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Cisco Catalyst Center Platform:

APIs, Event Notifications, Integrations, and DevOps Resources

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DEVNET-1087

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How

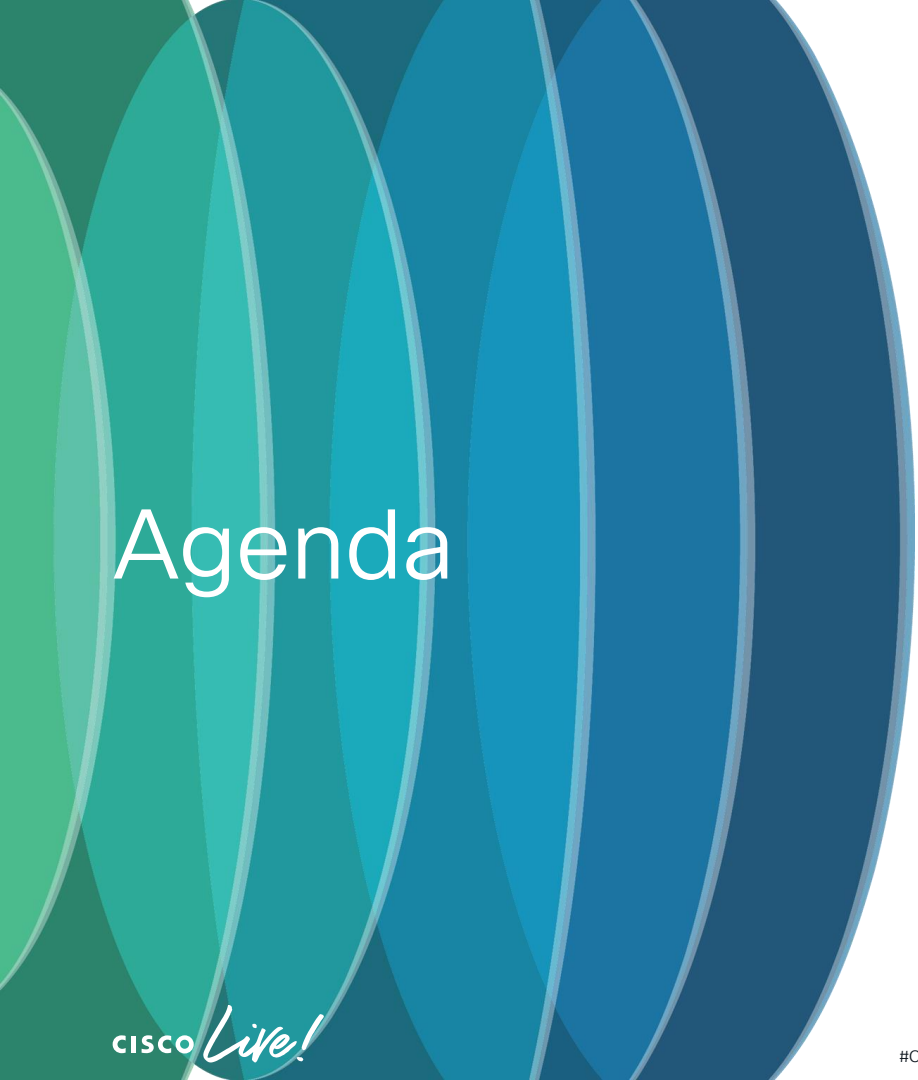
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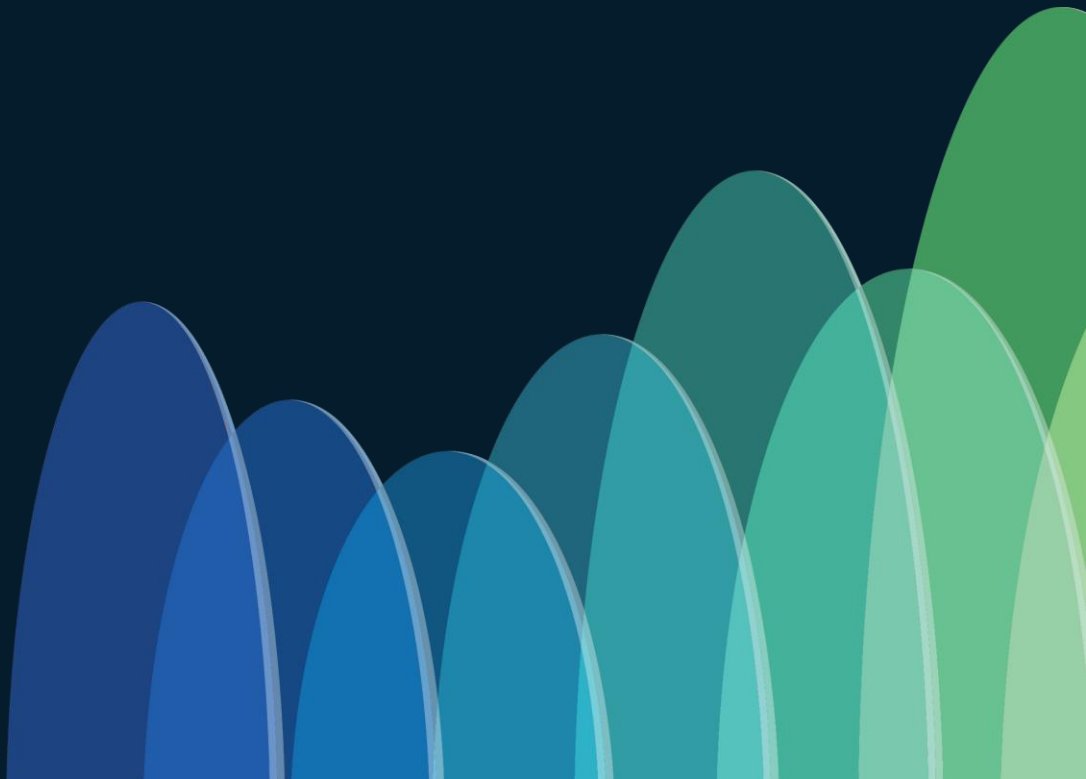




Agenda

- Catalyst Center Platform Overview
- REST APIs
- Event Notifications
- Integrations
- Developer Resources
- Summary

Catalyst Center Platform Overview



Catalyst Center Platform Vision



Efficient

Managing infrastructure as code while lowering OPEX



Consistent

Repeatable and precise intent-based outcomes



Scalable

Able to reduce time and effort with large network automation requirements



Secure

Secure APIs and integrations



Sustainable

Integrate sustainable devices and systems



Smart

260+ real time event notifications and AI/ML capabilities

The Value of Catalyst Center Platform



Automate

Implement changes from enterprise-sized deployments to minor adjustments



Integrate

Unlock new insights, streamline business workflows through integration into Cisco and 3rd Party Platforms

Alerting/notifications

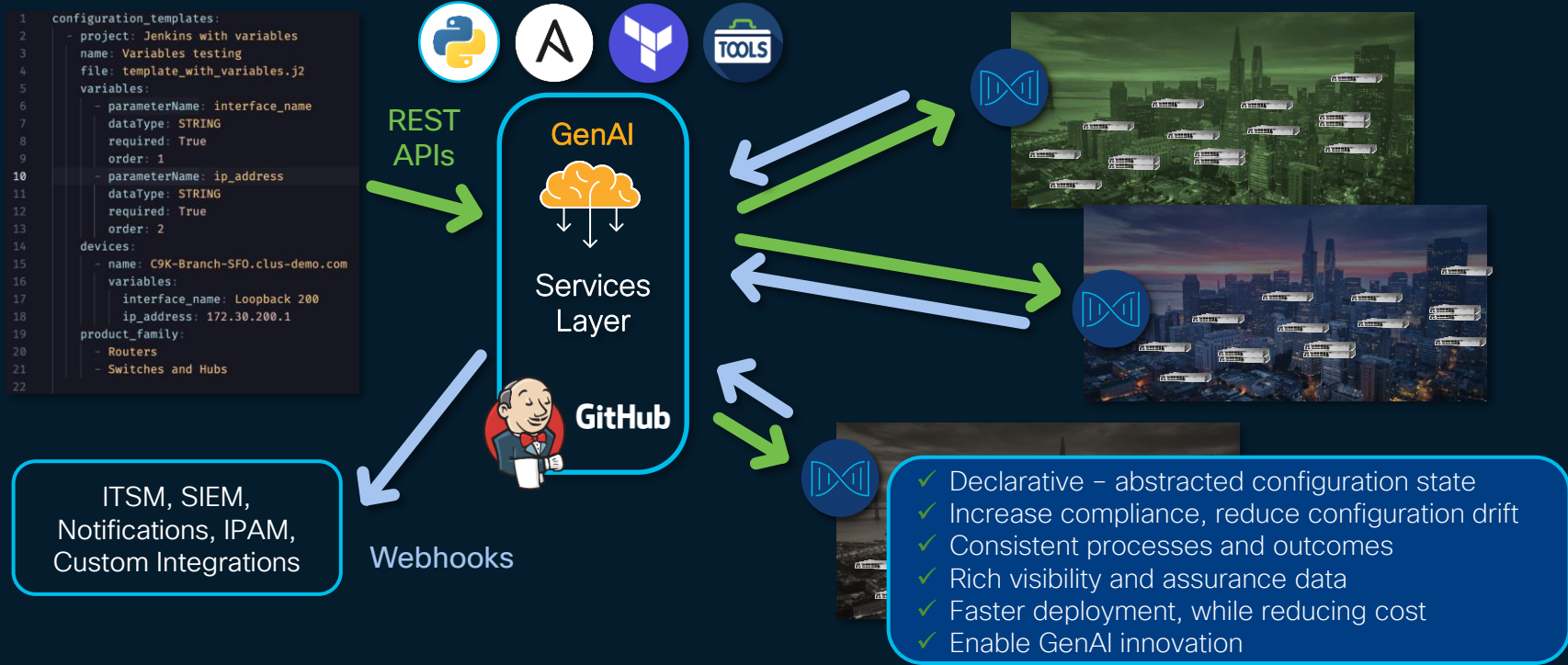
Real-time communications providing situational awareness and enabling data-driven decisions



Business process streamlining

Translate business process into multiplatform automation workflows

Multi Catalyst Center/Controller Managed Networks



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

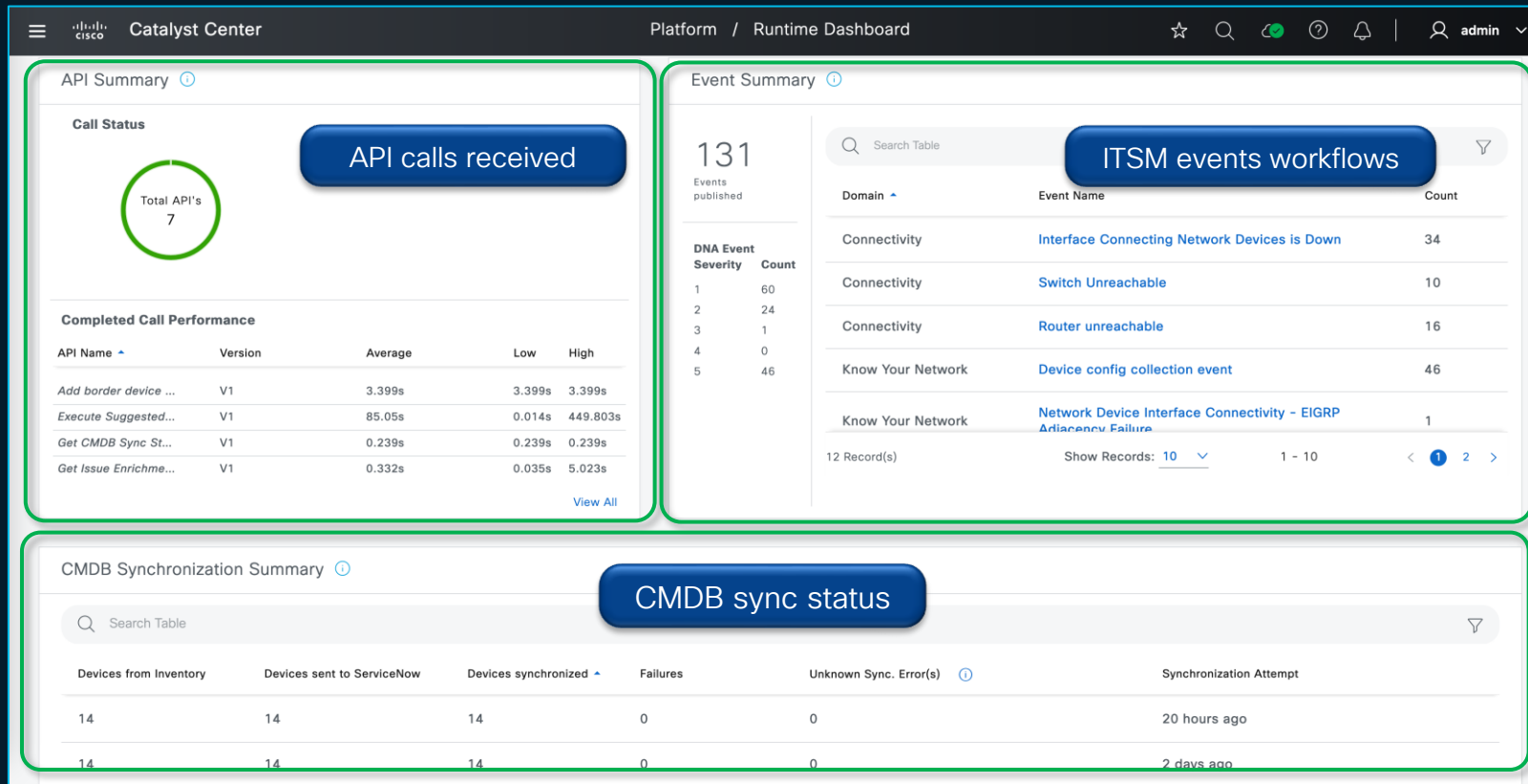
[View Details](#) | [Dismiss](#)

BUNDLE UPDATE

The Basic ITSM (ServiceNow) CMDB synchronization bundle is enabled and ready for configuration.

Jan 17 2024, 04:09 pm

Platform Runtime Dashboard



REST APIs



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 >

Review API docs, configure integration workflows and subscribe to events

Method	API Name	Description	URI	Action
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/\${deviceUid}/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/\${interfaceUid}/operation	Try

Try
Call an API without writing any code

Try an API Call

Try 'Get Device list'

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

PARAMETERS

QUERY PARAMETERS

☐ Select All

☒ hostname ⓘ

☐ LO-CN

☐ managementIpAddress ⓘ

☐ macAddress ⓘ

☐ locationName ⓘ

☐ serialNumber ⓘ

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      "bootDate": "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 API interface. On the left is a sidebar with navigation links: APIs, Integration Flows, Event Management, Integrations, Know Your Network, Applications, Clients, Compliance, Devices, EoX, Issues, Security Advisories, Sensors, Sites, Topology, Users, Operational Tasks, and Policy. The main panel shows the 'Get Device Count' endpoint with a GET method and the URL `https://10.93.141.45/dna/intent/api/v1/network-device/count`. Below the URL is a description: 'Returns the count of network devices based on the filter criteria by management IP address, mac address, hostname and location name'. A link to the 'Cisco DevNet API Guide' is provided. The interface has tabs for Parameters, Features, Responses, and Code Preview (which is highlighted with a green box). A language dropdown menu is open, showing options: Node - Unirest, Node - Request, Python (highlighted with a green box), Ruby, Javascript, and jQuery. The Python code preview is visible in the background, showing a REST client snippet for the same endpoint. At the bottom right of the interface are 'Close' and 'Try' buttons.

Code Preview
Generate code in few programming languages

Sync and Async APIs

Sync API

Get Site V2

GET https://10.93.141.45/dna/intent/api/v2/site

API to get site(s) by site-name-hierarchy or siteld or type. List all sites if these parameters are not given

[Cisco DevNet API Guide](#)

Parameters Responses Code Preview

200

The request was successful. The result is contained in the response body.

Schema Sample

```
root (map, required)
  response (array<map>, required)
    parentId (string, optional): Parent site Instance UUID (e.g. b27181bb-211b-40ec-ba5d-4a46f-305f475de4c5)
    groupTypeList (array<string>, optional): There are different group types like 'RBAC', 'PC site, so list contains 'SITE' only
    groupHierarchy (string, optional): Site hierarchy by instance UUID (e.g. b27181bb-211b-4a46f-305f475de4c5)
    additionalInfo (array<map>, optional): Site additional info
      namespace (string, optional): Site name space. Default value is 'Location'
```

API request with response including the requested data

Async API

Create Site

POST https://10.93.141.45/dna/intent/api/v1/site

Creates site with area/building/floor with specified hierarchy.

[Cisco DevNet API Guide](#)

TAGS

NFV

Parameters Features Request Body Responses Policies Code Preview

200

The request was successful. The result is contained in the response body.

Schema Sample

```
root (map, optional)
  executionId (string, optional)
  executionStatusUrl (string, optional)
  message (string, optional)
```

202

Close Try

The operation in the API request triggers a process being scheduled. The response includes a task or execution unique identifier for the process.

Note:

APIs for which we are unable to *ensure* a response in 60 seconds are implemented as Async

Async APIs Workflow

Create Site

POST https://10.93.141.45/dna/intent/api/v1/site

Creates site with area/building/floor with specified hierarchy.

Cisco DevNet API Guide

TAGS

nfV

Parameters Features Request Body Responses Policies Code Preview

200

The request was successful. The result is contained in the response body.

Schema Sample

root (map, optional)

- executionId (string, optional)
- executionStatusUrl (string, optional)
- message (string, optional)

202

1. Call Async API, select the {executionId} or {executionStatusUrl} from response
2. Call the business execution details API using the {executionId}. Repeat this call until execution is completed
3. Select the execution status

Get Business API Execution Details

GET https://10.93.141.45/dna/intent/api/v1/dnacapi/management/execution-status/{executionId}

Retrieves the execution details of a Business API

Cisco DevNet API Guide

Parameters Responses Code Preview

200

The request was successful. Response contains the execution details of the Business API for the given Execution Id.

Schema Sample

root (map, optional): Business API Execution Details

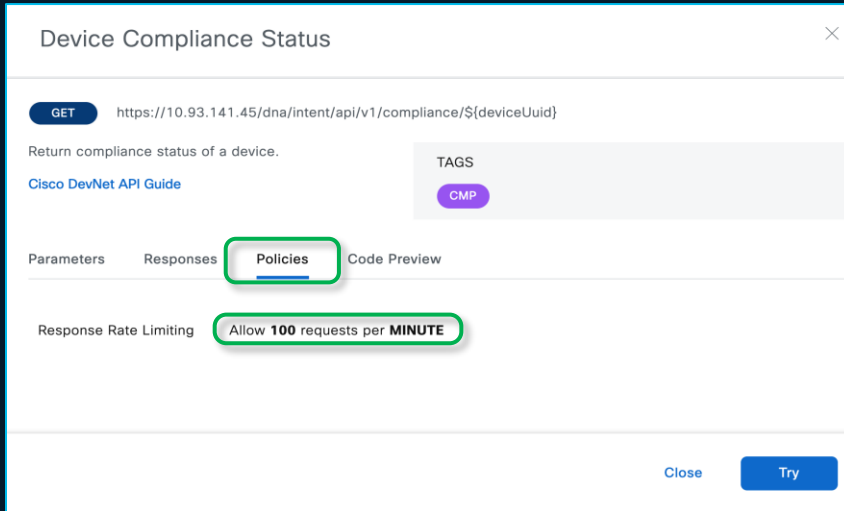
- bapiKey (string, required): Business API Key (UUID)
- bapiName (string, required): Name of the Business API
- bapiExecutionId (string, required): Execution Id of the Business API (UUID)
- startTime (string, required): Execution Start Time of the Business API (Date Time Format)
- startTimeEpoch (integer, required): Execution Start Time of the Business API (Epoch Milliseconds)
- endTime (string, required): Execution End Time of the Business API (Date Time Format)
- endTimeEpoch (integer, required): Execution End Time of the Business API (Epoch Milliseconds)
- timeDuration (integer, required): Time taken for Business API Execution (Milliseconds)
- status (string, required, enum: SUCCESS, FAILURE, IN_PROGRESS, PENDING_FOR_EXECUTION): Execution status of the Business API
- runtimeInstancePod (string, required): Pod Id in which the Business API is executed

Close Try

Note:

Async APIs execution may complete in few seconds, minutes, or longer.

API Policies – Rate Limit



- Catalyst Center API rate limit is defined at the API level, not at a Platform level
- Default rate limit is 100 API calls/minute
- There are APIs with 20, 50, 100 or 500 calls/minute
- Example:
 - Workflows calling 20 different API endpoints
 - Total number of API calls/minute = 2,000

API Rate Limit Documentation

Issues

GET `https://10.93.141.45/dna/intent/api/v1/issues`

Intent API to get a list of global issues, issues for a specific device, or issue for a specific client device's MAC address.

[Cisco DevNet API Guide](#)

TAGS Assurance Know Your Network AP

Parameters Features Responses **Policies** Code Preview

Response Rate Limiting **Allow 20 requests per MINUTE**

Close Try

Device Compliance Status

GET `https://10.93.141.45/dna/intent/api/v1/compliance/${deviceUuid}`

Return compliance status of a device.

[Cisco DevNet API Guide](#)

TAGS CMP

Parameters Responses **Policies** Code Preview

Response Rate Limiting **Allow 100 requests per MINUTE**

Get Device Interface Stats Info

POST `https://10.93.141.45/dna/intent/api/v2/networkDevices/${deviceId}/interfaces/query`

This API returns the Interface Stats for the given Device Id. Please refer to the Feature tab for the Request Body usage and the API filtering support.

[Cisco DevNet API Guide](#)

TAGS InterfaceStats Stats Interface Device Interface Assurance

Parameters Features Request Body Responses **Policies** Code Preview

Response Rate Limiting **Allow 500 requests per MINUTE**

Close Try

Note:

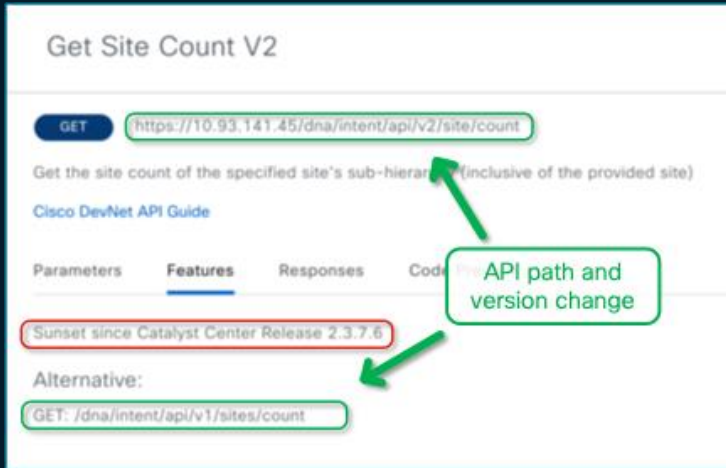
Rate-limited operations may return 429 status code, too many requests, with HTTP headers indicating limit/retry details

API Policies – Concurrency

- Default API concurrency limit is the API rate limit
- There are APIs with a concurrency of 1, 5, 10, 50, 100, 500 calls
- This is very important for Async APIs

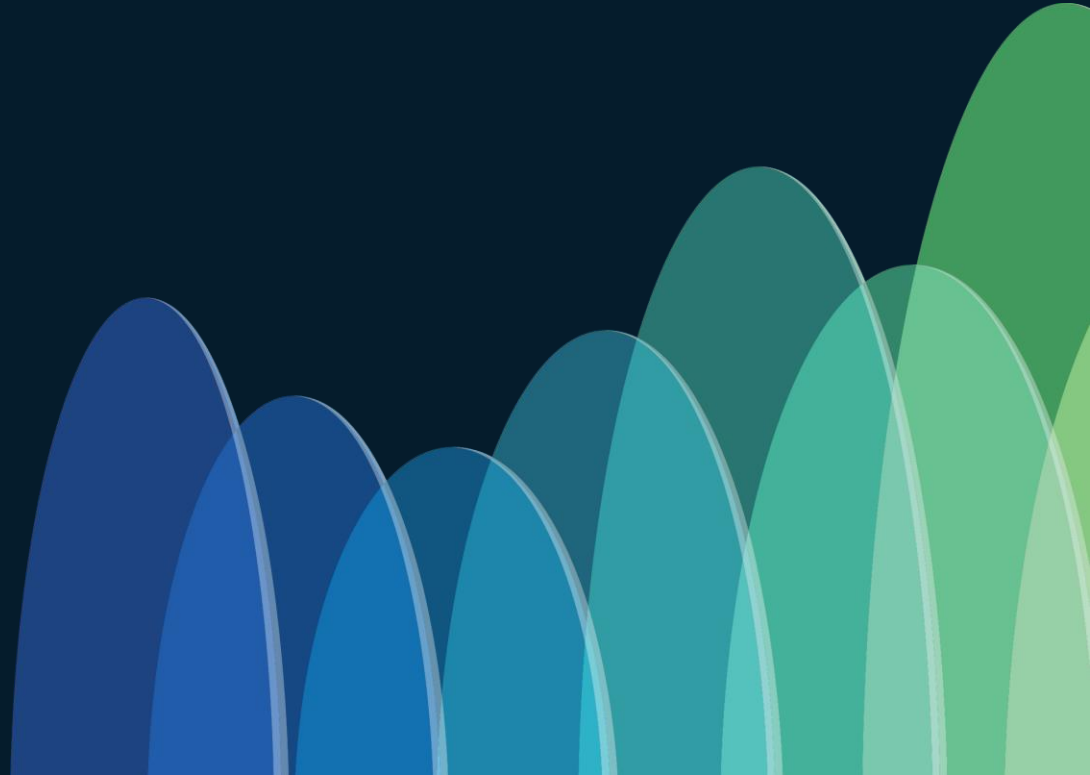
The screenshot displays the Cisco DevNet API console interface. At the top, the title is "Add Port assignment for user device in SDA Fabric". Below this, the HTTP method is "POST" and the URL is "https://10.93.141.45/dna/intent/api/v1/business/sda/hostonboarding/user-device". The description is "Add Port assignment for user device in SDA Fabric." and there is a link to the "Cisco DevNet API Guide". On the right, there are "TAGS" including "sda", "campus", "automation", and "fabric". A navigation bar at the bottom of the console has tabs for "Features", "Request Body", "Responses", "Policies" (which is selected and highlighted with a green box), and "Code Preview". Under the "Policies" tab, the "API Throttling" section is visible, with a green box highlighting the policy: "Allow upto 50 requests in 1 minute with a concurrency of 50".

API Lifecycle Management



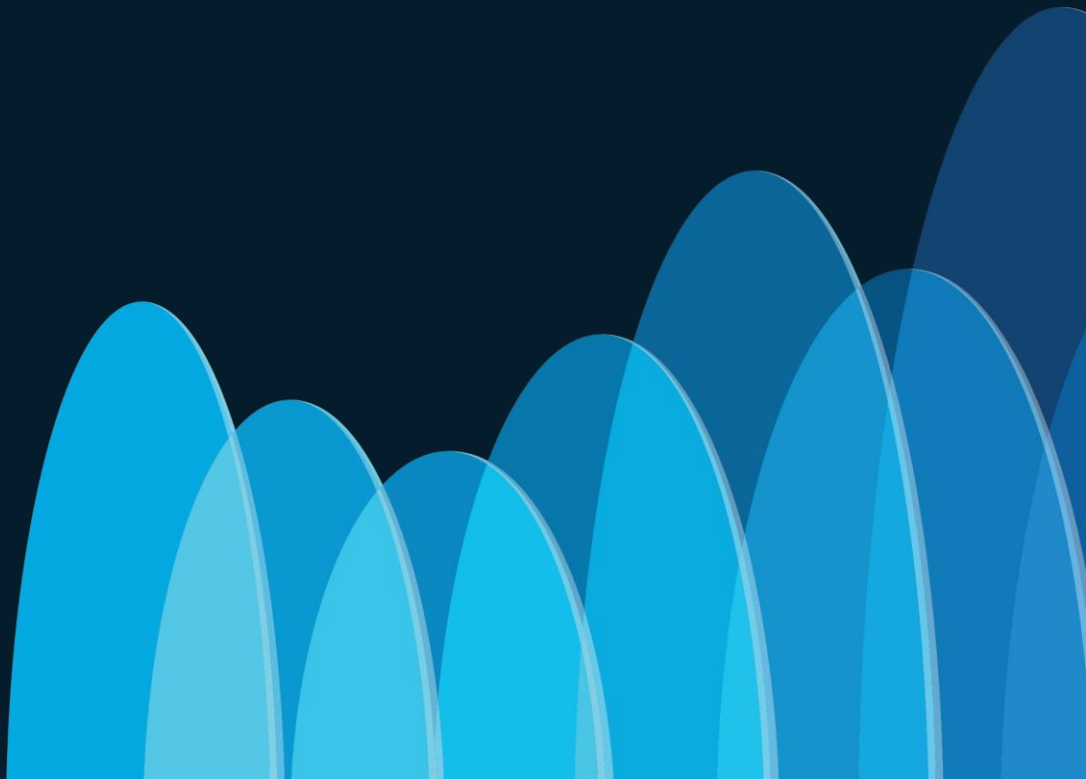
- **Beta** – The API has been released in Beta for feedback and will be supported in the future. However, the API design is not frozen and therefore may include changes in the future: request/response payload, URL change, query/header parameters.
- **Supported** – In production and supported. The design is frozen – breaking changes will require a new API version to be released
- **Deprecated** – Existing API could be deprecated, and will be retired after two major releases of Catalyst Center, or one year, whichever is later

Demo Device Inventory

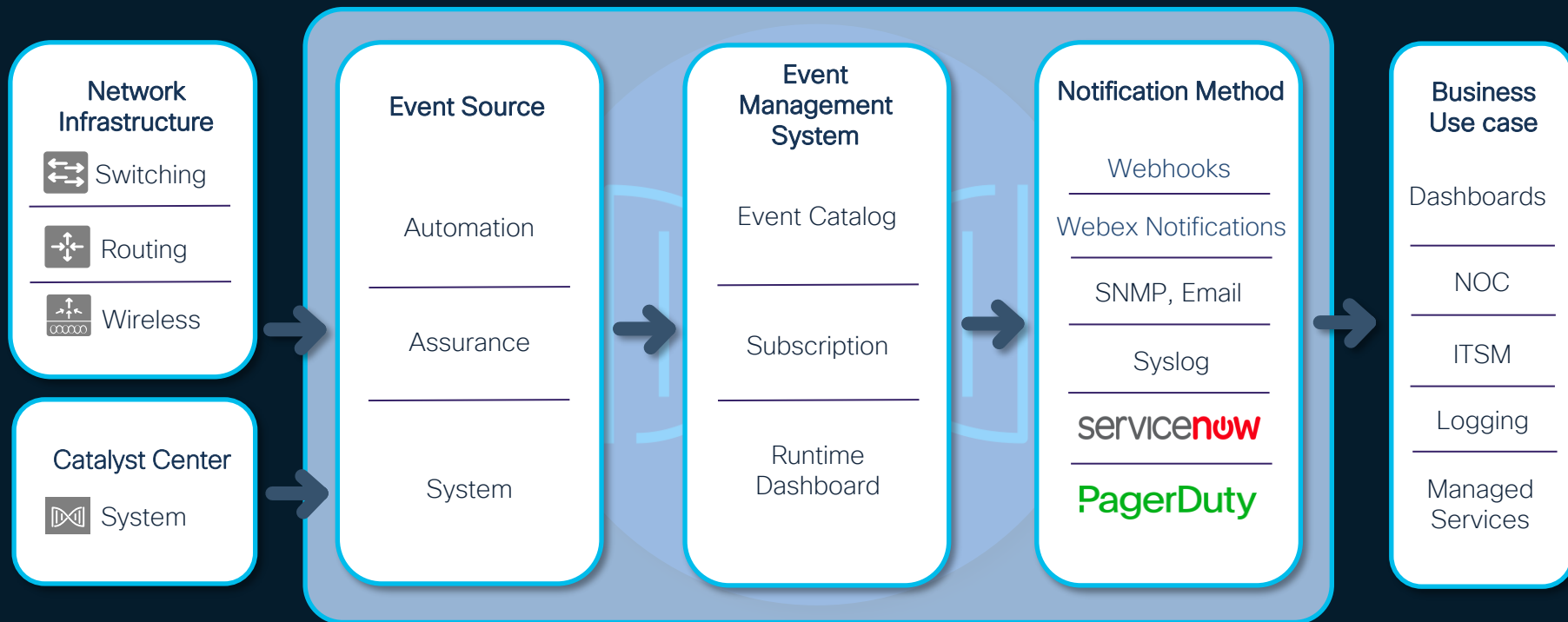


DEMO

Event Notifications



Event Notifications Framework



Note: Two steps process, configure destination followed by subscribe to events

269 Events in Different Areas ...

Backup/Restore
Fabric
AP Anomaly
Wired Connectivity
CPU and Memory Utilization
Onboarding
Software Image Management
Compliance
Device hardware and software
Application Experience
Device Availability
Wireless Connectivity
Sensor Test Troubleshooting

Webhooks

- Used by servers to publish data, (or event notifications)
- Pre-configured destinations to send data to
- Using POST or PUT methods, typically
- Server sends data when something new
- Push Model

```
{
  "severity": "1",
  "category": "ALERT",
  "timestamp": 1701864600273,
  "Assurance Issue Name": "Network Device 10.93.141.24 Is Unreachable From Controller - Notification from Cisco DNA Center, PA",
  "Assurance Issue Details": "This network device SP is unreachable from controller. The device role is BORDER ROUTER",
  "Assurance Issue Status": "resolved",
  "Assurance Issue URL": "https://10.93.141.45/dna/assurance/issueDetails?issuelid=c82bf364-ec1b-41a2-9b2b-504da2083fc8"}

{
  "severity": "1",
  "category": "ALERT",
  "timestamp": 1706245321519,
  "Assurance Issue Name": "Interface (Interface description: ) is Down on Network Device - Notification from Cisco DNA Center, PA",
  "Assurance Issue Details": "Interface (Interface description: ) connecting the following two network devices is down: Local Node: , Peer Node: ",
  "Assurance Issue Status": "",
  "Assurance Issue URL": "https://10.93.141.45/dna/assurance/issueDetails?issuelid=448a421e-1928-45ca-a4da-6c6707a782dc"}

{
  "severity": "1",
  "category": "ALERT",
  "timestamp": 1706245434656,
  "Assurance Issue Name": "Interface (Interface description: ) is Down on Network Device - Notification from Cisco DNA Center, PA",
  "Assurance Issue Details": "Interface (Interface description: ) connecting the following two network devices is down: Local Node: , Peer Node: ",
  "Assurance Issue Status": "",
  "Assurance Issue URL": "https://10.93.141.45/dna/assurance/issueDetails?issuelid=456a67f0-5743-4808-8989-e85ad3b2db48"}

{
  "severity": "3",
  "category": "WARN",
  "timestamp": 1706245934821,
  "Assurance Issue Name": "Interface (Interface description: ) is Flapping on Network Device - Notification from Cisco DNA Center, PA",
  "Assurance Issue Details": "Switch Interface (Interface description: ) is flapping",
  "Assurance Issue Status": "",
  "Assurance Issue URL": "https://10.93.141.45/dna/assurance/issueDetails?issuelid=b16fd046-4352-46c8-830a-f1b0636f5eb9"}
}
```

Event Catalog

 Catalyst Center

Platform / Developer Toolkit

☆ 🔍 🟢 ? 🔔 | 👤 admin ▾

APIs Integration Flows Event Notifications

Event ID ▾	Name	Type	Category	Severity
NETWORK-DEVICES-2-205	Switch Fan Failure	NETWORK	ERROR	2
NETWORK-DEVICES-2-261	SGACL TCAM table is full.	NETWORK	ERROR	2
NETWORK-DEVICES-2-262	SGT access policy download failed on the device	NETWORK	ERROR	2
NETWORK-DEVICES-2-263	Failure to install an access policy for SGT	NETWORK	ERROR	2
NETWORK-DEVICES-2-264	Access Contract (SGACL) access policy installation failed on the device			
NETWORK-DEVICES-2-265	Uninstall of SGT access policy failed on the device			
NETWORK-DEVICES-2-266	Unable to download SGT access policy from the Policy Server			
NETWORK-DEVICES-3-104	AP Memory High Utilization	NETWORK	WARN	3
NETWORK-DEVICES-3-105	AP Reboot Crash	NETWORK	WARN	3
NETWORK-DEVICES-3-107	AP Flap	NETWORK	WARN	3
NETWORK-DEVICES-3-108	Radio High Utilization (2.4GHz)	NETWORK	WARN	3

Showing 100 of 259 [Show More](#)

- Platform → Developer Toolkit → Event Notifications
- Version 2.3.7.4 – 259 events

Create a new Webhook Destination

The screenshot displays the Cisco Catalyst Center interface for configuring a new Webhook Destination. The left sidebar shows the navigation menu with 'Destinations' selected. The main content area shows the 'Edit Webhook' configuration page. A blue callout box lists the fields to be configured: Name, Description, URL, Trust Certificate, Method, Authentication, and Save. The 'Update' button is highlighted with a red box.

Destinations

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

Webhook | Email | Syslog | SNMP | ITSM

Configure the REST Endpoint to receive Events notifications from Catalyst Center Platform

Webhook Configuration Fields:

- Name: Troubleshooting Webhook Receiver
- Description: Webhooks destination for troubleshooting
- URL: https://10.93.141.47:5443/troubleshooting
- Trust Certificate: ☐ Yes ☒ No
- Method: POST
- Authentication: ☒ Basic ☐ Token ☐ No Auth
- Proxy: ☐
- Headers: Authorization (Basic YWRta...)

Update

Verify Webhook Receiver

The screenshot displays the Cisco Catalyst Center Developer Toolkit interface. The left sidebar shows the navigation menu with 'Event Notifications' selected. The main area is divided into two sections: 'Event Catalog' and 'Event Details'.

Event Catalog: A table listing various events. A blue callout box highlights the 'Try-it' button, stating:

- Try-it will send an event notification to all destinations subscribed to the event
- The payload is not identical with the real event notification payload

Event Details: The right panel shows details for the event 'Network Device Interface Connectivity - BGP Down'. It includes a 'Try-It Now' button (highlighted with a green box) and the following information:

GENERAL INFORMATION

- Description: BGP Connectivity is Down with Neighbor
- Event ID: NETWORK-NETWORKS-2-272 | Version: 1.0.0
- Namespace: ASSURANCE | Severity: 2
- Domain: Know Your Network
- Subdomain: Issues
- Category: ERROR
- Note: To programmatically get more info see here - <https://<ip-address>/dna/platform/app/consumer-portal/developer-toolkit/apis?apid=8684-39bb-4e89-a6e4>
- Event Link: dna/assurance/issueDetails?issueId=\$instanceId\$

TAGS: ASSURANCE, BGP_Down

CHANNELS: REST, SYSLOG, EMAIL, WEBEX, PAGERDUTY

Verify Webhook Receiver – continued

The screenshot shows the Cisco Catalyst Center interface with the 'Developer Toolkit' tab selected. A 'Notification' dialog box is open, displaying the following details:

- Event Name:** Network Device Interface Connectivity - BGP Down
- Event Id:** NETWORK-NETWORKS-2-272
- Instance Id:** b7c8def3-e5c7-49f1-b862-6aa12b621dcf
- Name:** Network Device Interface Connectivity - BGP Down
- Description:** BGP Connectivity is Down with Neighbor
- Namespace:** ASSURANCE
- Context:** EXTERNAL
- Source:** EXTERNAL
- Type:** NETWORK
- Category:** ERROR
- Severity:** 2
- Domain:** Know Your Network
- Sub Domain:** Issues

The 'Publish' button is highlighted with a green circle. A blue callout box contains the following text:

- This will publish a test event notification, to all your destinations for the event
- The event notification may be customized

Verify Webhook Receiver – continued

The screenshot displays the Cisco Catalyst Center interface. On the left, the 'Event Catalog' is visible with a search for 'bgp'. The main area shows a 'Notification' modal for the event 'Network Device Interface Connectivity - BGP Down' (Event ID: NETWORK-NETWORKS-2-272). The notification table lists several channels, with 'Network Troubleshooting Events' (REST) highlighted in green. A blue callout box states: 'Test event notification: Failed, Published, Success'. In the bottom right, a terminal window titled 'webhook_receiver' shows the output of a script, including a 'Webhook Received' message and a 'POST /troubleshooting HTTP/1.1' status.

Notification

Event Name: Network Device Interface Connectivity - BGP Down
Event Id: NETWORK-NETWORKS-2-272

Result

Notification	Channel	Status	Message
Interface Events to Splunk Syslog	SYSLOG	SUCCESS	Published
Lab_Events_PA	REST	FAILURE	Bad Gateway
Lab_Notifications_PagerDuty	PAGERDUTY		
Lab_Notifications_Splunk	REST		
Lab_Notifications_Webex	WEBEX		
Network Troubleshooting Events	REST		

Test event notification: Failed, Published, Success

I have included a simple script to test webhook receiver using Catalyst Center real event payloads.

```
Run
webhook_receiver
* Debug mode: on
INFO:werkzeug:WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on https://10.93.141.47:5443
INFO:werkzeug:Press CTRL+C to quit
INFO:werkzeug: * Restarting with stat
https://localhost:5443
WARNING:werkzeug: * Debugger is active!
INFO:werkzeug: * Debugger PIN: 771-682-372
INFO:werkzeug:10.93.141.47 - - [27/May/2024 12:24:21] "GET / HTTP/1.1" 401 -
INFO:werkzeug:10.93.141.47 - - [27/May/2024 12:24:29] "GET / HTTP/1.1" 200 -
INFO:werkzeug:10.93.141.47 - - [27/May/2024 12:24:29] "GET /favicon.ico HTTP/1.1" 404 -
INFO:werkzeug:10.24.68.38 - - [27/May/2024 12:24:45] "GET / HTTP/1.1" 401 -
INFO:werkzeug:10.24.68.38 - - [27/May/2024 12:24:51] "GET / HTTP/1.1" 200 -
INFO:werkzeug:10.24.68.38 - - [27/May/2024 12:24:51] "GET /favicon.ico HTTP/1.1" 404 -
INFO:root: Webhook Received
INFO:root:Payload:
INFO:root:{'version': '1.0.0', 'efInstanceId': '51ef677b-1362-4cd9-ad9b-80a1eb351c2d', 'instanceId': 'ff01f3d5-3153-4d63-a27f-7934bd11309e'}
INFO:werkzeug:10.93.141.45 - - [27/May/2024 12:25:25] "POST /troubleshooting HTTP/1.1" 202 -
```

Catalyst Center Webhook Sample Payload

Interface Connecting Network Devices is Down

```
> 1/17/24 { [-]
9:32:53.000 AM category: ALERT
ciscoDnaEventLink: https://10.93.141.45/dna/assurance/issueDetails?issueId=5daf6357-0721-4d39-9d27-7ed19dfbc3f7
context: null
description: null
details: { [-]
  Assurance Issue Category: Connectivity
  Assurance Issue Details: Interface GigabitEthernet0/0 (Interface description: connected_to_PDX-M Gi 1/0/4) connecting the following two network devices is down: Local
Node: L0-CN, Peer Node: PDX-M
  Assurance Issue Name: Interface GigabitEthernet0/0 (Interface description: connected_to_PDX-M Gi 1/0/4) is Down on Network Device 10.93.141.20
  Assurance Issue Priority: P2
  Assurance Issue Status: active
  Device: 10.93.141.20
  Type: Network Device
}
dnacIP: 10.93.141.45
Domain: Connectivity
efInstanceId: 2d94bcb5-0a7f-4041-91a9-179cf8bf7ac7
eventHierarchy: null
eventId: NETWORK-NON-FABRIC_WIRED-1-251
i18n: null
instanceId: 5daf6357-0721-4d39-9d27-7ed19dfbc3f7
message: null
messageParams: null
name: null
namespace: ASSURANCE
network: { [-]
  deviceId: 5daf6357-0721-4d39-9d27-7ed19dfbc3f7
  siteId: /15ab86e1-706e-41df-8400-ee1a974bc1f3/245892a8-21e9-4d30-9e36-67c44a120d3b/e7c23ba2-e665-4b9e-aefc-090b28cc8bc6/3bb9e022
}
note: To programmatically get more info see here - https://<ip-address>/dna/platform/app/consumer-portal/developer-toolkit/apis7a
parentInstanceId: null
severity: 1
source: ndp
subDomain: Non-Fabric Wired
timestamp: 1705512902249
type: NETWORK
userId: null
```

Details Included:

- Cisco Assurance Issue Link
- Issue details: name, description, device management IP Address, priority and status
- Catalyst Center IP Address
- Event Id
- Event unique identifier

Catalyst Center Webhook Update

```
> 10/11/23 2:28:14.000 PM { [-]
  category: ALERT
  ciscoDnaEventLink: https://10.93.141.45/dna/assurance/issueDetails?issueId=03f56dc7-0c0a-419f-bc22-7f92229bac70
  context: null
  description: null
  details: { [-]
    Assurance Issue Category: Availability
    Assurance Issue Details: This network device SP is unreachable from controller. The device role is BORDER ROUTER
    Assurance Issue Name: Network Device 10.93.141.24 Is Unreachable From Controller
    Assurance Issue Priority: P1
    Assurance Issue Status: active
    Device: 10.93.141.24
    Type: Network Device
  }
  dnacIP: 10.93.130.1
  domain: Connectivity
  eventHierarchy: null
  eventId: NETWORK-NON-FABRIC_WIRED-1-250
  i18n: null
  instanceId: 03f56dc7-0c0a-419f-bc22-7f92229bac70
  message: null
  messageParams: null
  name: null
  namespace: ASSURANCE
  type: NETWORK
  userId: null
  version: 1.0.0
}
```

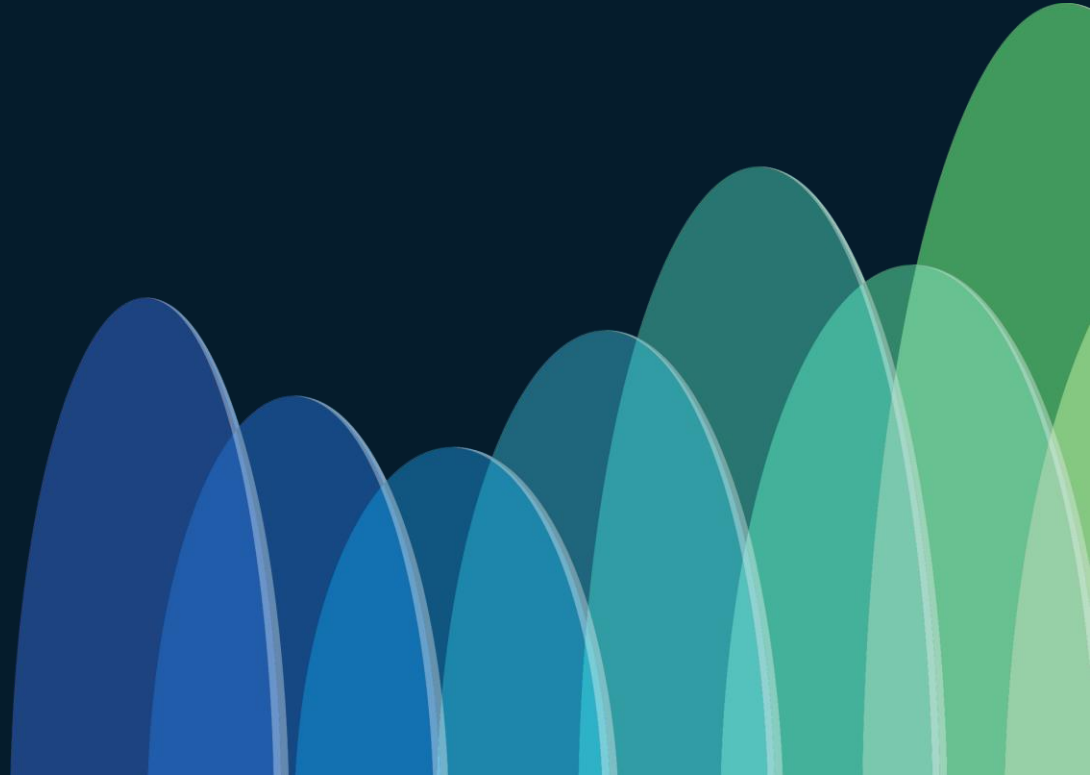
```
> 10/12/23 2:25:36.000 AM { [-]
  category: ALERT
  ciscoDnaEventLink: https://10.93.141.45/dna/assurance/issueDetails?issueId=03f56dc7-0c0a-419f-bc22-7f92229bac70
  context: null
  description: null
  details: { [-]
    Assurance Issue Category: Availability
    Assurance Issue Details: This network device SP is unreachable from controller. The device role is BORDER ROUTER
    Assurance Issue Name: Network Device 10.93.141.24 Is Unreachable From Controller
    Assurance Issue Priority: P1
    Assurance Issue Status: resolved
    Device: 10.93.141.24
    Type: Network Device
  }
  dnacIP: 10.93.130.1
  domain: Connectivity
  eventHierarchy: null
  eventId: NETWORK-NON-FABRIC_WIRED-1-250
  i18n: null
  instanceId: 03f56dc7-0c0a-419f-bc22-7f92229bac70
  message: null
  messageParams: null
  name: null
  namespace: null
  network: { [+]
```

Status Changed from Active to Resolve when:

- Assurance issue auto-resolve
- Resolved by user

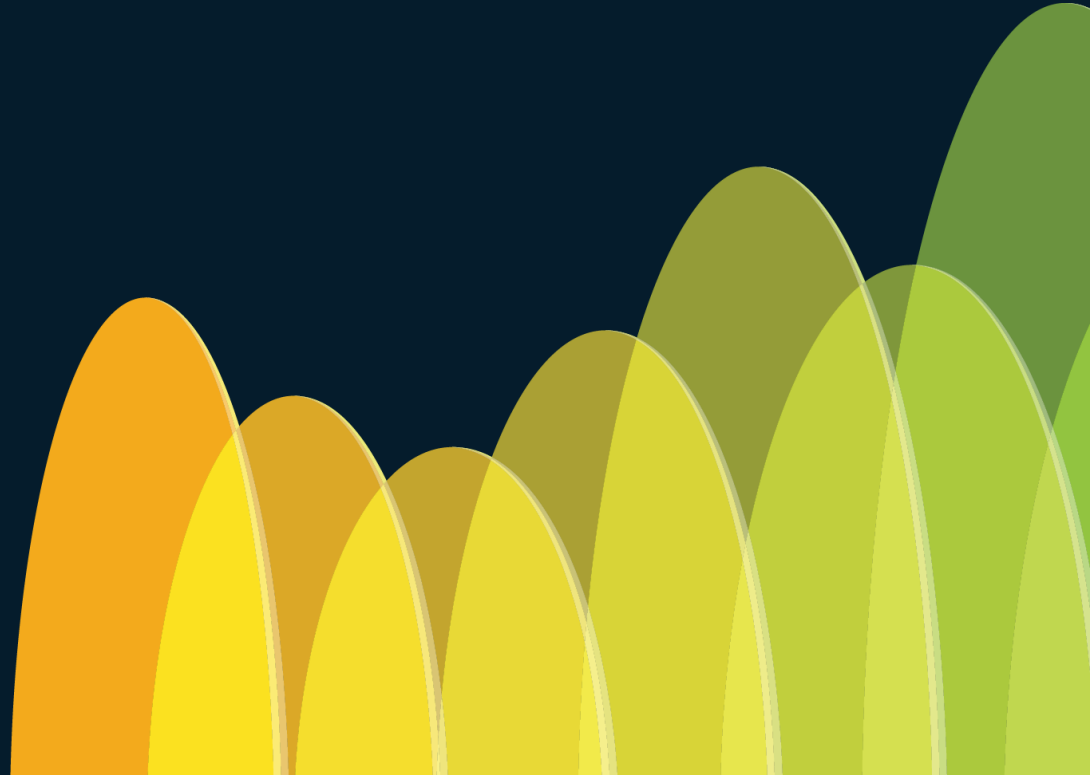
```
  }
  note: To programmatically get more info see here - https://<ip-address>/dna/platform/app/consumer-portal/developer-olkit/apis?apiId=8684-39bb-4e89-a6e4
  parentInstanceId: null
  severity: 1
  source: Cisco DNA Assurance
  subDomain: Non-Fabric Wired
  timestamp: 1697103720470
  type: NETWORK
  userId: null
  version: 1.0.0
}
```

Demo Webhook Receiver

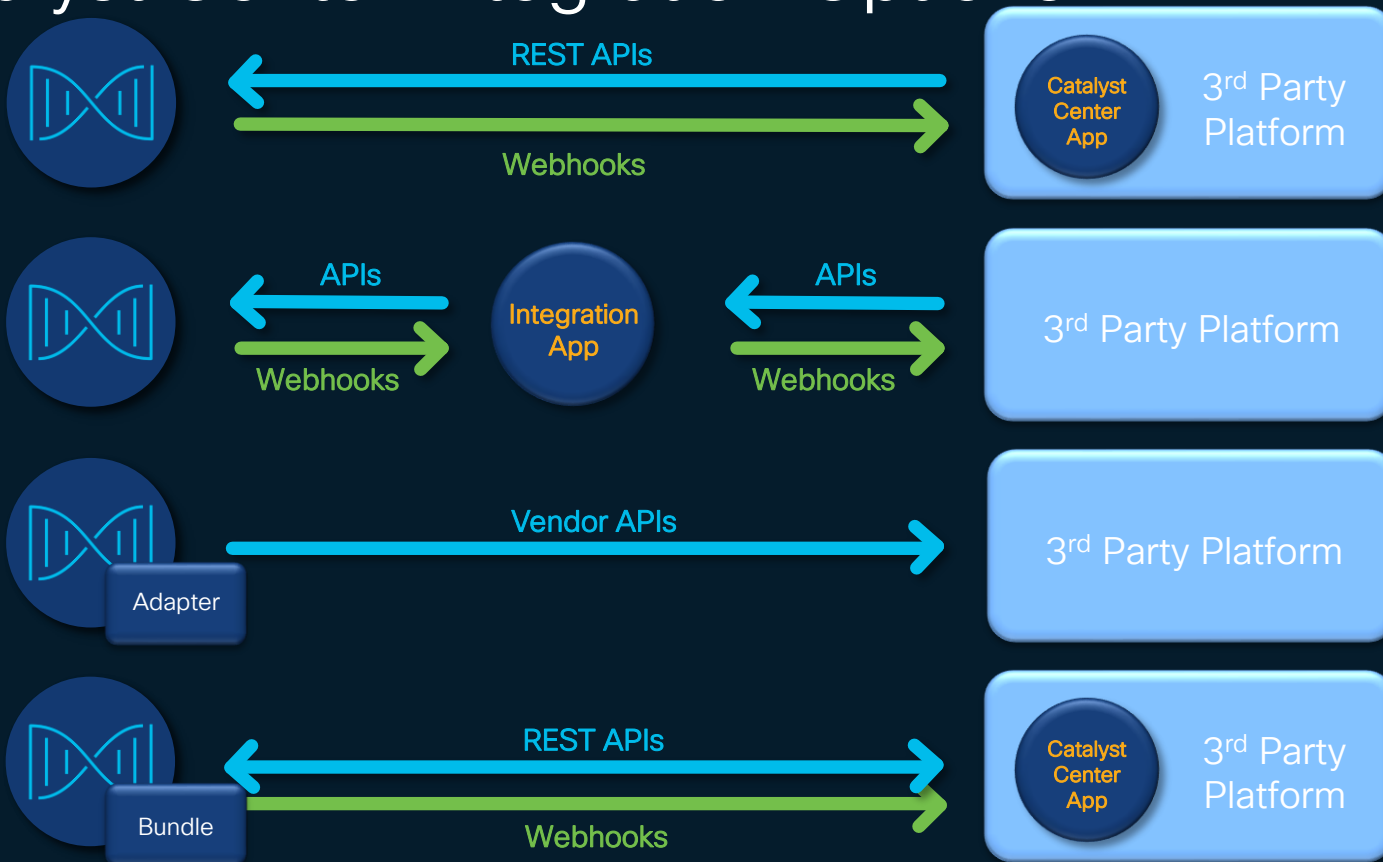


DEMO

Integrations

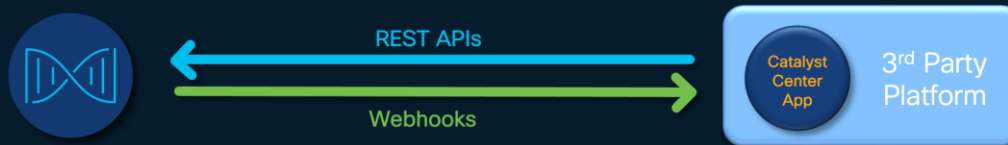


Catalyst Center Integration Options



Direct Integrations

- Catalyst Center Notifications sent using Webhooks
- App may call Catalyst Center REST APIs to:
 - Enrich the issue, client, device
 - Collect additional information: health, compliance, ...
 - Run other automations workflows
- Forward the collected data, store for long term
- Log events, correlate with other platforms
- Build dashboards



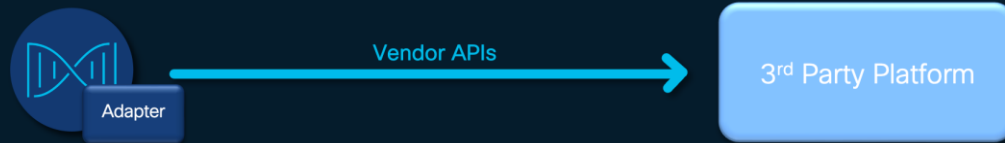
Integration Apps

- Rich features, innovation and maximum extensibility
- Enable GenAI use cases
- Supports non-matching API architectures, auth options, data encoding and data structures
- Ability to build custom integrations with any platforms
- May be required as a proxy between Catalyst Center and cloud platforms



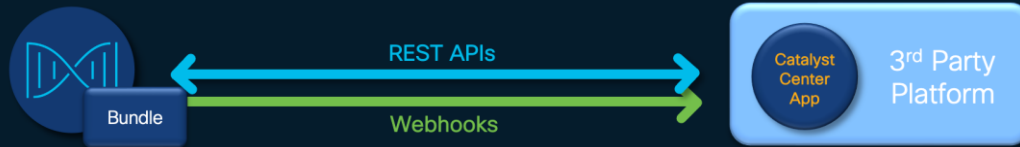
Adapter Integrations

- Catalyst Center software adapters developed for interoperability with other platforms
- The adapter will transform the event notification auth, header, data format and payload structure to match the destination
- Simple Catalyst Center workflows to integrate with 3rd Party Platforms
- Ready to use out-of-the-box

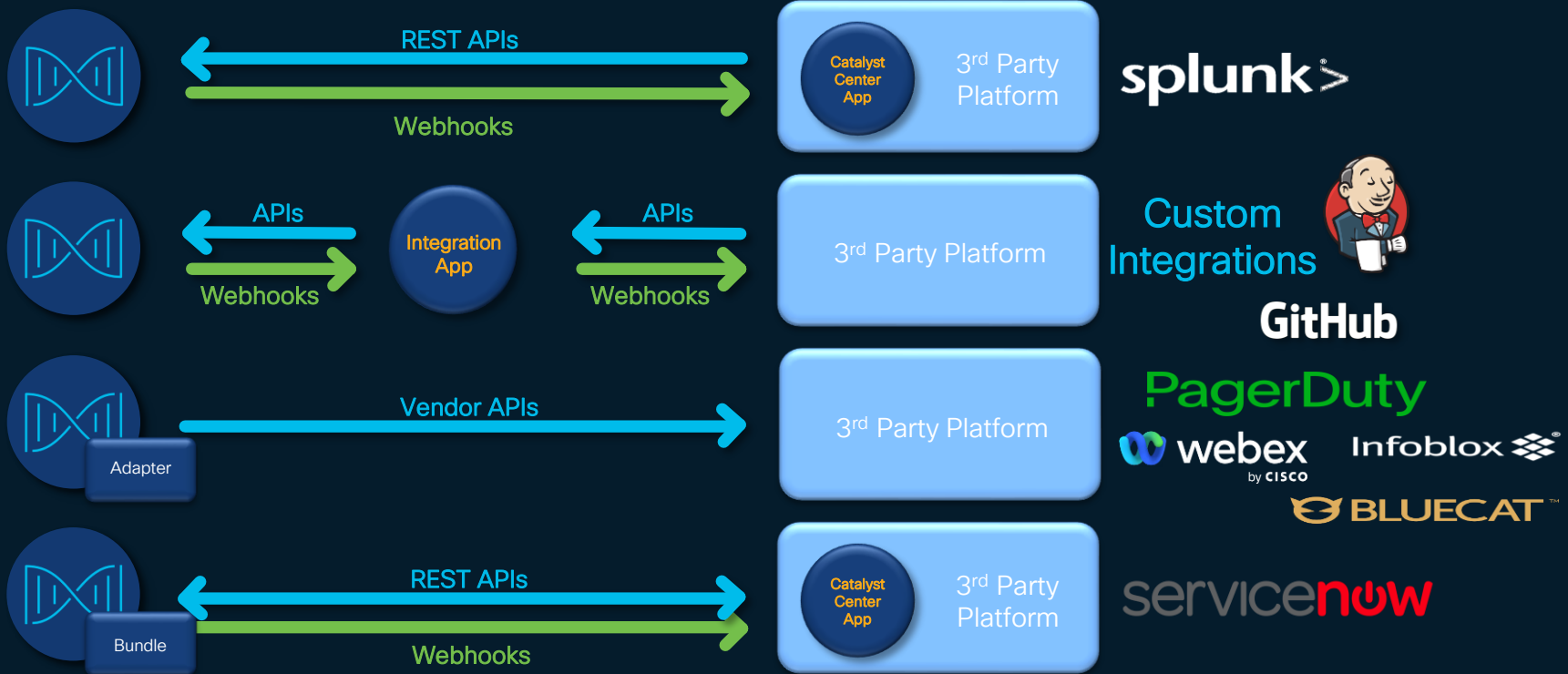


Bundle Integrations

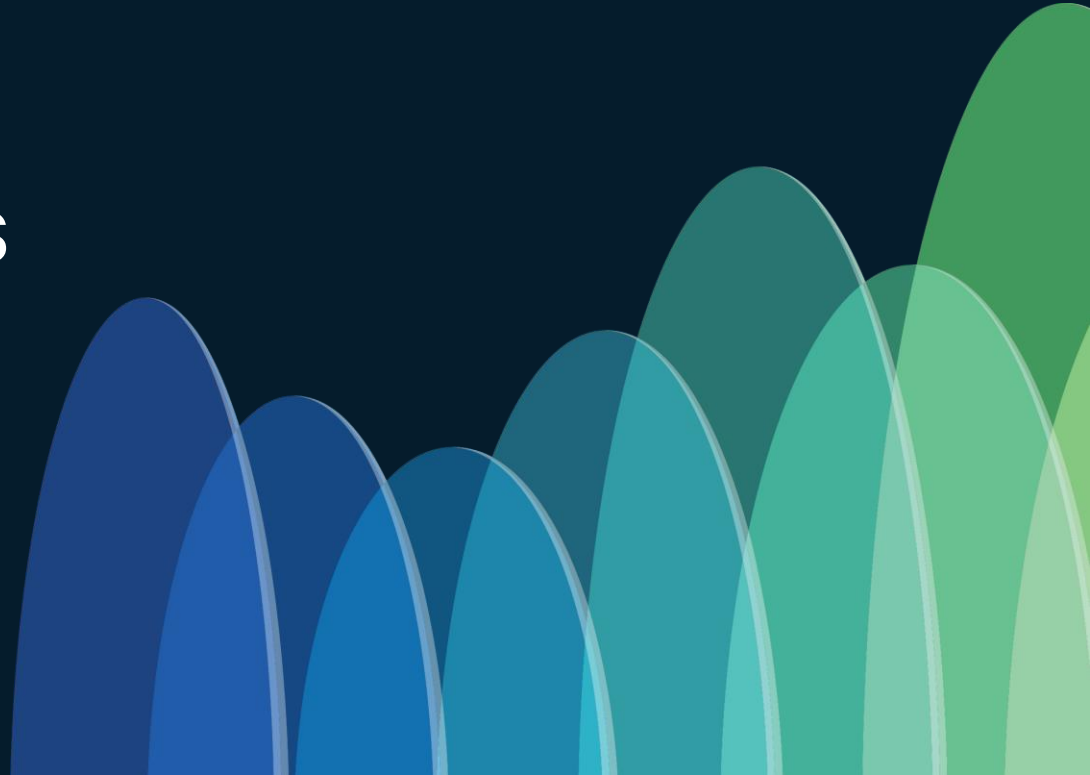
- High value bi-directional, closed-loop integrations between Catalyst Center and 3rd Party Platforms
- Catalyst Center bundles and Integration Apps developed for interoperability between platforms
- Complex Catalyst Center workflows, processes and automations
- Integration App and bundle compatibility and certifications required
- Ready to use out-of-the-box, and customizable



Catalyst Center Integration Options



Demo Microsoft Teams Integration App



DEMO

Developer Resources



Catalyst Center: API Journey/Progression



Cisco API
platform launch



Python SDK



Ansible
collection



Ansible
RedHat certified
Terraform provider
Jenkins open-
source



Ansible community
certification
Intent Ansible
modules introduced



Python SDK,
Ansible, Terraform
Support for
Catalyst Center
2.3.5.3



AI enabled use
cases
Support for
Catalyst Center
2.3.7.6

2018

2019

2020

2021

2022

2023

2024

API adoption



2 billion API calls per year, 45% customers



850+ APIs available (300+ new APIs in 2.3.7.6)



269 events and 65 reports

DevOps resources



Python SDK – 6,300 downloads/month



Ansible collection – 66,000
downloads



Terraform provider – 44,000 downloads

25 New Catalyst Center DevNet sandboxes

Catalyst Center API Focus Areas



Usability

Documentation

Ease of API use

Developer Resources



Completeness

Improve API coverage

Backward compatibility
and versioning

Better Prioritization



Scale

Rate Limit

Concurrency

Bulk Operations



Conformance

Cisco Standards

API governance,
Open API

API Best Practices

Quality

New Cisco EN Splunk Integration Apps

The screenshot shows the Splunkbase interface for the 'Cisco Catalyst Add-on for Splunk'. At the top, there's a navigation bar with 'splunkbase', 'Collections', 'Apps', a search bar, and buttons for 'Submit an App' and 'Log In'. The main content area features the Cisco logo and the app title. Below the title is a description: 'Cisco Catalyst Add-on for Splunk collects data for different Cisco Products - **Cisco Identity Services Engine**, **Cisco Catalyst SD-WAN**, and **Cisco Catalyst Center**. The add-on parses the data from these sources and stores them into the Splunk indexes. * Author - Cisco Systems *...'. It also mentions 'Built by Cisco EN Programmability'. A 'Login to Download' button is visible. On the right, there are links for 'Share' and 'Bookmark'. Below the main content, there are four tabs: 'Latest Version 1.0.0' (September 10, 2024), 'Compatibility' (Splunk Enterprise, Splunk Cloud, Platform Version: 9.3, 9.2, CIM Version: 5.X), 'Rating' (0 stars, Log in to rate this app), and 'Support' (Developer Add-on, Learn more).

- Integrate with ISE, Catalyst SD-WAN and Catalyst Center
- Two apps – Visualizations and Add-on for data collection
- Apps released September 10, 2024
- Splunk Enterprise + Cloud certified

The screenshot shows the Splunkbase interface for the 'Cisco Enterprise Networking for Splunk Platform'. The layout is similar to the previous app page. The main content area features the Cisco logo and the app title. Below the title is a description: 'The **Cisco Enterprise Networking for Splunk Platform** presents visualizations in dashboards for different Cisco Products - **Cisco Identity Services Engine**, **Cisco Catalyst SD-WAN**, and **Cisco Catalyst Center**. The App uses the data collected by *Cisco Catalyst Add-on for...'. It also mentions 'Built by Cisco EN Programmability'. A 'Login to Download' button is visible. On the right, there are links for 'Share' and 'Bookmark'. Below the main content, there are five tabs: 'Latest Version 1.0.0' (September 10, 2024), 'Compatibility' (Splunk Enterprise, Splunk Cloud, Platform Version: 9.3, 9.2, CIM Version: 5.X), 'Rating' (0 stars, Log in to rate this app), 'Support' (Developer Supported App, Learn more), and 'Ranking' (#6 in Network Access Control, #26 in Firewall).

Catalyst Center Python SDK

[Home](#) / [dnacentersdk](#)

dnacentersdk

Simple, lightweight, scalable Python API wrapper for the DNA Center APIs

Welcome to the docs! `dnacentersdk` is a *community developed* Pythonic wrapping of the DNA Center SDK (versions: 2.2.2.3, 2.2.3.3, 2.3.3.0, 2.3.5.3 and 2.3.7.6). The package represents all of the Cisco DNA Center APIs in Python as native Python tools. Making working with the Cisco DNA Center APIs in Python a *na* experience.

dnacentersdk helps you get things done faster. We take care of the API semantics, and you can focus on your code.

With dnacentersdk, you can easily:

- Interact with the DNA Center APIs in an interactive Python session
- Quickly create code that enables you get something done in DNA Center
- Leverage the API wrapper to cleanly add DNA Center functionality to your project without having boilerplate code for working with the DNA Center APIs

<https://dnacentersdk.readthedocs.io>

- Covers all Cisco Catalyst Center REST APIs
- Support for Cisco Catalyst Center version 2.3.7.6
- First SDK version August 2019
- Average downloads/month 6,000+ (last 30 days 12,000+)

cisco-en-programmability / dnacentersdk

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[Discussions](#)
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dnacentersdk
Public

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[Starred 66](#)

[master](#)
[9 Branches](#)
[45 Tags](#)

[Code](#)

bvgasre

Merge pull request #154 from cisco-en-programmability/develop

039db14 · 19 hours ago · 287 Commits

.github/ISSUE_TEMPLATE	New ompatibility matrix	last year
dnacentersdk	chore: Update package version to 2.3.7.6	19 hours ago
docs	chore: Update package version to 2.3.7.6	19 hours ago
script	Update LICENSE reference	3 years ago
tests	chore: Remove unused imports and blank lines	20 hours ago
.flake8	Update tests (lint, mock server order, validators)	3 years ago
.gitattributes	Initial commit	5 years ago

[Readme](#)
[MIT license](#)
[Activity](#)
[Custom properties](#)

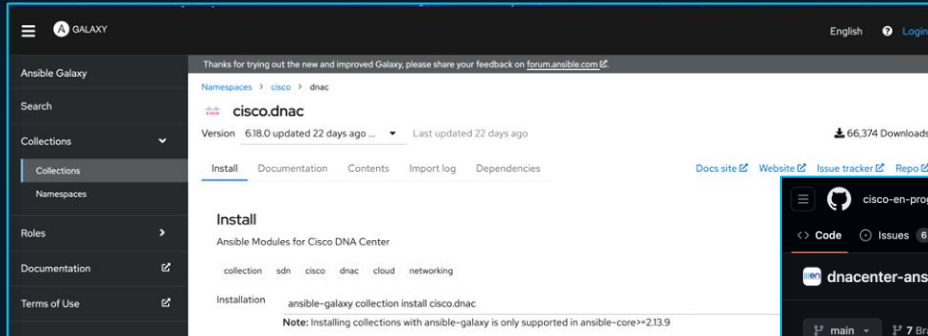
66 stars
15 watching
31 forks

[Report repository](#)

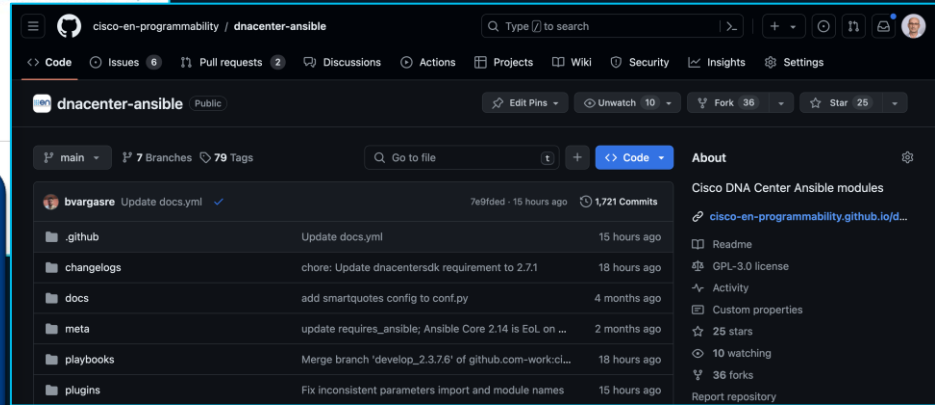
<https://github.com/cisco-en-programmability/dnacentersdk>

Cisco Catalyst Center Ansible Modules

<https://galaxy.ansible.com/ui/repo/published/cisco/dnac>



- Complete set of Ansible modules for all Cisco Catalyst Center REST APIs
- First library version Dec 2020
- Certified by RedHat v 2.9 – 04/2021
- Community certified – 05/2022
- Support for Cisco Catalyst Center version 2.3.7.6
- 66,300+ downloads
- 33% increase in last 3 Months



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

Cisco Developed, TAC/Engineering Supported

Version 6.18.0 updated 22 days ago ... Last updated 22 days ago 66,374 Downloads

Install Documentation Contents Import log Dependencies Docs site Website Issue tracker Repo

Q workflow x

Documentation (0) v

Modules (21) v

- accesspoint_workflow_mana...
- device_configs_backup_wor...
- device_credential_workflow_...
- discovery_workflow_manager
- events_and_notifications_wo...
- fabric_sites_zones_workflow...
- inventory_workflow_manager
- ise_radius_integration_workf...
- network_compliance_workfl...

Ansible Collection - cisco.dnac

Ansible Modules for DNA Center

The dnacenter-ansible project provides an Ansible collection for managing and automating your Cisco DNA Center environment. It consists of a set of modules and roles for performing tasks related to DNA Center.

This collection has been tested and supports Cisco DNA Center 2.3.7.6.

Note: This collection is not compatible with versions of Ansible before v2.8.

Other versions of this collection have support for previous Cisco DNA Center versions. The recommended version is listed below on the [Compatibility matrix](#).

Compatibility matrix

The following table shows the supported versions.

Cisco DNA Center version	Ansible "cisco.dnac" version	Python "dnacentersdk" version
2.2.2.3	3.3.1	2.3.3
2.2.3.3	6.4.0	2.4.11
2.3.3.0	6.6.4	2.5.5

- Support starting with Cisco Catalyst Center version 2.3.7.6
- Identified with the module name including "workflow_manager"
- Ansible playbooks for common operations for sites, PnP, SWIM, compliance, templates, network settings, ...

Terraform Provider and Go SDK

<https://registry.terraform.io/providers/cisco-en-programmability/dnacenter>

The screenshot shows the Terraform Registry page for the **dnacenter** provider. The page is titled "dnacenter" and includes a search bar, a list of resources, and a section for "dnacenter Provider". The "dnacenter Provider" section contains the following text:

The Cisco DNA Center provider is used to interact with Cisco DNA Center APIs (2.3.5.3). The provider needs to be configured with the proper credentials before it can be used.

Use the navigation to the left to read about the available resources.

Example Usage

The DNA Center SDK client could be generated with the following parameters:

```
# Configure provider with your Cisco DNA Center SDK credentials
provider "dnacenter" {
  # Cisco DNA Center user name
  username = "admin"
  # it can be set using the environment variable DNAC_BASE_URL
}
```

- Extended coverage of Cisco Catalyst Center REST APIs
- Support for Catalyst Center version 2.3.7.6
- Released January 2021
- 44,000+ downloads

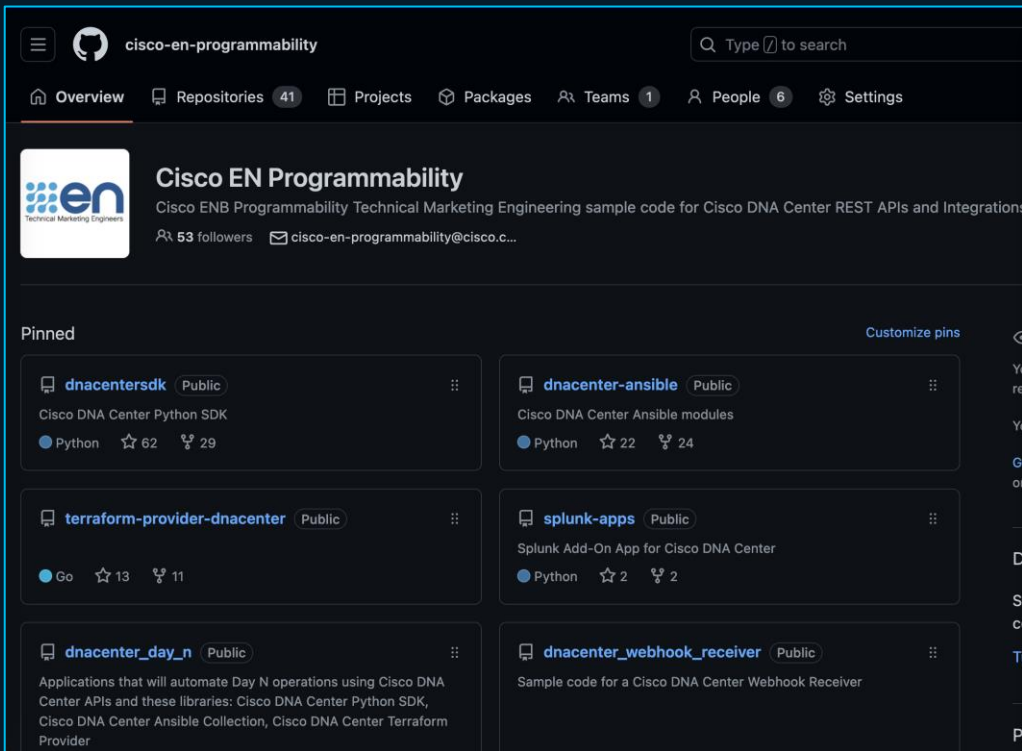
The screenshot shows the GitHub repository for the **terraform-provider-dnacenter** project. The repository is public and has 11 branches, 65 tags, and 496 commits. The repository is managed by **fmunozmiranda**. The repository contains the following files and folders:

- .github**: Merge pull request #199 from cisco-en-programmability/...
- dnacenter**: dnacenter_wireless_rf_profile does not properly read or s...
- docs**: dnacenter_wireless_rf_profile does not properly read or s...
- examples**: Nwe version 1.1.31-beta
- scripts**: first commit
- tools**: Update to use DNACenter 2.2.3.3
- .gitignore**: BINARYS AND MAKE FILE
- .goreleaser.yml**: Add Github actions files
- CHANGELOG.md**: ## 1.1.31-beta (December 07, 2023)
- LICENSE**: Update to use DNACenter 2.2.3.3

The repository also has a **Releases** section with 61 releases, including the latest release **v1.1.31-beta** on Dec 7, 2023.

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

Cisco EN Programmability GitHub Org



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

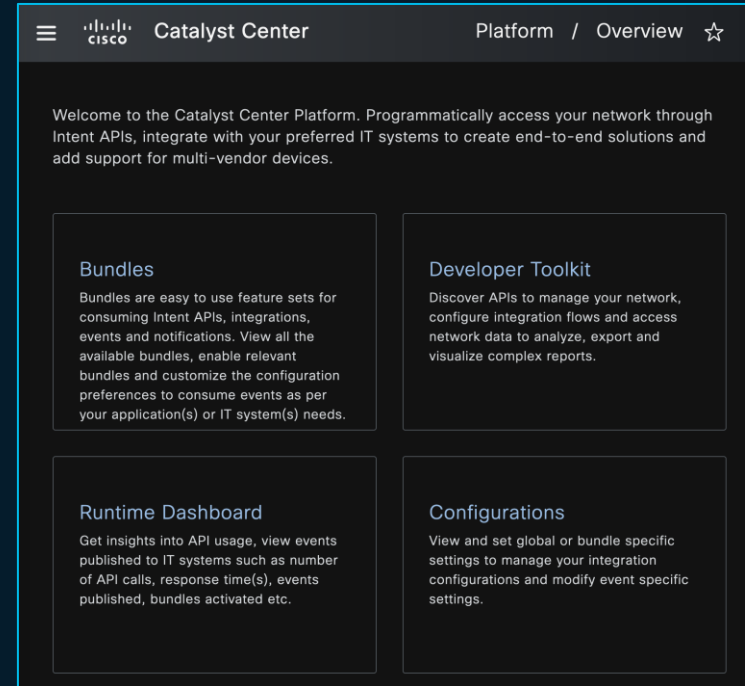
- DevOps Catalyst Center use cases
- Python SDK (support 2.3.7.6)
- Ansible modules (support 2.3.7.6)
- Go SDK and Terraform provider (support 2.3.5.x, pending support 2.3.7.6)
- Splunk Integration Apps
- GenAI use case
- SDA-as-Code
- Report Operations
- Day N use cases – Python SDK, Ansible, Terraform
- Jenkins open-source Integration and pipelines
- GitHub/GitLab open-source Integrations
- Compliance Use Cases
- Custom Integration App (Jira Service Desk)
- Webhook Receiver
- Other sample code

Summary



Catalyst Center APIs, Events, Integrations

- Manage Catalyst Center and the infrastructure efficiently, consistent and at scale
- Real-time insights and notifications with webhooks
- Rich Assurance data available via APIs
- Ready-to-use Integrations or build custom integrations
- Enable GenAI use cases



Keynote Deep Dives

Wednesday
10:30am – 11:30am



Experiences Amplified:
How AI Can Fuel
Better Employee
and Customer
Experiences

Level 1
Room 106



Smart, Secure,
Seamless:
Transforming
Experiences with
Next-Generation
Networking

Level 2
Room 204



Harness a Bold
New Era:
Transform Data
Centre and
Service Provider
Connectivity

Level 2
Room 203



Securing User to
Application and
Everything in
Between

Level 2
Melbourne Room 2



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- Visit the On-Demand Library for more sessions at www.CiscoLive.com/on-demand

Contact me at: gabi@cisco.com



Thank you

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