

The background features a vibrant, abstract design with a color gradient from dark blue on the left to bright yellow and white on the right. The design consists of overlapping, wavy horizontal bands and a radial pattern of lines emanating from a bright white point on the right side, creating a sense of motion and energy.

CISCO *Live!*

Let's go



The bridge to possible

# Custom Workflows for the Cisco Catalyst Center Integration with ServiceNow

Gabi Zapodeanu,  
Principal Technical Marketing Engineer  
@zapodeanu

# Cisco Catalyst Center ITSM Integration Sessions

The screenshot displays the Cisco Catalyst Center ITSM interface. On the left, a 'Configuration Items' table lists various network devices like NTC-RO, LQ-CH, PSL-STACK, PSL-BN, NTC-ACCESS, CMDB-CL, PSL-M, and AF3800. The main area features three tabs: 'Incident Management', 'Change Management', and 'CMDB Sync'. The 'Incident Management' tab is active, showing a list of incidents with columns for Number, Short description, Priority, State, Cisco DNA Center IP Address, Updated, and Cisco DNA Created Incident. A 'Cisco DNA App' icon is visible in the top right corner.

## BRKOPS-2471 Custom Workflows for the Cisco Catalyst Center Integration with ServiceNow

## BRKOPS-2032 Cisco Catalyst Center and ITSM Workflows: CMDB, Incident Management and Software Image Management

The screenshot displays the Cisco Catalyst Center ITSM interface. On the left, a 'Staging Tables Inventory + Events' table lists various network devices like NTC-RO, LQ-CH, PSL-STACK, PSL-BN, NTC-ACCESS, CMDB-CL, PSL-M, and AF3800. The main area features three tabs: 'Incident Management', 'Change Management', and 'CMDB Sync'. The 'Incident Management' tab is active, showing a list of incidents with columns for Number, Short description, Priority, State, Cisco DNA Center IP Address, Updated, and Cisco DNA Created Incident. A 'Cisco DNA App' icon is visible in the top right corner.

# Agenda

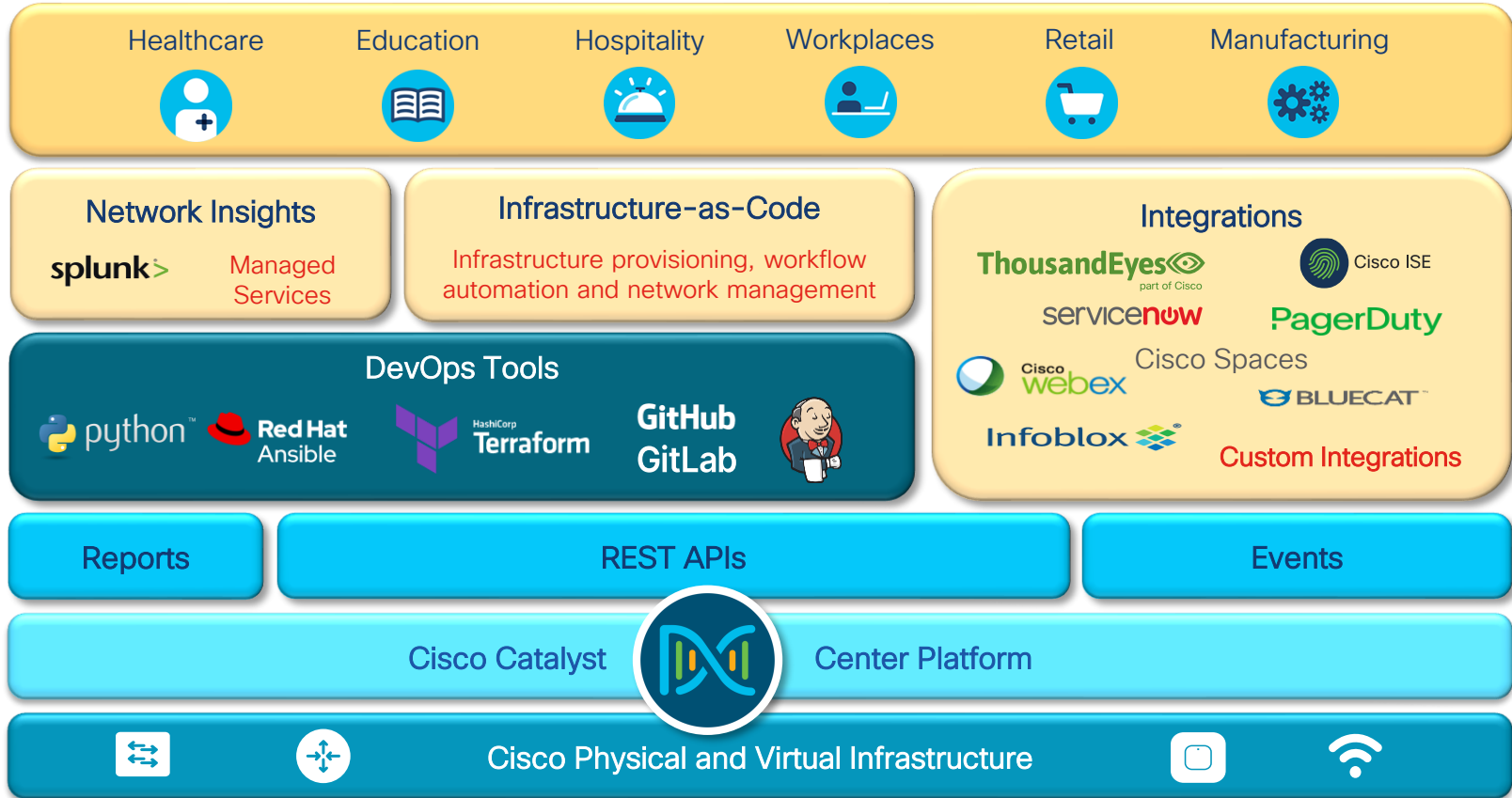
- Cisco Catalyst Center Platform
- ITSM (ServiceNow) Integration Overview
- CMDB Sync to Staging Table
- Events Notifications to Generic REST API Endpoint
- Network Troubleshooting Custom Workflow
- Summary



# Agenda

- Cisco Catalyst Center Platform
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- Summary

# Cisco Catalyst Center Platform



# Catalyst Center Platform

## Event Notifications

- Assurance Issues
- AI/ML Insights
- System Health
- Integration Connectivity
- License Management
- Webhooks
- PagerDuty
- Webex
- Syslog
- SNMP

## Northbound REST APIs

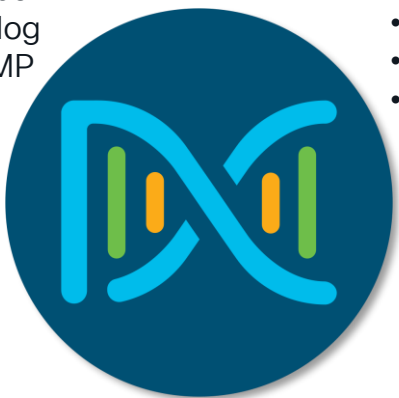
- Network Inventory
- Network Topology
- Network Design
- Provisioning
- SWIM, PnP
- Path Trace
- Assurance
- SDA
- Templates
- RMA
- Config Archive
- Sensors

## IT Ecosystem Integrations

- IT Service Management
- IP Address Management
- Reporting
- Wireless Planning
- Alerting
- Network Insights

## Developer Resources

- Sample Code, Videos
- Python SDK, Ansible, Terraform
- Cisco DevNet
  - Sandboxes, Learning Labs
  - Developer Guides
  - Community



# Catalyst Center Platform – Overview

**Catalyst Center** Platform / Overview

Welcome to the Catalyst Center Platform. Programmatically access your network through Intent APIs, integrate with your preferred IT systems to create end-to-end solutions and add support for multi-vendor devices.

### Bundles

Bundles are easy to use feature sets for consuming Intent APIs, integrations, events and notifications. View all the available bundles, enable relevant bundles and customize the configuration preferences to consume events as per your application(s) or IT system(s) needs.

### Developer Toolkit

Discover APIs to manage your network, configure integration flows and access network data to analyze, export and visualize complex reports.

### Runtime Dashboard

Get insights into API usage, view events published to IT systems such as number of API calls, response time(s), events published, bundles activated etc.

### Configurations

View and set global or bundle specific settings to manage your integration configurations and modify event specific settings.

### Notifications

Find

**BUNDLE UPDATE**  
Catalyst Center Automation events for ITSM (ServiceNow) successfully configured.  
Jan 17 2024, 04:13 pm  
[View Details](#) | [Dismiss](#)

**BUNDLE UPDATE**  
Basic ITSM (ServiceNow) CMDB synchronization successfully configured.  
Jan 17 2024, 04:10 pm  
[View Details](#) | [Dismiss](#)

**BUNDLE UPDATE**  
The Basic ITSM (ServiceNow) CMDB synchronization bundle is enabled and ready for configuration.  
Jan 17 2024, 04:09 pm

# Catalyst Center Platform – Developer Toolkit

**Catalyst Center** Platform / Developer Toolkit

APIs Integration Flows Event Notifications

Search

Event Management

Integrations >

Know Your Network >

Applications

Clients

Compliance

Devices

EoX

Issues

Security Advisories

Sensors

Sites

Topology

Users

Operational Tasks >

Policy >

Method	API Name	Description	Endpoint
GET	Get All User-Defined-Fields	Gets existing global User Defined Fields. If no input is given, it fetches ALL the Global UDFs. Filter/search is supported by UDF Id(s) or UDF name(s) or both.	/network-device/user-defined-field
POST	Create User-Defined-Field	Creates a new global User Defined Field, which can be assigned to devices	/network-device/user-defined-field
GET	Get Module Info by Id	Returns Module info by 'module id'	/network-device/module/{id}
GET	Get Device list	Returns list of network devices based on filter criteria such as management IP address, mac address, hostname, etc. You can use the .* in any value to conduct...	/network-device
GET	Get the Details of Physical Components of the Given Device.	Return all types of equipment details like PowerSupply, Fan, Chassis, Backplane, Module, PROCESSOR, Other and SFP for the Given device.	/network-device/\${deviceUuid}/equipment
POST	Clear Mac-Address table	Clear mac-address on an individual port. In request body, operation needs to be specified as 'ClearMacAddress'. In the future more possible operations will be...	/interface/\${interfaceUuid}/operation

Review API docs, configure integration workflows and subscribe to events

Try  
Call an API without writing any code

Try

# Try an API Call

The screenshot displays the 'Try an API Call' window in Cisco Catalyst Center. The title bar reads 'Get Device list'. The method is set to 'GET' and the public URL is 'https://10.93.141.45/dna/intent/api/v1/network-device'. The 'PARAMETERS' section on the left lists query parameters: 'hostname' (selected with a green box and 'LO-CN' value), 'managementIpAddress', 'macAddress', 'locationName', and 'serialNumber'. A 'Run' button is highlighted with a green box. The 'Response' tab on the right shows a JSON response with details for a Cisco Catalyst 9300 Switch, including its type, last update time, MAC address, and management state. The status code is 200.

Method: **GET** Public URL :https://10.93.141.45/dna/intent/api/v1/network-device

**PARAMETERS**

QUERY PARAMETERS

☐ Select All

☒ hostname <sup>?</sup>  
LO-CN

☐ managementIpAddress <sup>?</sup>

☐ macAddress <sup>?</sup>

☐ locationName <sup>?</sup>

☐ serialNumber <sup>?</sup>

Reset **Run**

**Response** Headers Status Code: 200

```
1- {
2-   "response": [
3-     {
4-       "type": "Cisco Catalyst 9300 Switch",
5-       "lastUpdateTime": "1705537690563",
6-       "macAddress": "30:8b:b2:ba:c2:80",
7-       "deviceSupportLevel": "Supported",
8-       "softwareType": "IOS-XE",
9-       "softwareVersion": "17.9.4a",
10-      "serialNumber": "FJC2325T0PH",
11-      "collectionInterval": "Global Default",
12-      "dnsResolvedManagementAddress": "10.93.141.20",
13-      "inventoryStatusDetail": "<status><general code=\\\"SUCCESS\\\"/></status>",
14-      "managementState": "Managed",
15-      "pendingSyncRequestsCount": "0",
16-      "reasonsForDeviceResync": "Periodic",
17-      "reasonsForPendingSyncRequests": "",
18-      "upTime": "84 days, 2:19:13.13",
19-      "bootDateTime": "2023-10-25 22:09:10",
20-      "lastUpdated": "2024-01-18 00:28:10",
21-      "reachabilityStatus": "Reachable",
22-      "series": "Cisco Catalyst 9300 Series Switches",
23-      "snmpContact": "",
24-      "snmpLocation": "",
25-      "roleSource": "MANUAL",
26-      "apManagerInterfaceIp": "",
27-      "collectionStatus": "Managed",
```

# Code Preview

The screenshot displays the Cisco Catalyst Center interface. On the left is a navigation sidebar with categories like APIs, Integration Flows, and various network management tools. The main panel shows the 'Get Device Count' API endpoint. The 'Code Preview' tab is active, displaying a Python code snippet for making a REST API call. A dropdown menu for selecting the programming language is open, with 'Python' highlighted. A blue callout box on the right contains the text: 'Code Preview' and 'Generate code in few programming languages'.

**Get Device Count**

**GET** `https://10.93.141.45/dna/intent/api/v1/network-device/count`

Returns the count of network devices based on the filter criteria by management IP address, mac address, hostname and location name

[Cisco DevNet API Guide](#)

Parameters Features Responses **Code Preview**

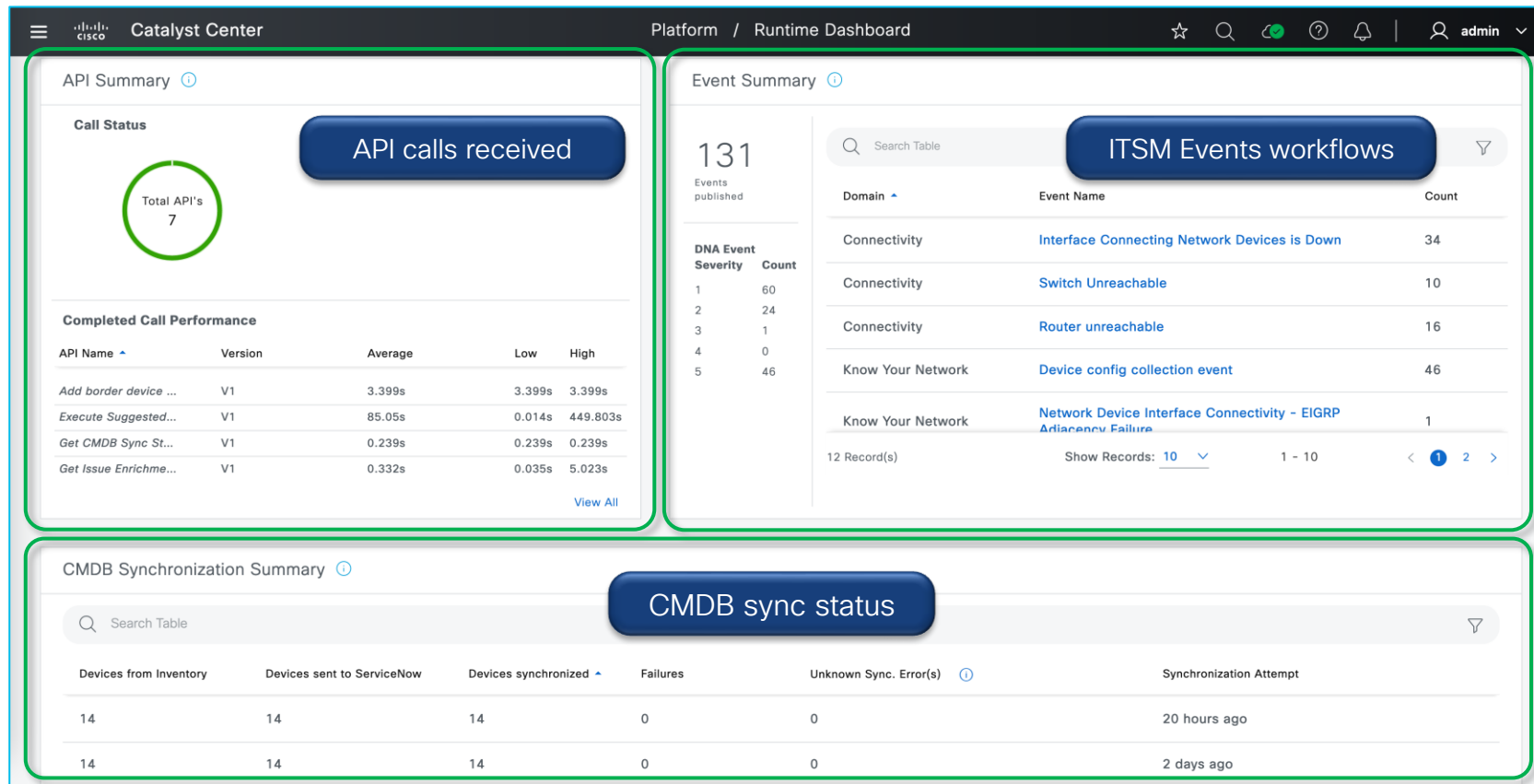
Language **Python**

```
1 //
2 //
3 import requests
4
5 # Create a REST client
6 client = requests.Session()
7 client.headers.update({'Content-Type': 'application/json'})
8
9 # Make a GET request to the API endpoint
10 response = client.get('https://10.93.141.45/dna/intent/api/v1/network-device/count?hostname=<hostname>&managementIpAddress=<managementIpAddress>&macAddress=<macAddress>&locationName=<locationName>')
11
12 # Print the response
13 print(response.json())
```

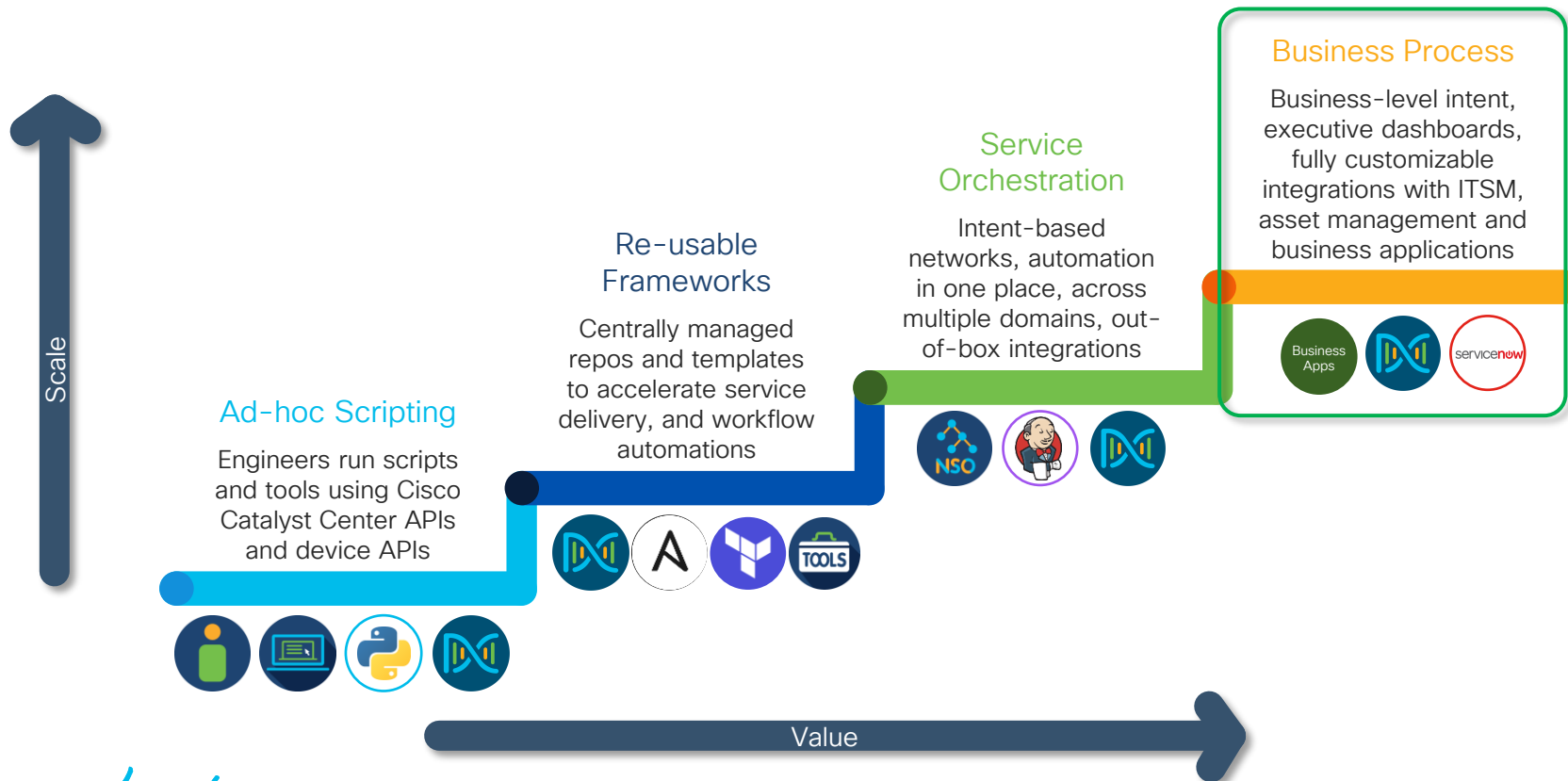
Close Try



# Platform Runtime Dashboard



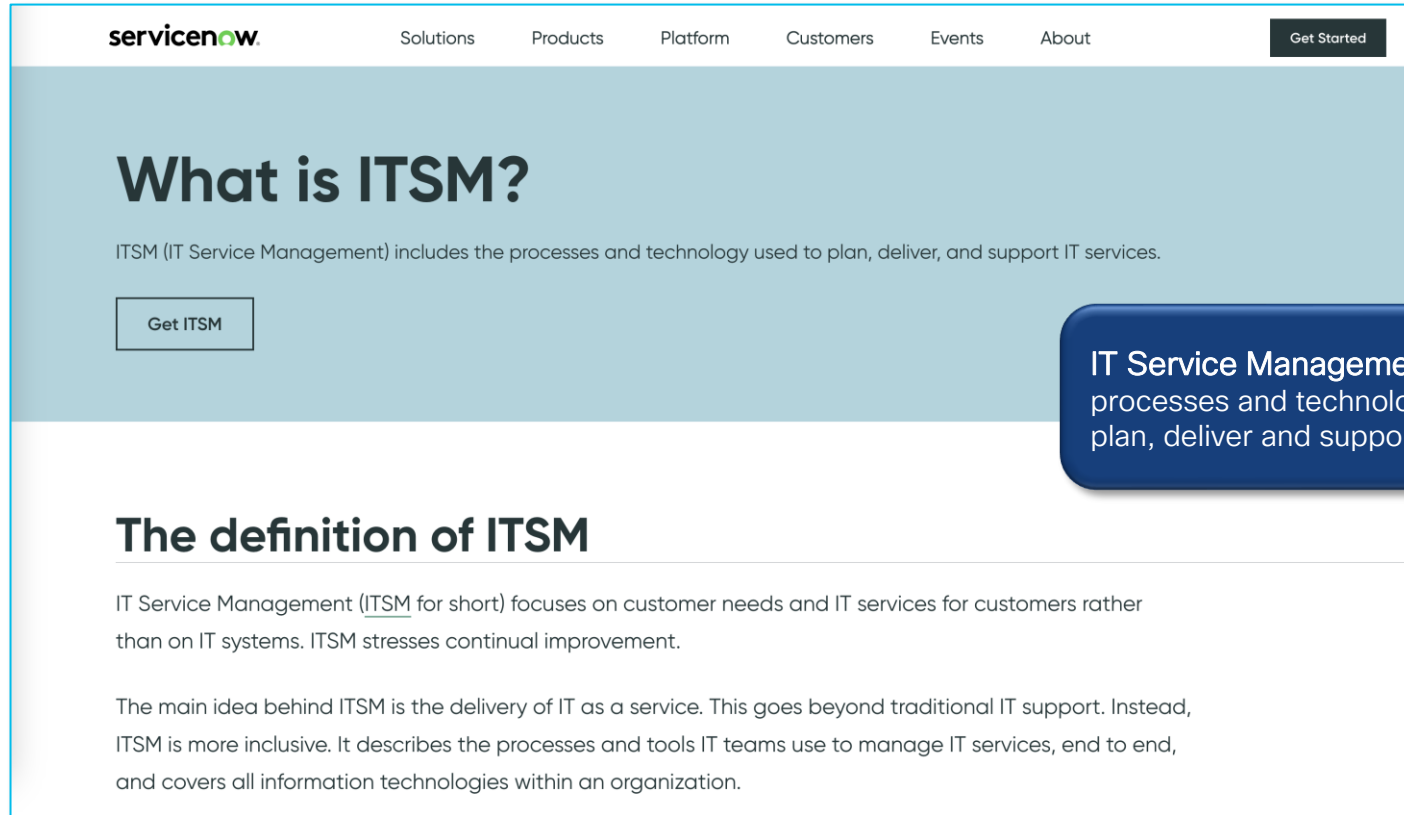
# Cisco Catalyst Center and DevOps Journey



# Agenda

- Cisco Catalyst Center Platform
- ITSM (ServiceNow) Integration Overview
- CMDB Sync to Staging Table
- Events Notifications to Generic REST API Endpoint
- Network Troubleshooting Custom Workflow
- Summary

# ServiceNow IT Service Management (ITSM)



**servicenow** Solutions Products Platform Customers Events About [Get Started](#)

## What is ITSM?

ITSM (IT Service Management) includes the processes and technology used to plan, deliver, and support IT services.

[Get ITSM](#)

**IT Service Management** includes processes and technology used to plan, deliver and support IT Services

## The definition of ITSM

IT Service Management (ITSM for short) focuses on customer needs and IT services for customers rather than on IT systems. ITSM stresses continual improvement.

The main idea behind ITSM is the delivery of IT as a service. This goes beyond traditional IT support. Instead, ITSM is more inclusive. It describes the processes and tools IT teams use to manage IT services, end to end, and covers all information technologies within an organization.

# ServiceNow ITSM Capabilities

## Capabilities that scale with your business

ITSM groups key applications into packages that can grow with you as your needs change.

[View Packages](#)[Get Solution Brief →](#)

ITSM/ITSM PRO

### Incident Management

Restore services faster with intelligent routing and built-in collaboration.

→

ITSM/ITSM PRO

### Problem Management

Identify the root cause of issues and proactively prevent future disruptions.

→

ITSM/ITSM PRO

### Change Management

Accelerate change at DevOps speed by automating approvals while maintaining control.

→

ITSM/ITSM PRO

### Configuration Management Database (CMDB)

Track the dependencies and relationships of supported IT services to maintain continuity.

→

# Why Cisco Catalyst Center and ServiceNow?



## Cisco Catalyst Center ServiceNow Integration:

- Increased IT efficiency by streamlining processes
- Automated ServiceNow CMDB population with rich asset data
- Enhanced incident management with enriched issue data
- Simplified change management with closed loop functionality
- Endpoint attribute synchronization for client profiling

# ITSM Integration Architecture

## Without Cisco DNA App

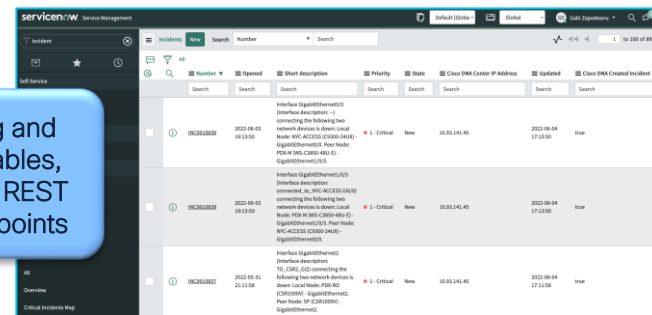


REST  
APIs



Staging and  
Event tables,  
Generic REST  
API endpoints

servicenow



A screenshot of the ServiceNow interface showing a list of incidents. The table has columns for Incident Number, Opened, Short Description, Priority, State, Class DNA Center IP Address, Updated, and Last Updated. The incidents listed are related to network devices and interfaces.

Incident Number	Opened	Short Description	Priority	State	Class DNA Center IP Address	Updated	Last Updated
INC0000001	2022-06-03 10:13:00	Interface GigabitEthernet0/1 connecting the following two network devices is down. Local Node: WPC-ACCESS-00001 (10.10.10.10). Peer Node: WPC-ACCESS-00002 (10.10.10.20).	Critical	New	10.10.10.10	2022-06-04 17:13:00	True
INC0000002	2022-06-03 10:13:00	Interface GigabitEthernet0/1 connecting the following two network devices is down. Local Node: WPC-ACCESS-00001 (10.10.10.10). Peer Node: WPC-ACCESS-00002 (10.10.10.20).	Critical	New	10.10.10.10	2022-06-04 17:13:00	True
INC0000003	2022-06-03 10:13:00	Interface GigabitEthernet0/1 connecting the following two network devices is down. Local Node: WPC-ACCESS-00001 (10.10.10.10). Peer Node: WPC-ACCESS-00002 (10.10.10.20).	Critical	New	10.10.10.10	2022-06-04 17:13:00	True

### Notes:

No support for closed-loop workflows.  
Code development on ServiceNow required.

Multi Cisco Catalyst Center  
clusters integrated with one  
ServiceNow Instance  
supported



# Integration Compatibility

## Without the Cisco DNA App

Versions:  
Cisco Catalyst Center, 2.3.7.4  
ServiceNow

Table 2. Catalyst Center-to-ServiceNow Integration Without the Catalyst Center App Procedure

Step	Description
Step 1	Install or upgrade to the latest Catalyst Center release. For information about <i>installing</i> Catalyst Center, see the <a href="#">Cisco Catalyst Center Installation Guide</a> .
Step 2	Install or upgrade to a compatible version of ServiceNow mentioned on the ServiceNow Store website. Click the following link to access the ServiceNow Store website: <a href="https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddb6b6ba00f27978b5ae96197b">https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddb6b6ba00f27978b5ae96197b</a> Refer to your ServiceNow documentation for its installation and upgrade procedures. <b>Note</b> This procedure must be performed by a ServiceNow administrator.

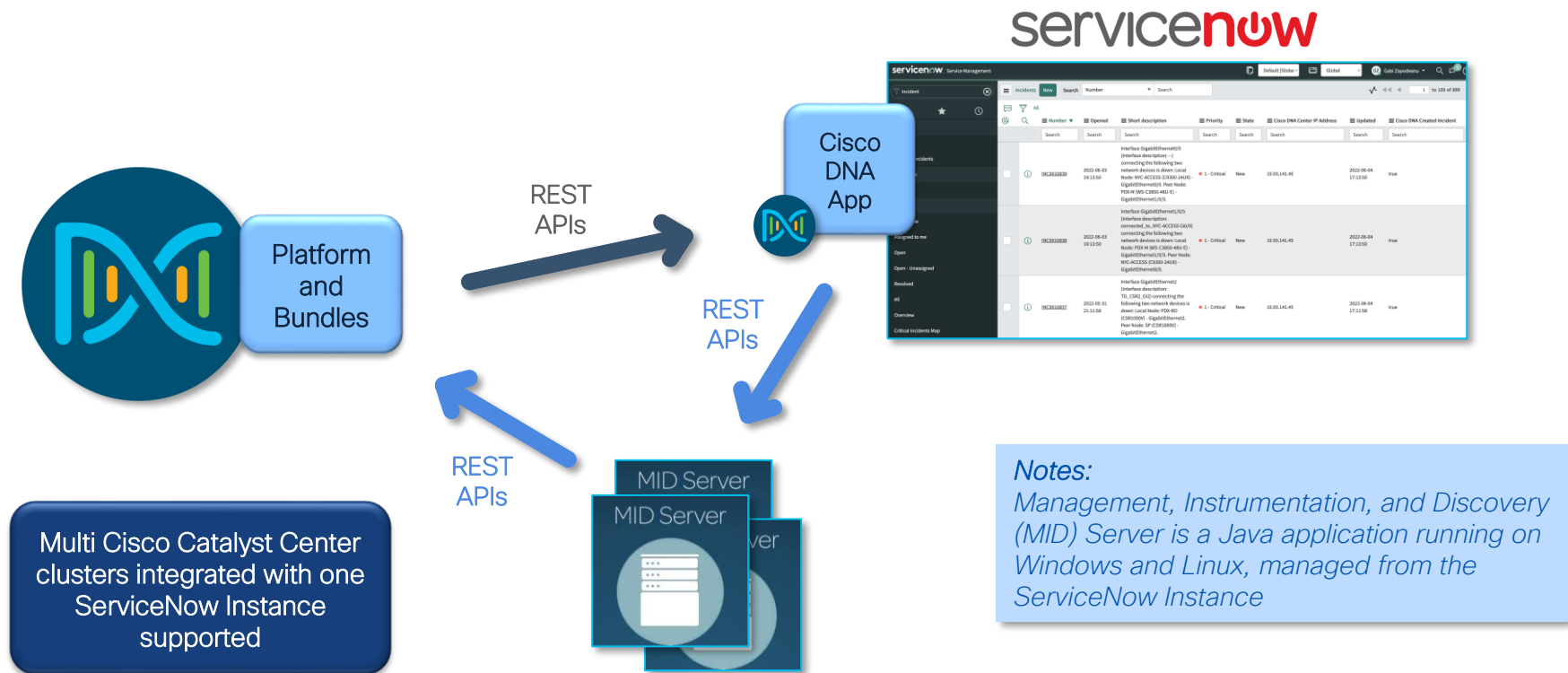
Version History

2.2.0	Vancouver, Utah, Tokyo	Minor Release	Oct 09, 2023 ^
Patch release with the fix for the issue with an "empty" CI being created in cmdb_ci table during CMBD synchronization			
<a href="#">View Details</a> →			
2.1.1	Utah, Tokyo	Minor Release	Jan 11, 2023 v
2.0.1	Utah, Tokyo	Patch Release	Jan 31, 2022 v
2.0.0	Tokyo	Major Release	Feb 08, 2021 v

Ref: Cisco Catalyst Center ITSM Integration Guide

# ITSM Integration Architecture

With the Cisco DNA App



# Integration Compatibility

## With the Cisco DNA App

Versions:  
Catalyst Center 2.3.7.4  
ServiceNow Store  
Cisco DNA App 2.2.0

**Table 3. Catalyst Center-to-ServiceNow Integration with Catalyst Center App Procedure**

Step	Description
Step 1	<p>Install or upgrade to the latest Catalyst Center release.</p> <p>For information about installing Catalyst Center, see the <a href="#">Cisco Catalyst Center Installation Guide</a>.</p>
Step 2	<p>Install or upgrade to a compatible version of ServiceNow mentioned on the ServiceNow Store website.</p> <p>Click the following link to access the ServiceNow Store website:</p> <p><a href="https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddbf6ba00f27978b5ae96197b/2.2.0">https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddbf6ba00f27978b5ae96197b/2.2.0</a></p> <p>Refer to your ServiceNow documentation for its installation and upgrade procedures.</p> <p><b>Note</b> This procedure must be performed by a ServiceNow administrator.</p>
Step 3	<p>Click the following link to access the ServiceNow Store website where the Catalyst Center app is located:</p> <p><a href="https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddbf6ba00f27978b5ae96197b/2.2.0">https://store.servicenow.com/sn_appstore_store.do#!/store/application/03eb0f4ddbf6ba00f27978b5ae96197b/2.2.0</a></p> <p>Download and install the Catalyst Center app (version 2.2.0) into ServiceNow by following the documentation available at the website.</p> <p><b>Note</b> This procedure is to be performed by a ServiceNow administrator. The Catalyst Center app versions 2.1.1 and 2.0.1 are compatible with the Tokyo and Utah releases of ServiceNow. If you want to use the Vancouver release of ServiceNow, you must first upgrade the Catalyst Center app to version 2.2.0.</p>

Ref: Cisco Catalyst Center  
ITSM Integration Guide

# Cisco DNA App – ServiceNow Store

<https://store.servicenow.com>

**Version History**

Version	Location	Release Type	Release Date
2.2.0	Vancouver, Utah, Tokyo	Minor Release	Oct 09, 2023
2.1.1	Utah, Tokyo	Minor Release	Jan 11, 2023
2.0.1	Utah, Tokyo	Patch Release	Jan 31, 2022
2.0.0	Tokyo	Major Release	Feb 08, 2021

**Cisco DNA**  
Innovate ITSM with Cisco DNA Center™ events and remediation insights  
Cisco Systems Inc  
Compatibility: Vancouver, Utah, Tokyo | [Other App Versions](#)  
Pricing: Free

**Summary**  
Cisco DNA Center™ is a complete dashboard for control and Cisco DNA Center™ is also open and systems to exchange data. Using the open platform capabilities, pioneer IT Service Management.

**Get**  
Click to complete purchase and make this application available for installation on your instance(s).  
[Contact Seller](#) →  
**Type**  
Integration  
**Version**  
2.2.0  
[Other App Versions](#)  
**Licensing**  
[View Licensing Requirements](#)  
**Compatibility**  
Vancouver, Utah, Tokyo  
**Terms and Conditions**  
[View Terms and Conditions](#)

Search Cisco DNA  
Cisco DNA App 2.2.0  
ServiceNow Compatibility

Cisco DNA App installation and configuration guides  
ServiceNow MID Server installation and configuration guide

**Note:** Cisco DNA App and MID server installations require ServiceNow Admin role

# Cisco DNA App Installation and Configuration

The screenshot shows the ServiceNow Store interface. A modal window titled "Log in" is centered on the screen, prompting the user to "Login with your ServiceNow ID". It offers a "Login via single sign-on (SSO)" option with the instruction "Using your ServiceNow ID credentials". Below this, there are two links: "Are you a federal customer?" and "Are you a customer who doesn't have ServiceNow ID?". A "Cancel" button is at the bottom of the modal. In the background, the Cisco DNA app page is visible, featuring the Cisco DNA logo, a description of the app, and a "Get" button. A blue callout box in the bottom right corner of the screenshot contains the text: "The installation of the Cisco DNA App requires a ServiceNow admin account".

Log in

Login with your ServiceNow ID

Login via single sign-on (SSO)  
Using your ServiceNow ID credentials

[Are you a federal customer?](#)

[Are you a customer who doesn't have ServiceNow ID?](#)

Cancel

The installation of the Cisco DNA App requires a ServiceNow admin account

# ServiceNow MID Server Installation

**servicenow** Service Management

Default [Global] Global GZ Gabi Zapodeanu 15

**MID Server**

Installation Instructions  
Downloads  
Dashboard  
Servers  
Server Issues  
Upgrade History  
Clusters  
Properties  
Script Includes

### Download MID Server

Select and download the MID Server for the appropriate operating system. If the download does not begin immediately, try the download at a later time as the system may be busy. Refer to the [installation instructions](#) for more details.  
Note: Please refer release notes for MID Server Host OS compatibility matrix for current and upcoming releases.

#### Windows Downloads

For Windows docker recipe, please follow the steps in [Build MID Server Docker Image for Windows](#).

Windows (MSI)	Windows Docker Recipe
64 bit	64 bit

#### Linux Downloads

For Linux docker recipe, please follow the steps in [Build MID Server Docker Image for Linux](#).

Linux (RPM)	Linux (DEB)	Linux Docker Recipe
64 bit	64 bit	64 bit
64 bit signatures	64 bit signatures	

Supported on all major server operating systems, and Docker

## Notes:

Installation instructions include all details for your host VM operating system  
Not required to have a dedicated MID server for the ITSM integration

# ServiceNow MID Server Management

The screenshot displays the ServiceNow Service Management console for MID Server management. The interface includes a left-hand navigation menu with options like MID Server, Installation Instructions, Downloads, Dashboard, Servers, Server Issues, Upgrade History, Clusters, Properties, Script Includes, Script Files, IP Ranges, Applications, Mid Selector Override, and Capabilities. The main content area shows the 'MID Server Status' table with columns for Name, Host name, Status, Validated, Version, Logged in user, Max memory used %, Mean CPU used %, Pending jobs, and Processing jobs. A table row is highlighted for 'midserver2' with host 'gabi-lm', status 'Up', and version 'tokyo-07-08-2022\_patch1b-11-03-2022\_11-...'. Below this, the 'MID Servers' list is shown with columns for Name, Host name, Status, Validated, Version, Last refreshed, Started, Stopped, Router, and Logged in user. A row for 'midserver2' is highlighted. A context menu is open over the 'midserver2' row, listing actions such as Validate, Rekey, Invalidate, Clear auto invalidated, Delete, Delete with preview..., Create Application File, Pause MID, Resume MID, Restart MID, Upgrade MID, and Assign Tag. The 'Assign Tag' option is highlighted. A blue callout box on the right contains the text: 'Servers Menu: • Hostname, status and validation, version, config details • Server management – delete, rekey, update, restart, logs'.

**Servers Menu:**

- Hostname, status and validation, version, config details
- Server management – delete, rekey, update, restart, logs



# MID Server IP Ranges

servicenow Service Management

Default [Cisco E] Cisco DNA Cust- GZ Gabi Zapodeanu 15

MID server

MID Server

Installation Instructions

Downloads

Dashboard

Servers

Server Issues

Upgrade History

Clusters

Properties

Script Includes

Script Files

IP Ranges

Applications

MID Server midserver2

Profile ID

Update Delete

Related Links

[Rekey](#)  
[Invalidate](#)  
[Grab MID logs, files and thread dump](#)  
[Get resource state](#)  
[MID statistics](#)  
[Pause MID](#)  
[Restart MID](#)  
[Upgrade MID](#)

Verify if your MID server will “route” traffic to the Cisco Catalyst Center subnet

MID Server Issues Configuration Parameters (7) Supported Applications (1) IP Ranges (1) Capabilities (1) Included in Clusters Extension Contexts Logs (136) Threads (90)

Properties MID Resources Statistics (3 hours) (18) Agent Logs Agent Files Properties MID Server Host Services

IP Ranges New Edit... Search IP range Search

MID server = midserver2

IP range	Range	Type
LO	10.93.140.0/23	Include

Actions on selected rows...

1 to 1 of 1

# MID Server Logs

The screenshot displays the ServiceNow Service Management console. The left sidebar shows the navigation menu with 'MID server' selected. The main content area shows the 'MID Server File' interface for the file 'agent0.log'. The file content is displayed in a text area, showing log entries. A green box highlights a specific log entry: '2023-01-12 11:23:21 INFO (Worker-Expedited:MIDWorker-a7f3a4ee1b9065509dd1c8866e4bcbf) [AWorker:136] Worker completed: RESTProbe source: https://10.93.141.45/api/system/v1/auth/token time: 0:00:00.051'. Below the text area, a table lists the log files.

File Name	Start Date	End Date	Content
agent0.log	2023-01-05 12:02:43		2023-01-12 11:21:18 INFO (ECCSender:1) [ECCSenderCache:345] Sending ecc_queue.3b73e0a6db10e550dcb463d13961934.xml 2023-01-12 11:21:18 INFO (ECCSender:1) [ECCSenderCache:345] Sending ecc_queue.3373e0a6db10e550dcb463d13961934.xml 2023-01-12 11:21:18 INFO (ECCSender:1) [ECCSenderCache:345] Sending ecc_queue.3f73e0a6db10e550dcb463d13961934.xml 2023-01-12 11:21:43 INFO (LogStatusMonitor:60) [LogStatusMonitor:49] 2023-01-12T19:21:43.376Z, stats threads: 94, memory max: 910.0mb, allocated: 348.0mb, used: 85.0mb, standard.queued: 0 probes, standard.processing: 0 probes, expedited.queued: 0 probes, expedited.processing: 0 probes, interactive.queued: 0 probes, interactive.processing: 0 probes 2023-01-12 11:22:43 INFO (LogStatusMonitor:60) [LogStatusMonitor:49] 2023-01-12T19:22:43.358Z, stats threads: 92, memory max: 910.0mb, allocated: 314.0mb, used: 85.0mb, standard.queued: 0 probes, standard.processing: 0 probes, eProbeExpedited.queued: 0 probes, expedited.processing: 0 probes, interactive.queued: 0 probes, interactive.processing: 0 probes 2023-01-12 11:23:21 INFO (Worker-Expedited:MIDWorker-a7f3a4ee1b9065509dd1c8866e4bcbf) [AWorker:128] Worker starting: RESTProbe source: https://10.93.141.45/api/system/v1/auth/token 2023-01-12 11:23:21 INFO (Worker-Expedited:MIDWorker-a7f3a4ee1b9065509dd1c8866e4bcbf) [ECCSender:206] Enqueuing: /home/gabi/ServiceNow/midserver2/agent/work/monitors/ECCSender/output_1/ecc_queue.a7f3a4ee1b9065509dd1c8866e4bcbf.xml 2023-01-12 11:23:21 INFO (Worker-Expedited:MIDWorker-a7f3a4ee1b9065509dd1c8866e4bcbf) [AWorker:136] Worker completed: RESTProbe source: https://10.93.141.45/api/system/v1/auth/token time: 0:00:00.051 2023-01-12 11:23:22 INFO (ECCSender:1) [ECCSenderCache:345] Sending ecc_queue.a7f3a4ee1b9065509dd1c8866e4bcbf.xml 2023-01-12 11:23:23 INFO (Worker-Expedited:MIDWorker-8404a4ee1b9065509dd1c8866e4bcbf) [AWorker:128] Worker starting: RESTProbe source: https://10.93.141.45/dna/intent/api/v1/update-itsm-details 2023-01-12 11:23:23 INFO (Worker-Expedited:MIDWorker-8404a4ee1b9065509dd1c8866e4bcbf) [ECCSender:206] Enqueuing: /home/gabi/ServiceNow/midserver2/agent/work/monitors/ECCSender/output_1/ecc_queue.8404a4ee1b9065509dd1c8866e4bcbf.xml 2023-01-12 11:23:23 INFO (Worker-Expedited:MIDWorker-8404a4ee1b9065509dd1c8866e4bcbf) [AWorker:136] Worker completed: RESTProbe

# Cisco DNA Controller Properties

The screenshot shows the Cisco ServiceNow interface for managing DNA controller properties. The left sidebar contains navigation links for Cisco DNA Center, Issue Categories, Preferences, Troubleshooting Log, Wireless Lan Controllers, Support, System Web Services, and Inbound. The main content area displays the 'Cisco DNA controller properties' page with a table of controller properties. A modal window is open for adding a new record, showing fields for IP address, password, username, and MID Server.

	IP address of DNA Engine controller	MID Server used to connect to DNAC	Updated	User Name of DNA Engine Controller	Password of the DNA Engine controller
<input type="checkbox"/>	<a href="#">10.93.141.45</a>	midserver2	2022-09-12 13:58:39	demotme	*****
<input type="checkbox"/>	<a href="#">10.93.141.35</a>	midserver2	2021-06-10 08:48:47	demotme	*****

Actions on selected rows...

1 to 2 of 2

**Modal Window: Cisco DNA controller properties - New record**

\* IP address of DNA Engine controller:

Password of the DNA Engine controller:

User Name of DNA Engine Controller:

MID Server used to connect to DNAC:

Submit

Configure the Catalyst Center cluster, username and passwords  
Select the MID Server to be used

# Cisco Catalyst Center Preferences

servicenow Service Management

Default [Cisco C] Cisco DNA G2 Gabi Zapodeanu

cisco dna

Cisco DNA Center

Cisco DNA controller properties

Issue Categories

Preferences

Troubleshooting Log

Wireless Lan Controllers

Support

System Web Services

Cisco DNA

Abort ticket creation for DNAC Events whose related CI is not present in CMDB ?

false

Write extended debug logging information to gs.info() log ?

☐ Yes | No

Save

Allow to create incidents for networks devices not in the ServiceNow CI table  
Enable debugging when troubleshooting:  
API calls, transform sets, business rules

servicenow Service Management

Default [Cisco C] Cisco DNA G2 Gabi Zapodeanu

cisco dna

Cisco DNA Center

Cisco DNA controller properties

Issue Categories

Preferences

Troubleshooting Log

Wireless Lan Controllers

Support

System Web Services

Cisco DNA Inventory Details

Log

New Search Created Search

All = Created on Today Source = x\_caci\_cisco\_dna

Created	Level	Message
2022-12-23 14:54:51	Information	Capturing entity id to send to DNA. Entity id = INC0011463
2022-12-23 14:54:51	Information	sendIncidentDetails Response : {"executionId": "0294a01b-4e64-41b2-88b0-a4eccc2e38d3", "executionStatus": "The request has been accepted for execution"} "message": "The request has been accepted for execution"
2022-12-23 14:54:51	Information	Capturing entity id to send to DNA. Entity Sys id = f6a496881b4c2d509d61c8866e4bcb6f
2022-12-23 14:54:51	Information	Capturing entity id to send to DNA. Event id = 80602b26-e64b-46ad-9d81-0ac319bac4c9
2022-12-23 14:54:51	Information	sendIncidentDetails Http response code 202
2022-12-23 14:54:51	Information	Capturing Description to send to DNA. Description = Interface GigabitEthernet0/0 [Interface description: -] connecting the following two network devices is down

# ITSM Destination Settings

1. Cisco Catalyst Center Settings → Destinations
2. Select ITSM, add new
3. Instance Name, Description
4. Hostname, username and password
5. Verify Connectivity

## Notes:

The user account used by Cisco Catalyst Center to connect to ServiceNow requires specific roles.

Please find all details in the “Scope Certified Application Installation and Configuration Guide” included with the Cisco DNA App documentation on ServiceNow

The screenshot shows the Cisco Catalyst Center interface. The left sidebar contains a menu with items like 'Access Login', 'AI Analytics', 'Watch', 'P Reputation', 'ations', 'Spaces/CMX Servers', 'ne Reasoning Engine', 'Authentication', 'o Catalyst - Cloud', 'Webex Integration', and 'ThousandEyes Integration'. The main area is titled 'Settings / External Services' and 'Destinations'. It includes instructions: 'Configure various types of destinations to deliver event notifications from Catalyst Center Platform' and 'Configure the ServiceNow settings to automatically create incidents/problems/RFC's from Catalyst Center'. A table lists existing destinations: CL\_Ven03092 (Vendor 03092 Instance Events Generic REST API) and ST\_Ven03092 (Vendor 03092 ServiceNow Instance Staging Table). The 'ITSM' tab is selected and highlighted with a green box and callout 2. An 'Add Instance' modal is open on the right, showing fields for 'Instance Name' (ven\_03092\_instance, callout 3), 'Description' (Vendor instance 03092), 'Host Name' (https://ven03092.service-now.com), 'User Name' (AppAdmin-en2, callout 4), and 'Password' (masked, callout 5). A 'Check connectivity' section shows a green checkmark and 'Connection Established'. The modal has 'Cancel' and 'Add' buttons.

Name	Description
CL_Ven03092	Vendor 03092 Instance Events Generic REST API
ST_Ven03092	Vendor 03092 ServiceNow Instance Staging Table
ven03092	

Add Instance	
<b>INFORMATION</b>	
Instance Name *	ven_03092_instance
Description	Vendor instance 03092
<b>SERVICENOW ACCESS SETTINGS</b>	
Host Name *	https://ven03092.service-now.com
User Name *	AppAdmin-en2
Password *	.....
Check connectivity	
✓ Connection Established	
Cancel	Add

# Integration Settings

**Catalyst Center** System / Settings

Settings / System Configuration

## Integration Settings

Callback URL Host Name or IP Address

Callback URL Host Name or IP Address  
10.93.141.45

This Host Name or IP Address will be used in the Integration Callback URLs

Clear Apply

Cisco Catalyst Center →  
System → Settings →  
Integration Settings  
Verify or configure the  
callback IP address

**CISCO** *Live!*



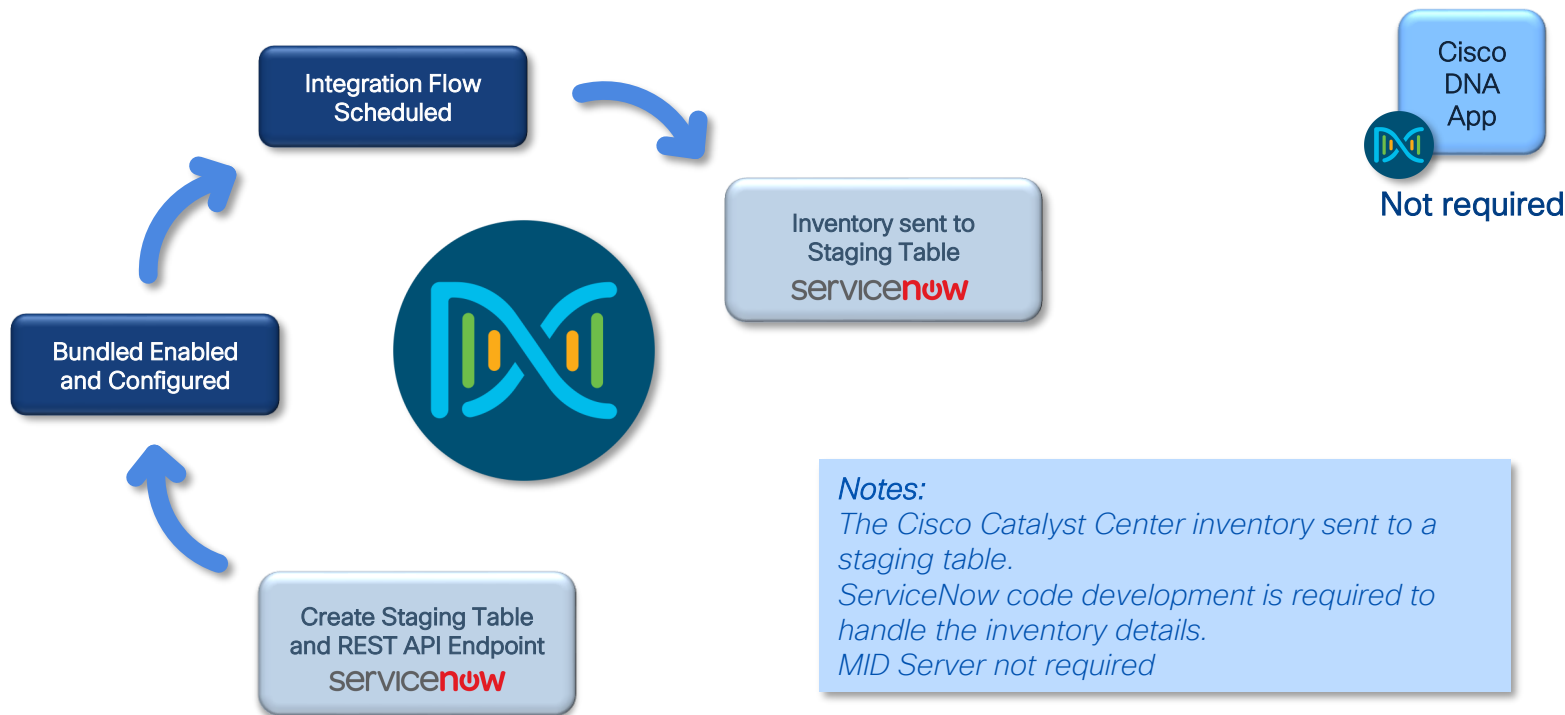


# Agenda

- Cisco Catalyst Center Platform
- ITSM (ServiceNow) Integration Overview
- CMDB Sync to Staging Table
- Events Notifications to Generic REST API Endpoint
- Network Troubleshooting Custom Workflow
- Summary

# Configuration Management Database Sync

## To Staging Table



# ServiceNow Create New Staging Table

**1** Apply filter **Tables**

**2** Select **System Definition/Tables**

**3** Create new table

**Notes:**  
ServiceNow staging tables are used to import and store data.  
A transform map will process the data and update the target table.

Label	Name	Source	Is Staging	Last Modified
Events REST API	u_events_rest_api			
Model State Transition	sttrm_state_transition	Application File	true	2023-01-14 00:24:35
Model State Transition Condition	sttrm_transition_condition	Application File	true	2023-01-14 00:24:35
Model State	sttrm_state	Application File	true	2023-01-14 00:24:34
Additional MetricBase Trigger Filtering	sys_metric_trigger_moderator	Application File	false	2022-12-28 12:11:30
MetricBase Model Trigger Level	sys_metric_trigger_level_model	MetricBase Trigger Level	false	2022-12-28 12:11:30
Retention Policy Schedule	sys_metric_schedule	Application File	false	2022-12-28 12:11:30
MetricBase Status	v_clotho_series			
MetricBase Trigger Log	sys_metric_trigger_log0006			
MetricBase Band Trigger Level	sys_metric_trigger_level_band			
MetricBase Trigger Log	sys_metric_trigger_log0007			
MetricBase Trigger Log	sys_metric_trigger_log0004	Log Entry	false	2022-12-28 12:11:28

# ServiceNow Create Table and REST API Endpoint

The screenshot shows the ServiceNow 'Table' configuration page. The left sidebar contains navigation links for 'Tables', 'System Definition', 'Tables & Columns', 'Decision Tables', 'Remote Tables', 'Tables', 'Definitions', 'System Diagnostics', 'Session Debug', 'Debug SQL (Large Tables)', 'System Import Sets', 'Import Set Tables', and 'Cleanup'. The main area is titled 'Table New record' and includes a 'Submit' button and a 'Cancel' button. The 'Label' field is set to 'Staging Table API' and the 'Name' field is set to 'u\_staging\_table\_api'. The 'Application' dropdown is set to 'Global'. The 'Create module' checkbox is checked. The 'Table Columns' section is expanded, showing a table with columns: 'Column label', 'Type', 'Reference', 'Max length', 'Default value', and 'Display'. A new row is being added with the label 'inventory\_details', type 'String', and max length '100000'. A blue callout box contains the following instructions:

1. Create a new Label. The table name will be created for you, customize if needed
2. Create a new Column label, Type, Max length example: `inventory_details, string, 100,000`
1. Submit

# ServiceNow New REST API Endpoint

The screenshot shows the ServiceNow Service Management console. In the left sidebar, the 'Explore REST API' link is highlighted. The main content area displays the 'Access Controls' for the 'u\_staging\_table\_api' endpoint. A blue callout box says 'Verify the operations allowed for the new REST API endpoint' and 'Explore the new REST API endpoint'. A light blue note box states: 'Note: The API allows the data to be sent to the staging table'.

**Access Controls Table:**

Name	Operation	Type	Active	Updated by	Updated
u_staging_table_api	create	record	true	gzapodea2	2023-04-24 15:24:33
u_staging_table_api	delete	record	true	gzapodea2	2023-04-24 15:24:33
u_staging_table_api	read	record	true	gzapodea2	2023-04-24 15:24:33
u_staging_table_api	write	record	true	gzapodea2	2023-04-24 15:24:33

# ServiceNow New REST API Endpoint – continued

## REST API Explorer

*Note: Save the new REST API endpoint:*

*url = 'https://ven03092.service-now.com/api/now/table/u\_staging\_table\_api'*

**REST API Explorer**

Namespace:

API Name:

API Version:

Retrieve records from a table (GET)

**Create a record (POST)**

Retrieve a record (GET)

Modify a record (PUT)

Delete a record (DELETE)

Update a record (PATCH)

Export OpenAPI Specification (YAML)

Export OpenAPI Specification (JSON)

**Table API**

Allows you to perform create, read, update and delete (CRUD) operations on existing tables

**Create a record**

POST https://ven03092.service-now.com/api/now/table/{tableName}

**Prepare request**

**Path parameters**

Name	Value
* tableName	Staging Table API (u_staging_table_api)

**Query parameters**

Name
sysparm_display_value
sysparm_exclude_reference_link
sysparm_fields
sysparm_input_display_value

**Request Body**

Builder Raw

inventory\_details {device: 'PDX-M', location: 'floor-2'}

{ "u\_inventory\_details": { "device": "PDX-M", "location": "floor-2" } }

Send

Identify the new REST API endpoint  
Test the new REST API endpoint

# Create a New ServiceNow Destination

The screenshot displays the Cisco Catalyst Center web interface. On the left is a dark navigation menu with various icons and labels. A blue circle with the number '1' is placed over the top of the menu. A blue circle with the number '2' is placed over the 'System' menu item. To the right of the menu, a secondary menu is open, showing options like 'System 360', 'Settings', 'Data Platform', etc. A blue circle with the number '3' is placed over the 'Settings' option. The main content area on the right shows a dashboard with several widgets: 'Critical Issues' (showing 7 P1 and 2 P2 issues), 'Trends and Insights' (showing 0 AP Performance Advisories and 0 Trend Deviations), 'Devices' (showing 4 devices with 0 unclaimed, 1 unprovisioned, and 3 unreachable), and 'Application QoS Policies' (showing 0 policies with 0 successful deploys, 0 errored deploys, and 0 stale policies). A blue callout box with a white border is overlaid on the right side of the dashboard, containing a numbered list: 1. Catalyst Center Menu, 2. System, 3. Settings.

1

Catalyst Center

Design > System 360

Policy > Settings 3

Provision > Data Platform

Assurance > Users & Roles

Workflows > Backup & Restore

Tools > Software Management

Platform > Disaster Recovery

Activities >

Reports

System > 2

Explore

Explore

Critical Issues

7 P1 2 P2 View Details

Trends and Insights

Last 30 Days

0 AP Performance Advisories 0 Trend Deviations View Details

Devices

2024 7:24 PM

4

Unclaimed: 0 Unprovisioned: 1 Unreachable: 3 Find New Devices

Application QoS Policies

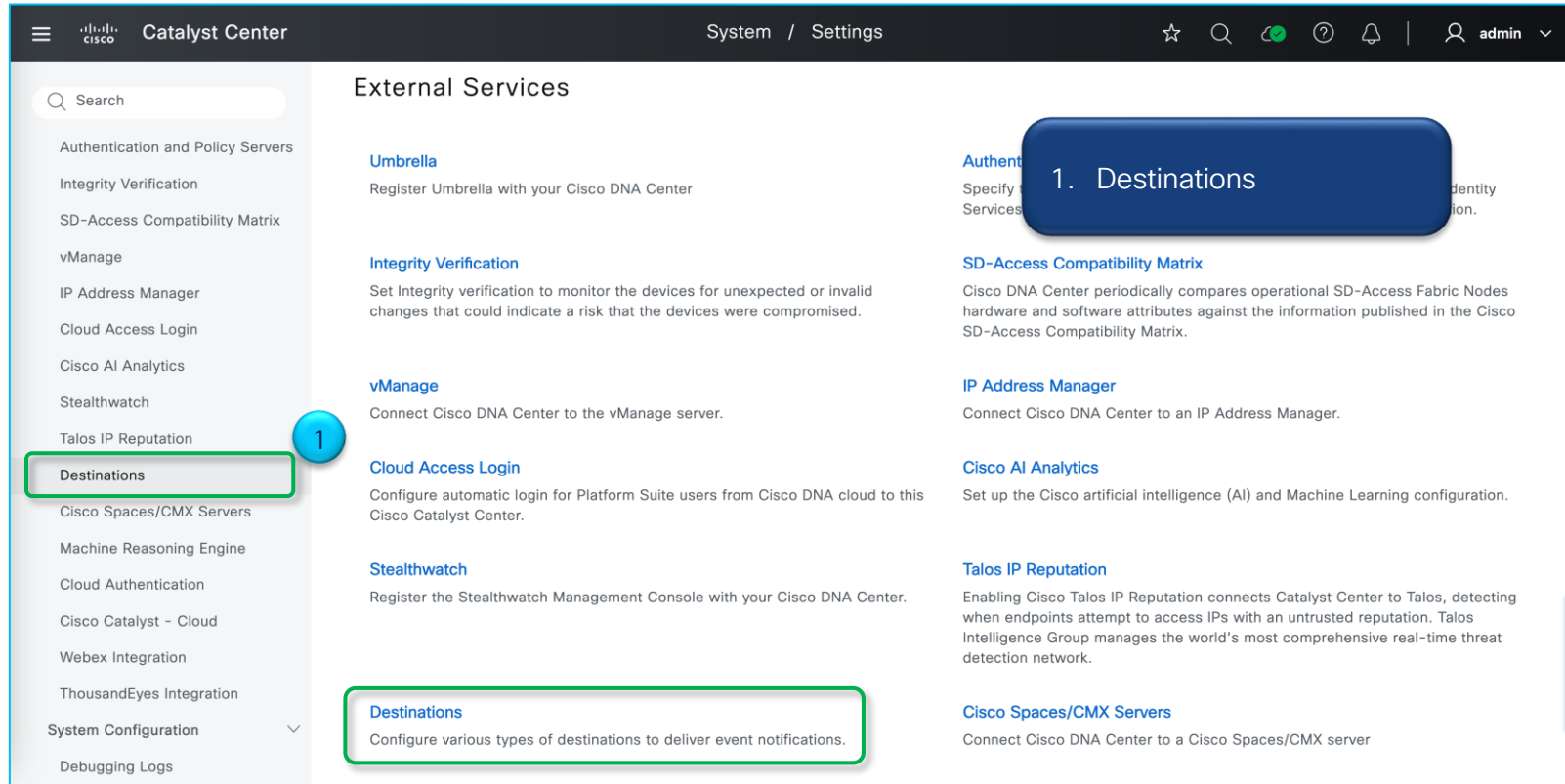
As of Jan 23, 2024 7:32 PM

0

Successful Deploys: 0 Errored Deploys: 0 Stale Policies: 0 Add New Policy

1. Catalyst Center Menu  
2. System  
3. Settings

# Create a New ServiceNow Destination – continued



**Catalyst Center** System / Settings

Search

**External Services**

**Destinations**

Configure various types of destinations to deliver event notifications.

**1. Destinations**



# Create a New ServiceNow Destination - continued

**Catalyst Center** System / Settings

Settings / External Services

## Destinations

Configure various types of destinations to deliver event notifications from Catalyst Center Platform

Webhook Email Syslog SNMP **ITSM**

Configure the ServiceNow settings to automatically create incidents/problems/RFC's from Catalyst Center

Name	Description
	for Instance 03092

1. ITSM
2. Add
3. Instance name, description, hostname, username, password
4. Check Connectivity
5. Add

### Add Instance

**INFORMATION**

Instance Name \*  
**ST\_ven03092**

Description  
**Staging Table instance 03092**

**SERVICENOW ACCESS SETTINGS**

Host Name \*  
**https://ven03092.service-now.com**

User Name \*  
**AppAdmin-en2**

Password \*  
..... [SHOW](#)

[Check connectivity](#)

✓ **Connection Established**

[Cancel](#) [Add](#)

# CMDB Sync Bundle Configuration

The screenshot shows the Cisco Catalyst Center interface. The left-hand menu (1) contains options like Design, Policy, Provision, Assurance, Workflows, Tools, Platform, Activities, Reports, System, and Explore. The 'Platform' option (2) is selected, and the 'Manage' sub-option (3) is highlighted. The main dashboard area (4) displays various metrics and charts, including 'Trends and Insights' (Last 30 Days) and 'Application QoS Policies' (As of Jan 23, 2024 7:43 PM). A blue callout box in the center-right of the dashboard lists the steps: 1. Catalyst Center Menu, 2. Platform, and 3. Manage.

1. Catalyst Center Menu  
2. Platform  
3. Manage

# CMDB Sync Bundle Configuration – continued

The screenshot shows the Cisco Catalyst Center interface. The top navigation bar includes the Cisco logo, 'Catalyst Center', and 'Platform / Manage'. The 'Bundles' tab is selected. Below the tab, there's a 'Bundles' section with a 'Filter' icon and a search bar. A table lists the bundles:

Bundle	Status	Description	Action
<b>A</b> <b>AI Endpoint Analytics</b> Cisco Systems, Inc. v1.2.1   Catalyst Center 2.2.3.0+ Version Dated Nov 20, 2023	NEW	API bundle to access various services provided by AI Endpoint Analytics application. AI Endpoint Analytics package must be installed on Catalyst Center, before this bundle can be used.	Enable
<b>B</b> <b>Basic ITSM (ServiceNow) CMDB synchronization</b> Cisco Systems, Inc. v1.16.3   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE	You can schedule a synchronization or trigger an update between Catalyst Center's device inventory and your ITSM(ServiceNow) configuration management database(CMDB). These activities integrate Catalyst Center's processes into the IT System Management processes of incident, change or problem management. Note: If your network...	Configure
<b>C</b> <b>Catalyst Center Automation events for ITSM (ServiceNow)</b> Cisco Systems, Inc. v1.11.7   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE	This bundle can be used to: 1. Monitor and publish events that... compliance, security or any other operational triggers, to an ITS... and publish events that involve changes to the configuration of... operational triggers, to an...	

A blue callout bubble with the text 'Enable and Configure bundle' points to the 'Configure' button for the 'Basic ITSM (ServiceNow) CMDB synchronization' bundle.

# CMDB Sync Bundle Configuration – continued

☰

Catalyst Center

Bundles

Configurations

Bundles

Filter

Bundle	Status
<div><div>A</div><div>AI Endpoint Analytics</div><div>Cisco Systems, Inc.</div><div>v1.2.1   Catalyst Center 2.2.3.0+</div><div>Version Dated Nov 20, 2023</div></div> <div>NEW</div>	
<div><div>B</div><div>Basic ITSM (ServiceNow) CMDB synchronization</div><div>Cisco Systems, Inc.</div><div>v1.16.3   Catalyst Center 1.2.5 +</div><div>Version Dated Nov 20, 2023</div></div> <div>ACTIVE</div>	
<div><div>C</div><div>Catalyst Center Automation events for ITSM (ServiceNow)</div><div>Cisco Systems, Inc.</div><div>v1.11.7   Catalyst Center</div><div>Version Dated Nov 20, 2023</div></div> <div>ACTIVE</div>	

Configure Basic ITSM (ServiceNow) CMDB synchronization

Configure your bundle

ⓘ

This bundle has additional configurations for its Schedule-Based Integration Flows. [View Flows](#)

• Schedule to Publish Inventory Details - ServiceNow Connector - Recurring daily in intervals of 24 hours

ServiceNow Access Settings

This is used to specify the connection settings to a ServiceNow instance

☒ Select an existing instance

☐ Create a new instance

Select Instance \*

ven\_03092\_instance

ven03092

ven\_03092\_instance

ST\_ven03092

1

2

Next

Note:

CMDB Sync requires configuration of:

ServiceNow access settings

ServiceNow inventory settings

## ServiceNow Access Settings

1. Select existing instance or create new one
2. Next

# CMDB Sync Bundle Configuration – continued

**Catalyst Center**

**Bundles** | Configurations

**Bundles**

Filter

Bundle	Status
<b>A</b> <b>AI Endpoint Analytics</b> Cisco Systems, Inc. v1.2.1   Catalyst Center 2.2.3.0+ Version Dated Nov 20, 2023	NEW
<b>B</b> <b>Basic ITSM (ServiceNow) CMDB synchronization</b> Cisco Systems, Inc. v1.16.3   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE
<b>C</b> <b>Catalyst Center Automation events for ITSM (ServiceNow)</b> Cisco Systems, Inc. v1.11.7   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE

### Configure Basic ITSM (ServiceNow) CMDB synchronization

Configure your bundle

*This bundle has additional configurations for its Schedule-Based Integration Flows. [View Flows](#)*

- Schedule to Publish Inventory Details - ServiceNow Connector - Recurring daily in intervals of 24 hours

#### CMDB Inventory Settings

This is used to specify the CMDB Configuration details for ServiceNow, which includes the list of device attributes(mandatory/optional) that needs to be synced, type of destination within ServiceNow to receive the CMDB details, connection settings to the ServiceNow instance, transformation mapping between Cisco DNA Center device families and ServiceNow CI classes, maximum number of devices that can be synced in a single API call and the discovery source details.

☐ Select an existing instance ☒ **Create a new instance**

Instance Name \* **1**  
ST\_ven03092

Description

**CMDB Inventory Settings**

1. Select existing instance or create new one
2. Next **2**

[Exit](#) [Back](#) [Next](#)

# CMDB Sync Bundle Configuration – continued

**Catalyst Center**

**Bundles** | Configurations

**Bundles**

Filter

Bundle	Status
<b>A</b> <b>AI Endpoint Analytics</b> Cisco Systems, Inc. v1.2.1   Catalyst Center 2.2.3.0+ Version Dated Nov 20, 2023	NEW
<b>B</b> <b>Basic ITSM (ServiceNow) CMDB synchronization</b> Cisco Systems, Inc. v1.16.3   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE
<b>C</b> <b>Catalyst Center Automation events for ITSM (ServiceNow)</b> Cisco Systems, Inc. v1.11.7   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE

**Configure Basic ITSM (ServiceNow) CMDB synchronization**

Configure your bundle

**Cisco ServiceNow Application**

Do you have Cisco ServiceNow Application installed? ?

☐ Yes ☒ No

1

**Cisco DNA App**

1. Select "No"

2. Next

2

Exit Back Next

# CMDB Sync Bundle Configuration – continued

The screenshot displays the Catalyst Center interface. On the left, a sidebar shows a list of bundles under the 'Bundles' tab. The main panel is titled 'Configure Basic ITSM (ServiceNow) CMDB synchronization' and includes a 'Select Destination' dropdown menu. A green box highlights the dropdown, and an orange box highlights the option 'Post device inventory details to a staging table', which is also marked with a blue circle containing the number '1'. A blue callout box on the right contains the following instructions:

1. Select Destination:  
Post device inventory details to a staging table
2. Next

At the bottom of the main panel, there is an 'Exit' button and 'Back' and 'Next' buttons. A blue circle with the number '2' is located in the bottom right corner of the interface.

Bundle	Status
<b>A</b> <b>AI Endpoint Analytics</b> Cisco Systems, Inc. v1.2.1   Catalyst Center 2.2.3.0+ Version Dated Nov 20, 2023	NEW
<b>B</b> <b>Basic ITSM (ServiceNow) CMDB synchronization</b> Cisco Systems, Inc. v1.16.3   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE
<b>C</b> <b>Catalyst Center Automation events for ITSM (ServiceNow)</b> Cisco Systems, Inc. v1.11.7   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE

# CMDB Sync Bundle Configuration – continued

**Catalyst Center**

**Bundles** | Configurations

**Select Destination**

Destination Type \*  
Post device inventory details to a st... ▼

Destination Uri \*  
/api/now/table/u\_staging\_table\_api 1  
Enter a Custom Endpoint

**Note:** Use the new Staging Table REST API endpoint  
– /api/now/table/u\_staging\_table\_api

1. Configure the destination with the new Staging Table REST API endpoint  
2. Save

Exit Back Next 2



# CMDB Sync Bundle Configuration – continued

☰

Catalyst Center

Bundles

Configurations

Bundles

Filter

Bundle

Status

A

AI Endpoint Analytics

Cisco Systems, Inc.

v1.2.1 | Catalyst Center 2.2.3.0+

Version Dated Nov 20, 2023

NEW

B

Basic ITSM (ServiceNow) CMDB synchronization

Cisco Systems, Inc.

v1.16.3 | Catalyst Center 1.2.5 +

Version Dated Nov 20, 2023

ACTIVE

C

Catalyst Center Automation events for ITSM (ServiceNow)

Cisco Systems, Inc.

v1.11.7 | Catalyst Center 1.2.5 +

Version Dated Nov 20, 2023

ACTIVE

Configure Basic ITSM (ServiceNow) CMDB synchronization

Configure your bundle

1

1. Select all (or a subset) of inventory data fields

2. Next

Select Inventory Data

<input checked="" type="checkbox"/>	Name	Description	Is Attribute / Is Reference	
<input checked="" type="checkbox"/>	Host Name	Hostname of the device	<input checked="" type="radio"/> Attribute	<input type="radio"/> Reference
<input checked="" type="checkbox"/>	MAC Address	MAC Address of the Device	<input checked="" type="radio"/> Attribute	<input type="radio"/> Reference
<input checked="" type="checkbox"/>	Device Id	Id of the Device	<input checked="" type="radio"/> Attribute	<input type="radio"/> Reference
<input checked="" type="checkbox"/>	IP Address	Management IP Address of the device	<input checked="" type="radio"/> Attribute	<input type="radio"/> Reference
<input checked="" type="checkbox"/>	Serial Number	Serial Number of the device	<input checked="" type="radio"/> Attribute	<input type="radio"/> Reference
<input checked="" type="checkbox"/>	Upgrade Failure Reason	Upgrade Failure Reason	<input checked="" type="radio"/> Attribute	<input type="radio"/> Reference
<input checked="" type="checkbox"/>	CurrentSMU Upgrade Date	CurrentSMU Upgrade Date	<input checked="" type="radio"/> Attribute	<input type="radio"/> Reference
<input checked="" type="checkbox"/>	CurrentSMU	CurrentSMU	<input checked="" type="radio"/> Attribute	<input type="radio"/> Reference
<input checked="" type="checkbox"/>	Prior Upgrade Date	Prior Upgrade Date	<input checked="" type="radio"/> Attribute	<input type="radio"/> Reference
<input checked="" type="checkbox"/>	Code Upgrade Date	Code Upgrade Date	<input checked="" type="radio"/> Attribute	<input type="radio"/> Reference

Exit

Back

Next

2

CISCO *Live!*

BRKOPS-2471

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# CMDB Sync Bundle Configuration – continued

**Configure Basic ITSM (ServiceNow) CMDB synchronization**  
Configure your bundle

### Set Source Identifier and Operational Limit

Source Identifier(Exact Match) \*  
Cisco DNA 10.93.141.45

Inventory Items Per Iteration \*  
100

1. Select the ServiceNow source identifier
2. Configure number of inventory items per iteration (recommendation – 100)
3. Next

**Note:**  
This configuration step requires the integration ServiceNow user account to have this role:  
*personalize\_choices*

Back Next

# CMDB Sync Bundle Configuration – continued

**Catalyst Center**

**Bundles** | Configurations

**Bundles**

Filter

Bundle	Status
<b>A</b> <b>AI Endpoint Analytics</b> Cisco Systems, Inc. v1.2.1   Catalyst Center 2.2.3.0+ Version Dated Nov 20, 2023	NEW
<b>B</b> <b>Basic ITSM (ServiceNow) CMDB synchronization</b> Cisco Systems, Inc. v1.16.3   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE
<b>C</b> <b>Catalyst Center Automation events for ITSM (ServiceNow)</b> Cisco Systems, Inc. v1.11.7   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE

## Configure Basic ITSM (ServiceNow) CMDB synchronization

Configure your bundle

### Summary

Review your configuration and make any changes.

Destination and Instance

Destination: Staging Table    Domain: https://ven03092.service-now.com    Uri: /api/now/table/u\_staging\_table\_api    Username: AppAdmin-en2    Password: \*\*\*\*\*

Inventory Data Fields [Edit](#)

Send To Destination: Host Name (A), MAC Address (A), Device Id (A), IP Address (A), Serial Number (A), Upgrade Failure Reason (A), CurrentSMU Upgrade Date (A), CurrentSMU (A), Prior Upgrade Date (A), Code Upgrade Date (A), Building (RF), Location (RF), Time Since Code Upgrade (A), Ports (A), Number Of Users (A), Role (A), Fabric Role (A), Uptime (A), Reachability status (A), Part Number (RF), Type (A), Software Version (A)

Limit and source [Edit](#)

Source Identifier: Cisco DNA 10.93.141.45    Inventory Items Per Iteration: 100

**1. Review settings and configure**

[Exit](#) [Back](#) [Configure](#)

# CMDB Sync Schedule Configuration

Catalyst Center

Platform / Developer Toolkit

☆

🔍

🟢

🕒

🔔

|

👤 admin

▼

APIs

Integration Flows

Event Notifications

Integration Flows

🔍 Find

Integrations

ITSM Integration

Integrations

View details of integration flow components that enable integration between Catalyst Center and other third party systems of various Domains like ITSM, IPAM etc. Integrations are based on two types of triggers - REST Based (Can be invoked as a Rest Call) or Schedule Based (Runs on a schedule, performs a task and pushes the information to a REST end point or other vendor specific destinations). Scheduler based flows can be edited here to modify the schedule.

ITSM Integration

Name	Description	Trigger
<a href="#">Schedule to Publish Inventory Details - ServiceNow Connector</a>	This scheduler discovers the devices in the network in a scheduled frequency and extracts the required device information to be able to sync the Inventory...	Schedule Based Scheduled Reoccurring on Daily every 24 hours
<a href="#">Scheduler for ServiceNow Asset Sync</a>	This API runs on a defined schedule to fetch the CI details of Clients in the network from the ITSM platform	Schedule Based Scheduled inactive

Configure new schedule:  
Cisco Catalyst Center Platform → Developer Toolkit → Integration Flows

# CMDB Sync Schedule Configuration - continued

**Schedule to Publish Inventory Details - ServiceNow Connector**

Scheduled

**Description**

This scheduler discovers the devices in the network in a scheduled frequency and extracts the required device information to be able to sync the Inventory with an ITSM system.

**Tags**

ServiceNow

**How to use this flow**

The integration flows can be scheduled to run periodically at a specified date/time. Configure scheduling the integration flow with the form provided.

\* Schedule window cannot be lower than 24 hours

☒ Run Now  
☐ Run Later  
☐ Recurring

**1**

**Schedule** **2** **Pause**

**1. Schedule options:**

- Run Now
- Run Later
- Recurring

**2. Schedule**

# CMDB Sync Schedule Configuration - Recurring

Schedule to Publish Inventory Details - ServiceNow Connector

Scheduled

\* Schedule window cannot be lower than 24 hours

☐ Run Now  
☐ Run Later  
☒ Recurring

Repeats  
Daily

☒ Set Schedule Start

Jan 23, 2024

9:00 PM

Select Time Zone  
(GMT-08:00) America/Los\_Angeles

☐ Set Schedule End

Schedule

1. Configure Schedule:

- Repeat - Weekly or Daily
- Set schedule start date and time
- Optional, select schedule end

2. Schedule

Note: Minimum recurring schedule 24 hours

# Verify CMDB Inventory in the Staging Table

servicenow Service Management

Default [Global] Global GZ Gabi Zapodeanu 27

staging

Staging Table APIs

Staging Table APIs

inventory\_details Updated Updated by Created by

<input type="checkbox"/>	<a href="#">i</a>	<code>{"items":{"className":"","values":{"nam...</code>	2024-01-23 20:07:38	AppAdmin-en2	AppAdmin-en2
<input type="checkbox"/>	<a href="#">i</a>	<code>{"items":{"className":"","values":{"nam...</code>	2023-10-02 14:16:00	AppAdmin-en2	AppAdmin-en2
<input type="checkbox"/>	<a href="#">i</a>	<code>{"items":{"className":"","values":{"nam...</code>	2023-06-23 09:57:24	AppAdmin-en2	AppAdmin-en2
<input type="checkbox"/>	<a href="#">i</a>	<code>{"items":{"className":"","values":{"nam...</code>	2023-06-02 11:12:54	AppAdmin-en2	AppAdmin-en2
<input type="checkbox"/>	<a href="#">i</a>	<code>{"items":{"className":"","values":{"nam...</code>	2023-05-19 18:44:18	AppAdmin-en2	AppAdmin-en2
<input type="checkbox"/>	<a href="#">i</a>	<code>{"items":{"className":"","values":{"nam...</code>	2023-04-24 19:26:20	AppAdmin-en2	AppAdmin-en2
<input type="checkbox"/>	<a href="#">i</a>	<code>{"device": "PDX-M", "location": "floor-2"}</code>	2023-04-24 19:11:32	gzapodea2	gzapodea2

Actions on selected rows...

1. Search and Select the Staging table  
2. Select the table entry

**Notes:**  
ServiceNow code development is required to process the received inventory details

# Verify CMDB Inventory in the Staging Table

Staging Table API  
Created 2024-01-23 20:07:38

inventory\_details

```
States":{"x_caci_cisco_dna_u_building":"PDX","u_building":"PDX","x_caci_cisco_dna_u_city":"","u_city":"","u_code_upgrade_date":"2023-08-18 23:57:00","u_code_upgrade_date":"2023-23:57:00","x_caci_cisco_dna_u_prior_upgrade_date":"","u_prior_upgrade_date":"","x_caci_cisco_dna_u_na_u_currentsmu_upgrade_date":"","u_currentsmu_upgrade_date":"","x_caci_cisco_dna_u_upgrade_fa":{"className":"","values":{"name":"LO-BN","serial_number":"FOC2426U0VX","firmware_version":"17.6.3","Switch","model_number":"C9300-24U","ip_address":"10.93.141.28","x_caci_cisco_dna_u_device_status":i_cisco_dna_u_uptime":"327 8:36:10","u_uptime":"327 8:36:10","x_caci_cisco_dna_u_role":"DISTRIBUTION","u_role":"DISTRIBUTION","x_caci_cisco_dna_u_fab7eeacab:80","x_caci_cisco_dna_u_number_of_users":0,"u_number_of_users":0,"ports":"43","x_caci_cisco_dna_u_device_id":"db05ad49-2c8d-4094-9df6-3a03f9b28069","u_device_id":"cisco_dna_u_time_since_code_upgrade":"554 00:00:00","u_time_since_code_upgrade":"554 00:00:00","lFloor-3","x_caci_cisco_dna_u_area":"OR","u_area":"OR","x_caci_cisco_dna_u_address":"5400 Meadows lStates","u_address":"5400 Meadows Rd, Lake Oswego, Oregon 97035, United States","x_caci_cisco_dna_u_building":"LO","u_building":"LO","x_caci_cisco_dna_u_city":"","u_city":"","or-3","x_caci_cisco_dna_u_code_upgrade_date":"2022-07-19 06:15:38","u_code_upgrade_date":"2022-06:15:38","x_caci_cisco_dna_u_prior_upgrade_date":"2021-10-06 01:00:06","u_prior_upgrade_date":"2001:00:06","x_caci_cisco_dna_u_currentsmu":"","u_currentsmu":"","x_caci_cisco_dna_u_currentsmu_upg_caci_cisco_dna_u_upgrade_failure_reason":"","u_upgrade_failure_reason":""}},"className":"","valuesCN","serial_number":"FJC2325TOPH","firmware_version":"17.9.4a","device_type":"Cisco Catalyst 9300Switch","model_number":"C9300-24UX","ip_address":"10.93.141.20","x_caci_cisco_dna_u_device_statusci_cisco_dna_u_uptime":"90 5:36:21","u_uptime":"90 5:36:21","x_caci_cisco_dna_u_role":"DISTRIBUTION","u_role":"DISTRIBUTION","x_caci_cisco_dna_u_fabbb2:ba:c2:80","x_caci_cisco_dna_u_number_of_users":0,"u_number_of_users":0,"ports":"43","x_caci-ci
```

Update Delete

Inventory Details

Device Detail

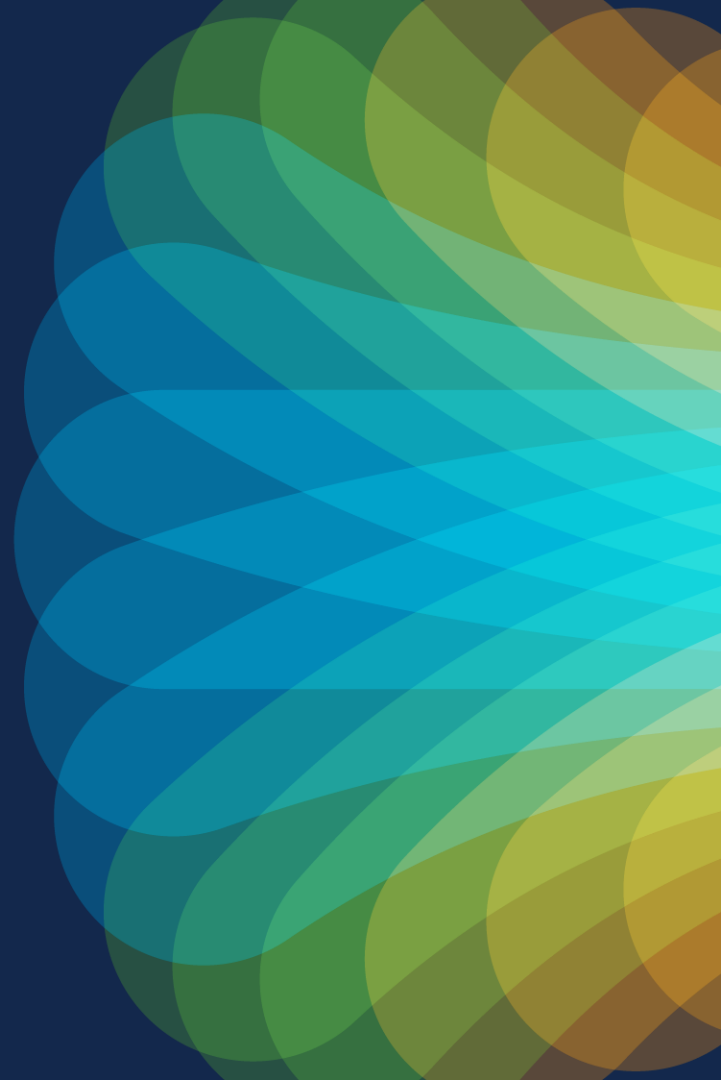
```
{
  "className": "",
  "values": {
    "name": "LO-BN",
    "serial_number": "FOC2426U0VX",
    "firmware_version": "17.6.3",
    "device_type": "Cisco Catalyst 9300 Switch",
    "model_number": "C9300-24U",
    "ip_address": "10.93.141.28",
    "x_caci_cisco_dna_u_device_status": "Reachable",
    "u_device_status": "Reachable",
    "x_caci_cisco_dna_u_uptime": "327 8:36:10",
    "u_uptime": "327 8:36:10",
    "x_caci_cisco_dna_u_role": "DISTRIBUTION",
    "u_role": "DISTRIBUTION",
    "x_caci_cisco_dna_u_fabric_role": "",
    "u_fabric_role": "",
    "mac_address": "90:77:ee:ac:ab:80",
    "x_caci_cisco_dna_u_number_of_users": 0,
    "u_number_of_users": 0,
    "ports": "43",
    "x_caci_cisco_dna_u_device_id": "db05ad49-2c8d-4094-9df6-3a03f9b28069",
    "u_device_id": "db05ad49-2c8d-4094-9df6-3a03f9b28069",
    "x_caci_cisco_dna_u_time_since_code_upgrade": "554 00:00:00",
    "u_time_since_code_upgrade": "554 00:00:00",
    "location": "Global/OR/LO/Floor-3",
    "x_caci_cisco_dna_u_area": "OR",
    "u_area": "OR",
    "x_caci_cisco_dna_u_address": "5400 Meadows Rd, Lake Oswego, Oregon 97035, United States",
    "u_address": "5400 Meadows Rd, Lake Oswego, Oregon 97035, United States",
    "x_caci_cisco_dna_u_building": "LO",
    "u_building": "LO",
```

## Notes:

ServiceNow code development is required to process the received inventory details



# Demo CMDB Sync to Staging Table



Welcome to Catalyst Center!

Explore

## Assurance Summary

### Health

Healthy as of Feb 1, 2024 1:39 PM

93%	--%	100%
Network Devices	Wireless Clients	Wired Clients

[View Details](#)

## Critical Issues

Last 24 Hours

Project	Critical Issues
P1	0
P2	1

[View Details](#)

## Trends and Insights

Last 30 Days

AP Performance Advisories


Trend Deviations

[View Details](#)

## Network Snapshot

## Sites

As of Feb 1, 2024 1:39 PM



DNS Servers : 1  
NTP Servers : 1

[Add Sites](#)

# Network Devices

As of Feb 1, 2024 1:39 PM

14

Unclaimed: 0

Unprovisioned: 1

Unreachable: 0

[Find New Devices](#)

## Application QoS Policies

As of Feb 1, 2024 1:40 PM

Category	Count
Successful Deploys	0
Errored Deploys	0
Stale Policies	0

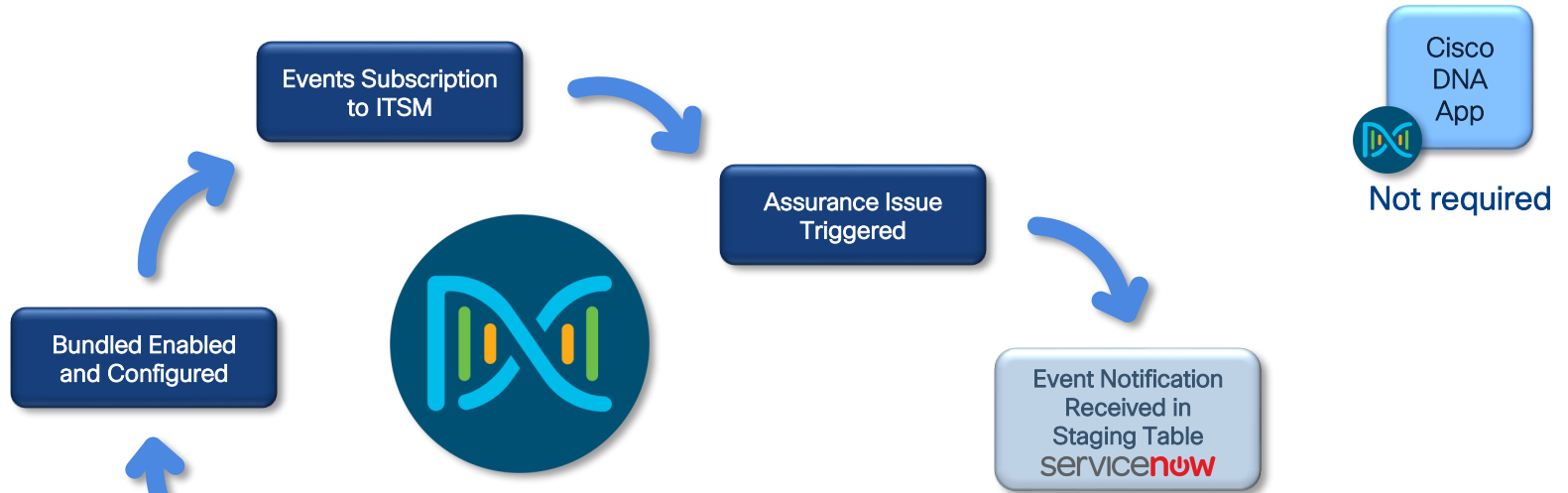
[Add New Policy](#)

# Agenda

- Cisco Catalyst Center Platform
- ITSM (ServiceNow) Integration Overview
- CMDB Sync to Staging Table
- Events Notifications to Generic REST API Endpoint
- Network Troubleshooting Custom Workflow
- Summary

# Network Issue Monitor and Enrichment

## To Generic REST API Endpoint



### Notes:

*The event notification will be received in a staging table.*  
*ServiceNow code development is required to handle these event notifications.*  
*MID server not required*

# ServiceNow Create New Table

The screenshot displays the ServiceNow 'Tables' page. The left sidebar contains the 'System Definition' section with 'Tables' selected. The main area shows a list of tables with columns for Name, Extends table, Extensible, and Updated. Annotations 1, 2, and 3 highlight the 'Tables' filter, the 'System Definition/Tables' menu item, and the 'New' button respectively.

1. Apply filter **Tables**

2. Select **System Definition/Tables**

3. Create new table

	Label	Name	Extends table	Extensible	Updated
<input type="checkbox"/>	<a href="#">.NET Application</a>	cmdb_ci_appl_dot_net	<a href="#">Application</a>	false	2021-06-09 21:22:50
<input type="checkbox"/>	<a href="#">A10 Load Balancer</a>	cmdb_ci_lb_a10	<a href="#">Load Balancer</a>	false	2021-06-09 21:22:40
<input type="checkbox"/>	<a href="#">Access Control</a>	sys_security_acl	<a href="#">Application File</a>	false	2021-06-09 21:13:25
<input type="checkbox"/>	<a href="#">Access Roles</a>	sys_security_acl_role	<a href="#">Application File</a>	false	2021-06-09 21:13:25
<input type="checkbox"/>	<a href="#">Accessory</a>	cmdb_ci_acc	<a href="#">Configuration Item</a>	false	2021-06-09 21:22:53
<input type="checkbox"/>	<a href="#">ACE</a>	cmdb_ci_lb_ace	<a href="#">Load Balancer</a>	false	2021-06-09 21:14:21
<input type="checkbox"/>	<a href="#">ACL Endpoint</a>	cmdb_ci_endpoint_acl	<a href="#">Endpoint</a>	false	2021-06-09 21:14:21
<input type="checkbox"/>	<a href="#">Action</a>	sn_ex_sp_action	<a href="#">Application File</a>	false	2021-06-09 21:14:21
<input type="checkbox"/>	<a href="#">Action</a>	ecc_action	(empty)	false	2021-06-09 21:14:21
<input type="checkbox"/>	<a href="#">Action Assignment</a>	sys_declarative_action_assignment	<a href="#">Application File</a>	false	2021-06-09 21:51:51
<input type="checkbox"/>	<a href="#">Action Binding</a>	sys_ux_page_action_binding	<a href="#">Application File</a>	false	2021-06-09 21:36:23
<input type="checkbox"/>	<a href="#">Action Category</a>	sys_hub_category	<a href="#">Application File</a>	false	2021-06-09 21:46:36

# ServiceNow Create Table and REST API Endpoint

1. Create a new Label. The table name will be created for you, customize if needed

2. Create a new Column label  
example: `event_details`, type `string`, max length

1. Submit

Column label	Type	Reference	Max length	Default value	Display
event_details	String		100000		false

# ServiceNow New REST API Endpoint

The screenshot displays the ServiceNow Service Management console. In the left sidebar, under 'System Definition', the 'Explore REST API' link is highlighted. A blue callout box on the right contains the text: 'Verify the operations allowed for the new REST API endpoint' and 'Explore the new REST API endpoint'. The main content area shows the 'Access Controls' tab for the 'Events REST API [Tables view]'. A table lists four access controls for the 'u\_events\_rest\_api' endpoint, with the first four rows highlighted by an orange box.

	Name	Operation	Type	Active	Updated by	Updated
<input type="checkbox"/>	u_events_rest_api	create	record	true	gzapodea2	2023-01-18 21:37:42
<input type="checkbox"/>	u_events_rest_api	delete	record	true	gzapodea2	2023-01-18 21:37:42
<input type="checkbox"/>	u_events_rest_api	read	record	true	gzapodea2	2023-01-18 21:37:42
<input type="checkbox"/>	u_events_rest_api	write	record	true	gzapodea2	2023-01-18 21:37:42

# ServiceNow New REST API Endpoint – continued

## REST API Explorer

**REST API Explorer**

Namespace:

API Name:

API Version:

Retrieve records from a table (GET)

**Create a record (POST)**

Retrieve a record (GET)

Modify a record (PUT)

Delete a record (DELETE)

Update a record (PATCH)

Export OpenAPI Specification (YAML)

Export OpenAPI Specification (JSON)

**Note:** Save the new REST API endpoint:  
`url = 'https://ven03092.service-now.com/api/now/table/u_events_rest_api'`

**Table**  
Allows you to perform create, read, update and delete (CRUD) operations on existing tables

**Create a record**

POST `https://ven03092.service-now.com/api/now/table/{tableName}`

**Prepare request**

**Path parameters**

Name	Value
* tableName	Events REST API (u_events_rest_api)

**Query parameters**

Name	Description
sysparm_display_value	Return field display values (true), actual values (false), or both (all) (default: false)
sysparm_exclude_reference_link	True to exclude Table API links for reference fields (default: false)
sysparm_fields	A comma-separated list of fields to return in the response
sysparm_input_display_value	Set field values using their display value (true) or actual value (false) (default: false)

Identify the new REST API endpoint  
Test the new REST API endpoint



# Network Issue Monitor and Enrichment Configuration

The screenshot shows the Cisco Catalyst Center interface. The top navigation bar includes the Catalyst Center logo, the text 'Platform / Manage', and user information 'admin'. Below the navigation bar, there are tabs for 'Bundles' and 'Configurations'. A large blue button labeled 'Enable and Configure bundle' is positioned in the top right area. The main content area displays a table of bundles. The 'Network Issue Monitor and Enrichment for ITSM' bundle is highlighted with a green border. It has an orange 'N' icon, is marked as 'ACTIVE', and has a 'Configure' button. The other two bundles, 'Endpoint Attribute Retrieval with ITSM (ServiceNow)' and 'Rogue and aWIPS', are also listed with their respective icons, status, and buttons.

Bundle	Status	Description	Action
<b>Endpoint Attribute Retrieval with ITSM (ServiceNow)</b> Cisco Systems, Inc. v1.6.2   Catalyst Center 2.1.1 + Version Dated Nov 20, 2023	ACTIVE	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 on your network. ServiceNow appears in the endpoint profiling workspace as an...	Configure
<b>Network Issue Monitor and Enrichment for ITSM</b> Cisco Systems, Inc. v1.11.10   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE	You can use this bundle to monitor your network for assurance and maintenance issues, and then publish the event details about these issues to an ITSM(ServiceNow) system. This bundle also contains APIs that extract rich network context data. This bundle also enables closed loop integration. Please note that, for the ServiceNow...	Configure
<b>Rogue and aWIPS</b> Cisco Systems, Inc. v1.2.1   Catalyst Center 2.1.2.0 + Version Dated Nov 20, 2023	NEW	Use Rogue Management and the Cisco Adaptive Wireless Intrusion Prevention System (aWIPS) to detect wired and wireless threats, including rogue access points.	Enable

# Network Issue Monitor and Enrichment Configuration

**Catalyst Center**

**Bundles** Configurations

**Bundles**

Filter

Bundle	Status
<b>Endpoint Attribute Retrieval with ITSM (ServiceNow)</b> Cisco Systems, Inc. v1.6.2   Catalyst Center 2.1.1 + Version Dated Nov 20, 2023	ACTIVE
<b>Network Issue Monitor and Enrichment for ITSM</b> Cisco Systems, Inc. v1.11.10   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE
<b>Rogue and aWIPS</b> Cisco Systems, Inc. v1.2.1   Catalyst Center 2.1.2.0 + Version Dated Nov 20, 2023	NEW

### Configure Network Issue Monitor and Enrichment for ITSM

Configure your bundle

**Destination to receive events**

This is used to specify the type of destination in ServiceNow to receive the events.

☐ Select an existing instance ☒ Create a new instance

Instance Name \*  
ET\_ven03092

Description

**Destination settings**

1. Select or create the instance
2. Next

Exit

Next

# Network Issue Monitor and Enrichment Configuration

**Catalyst Center**

**Bundles** | Configurations

**Bundles**

Filter

Bundle	Status
<b>Endpoint Attribute Retrieval with ITSM (ServiceNow)</b> Cisco Systems, Inc. v1.6.2   Catalyst Center 2.1.1 + Version Dated Nov 20, 2023	ACTIVE
<b>Network Issue Monitor and Enrichment for ITSM</b> Cisco Systems, Inc. v1.11.10   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE
<b>Rogue and aWIPS</b> Cisco Systems, Inc. v1.2.1   Catalyst Center 2.1.2.0 + Version Dated Nov 20, 2023	NEW

**Configure Network Issue Monitor and Enrichment for ITSM**

Configure your bundle

**Destination to receive events**

Select ITSM Type \*

**ServiceNow**

Destination to receive events \*

**Generic REST Endpoint in ServiceNow**

Event Management

REST API Endpoint

**Generic REST Endpoint in Service...**

**Exit** **Back** **Next**

**Destination Settings**

1. Select ServiceNow
2. Select the destination option to send the events to: **Generic REST Endpoint in ServiceNow**

# Network Issue Monitor and Enrichment Configuration

The screenshot displays the Cisco Catalyst Center interface. On the left, a sidebar shows a list of bundles under the 'Configurations' tab. The 'Bundles' section lists three items: 'Endpoint Attribute Retrieval with ITSM (ServiceNow)' (ACTIVE), 'Network Issue Monitor and Enrichment for ITSM' (ACTIVE), and 'Rogue and aWIPS' (NEW). The main panel is titled 'Configure Network Issue Monitor and Enrichment for ITSM' and contains the following configuration options:

- Destination to receive events:** A dropdown menu set to 'ServiceNow'.
- Select ITSM Type \*:** A dropdown menu set to 'ServiceNow'.
- Destination to receive events \*:** A dropdown menu set to 'Generic REST Endpoint in ServiceNow'.
- Destination Uri \*:** A text input field containing the URL `/api/now/table/u_events_rest_api`. This field is highlighted with a red rectangle and a blue circle with the number '1'.
- Enter a Custom Endpoint:** A link below the Destination Uri field.

A blue callout box with a white border contains the following text:

**Note:**  
Use the created ServiceNow REST API endpoint – `/api/now/table/u_events_rest_api`

A blue rounded rectangle contains the following steps:

1. Configure the destination with the new REST API endpoint
2. Save

At the bottom right, there are 'Back' and 'Next' buttons. A blue circle with the number '2' is positioned near the 'Next' button. An 'Exit' button is located at the bottom left of the main panel.

# Network Issue Monitor and Enrichment Configuration

**Catalyst Center**

**Bundles** | Configurations

**Bundles**

Filter

Bundle	Status
<b>Endpoint Attribute Retrieval with ITSM (ServiceNow)</b> Cisco Systems, Inc. v1.6.2   Catalyst Center 2.1.1 + Version Dated Nov 20, 2023	ACTIVE
<b>Network Issue Monitor and Enrichment for ITSM</b> Cisco Systems, Inc. v1.11.10   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE
<b>Rogue and aWIPS</b> Cisco Systems, Inc. v1.2.1   Catalyst Center 2.1.2.0 + Version Dated Nov 20, 2023	NEW

**Configure Network Issue Monitor and Enrichment for ITSM**

Configure your bundle

**ServiceNow Access Settings**

This is used to specify the connection settings to a ServiceNow instance

☒ Select an existing instance ☐ Create a new instance

Select Instance \*  
ET\_ven03092

**ServiceNow Access Settings**

1. Select or create the instance
2. Next

Exit

Back Next

# Network Issue Monitor and Enrichment Configuration

**Catalyst Center**

**Bundles** | Configurations

**Bundles**

Filter

Bundle	Status
<b>Endpoint Attribute Retrieval with ITSM (ServiceNow)</b> Cisco Systems, Inc. v1.6.2   Catalyst Center 2.1.1 + Version Dated Nov 20, 2023	ACTIVE
<b>Network Issue Monitor and Enrichment for ITSM</b> Cisco Systems, Inc. v1.11.10   Catalyst Center 1.2.5 + Version Dated Nov 20, 2023	ACTIVE
<b>Rogue and aWIPS</b> Cisco Systems, Inc. v1.2.1   Catalyst Center 2.1.2.0 + Version Dated Nov 20, 2023	NEW

## Configure Network Issue Monitor and Enrichment for ITSM

Configure your bundle

### Summary

Review your configuration and make any changes.

- Destination to receive events [Edit](#)  
Destination to receive events: Generic REST Endpoint in ServiceNow  
Destination URI: /api/now/table/u\_events\_rest\_api  
ITSMType: ServiceNowConnection
- ServiceNow Access Settings  
Domain: https://ven03092.service-now.com  
Username: AppAdmin-en2  
Password: \*\*\*\*\*

1. Review configuration  
2. Configure

Exit Back Configure

# Trigger a Cisco Catalyst Center Assurance Issue

The screenshot displays the Cisco DNA Center Assurance interface. The top navigation bar includes the Cisco DNA Center logo and the path Assurance / Dashboards / Issues & Events. The left sidebar contains a navigation menu with 'Issues' and 'Events' tabs, a 'Global' filter, a time range of '24 H', a small timeline chart, and a 'Most Impacted Areas' section showing 'OR' with '1 P1' and '1 Open' items. The main content area shows an issue titled 'Interface Connecting Network Devices is Down / Issue Instance'. The issue details include the title 'Interface "GigabitEthernet2" (Interface description: TO\_CSR2\_GI2) is down on network device "PDX-RO"', an 'Open' status, and an 'Issue Profile: global' with an 'Edit Issue Settings' link. The 'Description' section, highlighted with an orange border, states: 'Interface GigabitEthernet2 (Interface description: TO\_CSR2\_GI2) connecting the following two network devices is down: Local Node: PDX-RO (CSR1000V) - GigabitEthernet2. Peer Node: SP (CSR1000V) - GigabitEthernet2. Last Occurred: Jan 19, 2023 1:36 PM'. Below the description, the 'Root Cause Analysis' section is visible, featuring a link to 'View All Network Reasoner Tools' and text explaining the Machine Reasoning Engine (MRE) and its role in detecting issues and vulnerabilities. The bottom of the interface shows a table with filters for 'Priority' (P1) and 'Issue Type' (Interface), and a '1 Records' count.

Cisco DNA Center Assurance / Dashboards / Issues & Events

Issues Events

Global 24 H

2:00p  
P1  
P2  
P3  
P4  
2p 4p

Most Impacted Areas b

OR  
1 P1 | 1 Open

All P1: 1

Total Open: 1

Search Table

Priority Issue Type

P1 Interface

1 Records

Interface Connecting Network Devices is Down / Issue Instance

Interface "GigabitEthernet2" (Interface description: TO\_CSR2\_GI2) is down on network device "PDX-RO"

Open Issue Profile: global Edit Issue Settings

**Description**

Interface GigabitEthernet2 (Interface description: TO\_CSR2\_GI2) connecting the following two network devices is down: Local Node: PDX-RO (CSR1000V) - GigabitEthernet2. Peer Node: SP (CSR1000V) - GigabitEthernet2.  
Last Occurred: Jan 19, 2023 1:36 PM

Root Cause Analysis View All Network Reasoner Tools

The Machine Reasoning Engine (MRE) uses automated Cisco expertise to detect issues and vulnerabilities, perform complex root cause analysis, and suggest corrective actions.

Analyze why an interface flap is taking place on a device .

Network Impact: **High**

# Verify Received Events in the New Table

The screenshot shows the ServiceNow interface for the 'Events REST API' table. The left sidebar contains a navigation menu with 'Events REST APIs' highlighted. The main table displays a list of events with columns for ID, Created, and Created by. A green box highlights the 'Events REST APIs' menu item (1), the 'Events REST API' table (2), and the first row of the table (3). A blue box on the right contains the following instructions:

1. Search for Events
2. Events REST API table
3. Received Event

	event_details	Created	Created by
<input type="checkbox"/>	<a href="#">{"id":"943d6f72-57f6-4cf2-8bec-13e08aba6..."}</a>	2024-01-23 20:38:48	AppAdmin-en2
<input type="checkbox"/>	<a href="#">{"id":"f6980f24-f12b-44c9-8429-ee227648d..."}</a>	2024-01-23 20:38:45	AppAdmin-en2
<input type="checkbox"/>	<a href="#">{"id":"98d2dbd4-4da8-4a4f-833b-2b686051d..."}</a>	2023-10-02 14:19:44	AppAdmin-en2
<input type="checkbox"/>	<a href="#">{"id":"c4d96ac2-234d-4529-b69d-a4a1ca9d2..."}</a>	2023-10-02 14:19:13	AppAdmin-en2
<input type="checkbox"/>	<a href="#">{"id":"e60563a5-a9a6-4f7b-b1c2-c6cd0857c..."}</a>	2023-10-02 14:19:07	
<input type="checkbox"/>	<a href="#">{"id":"b97a7f25-66fb-4176-bc31-f8a947cb4..."}</a>	2023-10-02 14:19:05	
<input type="checkbox"/>	<a href="#">{"id":"ae0db533-2e0a-49af-a350-fa643c50a..."}</a>	2023-06-02 11:40:23	
<input type="checkbox"/>	<a href="#">{"id":"35ab6523-5991-46f2-9736-67153d46f..."}</a>	2023-06-02 11:39:18	
<input type="checkbox"/>	<a href="#">{"id":"e959d4a1-0d83-4005-b72e-8578cb8c4..."}</a>	2023-06-02 11:32:50	
<input type="checkbox"/>	<a href="#">{"id":"3a9358f6-77f6-4487-80b6-5e19168fd..."}</a>	2023-06-02 11:32:43	AppAdmin-en2



# Verify Received Events in the New Table

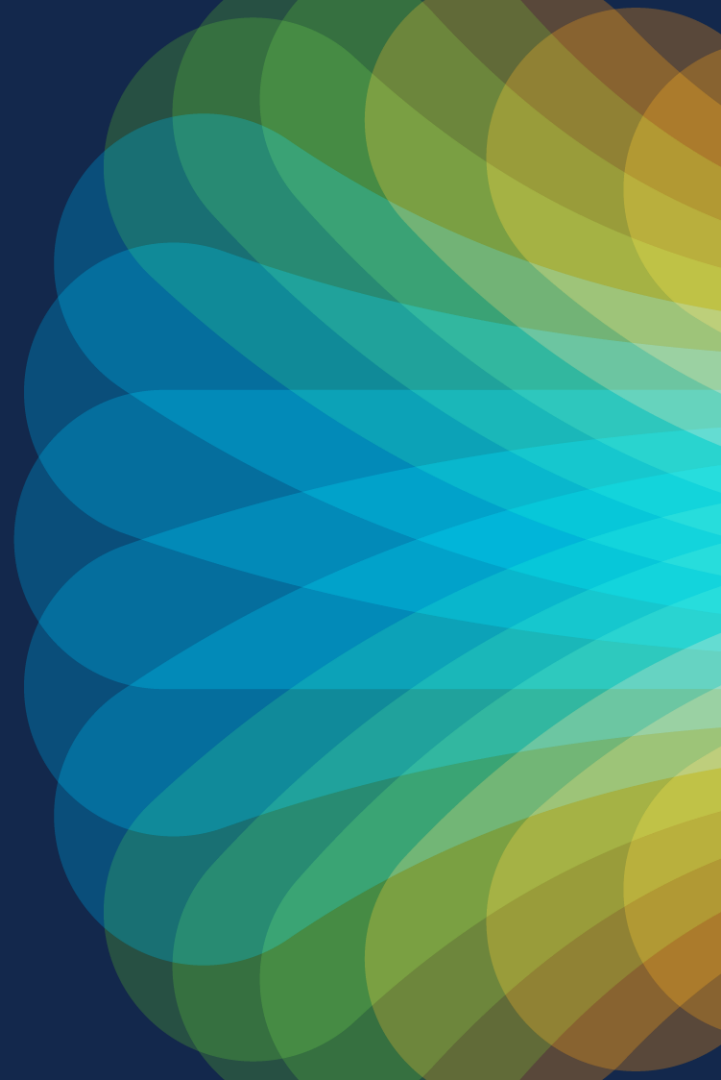


Event  
Notification  
details



Includes:  
Issue details  
Suggested Actions  
Topology

# Demo Events to Generic REST API Endpoint



Camtasia 2023

FileEditModifyTextViewExportWindowHelp

Home - Cisco Catalyst Center

Events REST APIs | ServiceNow

https://10.93.141.45/dna/home120%

Cisco Systems, IncAPIsToolsLAB\_AccessCiscoLiveMeraki Dashboard L...Cisco BoxSFEH-NAS - Synolo...CDETSDNACaaPCisco.DNA.Center.D...SharePointAPIs and Owners - ...JIRA Engineering SJ...Uno - MaglevCloud...Other Bookmarks

☰

Cisco

Catalyst Center

☆

🔍

🟢

?

🔔

|

👤admin

▼

Welcome to Catalyst Center!

[Explore](#)

### Assurance Summary

Health ⓘ

Healthy as of Feb 1, 2024 2:01 PM

100%

Network Devices

--%

Wireless Clients

100%

Wired Clients

[View Details](#)

Critical Issues

Last 24 Hours

1

P1

2

P2

[View Details](#)

Trends and Insights

Last 30 Days

0

AP Performance Advisories

0

Trend Deviations

[View Details](#)

### Network Snapshot

Sites

As of Feb 1, 2024 2:01 PM

16

DNS Servers : 1

NTP Servers : 1

[Add Sites](#)

Network Devices

As of Feb 1, 2024 2:01 PM

14

Unclaimed: 0

Unprovisioned: 1

Unreachable: 1

[Find New Devices](#)

Application QoS Policies

As of Feb 1, 2024 2:01 PM

0

Successful Deploys: 0

Errored Deploys: 0

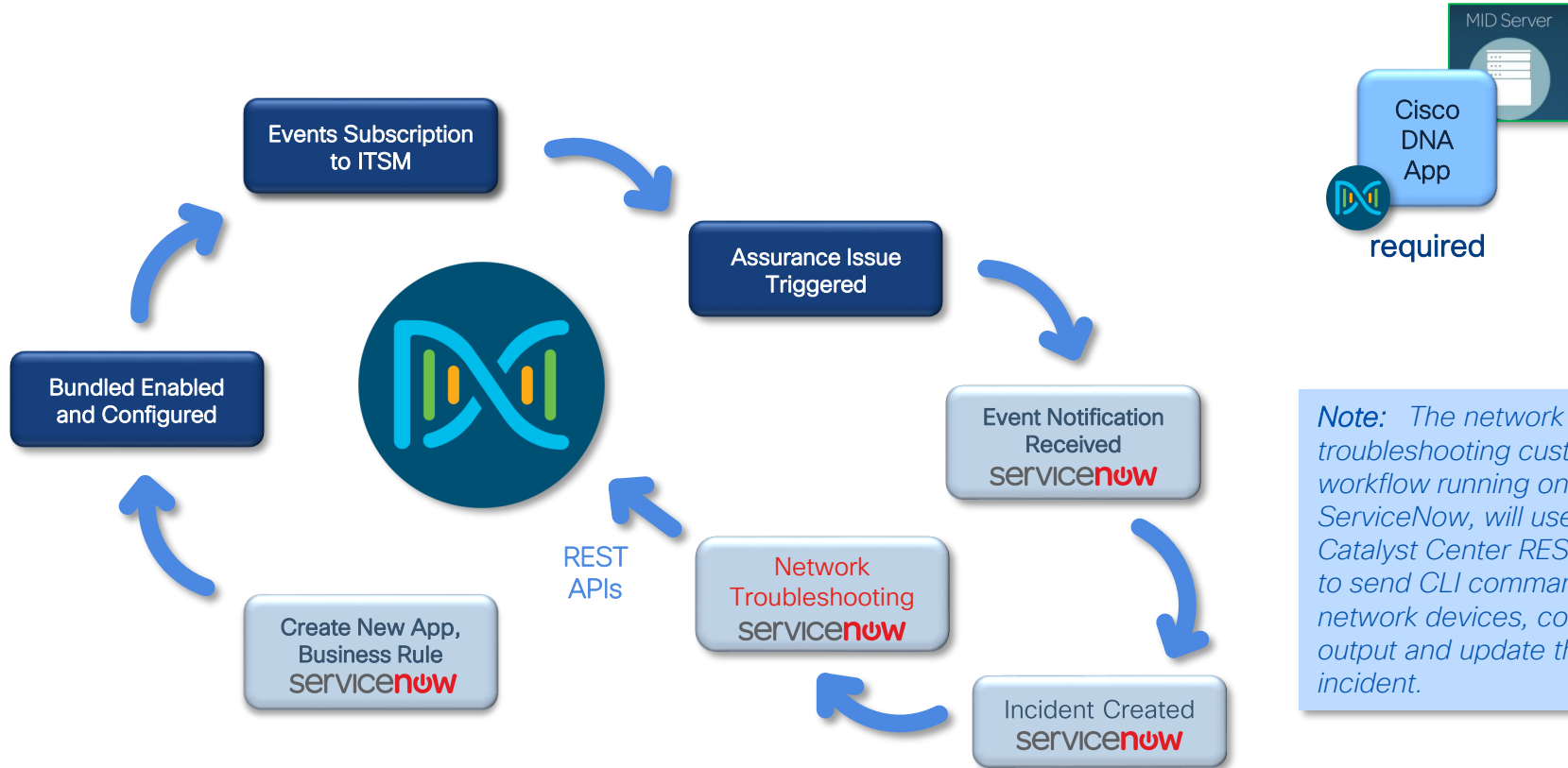
Stale Policies: 0

[Add New Policy](#)

# Agenda

- Cisco Catalyst Center Platform
- ITSM (ServiceNow) Integration Overview
- CMDB Sync to Staging Table
- Events Notifications to Generic REST API Endpoint
- Network Troubleshooting Custom Workflow
- Summary

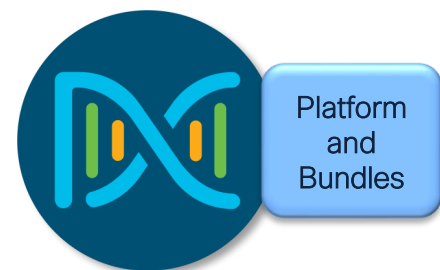
# Network Troubleshooting Custom Workflow



*Note: The network troubleshooting custom workflow running on ServiceNow, will use Cisco Catalyst Center REST APIs to send CLI commands to network devices, collect the output and update the incident.*

# Network Troubleshooting Custom Workflow

Requires the Cisco DNA App



Platform  
and  
Bundles

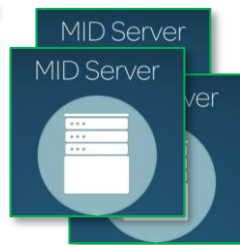
REST  
APIs



Cisco  
DNA  
App

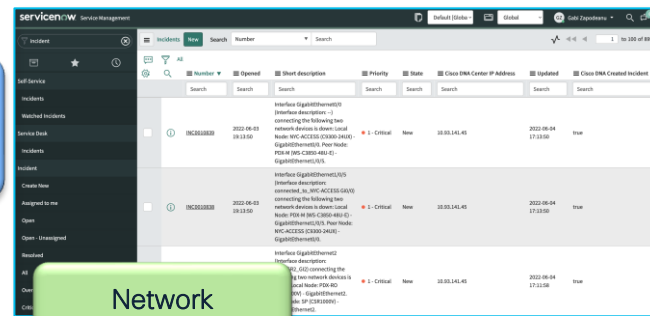


REST  
APIs



REST  
APIs

Network  
Troubleshooting



## Note:

The Network Troubleshooting custom workflow will call the Cisco Catalyst Center REST APIs using the Cisco DNA App configured MID server and username.

# ServiceNow Create New App

Create Custom Workflow  
1. Create new app

The screenshot displays the ServiceNow Studio interface. On the left sidebar, under 'System Applications', the 'Studio' application is highlighted with a green box and a blue circle labeled '1'. Below it, another 'Studio' entry is also highlighted with a green box and a blue circle labeled '2'. A tooltip for the second 'Studio' entry reads 'New Page Launch Studio - Link opens in new window'. The main workspace is titled 'My Homepage 1' and contains a 'New Page' button. The top navigation bar shows 'Default [Global]' and 'Global' dropdown menus. A 'Change Layout' button is visible in the top right corner.

1. ServiceNow Studio
2. Launch Studio

# ServiceNow Create New App – continued

**Select Application**

**New**

Create Application Import From Source Control Select Store App to Customize

**Recent (10)**

Filter...

Status	Application	Version	Created on	Updated On ↓	Scope
	<a href="#">CMDB Workspace</a>	2.2.1	2022-12-06	2022-12-06 02:05:21	sn_cmdb_ws
	<a href="#">Now Mobile</a>	25.0.1	2022-11-10	2022-11-10 03:54:19	sn_me
	<a href="#">Employee Profile</a>	4.0.2	2022-11-10	2022-11-10 03:54:19	
	<a href="#">Now Experience Analytics</a>	1.0.0	2022-10-04	2022-10-03 19:31:03	
	<a href="#">Cloud API</a>	1.0.0	2022-10-04	2022-10-03 18:56:03	
	<a href="#">Social Knowledge</a>	22.4.4	2022-10-04	2022-10-03 18:43:21	
	<a href="#">ISE Integration</a>	1.0.0	2022-06-21	2022-06-21 07:10:17	x_caci_ise_integra

1. Create New Application



# ServiceNow Create New App – continued

The screenshot shows the 'Create Application File' dialog in ServiceNow. The dialog has tabs for 'General Info', 'Data', and 'Design'. The 'General Info' tab is active. The text inside says: 'OK. Let's get started on your new app. This app needs a name, description, and logo (optional). If you want to create more than one app, we'll build them one at a time.'

Numbered callouts indicate the following steps:

1. App name and description
2. Scoped or Global
3. Optional - update a logo image
4. Create

The form fields are:

- Name** (1): Cisco DNA Custom Workflows
- Description** (1): App for Cisco DNA Center custom workfl
- Advanced settings** (2):
  - ☒ Scoped (1)
  - ☐ Global (1)
- Logo** (3): A blue circular logo with a white 'X' and a blue 'DNA' logo. Below it is a 'Remove Image' link.
- Buttons** (4): 'Cancel' and 'Create'.

# ServiceNow Create New App – continued

STUDIO File Source Control Window Search

+ Create Application File

Application Explorer

Go To Code Search

General Info — Data — Design

Let's create some roles for this app

You can search for existing roles or select "Create new role" to add new ones.

Roles ⓘ

admin X

+ Create new role

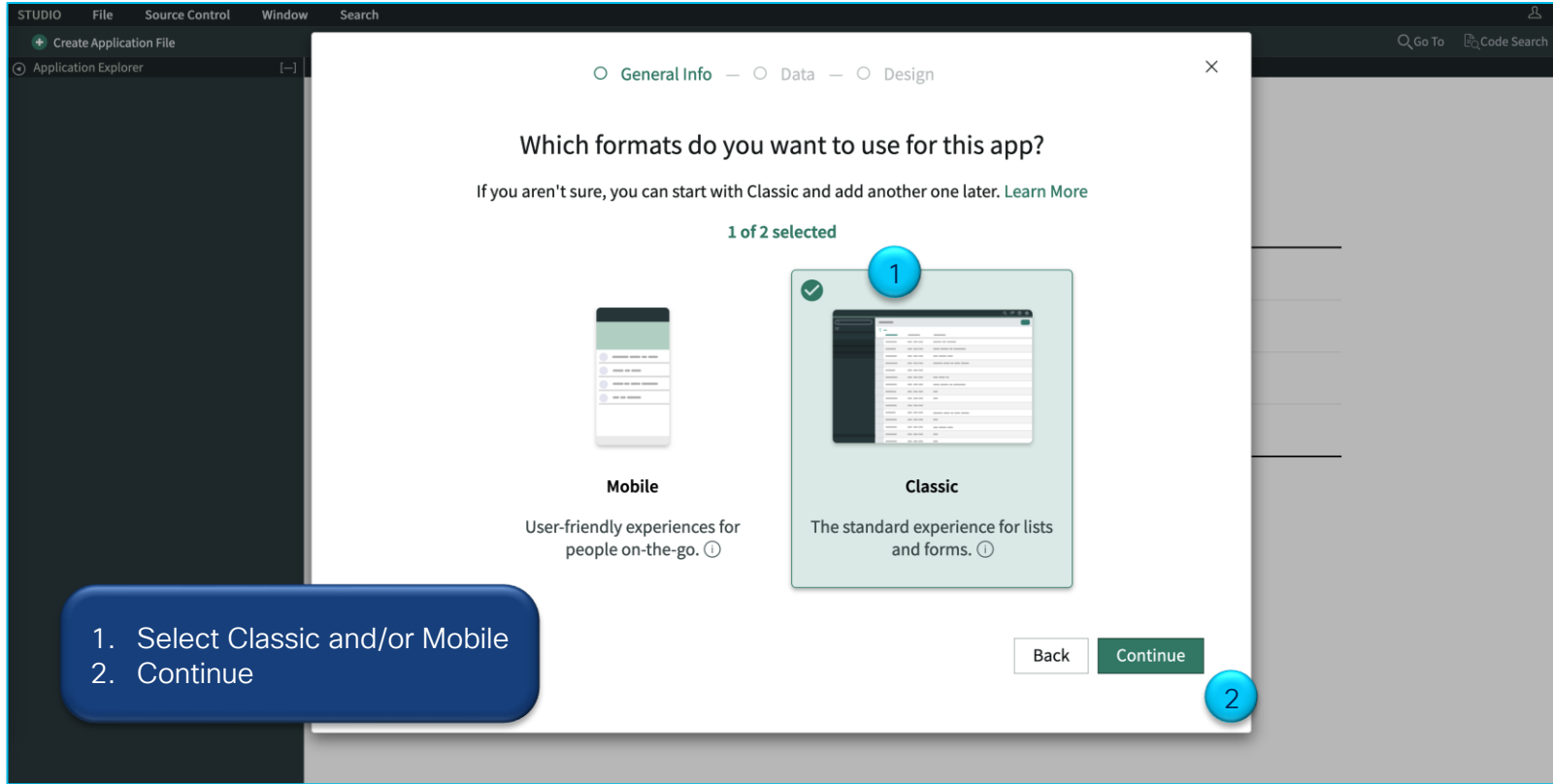
Continue in Studio (Advanced)

1. Select a role or create a new role

2. Continue

Continue

# ServiceNow Create New App – continued



# ServiceNow Create New App – continued

STUDIO File Source Control Window Search

+ Create Application File

Application Explorer [~]

General Info — Data — Design

Which data tables do you want to use for this app?

If you need a new table, use the "Create new table" button below.

Tables ⓘ

Incident [incident] X

Cisco DNA controller properties [x\_caci\_cisco\_dna\_cisco\_dna\_controller] X

1

2

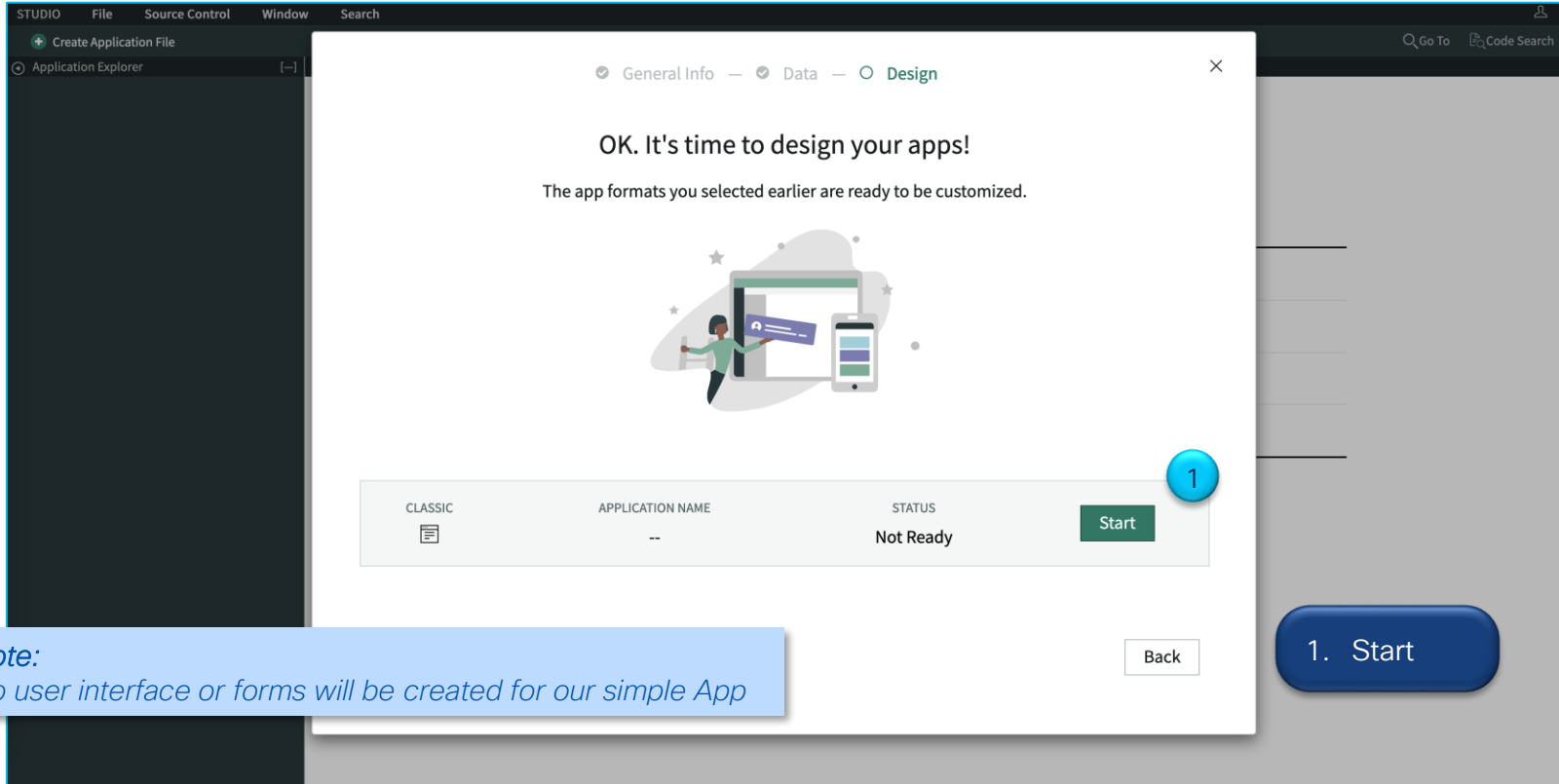
Create new table Done with tables

1. Select the tables required by this App

2. Done with tables

**Notes:**  
The Cisco DNA controller properties table provides details about the configured Cisco Catalyst Centers integrated with ServiceNow

# ServiceNow Create New App – end



**Note:**

*No user interface or forms will be created for our simple App*

# ServiceNow Create New App – Verify

The screenshot displays the ServiceNow Application Manager interface. On the left sidebar, a blue circle with the number '1' highlights the 'My Company App' filter. The main content area shows the 'Application Manager' page with a 'Filter by Apps' dropdown and a 'Create new' button. Below the filter, there are tabs for 'All Apps', 'In Development', 'Not Installed', and 'Installed'. The 'In Development' tab is selected, and a green box highlights the 'Cisco DNA Custom Workflows' app. A blue circle with the number '2' is placed over the app's details. Below this, the 'Not Installed' section shows two other apps: 'ACICWA' and 'Activity Pack Integration'. A blue callout box on the right contains the following instructions:

1. Apply filter **My Company Applications**
2. Find the new App

# ServiceNow Create New Business Rule

**1** Business Rule

**2** Business Rules

**3** Cisco DNA Cust

**4** New

**Create Custom Workflow**

1. Create new app
2. Write business rule

**1. Apply filter Business Rules**

**2. Select System Definition/Business Rules**

**3. Verify the App scope is the new App**

**4. Create new business rule**

	Name	Active	Table	Application	Order	Updated
<input type="checkbox"/>	Display: Fulfiller UI and Queues	true	Chat Setup [sys_cs_live_agent_setup]	Global	100	2020-03-23 00:00:32
<input type="checkbox"/>	GTD Tour Name Validation			Global	100	2020-07-27 22:40:07
<input type="checkbox"/>	80-20 split for t			Global	100	2021-10-13 09:48:24
<input type="checkbox"/>	Able to disable testing			Global	100	2018-06-29 10:33:57
<input type="checkbox"/>	Abort CMDB Po deletion			Global	100	2021-10-28 18:24:30
<input type="checkbox"/>	Abort action if no license type	true	Software Model [cmdb_software_product_model]	Global	100	2012-04-03 19:35:58
<input type="checkbox"/>	Abort Activation/Deactivation of topics	true	Topic [topic]			
<input type="checkbox"/>	Abort active records for same source	true	Event Grouping Definition [			
<input type="checkbox"/>	Abort adding more than one taxonomy	true	Portal Taxonomy [m2m_sp			
<input type="checkbox"/>	Abort adding same flow twice	true	Remediation Subflow [em			

**Note:** "A business rule is a server-side script that runs when a record is displayed, inserted, deleted, or when a table is queried. Use business rules to automatically change values in form fields when the specified conditions are met"

**servicenow**

# ServiceNow Create New Business Rule – continued

The screenshot shows the ServiceNow 'Business Rule' creation page. The left sidebar contains navigation links: Business Rule, Activity Subscriptions, Administration, Business Rules, Metrics, Business Rules, System Definition, Business Rules, System Diagnostics, Session Debug, Debug Business Rule, and Debug Business Rule (Details). The main form includes fields for Name, Table, Application, Active, and Advanced. A dropdown menu for the Table field is open, showing options like Incident, Incident DNA Import, Incident Fact Table, Incident Task, and Task Template. A blue box with numbered instructions (1-4) is overlaid on the form. A light blue note box is at the bottom left.

**1** New business rule, name

**2** Select the table required - Incident Table

**3** Verify the App scope is the new App

**4** Select **Advanced**

**Note:**  
Most of the selected values are predefined options, from pull-down menus



# ServiceNow Create New Business Rule – continued

The screenshot shows the ServiceNow Business Rule configuration interface. The left sidebar contains navigation links for Business Rule, Activity Subscriptions, Administration, Metrics, Business Rules, System Definition, and Business Rules. The main content area is titled 'Business Rule New record' and shows the configuration for a rule named 'Send Command Runner'. The 'Table' is set to 'Incident [incident]' and the 'Priority' is 100. The 'When to run' section has tabs for 'Actions' and 'Advanced'. The 'Advanced' tab is selected, showing the 'When' dropdown set to 'async' and the 'Order' set to 100. The 'Filter Conditions' section is highlighted with a yellow box and contains a condition for 'Additional comments' changes. The 'Role conditions' section is also visible. A blue callout box on the right lists four steps: 1. Select when the business rule will execute – before, after, **async**; 2. What changes will trigger – **insert** and **update** to records; 3. Additional filters – execute only when changes to **Additional comments** field; 4. Select **Advanced**.

**Notes:**  
This Business Rule will execute every time:

- an incident is created or updated, **AND**
- additional comments field is changed

1. Select when the business rule will execute – before, after, **async**

2. What changes will trigger – **insert** and **update** to records

3. Additional filters – execute only when changes to **Additional comments** field

4. Select **Advanced**

# ServiceNow Create New Business Rule – end

**Notes:** "Code developed in JavaScript to extend application functionality to:

- Interact with database tables: query, update, create, delete
- Validate data
- Write to log files
- Interact with 3rd party web services"

**servicenow**

The custom workflow will call the Catalyst Center REST APIs

**1.** Placeholder for custom workflow code

**2.** Submit

The screenshot shows the ServiceNow interface for creating a new Business Rule. The left sidebar contains navigation links for Business Rule, Administration, Metrics, System Definition, System Diagnostics, and Session Debug. The main content area is titled 'Business Rule New record'. It includes a description of a business rule and fields for Name (Send Command Runner), Table (Incident [incident]), and Priority (100). The 'Advanced' tab is selected, showing a 'Script' field with a placeholder function. A green box highlights the script area, and a blue box highlights the 'Submit' button. A blue callout box on the right contains notes about the script's purpose and capabilities.

# Network Troubleshooting – Code Development

The screenshot displays the 'Business Rule' configuration page in Cisco DNA Center. The 'Advanced' tab is selected, showing a script for a custom workflow. The script is a JavaScript function named `executeRule` that handles REST API calls to Cisco DNA Center to retrieve device information and execute CLI commands. The script includes comments explaining its purpose and usage.

```
1 /*
2  * This application is included in the scoped app: "Cisco DNA Custom Workflows". This App is in development.
3  * The script is triggered when a new "Additional Comment" is added to an incident.
4  * The comment must be formatted in this way:
5  *   device: deviceHostname
6  *   command: CLI command
7  * Only show commands are supported. For full list of the supported show commands call this Cisco DNA Center
8  * API: GET, /dna/intent/api/v1/network-device-poller/cli/legit-reads
9  * Example of a valid additional comment:
10 *   device: PDX-M
11 *   command: show ip int bri
12 * The app will call the Cisco DNA Center REST APIs to:
13 * - obtain a Cisco DNA Center token
14 * - identify the device UUID for the device with the hostname
15 * - send the CLI command to device with the command runner APIs
16 * - retrieve the command output
17 * - post the command output in the incident notes
18 *
19 * All application logs start with "DNA Custom Workflow -- "
20 *
21 * @author gabi@cisco.com, Gabriel Zapodeanu, TME, Cisco Systems
22 * Thank you szapodeanu19@gmail.com, Stephan Zapodeanu, CS Student, Purdue University, for your
23 * contributions to this app development.
24 */
25 (function executeRule(current, previous /*null when async*/) {
```

## Create New Custom Workflow

1. Create new app
2. Write business rule
3. Code development – actions executed when business rule executes

App documentation

*Note: Source-code co-development with  
Stephan Zapodeanu, MS Student, Purdue University*

# Network Troubleshooting – App Workflow

- Select the last additional comment from incident (the current table)
- Verify the pre-defined format for device and command
- Retrieve from incident the IP address for the Cisco Catalyst Center reporting the issue
- Using the IP address, retrieve the Cisco Catalyst Center username and MID server from the configuration of the Cisco DNA app
- GET the Cisco Catalyst Center Auth token
- API call to retrieve the device UUID by hostname.
- Command Runner API, method POST, send the CLI command to device
- Update incident with status
- Retrieve the file content using the GET file API, parse the content
- Update the current record with the CLI command output or error message, if any

The screenshot displays the 'Incident INC0017887' interface. It shows a list of activities with three entries highlighted by colored boxes and corresponding labels:

- Field changes** (2024-01-24 15:13:27): Shows the incident assigned to Gabi Zapodeanu, with the state 'In Progress' and 'was New'.
- Command output** (2024-01-24 15:11:17): Shows the command 'show ip bgp' and its output, including BGP table version, status codes, origin codes, and network next hop metric.
- Command sent** (Additional comments): Shows the command 'show ip bgp' sent to the device 'PDX-RO'.
- Device and CLI Command** (Additional comments): Shows the device 'PDX-RO' and the command 'show ip bgp'.

# Network Troubleshooting – Code Development – cont.

**Business Rule Runner**  
Send Command Runner

When to run: Actions Advanced

Condition: [Empty]

Script:

```
24 (function executeRule(current, previous /*null when async*/) {  
25 // Retrieve the last comment from incident  
26 var lastComment = current.comments.getJournalEntry(1);  
27 gs.info("DNA Custom Workflow -- last comment: \n" + lastComment);  
28  
29 lastCommentList = lastComment.split("\n");  
30  
31 // Retrieve the Cisco DNA Center IP address from current table of preconfigured controllers  
32 var dnacIpAddress = current.x_caci_cisco_dna_cisco_dna_center_ip_address;  
33 gs.info("DNA Custom Workflow -- Cisco DNA Center: " + dnacIpAddress);  
34  
35 // Get the username and midserver for the DNAC  
36 var prop = new GlideRecord('x_caci_cisco_dna_cisco_dna_controller');  
37 prop.addQuery('ip_address_of_dna_engine_controller', dnacIpAddress);  
38 prop.query();  
39 while (prop.next()) {  
40 var username = prop.getValue('user_name');  
41 var midserver = prop.getDisplayValue('mid_server_used_to_connect_to_dnac');  
42 //var password = prop.password_of_the_dna_engine_controller.getDecryptedVal  
43  
44 gs.info("DNA Custom Workflow -- Cisco DNA Center username : " + username);  
45 gs.info("DNA Custom Workflow -- Cisco DNA Center MID server : " + midserver);  
46  
47 // Set password (for demo)  
48 var PASSWORD  
49  
50
```

Select the last additional comment from incident (the current table)

Retrieve from the current incident the IP address for the Cisco Catalyst Center reporting the issue

Using the IP address, retrieve the Cisco Catalyst Center username and MID server from the configuration of the Cisco DNA app

**Incident INC0017887**  
Follow Update Create Cisco DNA Change Request Resolve Delete

Short description: Device name 'PDX-RO' at site 'Global/OR/PDX/Floor-2': BGP is down with neighbor '10.93.131.2'

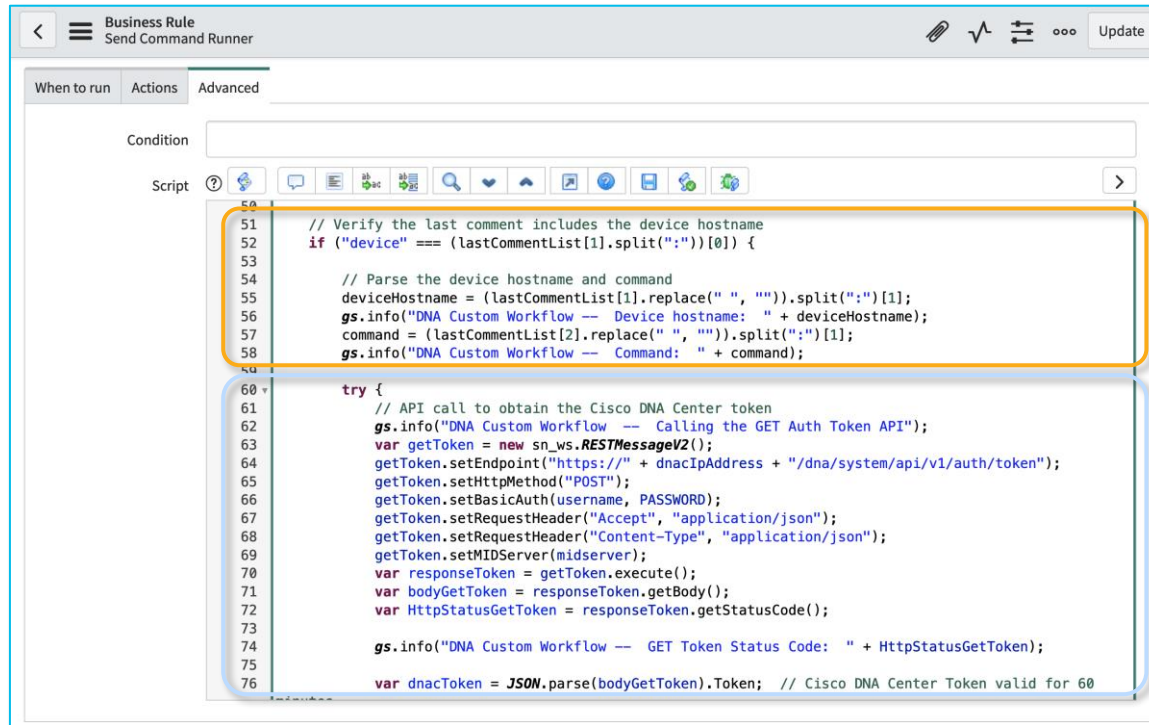
Additional comments (Customer visible):

Configuration item: PDX-RO

Notes Related Records Resolution Information Cisco DNA

Cisco DNA Center IP Address: 10.93.141.45

# Network Troubleshooting – Code Development – cont.



The screenshot shows the 'Business Rule Send Command Runner' interface. The 'Advanced' tab is selected, and the 'Script' section contains the following code:

```
50  
51 // Verify the last comment includes the device hostname  
52 if ("device" == (lastCommentList[1].split(":"))[0]) {  
53  
54     // Parse the device hostname and command  
55     deviceHostname = (lastCommentList[1].replace(" ", "").split(":")[1];  
56     gs.info("DNA Custom Workflow -- Device hostname: " + deviceHostname);  
57     command = (lastCommentList[2].replace(" ", "").split(":")[1];  
58     gs.info("DNA Custom Workflow -- Command: " + command);  
59  
60     try {  
61         // API call to obtain the Cisco DNA Center token  
62         gs.info("DNA Custom Workflow -- Calling the GET Auth Token API");  
63         var getToken = new sn_ws.RESTMessageV2();  
64         getToken.setEndpoint("https://" + dnacIpAddress + "/dna/system/api/v1/auth/token");  
65         getToken.setHttpMethod("POST");  
66         getToken.setBasicAuth(username, PASSWORD);  
67         getToken.setRequestHeader("Accept", "application/json");  
68         getToken.setRequestHeader("Content-Type", "application/json");  
69         getToken.setMIDServer(midserver);  
70         var responseToken = getToken.execute();  
71         var bodyGetToken = responseToken.getBody();  
72         var HttpStatusGetToken = responseToken.getStatusCode();  
73  
74         gs.info("DNA Custom Workflow -- GET Token Status Code: " + HttpStatusGetToken);  
75  
76         var dnacToken = JSON.parse(bodyGetToken).Token; // Cisco DNA Center Token valid for 60
```

Verify the pre-defined format  
for device and command

GET the Cisco Catalyst Center  
Auth token

# Network Troubleshooting – API call details

API call to retrieve the device UUID by hostname:  
.setEndpoint – API resource  
.setHttpMethod – API method  
.setRequestHeaders – content type and auth token  
.setMIDServer – the MID server reaching out Cisco Catalyst Center

Call the API and parse the response

Log the API status code and device Id

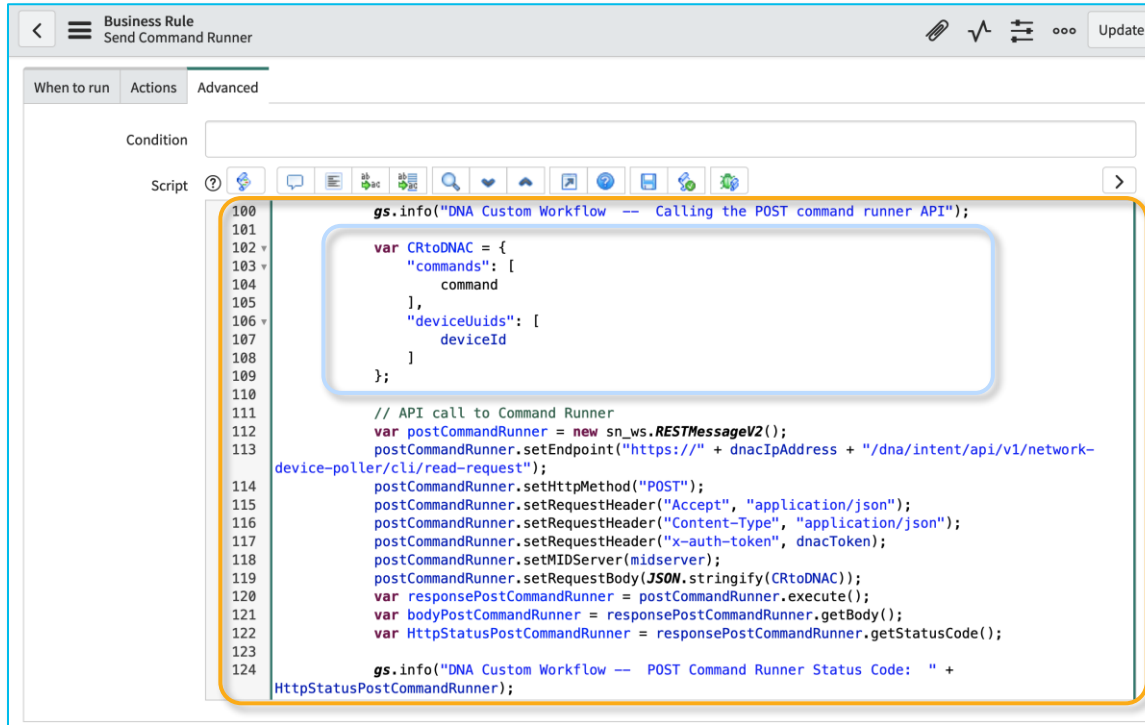
The screenshot shows the 'Business Rule Send Command Runner' configuration window. The 'Advanced' tab is selected, showing a 'Script' section. The script contains the following code:

```
77 //gs.info("DNA Custom Workflow --- Token: " + dnacToken); // For Troubleshooting
78
79 // API to get the device uuid using the device hostname
80 gs.info("DNA Custom Workflow --- Calling the GET device API");
81 var getDevice = new sn_ws.RESTMessageV2();
82 getDevice.setEndpoint("https://" + dnacIpAddress + "/dna/intent/api/v1/network-
83 device?hostname=" + deviceHostname);
84 getDevice.setHttpMethod("GET");
85 getDevice.setRequestHeader("Accept", "application/json");
86 getDevice.setRequestHeader("Content-Type", "application/json");
87 getDevice.setRequestHeader("x-auth-token", dnacToken);
88 getDevice.setMIDServer(midserver);
89 var responseGetDevice = getDevice.execute();
90 var bodyGetDevice = responseGetDevice.getBody();
91 var HttpStatusGetDevice = responseGetDevice.getStatusCode();
92
93 gs.info("DNA Custom Workflow --- GET Device Status Code: " + HttpStatusGetDevice);
94 //gs.info("DNA Custom Workflow --- GET device details: " + bodyGetDevice); // For
95 Troubleshooting
96
97 var deviceId = JSON.parse(bodyGetDevice).response[0].id;
98 gs.info("DNA Custom Workflow --- Device Id: " + deviceId);
99
100 // Payload for API call to Command Runner
101 gs.info("DNA Custom Workflow --- Calling the POST command runner API");
```

The script is annotated with colored boxes: a green box highlights the entire script, a blue box highlights the GET device API call setup (lines 81-88), an orange box highlights the execution and response parsing (lines 89-91), and a yellow box highlights the logging of the status code (line 93).

Note: You will need to provide a MID server for the API call

# Network Troubleshooting – Code Development – cont.



The screenshot shows the Cisco Business Rule Editor interface. The title bar reads "Business Rule Send Command Runner". Below the title bar are tabs for "When to run", "Actions", and "Advanced". The "Advanced" tab is selected. A "Condition" field is empty. Below it is a "Script" editor with a toolbar. The script is as follows:

```
100 gs.info("DNA Custom Workflow -- Calling the POST command runner API");
101
102 var CRtoDNAC = {
103   "commands": [
104     command
105   ],
106   "deviceUuids": [
107     deviceId
108   ]
109 };
110
111 // API call to Command Runner
112 var postCommandRunner = new sn_ws.RESTMessageV2();
113 postCommandRunner.setEndpoint("https://" + dnacIpAddress + "/dna/intent/api/v1/network-
device-poller/cli/read-request");
114 postCommandRunner.setHttpMethod("POST");
115 postCommandRunner.setRequestHeader("Accept", "application/json");
116 postCommandRunner.setRequestHeader("Content-Type", "application/json");
117 postCommandRunner.setRequestHeader("x-auth-token", dnacToken);
118 postCommandRunner.setMIDServer(midserver);
119 postCommandRunner.setRequestBody(JSON.stringify(CRtoDNAC));
120 var responsePostCommandRunner = postCommandRunner.execute();
121 var bodyPostCommandRunner = responsePostCommandRunner.getBody();
122 var HttpStatusPostCommandRunner = responsePostCommandRunner.getStatusCode();
123
124 gs.info("DNA Custom Workflow -- POST Command Runner Status Code: " +
HttpStatusPostCommandRunner);
```

Command Runner API  
payload – requires the CLI  
command and device UUID

Command Runner API,  
method POST, send the CLI  
command to devices



# Network Troubleshooting – Code Development – cont.

Business Rule Runner  
Send Command Runner

When to run Actions Advanced

Condition

Script

```
// Update incident with the status
current.comments = "Command: " + command + ", Sent to device: " + deviceHostname;
current.update();

// 3 second timer (in ms), wait for execution of command runner
var sleepTimer = 3000;
var endSleep = new GlideDuration().getNumericValue() + sleepTimer;
while (new GlideDuration().getNumericValue() < endSleep) {
    // Wait
}

// GET the task Id status
var getTask = new sn_ws.RESTMessageV2();
getTask.setEndpoint("https://" + dnacIpAddress + "/dna/intent/api");
getTask.setHttpMethod("GET");
getTask.setRequestHeader("Accept", "application/json");
getTask.setRequestHeader("Content-Type", "application/json");
getTask.setRequestHeader("x-auth-token", dnacToken);
getTask.setMIDServer(midservice);
var requestGetTask = getTask.execute();
var bodyGetTask = requestGetTask.getBody();
var HttpStatusGetTask = requestGetTask.getStatusCode();

gs.info("DNA Custom Workflow");
//gs.info("DNA Custom Workflow");
```

Incident  
INC0017887

Follow Update

GZ Gabi Zapodeanu  
Command: show ip bgp, Sent to device: PDX-RO

GZ Gabi Zapodeanu  
device: PDX-RO  
command: show ip bgp

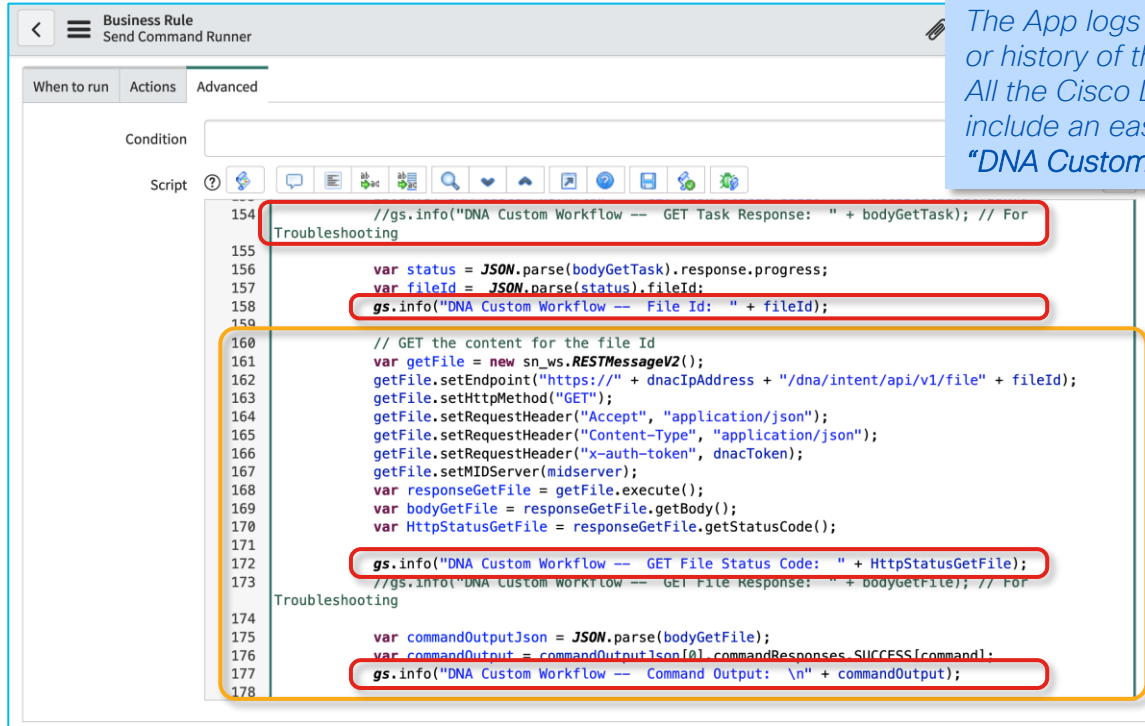
Update incident with status

Wait for 3 seconds and check task status. Retrieve the file Id with the output.

## Note:

Incident updated only if API calls to obtain the Cisco Catalyst Center token and the device UUID are successful

# Network Troubleshooting – Code Development – cont.



```
154 //gs.info("DNA Custom Workflow -- GET Task Response: " + bodyGetTask); // For
    Troubleshooting
155
156 var status = JSON.parse(bodyGetTask).response.progress;
157 var fileId = JSON.parse(status).fileId;
158 gs.info("DNA Custom Workflow -- File Id: " + fileId);
159
160 // GET the content for the file Id
161 var getFile = new sn_ws.RESTMessageV2();
162 getFile.setEndpoint("https://" + dnacIpAddress + "/dna/intent/api/v1/file" + fileId);
163 getFile.setHttpMethod("GET");
164 getFile.setRequestHeader("Accept", "application/json");
165 getFile.setRequestHeader("Content-Type", "application/json");
166 getFile.setRequestHeader("x-auth-token", dnacToken);
167 getFile.setMIDServer(midserver);
168 var responseGetFile = getFile.execute();
169 var bodyGetFile = responseGetFile.getBody();
170 var HttpStatusGetFile = responseGetFile.getStatusCode();
171
172 gs.info("DNA Custom Workflow -- GET File Status Code: " + HttpStatusGetFile);
173 //gs.info("DNA Custom Workflow -- GET File Response: " + bodyGetFile); // For
    Troubleshooting
174
175 var commandOutputJson = JSON.parse(bodyGetFile);
176 var commandOutput = commandOutputJson[0].commandResponses.SUCCESS[command];
177 gs.info("DNA Custom Workflow -- Command Output: \n" + commandOutput);
178
```

## Notes:

The App logs are very useful for troubleshooting, or history of the business rule's executions. All the Cisco DNA Custom Workflow App logs include an easy to identify comment – example: "DNA Custom Workflow -- "

Retrieve the file content using the GET file API, parse the content and log info

# Network Troubleshooting – Code Development – cont.

The screenshot shows the 'Business Rule Runner' interface with the 'Advanced' tab selected. The 'Script' section contains the following code:

```
179 // Update incident with the command output
180 if (commandOutput === undefined) {
181   commandOutput = "Something went wrong, please verify your input and try again";
182 }
183
184 current.comments = "Command Output:\n\n" + commandOutput;
185 current.update();
186
187 gs.info("DNA Custom Workflow -- End of Command Runner App");
188
189 } catch (ex) {
190   var message = ex.getMessage();
191
192   // If error occurs, log to application logs
193   if (message === undefined) {
194     gs.info("DNA Custom Workflow -- Something went wrong, please try again");
195   } else {
196     current.comments = "Something went wrong, please try again";
197     gs.info("DNA Custom Workflow -- Error: " + message);
198     current.comments = "DNA Custom Workflow -- Error: " + message;
199   }
200   current.update();
201 }
202
203
204 })(current, previous);
```

Two blue callout boxes highlight specific parts of the code:

- Update the current record with the CLI command output**: Points to lines 184-185, where the command output is added to the incident comments and the record is updated.
- Update the current record with error message, if any**: Points to lines 196-197, where an error message is added to the incident comments and the record is updated.

The comment box shows the output of a 'show ip bgp' command. The output is as follows:

```
GZ Gabi Zapodeanu Additional comments • 2024-01-24 15:11:17
Command Output:
show ip bgp
BGP table version is 18, local router ID is 10.93.141.23
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
x best-external, a additional-path, c RIB-compressed,
t secondary path, L long-lived-stale,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

Network Next Hop Metric LocPrf Weight Path
*> 10.93.130.0/24 10.93.141.17 0 0 65003 i
*> 10.93.141.23/32 0.0.0.0 0 0 32768 i
*> 11.1.1.1/32 10.93.141.42 0 0 65001 i
PDX-RO#
```

# Network Troubleshooting App Workflow

The screenshot displays the Cisco Catalyst Center web interface. The top navigation bar includes the Cisco logo, the text 'Catalyst Center', and a breadcrumb trail: 'Assurance / Dashboards / Issues and Events'. On the right side of the header, there are icons for favorites, search, notifications, help, and a user profile labeled 'admin'.

The left sidebar contains a navigation menu with 'Issues' and 'Events' tabs. Under 'Issues', there is a filter for 'NY' showing '2 P1 | 2 Open'. Below this, a 'Total Open: 2' summary is shown, followed by a 'Search Table' input and a list of filters for 'Priority' (P2) and 'Issue Type' (Network D).

The main content area is titled '(P2)Network Device Interface Connectivity - BGP Down' with a close button. It shows a time range of 'Jan 23, 2024 3:30 PM - Jan 24, 2024 3:30 PM | Global'. Summary statistics are displayed: '1 Open Issues', '1 Area' (1 Buildings, 1 Floors), and '1 BORDER ROUTER'.

A table lists the issues. The first row is highlighted with a green border:

<input type="checkbox"/>	Issue	Site	Device	Device Type	First Occurred Time	Last O
<input type="checkbox"/>	BGP is down on 'PDX-RO' with neighbor '10.93.131.2'	OR/PDX/Floor-2	PDX-RO	Cisco Cloud Services Router 1000V	Jan 24, 2024 3:05 PM	Jan 24

Below the table, it indicates '1 Record(s)' and provides options to 'Show Records: 10' and a pagination control '1 - 1'.

A blue button at the bottom center of the interface reads 'New Cisco Catalyst Center issue'.

# Network Troubleshooting App Workflow – cont.

**Incident**  
INC0017887

Number: INC0017887

\* Caller: [Search] [Info]

Watch list: [Add] [Remove]

Opened: 2024-01-24 15:09:12

Urgency: 2 - Medium

Assigned to: Gabi Zapodeanu

Assignment group: Network

State: In Progress

Closed: [Calendar]

\* Short description: Device name 'PDX-RO' at site 'Global/OR/PDX/Floor-2': BGP is down with neighbor '10.93.131.2'

Additional comments (Customer visible): [Text Area]

Configuration item: PDX-RO

**Resolution Information**

**Cisco DNA**

Cisco DNA Center IP Address: 10.93.141.45

Cisco DNA Event Domain: -- None --

Cisco 360 View: <https://10.93.141.45/dna/assurance/device/details?id=01f7cdf2-2298-42c7-bb74-dc68e3c3a051>

## ServiceNow Incident details

1. If needed, update:
  - incident urgency
  - assign to team and engineer
  - state
2. Find more details about the incident in the Cisco DNA tab

# Network Troubleshooting App Workflow – cont.

The screenshot displays the ServiceNow Incident Management interface for incident INC0017887. The left sidebar shows navigation options like Home, Incidents, Configuration Items, Change Requests, Asset - All Assets, and MID Server - Dashboard. The main form area is titled 'Incident INC0017887' and includes a 'Short description' field with the text: 'Device name 'PDX-RO' at site 'Global/OR/PDX/Floor-2': BGP is down with neighbor '10.93.131.2''. Below this is an 'Additional comments (Customer visible)' field and a 'Configuration item' dropdown set to 'PDX-RO'. The 'Cisco DNA' tab is active, showing fields for 'Cisco DNA Center IP Address' (10.93.141.45, highlighted with an orange box and a blue circle with '1'), 'Cisco DNA Event Domain' (set to '-- None --'), and 'Cisco 360 View' (a URL). Below these is a 'Cisco DNA Network Details' section containing 'Connected Device:1' information (Device Id, Model, IP Address, Host Name, Device Software Version, MAC Address) and 'Neighbor topology' information (Nodes, Node:1 details). A blue callout box on the right contains the text: 'ServiceNow Incident details' followed by a numbered list: '1. Catalyst Center creating the incident' and '2. Details for the device reporting the issue'. A blue circle with '2' is placed near the 'Cisco DNA Network Details' section.

ServiceNow Incident details

1. Catalyst Center creating the incident
2. Details for the device reporting the issue

# Network Troubleshooting App Command/Output

**Left Screenshot (Incident INC0017887):**

- Annotation 1:** Points to the 'Additional comments (Customer visible)' field containing: device: PDX-RO, command: show ip bgp.
- Annotation 2:** Points to the 'Update' button.

**Right Screenshot (Activities for Incident INC0017887):**

- Annotation 1:** Points to the first activity entry: GZ Gabi Zapodeanu, device: PDX-RO, command: show ip bgp.
- Annotation 2:** Points to the second activity entry: GZ Gabi Zapodeanu, Command: show ip bgp, Sent to device: PDX-RO.
- Annotation 3:** Points to the third activity entry: GZ Gabi Zapodeanu, Command Output: show ip bgp, BGP table version is 18, local router ID is 10.93.141.23, Status codes: s suppressed, d damped, h history, \* valid, > best, i - internal, r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter, x best-external, a additional-path, c RIB-compressed, t secondary path, L long-lived-stale, Origin codes: i - IGP, e - EGP, ? - incomplete, RPKI validation codes: V valid, I invalid, N Not found, Network Next Hop Metric LocPrf Weight Path, \*> 10.93.130.0/24 10.93.141.17 0 0 65003 i, \*> 10.93.141.23/32 0.0.0.0 0 32768 i, \*> 11.1.1.1/32 10.93.141.42 0 0 65001 i, PDX-RO#.

**Callout Boxes:**

- Additional Comments:**
  1. CLI command to device, using the predefined format
  2. Update – send command
- 1. Device and CLI Command**
- 2. Command sent**
- 3. Command output**

**Note:** The network troubleshooting workflow does not require VPN access, or SSH to network devices.

# Network Troubleshooting App Command/Output – cont.

The screenshot displays the 'Incident' view for INC0017887. On the left, the 'Additional comments (Customer visible)' field contains the text 'device: PDX-RO' and 'command: show ip int bri'. Below this, a blue button labeled 'Command sent' is visible. The main area shows a list of activities. The first activity, labeled '1', is a command output from GZ (Gabi Zapodeanu) dated 2024-01-24 15:39:58. The output text is: 'show ip int bri', 'Interface IP-Address OK? Method Status Protocol', 'GigabitEthernet1 10.93.141.41 YES NVRAM up up', 'GigabitEthernet2 10.93.131.1 YES NVRAM administratively down down', 'GigabitEthernet3 unassigned YES NVRAM down down', 'Loopback1 10.93.141.23 YES NVRAM up up', and 'PDX-RO#'. The second activity, labeled '2', is an additional comment from GZ dated 2024-01-24 15:39:51, with the text 'Command: show ip int bri, Sent to device: PDX-RO'. A third activity, also labeled '2', is another additional comment from GZ dated 2024-01-24 15:39:46. A legend at the bottom indicates: '1. Command output' and '2. Timestamps – average of 10 seconds between command sent and response'.

Incident INC0017887

Follow Update

Short description

Device name 'PDX-RO' at site 'Global/OR/PDX/Floor-2': B

Additional comments (Customer visible)

device: PDX-RO  
command: show ip int bri

Configuration item PDX-RO

Command sent

Activities: 11

GZ Gabi Zapodeanu

Additional comments • 2024-01-24 15:39:58

Command Output:

```
show ip int bri
Interface IP-Address OK? Method Status Protocol
GigabitEthernet1 10.93.141.41 YES NVRAM up up
GigabitEthernet2 10.93.131.1 YES NVRAM administratively down down
GigabitEthernet3 unassigned YES NVRAM down down
Loopback1 10.93.141.23 YES NVRAM up up
PDX-RO#
```

GZ Gabi Zapodeanu

Additional comments • 2024-01-24 15:39:51

Command: show ip int bri, Sent to device: PDX-RO

GZ Gabi Zapodeanu

Additional comments • 2024-01-24 15:39:46

1. Command output
2. Timestamps – average of 10 seconds between command sent and response



# Network Troubleshooting App Command/Output – cont.

The screenshot displays the Network Troubleshooting App interface for incident INC0017887. The interface is divided into two main sections: a left sidebar for incident details and a right pane for command output.

**Left Sidebar:**

- Incident Header:** INC0017887, with buttons for Follow, Update, Create Cisco DNA Change Request, Resolve, and Delete.
- Short description:** Device name 'PDX-RO' at site 'Global/OR/PDX/Floor-2': B...
- Additional comments (Customer visible):** device: PDX-RO, command: show logging.
- Configuration item:** PDX-RO (highlighted with a green box).

**Right Pane:**

- Incident Header:** INC0017887, with buttons for Follow, Update, Create Cisco DNA Change Request, Resolve, and Delete.
- Command Output:** A log of system messages. A blue box highlights the following messages:
  - Jan 24 15:05:03: %SEC\_LOGIN-5-LOGIN\_SUCCESS: Login Success [user: dnacenter] [Source: 10.93.141.45] [localport: 22] at 15:05:03 PST Wed Jan 24 2024
  - Jan 24 15:05:06: %DMI-5-AUTH\_PASSED: R0/0: dmiauthd: User 'dnacenter' authenticated successfully from 10.93.141.45:60995 and was authorized for netconf over ssh. External groups: PRIV15
  - Jan 24 15:05:54: %DMI-5-AUTH\_PASSED: R0/0: dmiauthd: User 'demotme' authenticated successfully from 10.24.137.51:54014 and was authorized for netconf over ssh. External groups: PRIV15
  - Jan 24 15:05:56: %BGP-5-NBR\_RESET: Neighbor 10.93.131.2 reset (Interface flap)
  - Jan 24 15:05:56: %DUAL-5-NBRCHANGE: EIGRP-IPv4 123: Neighbor 10.93.131.2 (GigabitEthernet2) is down: interface down
  - Jan 24 15:05:56: %BGP-5-ADJCHANGE: neighbor 10.93.131.2 Down Interface flap
  - Jan 24 15:05:56: %BGP\_SESSION-5-ADJCHANGE: neighbor 10.93.131.2 IPv4 Unicast topology base removed from session Interface flap
  - Jan 24 15:05:56: %SYS-5-CONFIG\_P: Configured programmatically by process iosp\_vty\_100001\_dmiauthd\_fd\_170 from console as NETCONF on vty63
  - Jan 24 15:05:56: %DMI-5-CONFIG\_I: R0/0: dmiauthd: Configured from NETCONF/RESTCONF by demotme, transaction-id 566
  - Jan 24 15:05:58: %LINK-5-CHANGED: Interface GigabitEthernet2, changed state to administratively down
  - Jan 24 15:05:59: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet2, changed state to down

**Annotations:**

- A blue button labeled "Command sent" is positioned below the configuration item.
- A blue callout box contains the text: "Interface was disabled via NETCONF by user 'demotme', at the time the ServiceNow incident was created".

# Application Logs – Network Troubleshooting

The screenshot shows the ServiceNow Application Logs interface. A blue callout box with two numbered steps is overlaid on the top right:

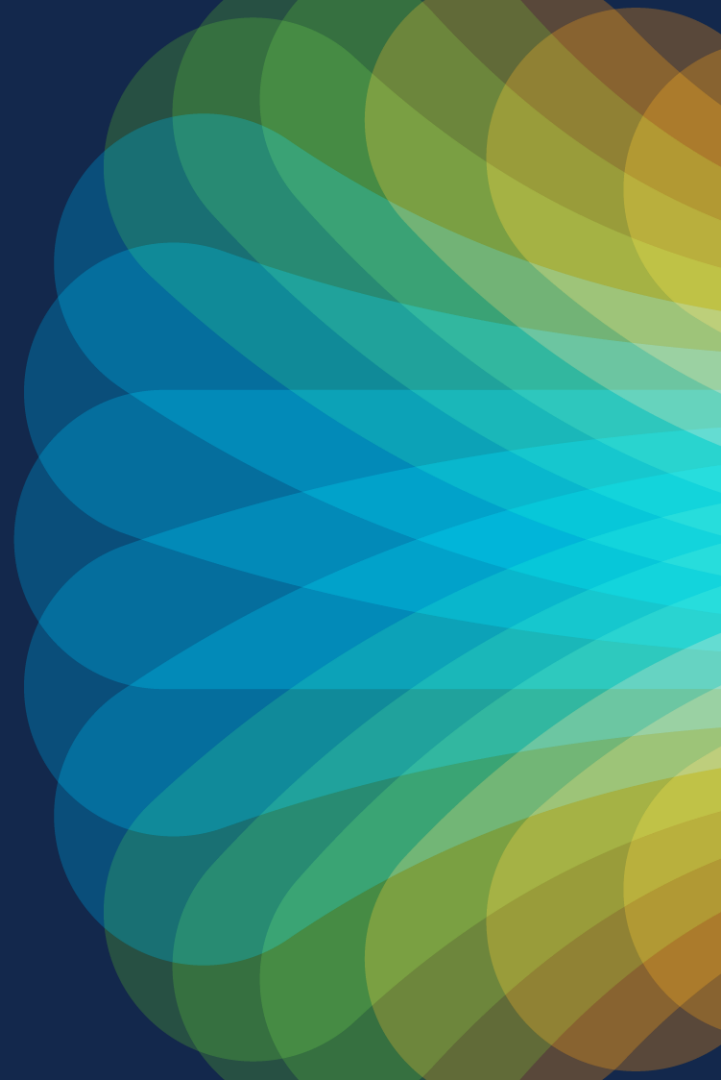
1. Search for Applications Logs.
2. Filter the logs created today, by application Cisco DNA Custom Workflows

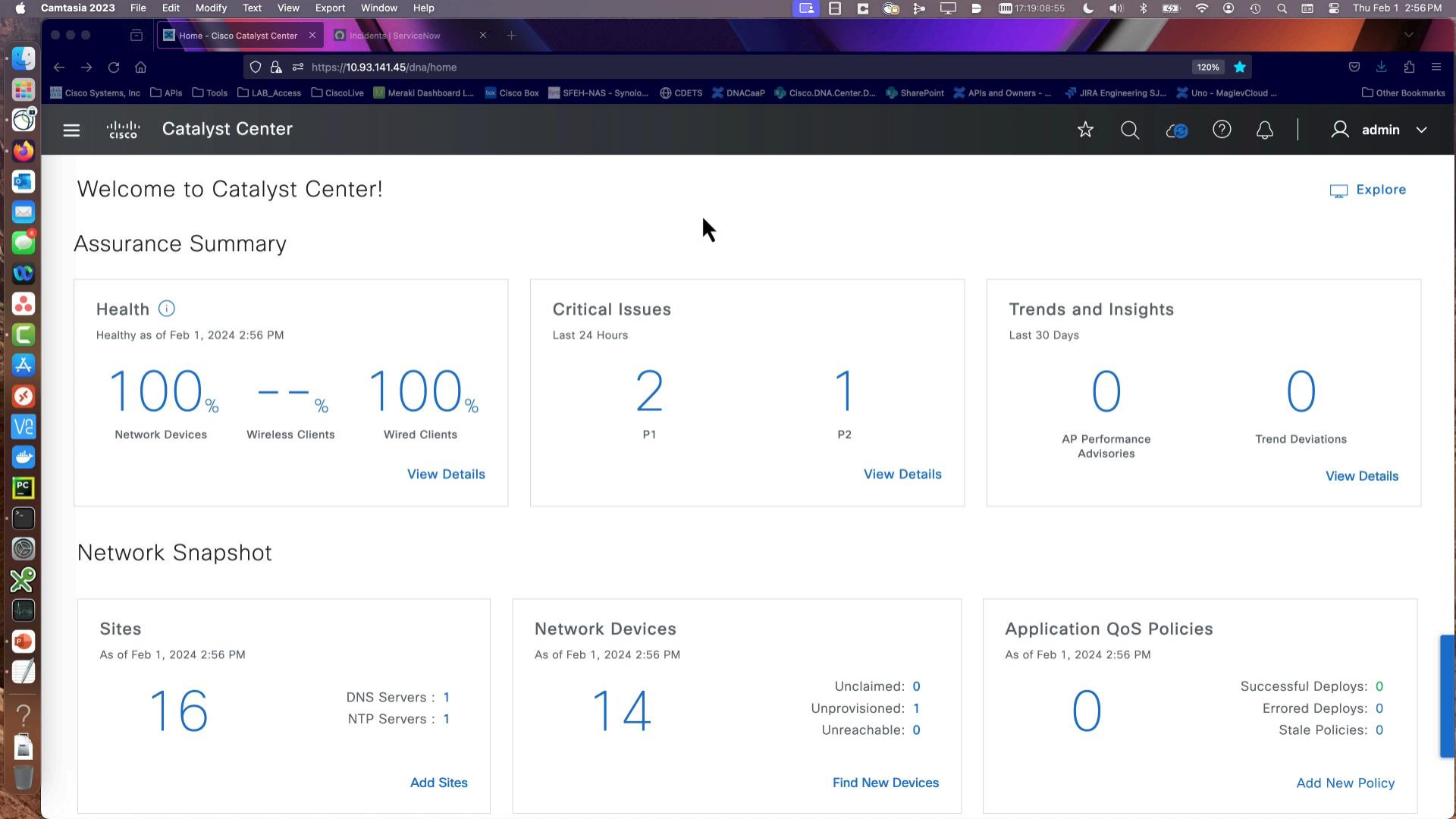
Callout 1 points to the search bar where 'application logs' is entered. Callout 2 points to the filter bar where 'All > App Scope = Cisco DNA Custom Workflows > Created on Today' is selected.

The main table displays the following logs:

Created	Level	Message	App Scope	Source
2024-01-24 15:53:56	Information	DNA Custom Workflow -- Cisco DNA Center username : servicenow	Cisco DNA Custom Workflows	x_caci_dna_custom
2024-01-24 15:53:56	Information	DNA Custom Workflow -- Cisco DNA Center: 10.93.141.45	Cisco DNA Custom Workflows	x_caci_dna_custom
2024-01-24 15:53:56	Information	DNA Custom Workflow -- last comment: 2024-01-24 15:53:55 - Gabi Zapodeanu (Additional comments) Command: show cdp neigh, Sent to device: PDX-RO	Cisco DNA Custom Workflows	x_caci_dna_custom
2024-01-24 15:53:55	Information	DNA Custom Workflow -- POST Command Runner Status Code: 202	Cisco DNA Custom Workflows	x_caci_dna_custom
2024-01-24 15:53:55	Information	DNA Custom Workflow -- Task Id: 018d3de5-0056-7529-90f8-d10622de838	Cisco DNA Custom Workflows	x_caci_dna_custom
2024-01-24 15:53:54	Information	DNA Custom Workflow -- Calling the POST command runner API	Cisco DNA Custom Workflows	x_caci_dna_custom
2024-01-24 15:53:54	Information	DNA Custom Workflow -- Device Id: 01f7cdf2-2298-42c7-bb74-dc68e3c3a051	Cisco DNA Custom Workflows	x_caci_dna_custom
2024-01-24 15:53:54	Information	DNA Custom Workflow -- GET Device Status Code: 200	Cisco DNA Custom Workflows	x_caci_dna_custom
2024-01-24 15:53:53	Information	DNA Custom Workflow -- Calling the GET device API	Cisco DNA Custom Workflows	x_caci_dna_custom
2024-01-24 15:53:53	Information	DNA Custom Workflow -- GET Token Status Code: 200	Cisco DNA Custom Workflows	x_caci_dna_custom

# Demo Network Troubleshooting App





Welcome to Catalyst Center!

Explore

## Assurance Summary

### Health

Healthy as of Feb 1, 2024 2:56 PM

100%

Network Devices

--%

Wireless Clients

100%

Wired Clients

View Details

### Critical Issues

Last 24 Hours

2

P1

1

P2

View Details

### Trends and Insights

Last 30 Days

0

AP Performance  
Advisories

0

Trend Deviations

View Details

## Network Snapshot

### Sites

As of Feb 1, 2024 2:56 PM

16

DNS Servers : 1  
NTP Servers : 1

Add Sites

### Network Devices

As of Feb 1, 2024 2:56 PM

14

Unclaimed: 0  
Unprovisioned: 1  
Unreachable: 0

Find New Devices

### Application QoS Policies

As of Feb 1, 2024 2:56 PM

0

Successful Deploys: 0  
Errored Deploys: 0  
Stale Policies: 0

Add New Policy

# Cisco DNA Custom Workflows Open-Source Code

[https://github.com/zapodeanu/dna\\_custom\\_workflows](https://github.com/zapodeanu/dna_custom_workflows)

Search or jump to... Pull requests Issues Codespaces Marketplace Explore

zapodeanu / dna\_custom\_workflows Public

<> Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main 1 branch 0 tags Go to file Add file <> Code

zapodeanu added screenshot 303e6c9 3 minutes ago 35 commits

CODE_OF_CONDUCT.md	added Licenses and some error cleanup	20 hours ago
CONTRIBUTING.md	added Licenses and some error cleanup	20 hours ago
LICENSE.txt	added Licenses and some error cleanup	20 hours ago
NOTICE.txt	Update NOTICE.txt	20 hours ago
README.md	added screenshot	3 minutes ago
command_runner.js	added command output validation	27 minutes ago
network_troubleshooting_message...	initial commit	10 minutes ago

README.md

### Cisco DNA Custom Workflows

#### About

Repo for Cisco DNA Center ITSM Integration (ServiceNow) Custom Workflows

- Readme
- View license
- Code of conduct
- 0 stars
- 1 watching
- 0 forks

#### Releases

No releases published  
[Create a new release](#)

The open-source code is for demos and proof-of-concepts only.

# Agenda

- Cisco Catalyst Center Platform
- ITSM (ServiceNow) Integration Overview
- CMDB Sync to Staging Table
- Events Notifications to Generic REST API Endpoint
- Network Troubleshooting Custom Workflow
- Summary

# ITSM Integration Benefits

- Real-time incident and change control integration
- Enable innovation and business agility
- Ready to use, fully customizable
- Cost reduction and increased efficiencies

The image displays three overlapping screenshots of the ServiceNow ITSM interface, demonstrating its integration with Cisco DNA Center.

**Top Screenshot: Configuration Items**  
This view shows a table of configuration items discovered from Cisco DNA. The table includes columns for Name, Class, IP Address, Discovery source, Location, and Serial number. Two items are highlighted: 'LO-CN' (IP Switch, 10.93.141.20) and 'PDX-M' (IP Switch, 10.93.141.17).

**Bottom-Left Screenshot: Incident Details (INC0017887)**  
This view shows the details of an incident. The 'Cisco DNA Suggested Actions' section displays a command output for a ping test. The 'Cisco DNA Event' section shows a log entry for the incident.

**Bottom-Right Screenshot: Incident Details (INC0017887) - Activities**  
This view shows the 'Activities' section of the incident, listing 17 activities. The activities are categorized by user (Gabi Zapodanu) and include command outputs for various network devices and configurations.

# Cisco EN Programmability GitHub Org

The screenshot shows the GitHub organization page for 'cisco-en-programmability'. The header includes the organization name, a search bar, and navigation tabs for Overview, Repositories (41), Projects, Packages, Teams (1), People (6), and Settings. The profile section features the Cisco EN logo, the organization name, a description: 'Cisco ENB Programmability Technical Marketing Engineering sample code for Cisco DNA Center REST APIs and Integrations', 53 followers, and an email address. Below this is a 'Pinned' section with six repositories:

- dnacentersdk** (Public): Cisco DNA Center Python SDK. Languages: Python. Stars: 62, Forks: 29.
- dnacenter-ansible** (Public): Cisco DNA Center Ansible modules. Languages: Python. Stars: 22, Forks: 24.
- terraform-provider-dnacenter** (Public): Cisco DNA Center Terraform Provider. Languages: Go. Stars: 13, Forks: 11.
- splunk-apps** (Public): Splunk Add-On App for Cisco DNA Center. Languages: Python. Stars: 2, Forks: 2.
- dnacenter\_day\_n** (Public): Applications that will automate Day N operations using Cisco DNA Center APIs and these libraries: Cisco DNA Center Python SDK, Cisco DNA Center Ansible Collection, Cisco DNA Center Terraform Provider.
- dnacenter\_webhook\_receiver** (Public): Sample code for a Cisco DNA Center Webhook Receiver.

- DevOps Catalyst Center use cases
- Python SDK
- Ansible modules
- Go SDK and Terraform provider
- Splunk Integration Apps
- SDA-as-Code
- Report Operations
- Day N use cases – Python SDK, Ansible, Terraform
- Jenkins open-source Integration and pipelines
- GitHub/GitLab open-source Integrations
- Compliance Use Case
- Custom Integration App
- Webhook Receiver
- Other sample code

<https://github.com/cisco-en-programmability>





# Continue your education

**CISCO** *Live!*

## **TECOPS-2158**

Cisco Catalyst Center Out-of-the-Box and Custom Integrations

Lab 8 - G106, 02/05/24, 08:45 AM

## **DEVNET-2958**

Version Control Tools Integrations - Cisco Catalyst Center Infrastructure-as-Code Use Cases

DevNet Classroom 1, 02/05/24, 01:30 PM

## **BRKOPS-2032**

3 Cisco Catalyst Center and ITSM Workflows: CMDB, Incident Management and SWIM

Session Room A10, 02/06/24, 11:30 AM

## **DEVNET-2157**

Cisco Catalyst Center-as-Code Network Compliance Use Cases

DevNet Classroom 1, 02/06/24, 01:30 PM

## **BRKOPS-2471**

Custom Workflows for the Cisco Catalyst Center Integration with ServiceNow

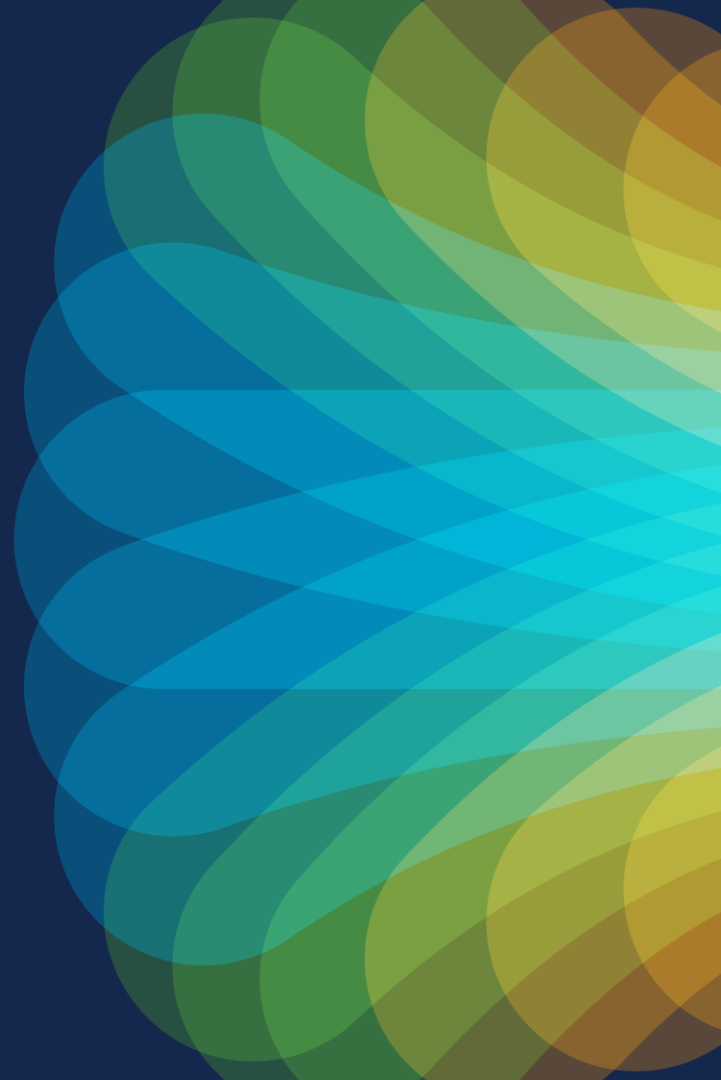
Session Room A14, 02/08/24, 05:00 PM



The bridge to possible

# Thank you

CISCO *Live!*



The background of the slide is a vibrant, abstract graphic. It features a large, stylized cloud on the left side, composed of overlapping, semi-transparent shapes in shades of red, orange, and yellow. To the right of the cloud, a bright, multi-colored sunburst or starburst pattern radiates from a central point, with rays extending towards the right edge of the frame. The colors in the sunburst transition through a spectrum from blue and purple on the left to yellow and orange on the right. The overall effect is energetic and colorful.

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Let's go