSM Change Request with network device details from Cisco Catalyst Center. The Cisco DNA app makes REST API calls into Cisco Catalyst Center for fetching enrichment information of various types such as device, issue, user, and client for a user created ticket.

Automation Event (SWIM) Bundle Configuration

The Cisco DNA Center Automation events for ITSM (ServiceNow) bundle retrieves events relating to software image updates triggered from Cisco DNA Center. This bundle can then publish the event data on a recurring schedule to an ITSM(Service Now) system. The event data can be published to the Event table in ServiceNow.

For Automation Event (SWIM) bundle configuration, refer to section Configure the Cisco DNA Center Automation Events for ITSM (ServiceNow) Bundle of [Cisco DNA Center ITSM Integration Guide, Release 2.3.5](#).

Automation Event (SWIM) Workflow Execution

Catalyst Center

- a. Navigate to **Inventory > Select the Device > Actions > Software Image > Image Update**.

- b. Select the **Device** for which the upgrade is to be scheduled.

Image Update X

1 Analyze Selection
2 Distribute
3 Activate
4 Schedule and Clean Up
5 Summary

Analyze Selection
 Before you proceed for the Update, analyze your selection.

Devices to Update: 1 | Device Family: 1 | Sites: 1

Search Table T

0 Selected [Update](#) [1830](#)

Device	From Image	To Image	Command
T3001000-Access Router (T301) (1830)	sd16_16_image.17.05.05.05M&ls	sd16_16_image.17.12.02.02M&ls	Update Readiness Report

c. Enable the checks for **Image Distribution**.

Image Update X

1 Analyze Selection
2 Distribute
3 Activate
4 Schedule and Clean Up
5 Summary

Software Distribution Checks
 You can set an order on Pre and Post checks for your Software Distribution. If you don't see the check you can add a new custom check.

2 Pre and Post checks

<input type="checkbox"/> Pre: Device Upgrade Check	<input type="button" value="Remove"/> <input type="button" value="Run"/>	<input type="checkbox"/>
<input type="checkbox"/> Post: Health Check	<input type="button" value="Remove"/> <input type="button" value="Run"/>	<input type="checkbox"/>

Not able to see the check you would like to run? You can [add a new check](#).

d. Choose if **Image Activation** is skipped or not.

Image Update X

1 Analyze Selection
2 Distribute
3 Activate
4 Schedule and Clean Up
5 Summary

Software Activation Checks
 You can enable and set an order on Pre and Post checks for your Software Activation. If you don't see the check you can add a new custom check.

Skip Activation:

1 Activation is skipped for current Image Update workflow.

e. Schedule the **Image Distribution**.

Image Update ✕

Analyze Selection
 Distribute
 Activate
 4 Schedule and Clean Up
 5 Summary

Schedule
Schedule when you want the software distribution and activation tasks to occur.

ⓘ This time zone of the site to which the device belongs will be used as the default site time zone.

Software Distribution
 ⚠ If the ITSM ServiceNow application is enabled, choose Later.

Now
 Later

Task Name*
Software Image Distribution

Start Date/Time
Aug 1, 2024 📅

1:05 PM ⌵

Time Zone
Asia/Calcutta ⌵

Software Activation
ⓘ Activation is skipped for current Image Update workflow.

f. Review the **SWIM** task and click **Submit**.

Image Update ✕

Analyze Selection
 Distribute
 Activate
 Schedule and Clean Up
 5 Summary

Summary
Review your entry and make changes if you wish to do

Devices to Update: 1 | Device Family: 1 | Sites: 1

Device	From Image	To Image	Update Support
Ther00000-Device (Site.com) [172.18.12.0/24]	csdk_image_17.06.02_SPA.01	csdk_image_17.12.02_SPA.01	

Software Distribution Checks

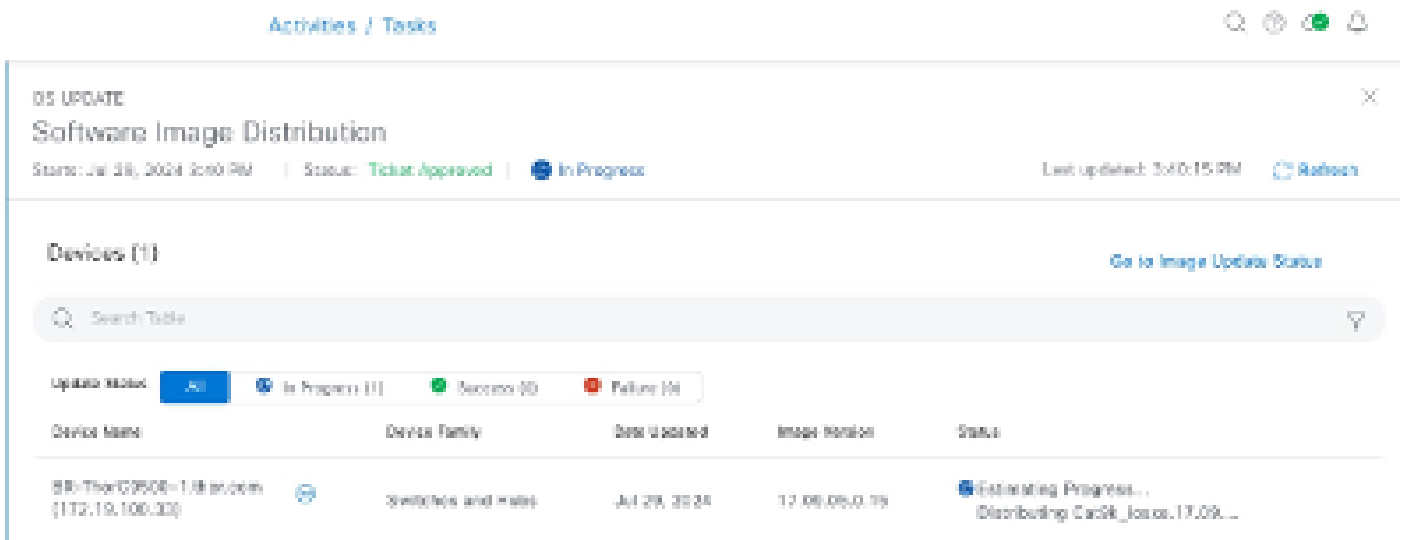
Scheduled On
Time: Aug 1, 2024 1:10 PM | Time Zone: Asia/Calcutta (GMT+5:30)

Pre And Post Checks

ii. a. Scheduled SWIM task is listed under **Activities > Tasks** and in **Ticket Pending** state.



b. If the Change Ticket is approved on ServiceNow and has been moved to Implement state, then the respective Tasks status on Catalyst Center changes to Ticket Approved.



c. Image Distribution triggers automatically at scheduled time.

ThorC9200L-Access.thor.com (172.19.100.39) Image Distribution

Date: Aug 1, 2024 1:10 PM Duration: 1 minute 42 seconds Status: ● 100%
 Distributing Cat9k_ite_image_17...

Operations Checks

▼ ● Distribution

Starting distribution of image: cat9k_ite_image_17.12.02.S/9k.bin on device: 172.19.100.39 using protocol: HTTP

- > ● Image Integrity Verification(KGV)
1 second
- > ● Pre Distribution Operation
1 second
- > ● Distribution
1 minute 42 seconds

iii. a. The scheduled SWIM task gets listed as an Event on Platform Runtime dashboard of Catalyst Center.

Event Summary ⓘ

1

Events
as detailed

DNM Event Severity	Count
1	0
2	1
3	0
4	0
5	0

▼ Filter

≡ Find

Domain	Event Name	Count
Site Management	SWIM Upgrade Request Creation Image Distribution	1

1 Records

Show Records: 10 ▼ 1 - 1 < 1 >

b. The scheduled SWIM task gets the Change Request ID and ServiceNow link of the Change Request.

SWIM Upgrade Request Creation Image Distribution (1)

Last Updated: a few seconds ago [Refresh](#)

Filter: **Retry** (1 Selected)

Last 10 Event Rows

Event ID	Source	Destination	ITSM Workflow	ITSM Status	ITSM ID	ITSM Link	ITSM Last Updated/Time
22336752-8293-4d10-ad53-578a610c6440	ServiceNow	Class DBM Center	RFC	New	CR00000000	https://vent0000.service-now.com/itcm/change_request.do?sys_id=814984261746170679548	August 1st 2024, 12:58:08 PM

c. ITSM Status of the Change Request gets updated in accordance to the status of Change Request ticket on the ServiceNow.

Event History - 22336752-8293-4d10-ad53-578a610c6440

Last Updated: a few seconds ago [Refresh](#)

Filter: **FCI** (1)

Last 10 Event Rows

Source	Destination	ITSM Workflow	ITSM Status	ITSM ID	ITSM Link	ITSM Last Updated/Time	ITSM Entry	ITSM Priority	ITSM Event Details
ServiceNow	Class DBM Center	RFC	Closed	CR00000000	https://vent0000.service-now.com/itcm/change_request.do?sys_id=814984261746170679548	August 1st 2024, 1:18:35 PM	2 - High	0	
ServiceNow	Class DBM Center	RFC	Closed	CR00000000	https://vent0000.service-now.com/itcm/change_request.do?sys_id=814984261746170679548	August 1st 2024, 1:18:35 PM	2 - High	0	
ServiceNow	Class DBM Center	RFC	Incident	CR00000000	https://vent0000.service-now.com/itcm/change_request.do?sys_id=814984261746170679548	August 1st 2024, 12:58:08 PM	2 - High	0	
ServiceNow	Class DBM Center	RFC	Selected	CR00000000	https://vent0000.service-now.com/itcm/change_request.do?sys_id=814984261746170679548	August 1st 2024, 12:58:08 PM	2 - High	0	
ServiceNow	Class DBM Center	RFC	New	CR00000000	https://vent0000.service-now.com/itcm/change_request.do?sys_id=814984261746170679548	August 1st 2024, 12:58:08 PM	2 - High	0	
Class DBM Center	ServiceNow	RFC	New	NA	NA	August 1st 2024, 12:58:08 PM	NA	0	

ITSM-ServiceNow

The SWIM event from Cisco Catalyst Center is received by Import Set Table of ServiceNow. The data is pushed to ServiceNow using ServiceNow Import Set APIs or Scripted REST APIs or Generic REST API endpoints in ServiceNow.

- To check the data posted to ServiceNow from Cisco Catalyst Center, navigate to **Import Sets** and look for the **Import Set Entry** for the table: **x_caci_cisco_dna_cisco_dna_inventory_det**

- Filter out the Import Set entry from the Import Set dashboard for the table **x_caci_cisco_dna_cisco_dna_inventory_det**.

Import Sets

All - Number: 1 (175027111)

Number	Event Description	Date	Import available	Destination	Created	Last updated	Last run time
175027111	ServiceNow REST transformation		Processed	ServiceNow	2024-08-01 00:03:42		

- Check the details of **Import Set** and check the **Import Set Rows** for the respective Incident number.

Import Set - RPT00111

Number: RPT00111 | Created: 2024-08-08 09:09:07

Name: Synchrouse | Last completed: |

Import set table: Create Workflow for Event from DPM [a_post_class_0ba_0ba0a_0ba0a_0ba_0ba]

Event description: Synchrouse RPT transformation

Update | Delete

Import Set Rows (3) | Import Set Rows (3) | Import Log (3)

Created	Row	Date	Target record ID	Error	Success	Transform Map
2024-08-08 09:09:07	1	Imported	Imported	Imported	Row function ignored (no before script)	Create Incident for Event from DPM
2024-08-08 09:09:07	1	Imported	Imported	Imported	Row function ignored (no before script)	Create Problem for Event from DPM
2024-08-08 09:09:07	1	Imported	Change Request: CH00000000	Imported		Create Change Request for Event from DPM

Create Workflow for Event from DPM

iii. Workflow Indicator determines the kind of workflow the event goes through in ServiceNow; based on the workflow indicator decision, one of the transform maps gets executed.

iv. To check the details of Transform Map, click **Hyperlink in Transform Map Column of Import Set Rows**.

Table Transform Map - Change DPM Action

Number: Change DPM Action | Created: 2024-08-13 12:18:50

Description: Change DPM Action [a_post_class_0ba_0ba0a_0ba0a_0ba_0ba] | Target table: Change Request [change_request]

Order: 100

Imported:

Imported on: |

Created on: |

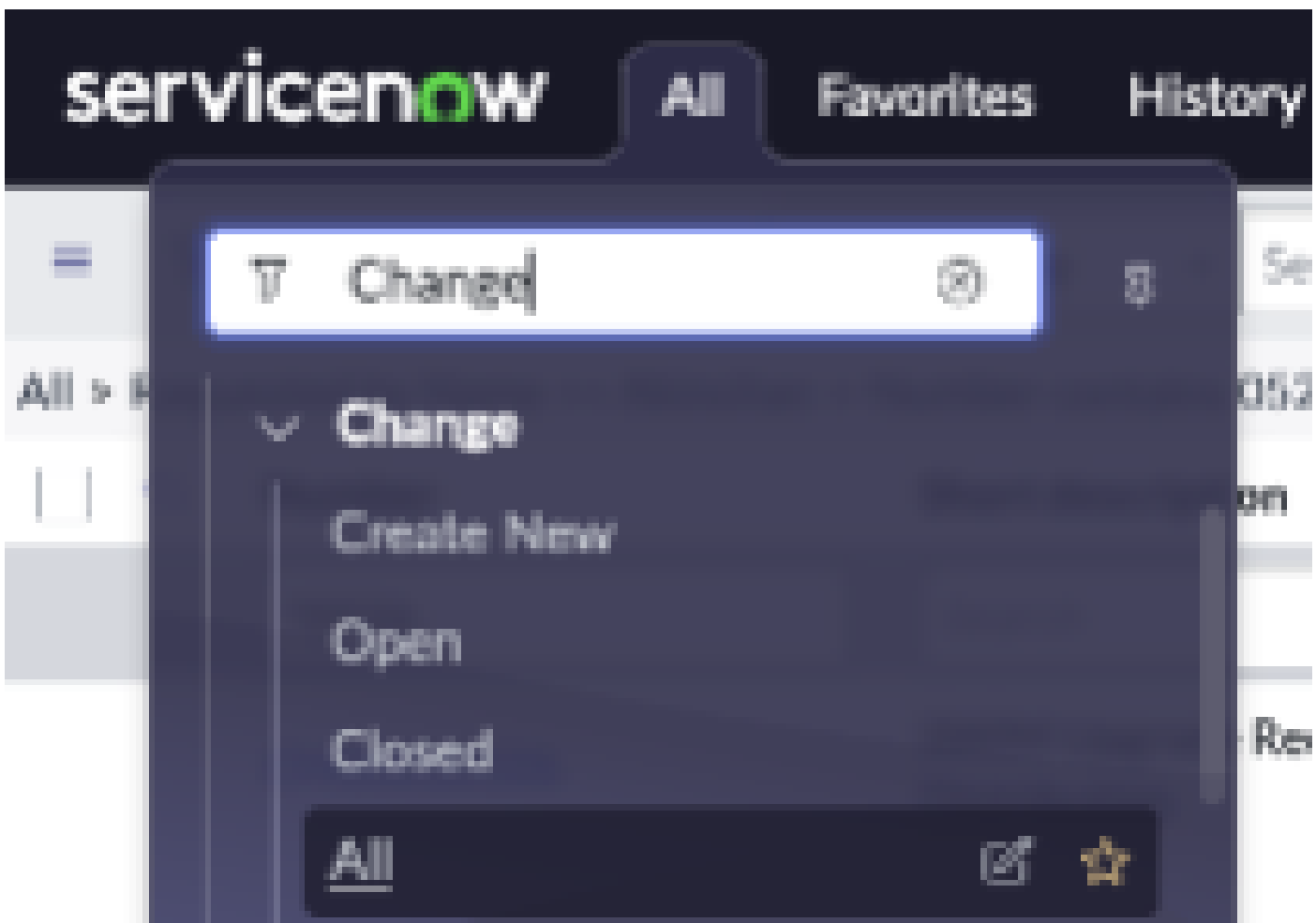
Transform Map Tables for Automation Event (SWIM):

Name	Source table	Target table
Change CommandOutputUpdate	Change Command Output Update [x_caci_class_dna_change_commandoutputupdate]	Change Request [change_request]
Change DNA Update	Change DNA Update [x_caci_class_dna_change_dna_update]	Change Request [change_request]
Change Status Update	Ticket Status Update [x_caci_class_dna_ticket_status_update]	Change Request [change_request]

Automation Event (SWIM) Workflow Execution Validation

- Once the SWIM workflow is scheduled successfully, the Change Request gets created with the details of the device for which the SWIM Upgrade has been scheduled.

1. Global Search > Change > All



- ii. Filter out the **Change Request** from **Change Requests** dashboard.

Number	Short Description	Type	State	Planned start date	Planned end date	Assigned to	Requested by
CH0000000	SPM Upgrade Request Creation Image/Configuration	Standard	Closed	2024-01-01 08:40:00			Ashwin Mittal

iii. a. Click the **Change Request** to see Request Ticket Details.

Change Request - CH0000000

Number: Type:
 Requester: State:
 Category: Configuration:
 Service: Configuration:
 Service offering: Assignment group:
 Configuration item: Assignment:
 Priority:
 Risk:
 Impact:
 Start description:
 Description:

b. Verify the **Device details of the Change Request**, Approve it and Schedule the change.

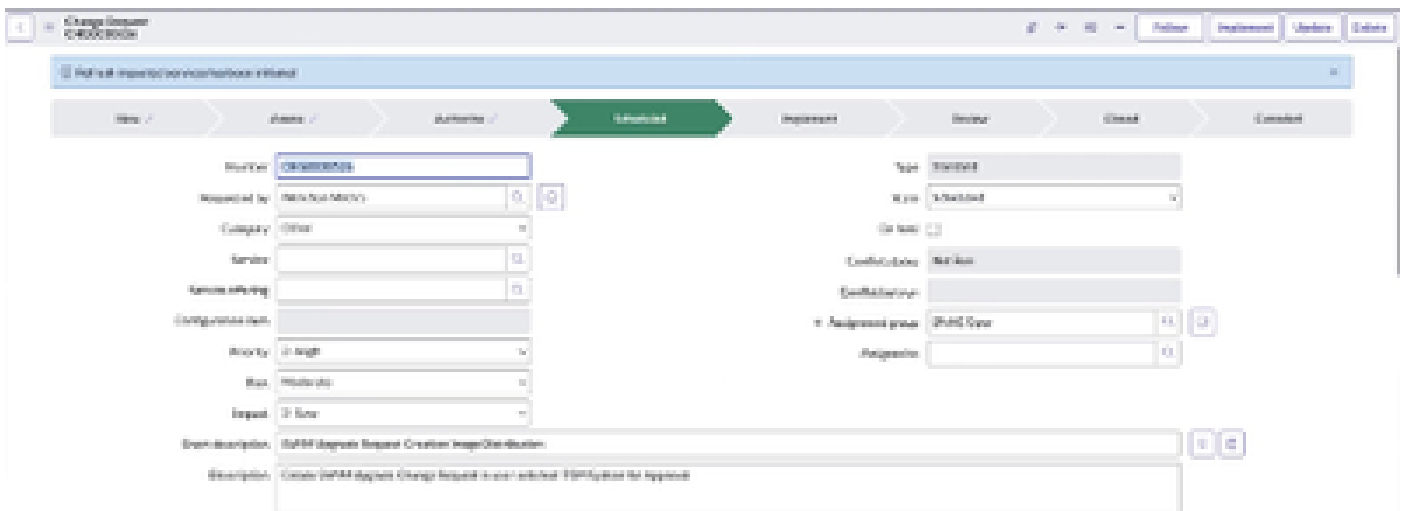
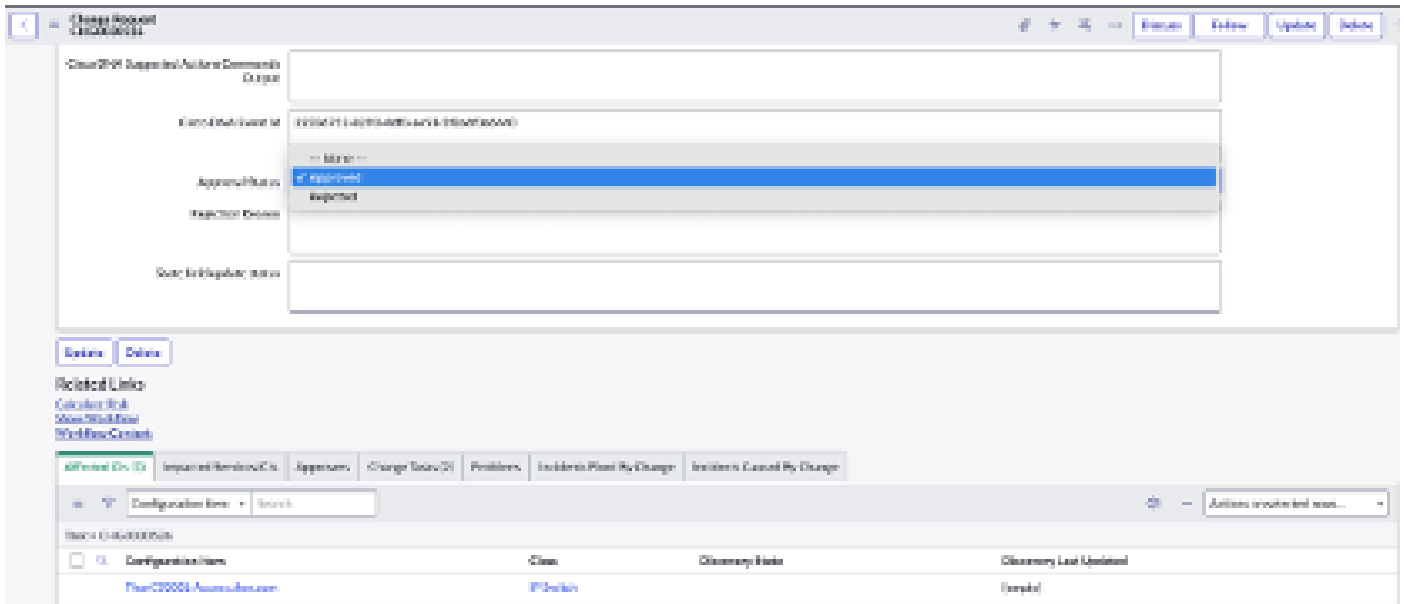
Change Request - CH0000000

Planning Schedule Config Misc Change/Template **Class CBA**

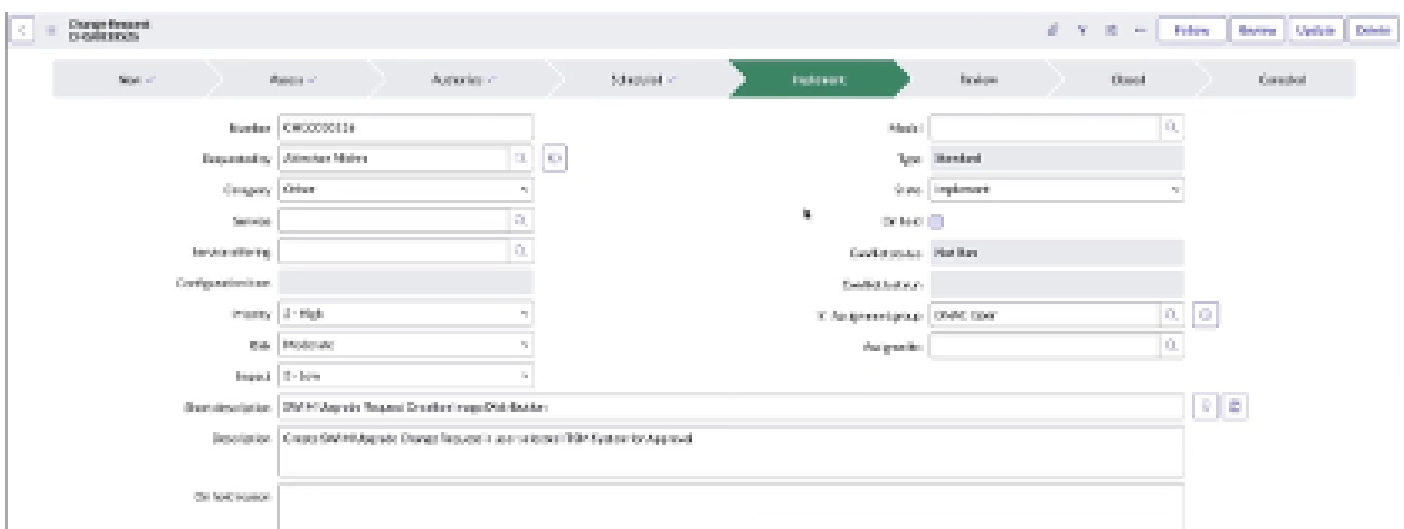
Class CBA Center IP Address:
 Class CBA Name:
 Class CBA Network Details:

Network Details
 Device 1:
 IP Address: 10.0.0.1
 Manufacturer: Fortinet
 Model: Fortinet FortiSwitch-1000
 MAC Address: 00:0C:29:00:00:00
 Subnet: 10.0.0.0/24
 Subnet mask: 255.255.255.0
 Gateway: 10.0.0.1
 DNS Servers: 10.0.0.1
 NetBIOS Name: 10.0.0.1
 NetBIOS Suffix: .com

Class CBA Error Details:
 Class CBA Error Suggested Actions:



c. Verify the details of the Change Request and Implement the change.



d. After successful completion of the SWIM workflow, the Change Request moves to Closed state automatically via Closed Loop Automation.

Change Request
C000000001

Home / Alerts / Alerts / Execution / Parameters / Review / **Create** / Details

Number	C000000001	Type	Standard
Responsible to	Michael Martin	State	Closed
Category	Other	Continuous	Not Run
Service		Control Action	
Service Offering		W Assignments	DRAC Oper
Configuration Item		Analysis	
Priority	2 - High		
Risk	Moderate		
Import	1 - Yes		
Description	IBM Upgrade/Refresh Creation Image Distribution		
Basic Notes	Create IBM Image to Deploy BaseWMI and install IBM Software for Approval		

- Import Set Execution for SWIM Event:

1. Navigate to **Global Search > All Results > System Import Sets > Advanced > Import Sets**.

Import Set

ALL RESULTS

▼ Contact Tracing

▼ Devlo

Devlo Users Risk Report L..

▼ System Import Sets

Load Data

Create Transform Map

Run Transform

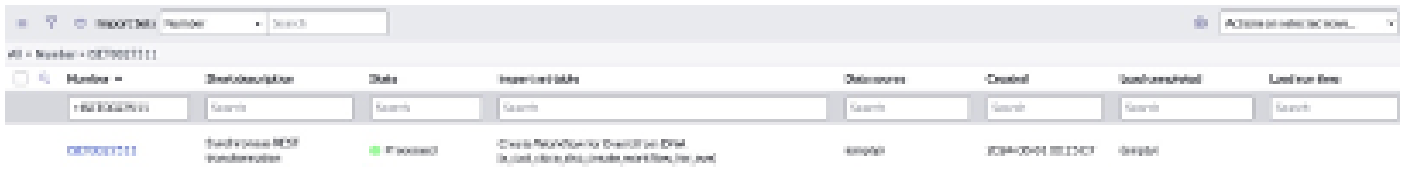
> Administration

▼ Advanced

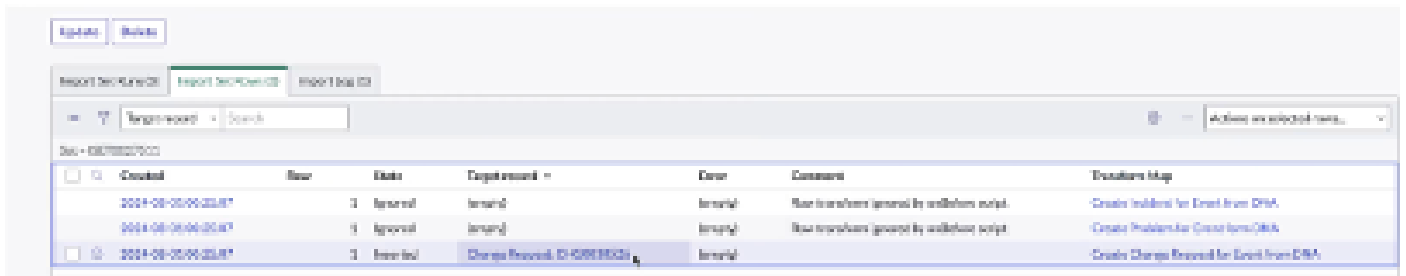
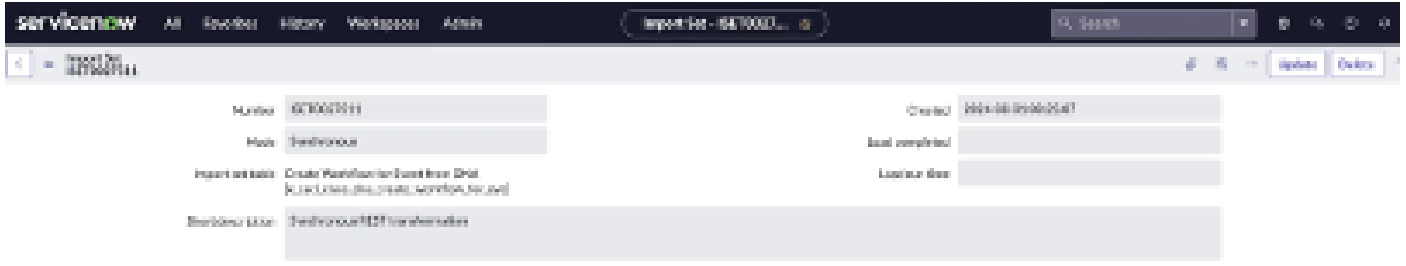
Import Sets



ii. Identify the **Import Set** and select **it** to check the details.



iii. Under **Import Set Details**, check the **Import Set Runs** and **Import Set Rows**.



iv. Click the **Import Set Row** entry for the **Change Request** to see the details of SWIM event like Device specifics, versions, and so on.



Related Information

- [Scope Underlying Concepts of Catalyst Center and ITSM Integration](#)
- [Synchronize Catalyst Center Inventory with ServiceNow CMDB System](#)
- [Use Catalyst Center Network Issue Monitor and Enrichment for ITSM](#)