



Automatic PnP with external data

Branch routers are pre-installed

Routers in Cisco DNA Center

Campus Switching Dynamic PnP

Router Connected port logic

Variables stored in external DB


Automated Plug-and-Play

- 4 switches pending in PnP
- Identify a Cat2k & Cat9k on a Branch ISR4k
- Script polls regularly PnP pending devices
- Takes the first in the list
- Does a lookup in a DB (like mySQL) for a match
- Gets config template & device details from DB
- Inject Config in PnP
- Associate SN (captured in pending state) with config


The Cisco DNA-Center claiming process

- 1 Get List of Unclaimed (pending) devices
- 2 Select the first device in the list of unclaimed devices
- 3 Lookup parameters & site information from your database (json, SQL,...)
- 4 Get the siteID based of the site name found in the database
- 5 Get the Template ID for the device based on template name in the database
- 6 Build your JSON post data incl template parameters
- 7 Post a claim to site

Automated Plug-and-Play

 **DNA**
CENTER

DESIGNPOLICY**PROVISION**ASSURANCEPLATFORM



DevicesFabric

Inventory**Plug and Play**

Plug and Play Devices (4)

Last updated: 10:28 am [Refresh](#) [Add](#)

Filter

Actions ▾ LAN Automation ▾

Find

<input type="checkbox"/>	Name	Serial Number	Product ID	Source	State ▾	Site	Last Contact	
<input type="checkbox"/>	FCW2124L0U4	FCW2124L0U4	C9300-24U-A	Network	Unclaimed	N/A	01/27/2019 09:24:07 UTC	
<input type="checkbox"/>	FCW2124L0DJ	FCW2124L0DJ	C9300-24T-E	Network	Unclaimed	N/A	01/27/2019 09:24:52 UTC	
<input type="checkbox"/>	FCW2124L0AA	FCW2124L0AA	C9300-24T-E	Network	Unclaimed	N/A	01/27/2019 09:24:46 UTC	
<input type="checkbox"/>	FCW2148G0TK	FCW2148G0TK	C9300-48P	Network	Unclaimed	N/A	01/27/2019 09:25:02 UTC	

Show 25 ▾ entries

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Presentation ID







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DevicesFabric

Inventory**Plug and Play**

1

Site Assignment

2

Configuration

3

Advanced Configuration

4

Summary

Manage sites in [Network Hierarchy](#)

Device Name	Serial Number	Product ID	Site
FCW2124L0U4	FCW2124L0U4	C9300-24U-A	<div>Select a site* Global/EMEAR/Barcelona/Fira</div> <div><input checked="" type="checkbox"/> Apply to all below</div>
FCW2124L0DJ	FCW2124L0DJ	C9300-24T-E	<div>Select a site* Global/EMEAR/Barcelona/Fira</div>
FCW2124L0AA	FCW2124L0AA	C9300-24T-E	<div>Select a site* Global/EMEAR/Barcelona/Fira</div>
FCW2148G0TK	FCW2148G0TK	C9300-48P	<div>Select a site* Global/EMEAR/Barcelona/Fira</div>

Automated Plug-and-Play

DNA
CENTER

DESIGN

POLICY

PROVISION

ASSURANCE

PLATFORM

✓ Site Assignment

2 Configuration

3 Advanced Configuration

4 Summary

FCW2124L0U4

FCW2124L0DJ

FCW2124L0AA

FCW2148G0TK

FCW2124L0U4 - Configuration

Serial NumberFCW2124L0U4

Product IDC9300-24U-A

SiteGlobal/EMEAR/Barcelona/Fira

Image: ⓘ

⚠ Failed to retrieve device-specific product information. Below are all golden images for the site

Select an Image - Ex: Site Inheritance | Image Name (Device Roles) ▾

☒ Skip golden image upgrade

Template:

⚠ Failed to retrieve device-specific product information. Below are all onboarding templates for the site

Select a Template (optional) - Ex: Template Name (Profile Type)

Fira-Access-24 (Switching) ⓧ ▾ 👁


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Automated Plug-and-Play


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DevicesFabric

InventoryPlug and Play

 Site Assignment

 Configuration

3

Advanced Configuration

4

Summary

Devices

Select devices to fill out provisioning parameters

Find

Show

EQ Device

All

▼

▼ Fira-Access-24 (3)

FCW2124LOU4

FCW2124LODJ

FCW2124LOAA

▼ Fira-Access-48 (1)

FCW2148G0TK

Fira-Access-24

hostname *
hostname


mgmt_vlan *
mgmt_vlan

data_vlan *
data_vlan

voice_vlan *
voice_vlan


default_router *

[Export](#) [Import](#)









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Automated Plug-and-Play



Inventory











Last updated: 9:01 am [Refresh](#) [Import](#) [Export](#) [Add](#)

Filter

Actions

Device Name is Fira-

<input type="checkbox"/> Device Name	IP Address	Reachability Status	Uptime	Last Updated	Resync Interval	Last Sync Status	Device Role	Site
<input type="checkbox"/> Fira-Acc01.corp.local	10.11.70.11	 Reachable	9 days 20 hrs 59 mins	a minute ago	00:25:00	Managed	 ACCESS	...arcelona/Fira
<input type="checkbox"/> Fira-Acc02.corp.local	10.11.70.12	 Reachable	9 days 20 hrs 59 mins	a minute ago	00:25:00	Managed	 ACCESS	...arcelona/Fira
<input type="checkbox"/> Fira-Acc03.corp.local	10.11.70.13	 Reachable	9 days 20 hrs 26 mins	a minute ago	00:25:00	Managed	 ACCESS	...arcelona/Fira
<input type="checkbox"/> Fira-Acc04.corp.local	10.11.70.14	 Reachable	9 days 20 hrs 58 mins	a minute ago	00:25:00	Managed	 ACCESS	...arcelona/Fira

Show 10 entries

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Case #4 Something is missing

Logical order based on interface

Site depending on neighbor router

Dynamic hostnames

Automatic template selection

So... We need logic!

Get PnP Devices

> Know Your Network	PnP
> Site Management	
> Connectivity	
> Operational Tools	
Authentication	

Method	Name	Description
GET	Get Device history	Returns history for a specific device. Serial number is a required parameter.
GET	Get Device list	Returns list of devices based on filter criteria. If a limit is not specified, it will default to return 50 devices. Pagination and sorting are also...
POST	Un-Claim Device	Un-Claims one of more devices with specified workflow
POST	Add Virtual Account	Registers a Smart Account, Virtual Account and the relevant server profile info with the PnP System & database. The devices present in the registered virtual...
POST	Import Devices in bulk	Add devices to PnP in bulk

DESCRIPTION

Returns list of devices based on filter criteria. If a limit is not specified, it will default to return 50 devices. Pagination and sorting are also supported by this endpoint

Method	URL
GET	https://cgem-dnac1.cisco.com/dna/intent/api/v1/onboarding/pnp-device

PARAMETERS

Request Query Parameters

Name	Description	DataType	Default Value	Required
serialNumber	Device Serial Number	array		false
state	Device State	array		false
onbState	Device Onboarding State	array		false

dna/intent/api/v1/onboarding/pnp-device

```
{  "deviceInfo": {    "source": "string",    "serialNumber": "string",    "stack": "boolean",    "mode": "string",    "state": "string",    "location": {      "siteId": "string",      "address": "string"
```

```
  },  "neighborLinks": [    {      "localInterfaceName": "string",      "localShortInterfaceName": "string",      "localMacAddress": "string",      "remoteInterfaceName": "string",      "remoteShortInterfaceName": "string",      "remoteMacAddress": "string",      "remoteDeviceName": "string",      "remotePlatform": "string",      "remoteVersion": "string"    }  ],  "totalCount": "string"}
```

Get Templates

	Method	Name	Description	
> Know Your Network	DELETE	Delete Template	Deletes an existing template	...
> Site Management	DELETE	Delete Project	Deletes an existing Project	...
> Connectivity	GET	Gets the templates available	List the templates available	...
> Operational Tools	GET	Get Projects	Returns the projects in the system	...
Authentication	GET	Get Template Details	Returns details of the specified template	...

DESCRIPTION

Returns the projects in the system

Method	URL
GET	https://cgem-dnac1.cisco.com/dna/intent/api/v1/template-programmer/project

PARAMETERS

Request Query Parameters

Name	Description	DataType	Default Value	Required
name	Name of project to be searched	string		false

dna/intent/api/v1/template-programmer/project

```
[
  {
    "name": "string",
    "id": "string",
    "templates": [
      {
        "name": "string",
        "composite": "boolean",
        "id": "string"
      }
    ]
  }
]
```

Get Site Id (from site Health API)

> Know Your Network	Know Your Network
> Site Management	Know your Network APIs can be used to discover details about clients, sites, topology and devices. It also provides programmatic REST APIs to add devices to the network and export device data.
> Connectivity	Sites
> Operational Tools	
Authentication	

Method	Name	Description	
GET	Get Site Health	Returns Overall Health information for all sites	...
POST	Assign Device To Site	Assigns list of devices to a site	...
POST	Create Site <small>Intent</small>	Creates site with area/building/floor with specified hierarchy.	...

DESCRIPTION

Returns Overall Health information for all sites

Method	URL
GET	https://cgem-dnac1.cisco.com/dna/intent/api/v1/site-health

/dna/intent/api/v1/network-device/?role=...

```
{
  "response": [
    {
      "siteName": "string",
      "siteId": "string",
      "parentSiteId": "string",
      "parentSiteName": "string",
      "siteType": "string",
      "latitude": {},
      "longitude": {},
      "healthyNetworkDevicePercentage": "string",
      "healthyClientsPercentage": "string",
      "clientHealthWired": "string",
      "clientHealthWireless": {},
      "numberOfClients": "string",
      "clientNumberOfIssues": {},
      "networkNumberOfIssues": {},
      "numberOfNetworkDevice": "string",
      "networkHealthAverage": {},
      "networkHealthAccess": "string",
      "networkHealthCore": "string",
      "networkHealthDistribution": "string",
      "networkHealthRouter": "string",
      "networkHealthWireless": {},
      "networkHealthOthers": {},
      "numberOfWiredClients": "string",
      "numberOfWirelessClients": {},
      "wiredGoodClients": "string",
      "wirelessGoodClients": {},
      "clientIssueCount": {}
    }
  ]
}
```

Case #4 – Claim Devices to Site

> Know Your Network	POST	Add Virtual Account	Registers a Smart Account, Virtual Account and the relevant server profile info with the PnP System & database. The devices present in the registered virtual...	...
> Site Management	POST	Import Devices in bulk	Add devices to PnP in bulk	...
> Connectivity	POST	Claim a Device to a Site	Claim a device based on DNA-C Site based design process. Different parameters are required for different device platforms.	...
> Operational Tools	POST	Add a Workflow	Adds a PnP Workflow along with the relevant tasks in the workflow into the PnP database	...
Authentication	POST	Reset Device	Recovers a device from a Workflow Execution Error state	...

DESCRIPTION

Claim a device based on DNA-C Site based design process. Different parameters are required for different device platforms.

Method	URL
POST	https://cgem-dnac1.cisco.com/dna/intent/api/v1/onboarding/pnp-device/site-claim

/dna/intent/api/v1/onboarding/pnp-device/site-claim

```
{ "siteId": "",
  "deviceId": "",
  "type": "Default",
  "imageInfo":
  {
    "imageId": "",
    "skip": true
  },
  "configInfo": {
    "configId": "",
    "configParameters": [
      { "key": "key1", "value": "vlaue1" },
      { "key": "key2", "value": "vlaue2" }
    ]
  }
}
```