

Manage Non-Fabric Catalyst 9800 Wireless LAN Controllers

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Introduction

This document describes how to add, manage, and provision non-fabric Catalyst 9800 Wireless LAN Controllers via Cisco DNA Center (DNAC).

Prerequisites

Basic knowledge of Catalyst 9800 and Cisco DNA Center configuration.

Requirements

Refer to [software compatibility matrix](#) for solution compatibility requirements on Catalyst 9800 WLC and Cisco DNA Center.

Components Used

- 9800-CL on 16.12.4a release
- Cisco DNAC on 2.1.2.0 release

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Configure

From Cisco DNAC GUI:

1. Log into Cisco DNAC GUI.
2. On the top left corner of the webpage, click the **hamburger** menu, click **Tools**, and then click

Discovery:

Cisco DNA Center

Welcome, [admin](#)

Learn about new capabilities in this release on the [Cisco DNA Center YouTube Channel](#).

Assurance Summary

Cisco DNA Center

- Design >
- Policy >
- Provision >
- Assurance >
- Workflows
- Tools >**
 - Discovery**
 - Topology
 - Command Runner
 - License Manager
 - Template Editor
 - Model Config Editor
 - Wide Area Bonjour
 - Security Advisories
 - Network Reasoner
- Platform >
- Activity
- Reports
- System >



Note: You can alternatively discover your C9800 device using the **Inventory** menu.

3. On the Discovery page, click **Add Discovery**:

Discovery



Add Discovery

[View All Discoveries](#)

Device Controllability is **Enabled**.

4. Enter the C9800 WLC details.

New Discovery

Discovery Name*

9800-WLC-Switch

^ IP ADDRESS/RANGE *

Discovery Type ⓘ

CDP IP Address/Range LLDP

From* ⓘ

1.1.1.1

To* ⓘ

1.1.1.1

-

+

Subnet Filters ⓘ

+

Preferred Management IP Address ⓘ

None Use Loopback

Scroll down to enable the CLI/SNMP/HTTP/HTTPS credentials:



Note: The username/password/SSHv2 needs to be configured on the device first.

- 1 At least one CLI credential and one SNMP credential are required.
 - 2 Netconf is mandatory for enabling Wireless Services on Wireless capable devices such as C9800-Switches/Controllers.
- GLOBAL ■ Task-specific

CLI

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

SNMPv2c Read

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

SNMPv2c Write

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

SNMPv3

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

HTTP(S) Read

HTTP(S) Write

To enable NETCONF on the Discovery page:

^ CREDENTIALS*

- 1 At least one CLI credential and one SNMP credential are required.
 - 2 Netconf is mandatory for enabling Wireless Services on Wireless capable devices such as C9800-Switches/Controllers.
- GLOBAL ■ Task-specific

[+ Add Credentials](#)

Add Credentials



CLI

SNMPv2c

SNMPv3

SNMP
PROPERTIES

HTTP(S)

NETCONF

Port ⓘ
830

2. Type "830"

1. Click
"NETCONF"

Save as global settings

Settings will be used for this specific Discovery only

i NETCONF with user privilege 15 is mandatory for enabling Wireless Services on Wireless capable devices such as C9800 Switches/Controllers. The NETCONF credentials are required to connect to eWLC devices. Majority of data collection is done using NETCONF for eWLC.

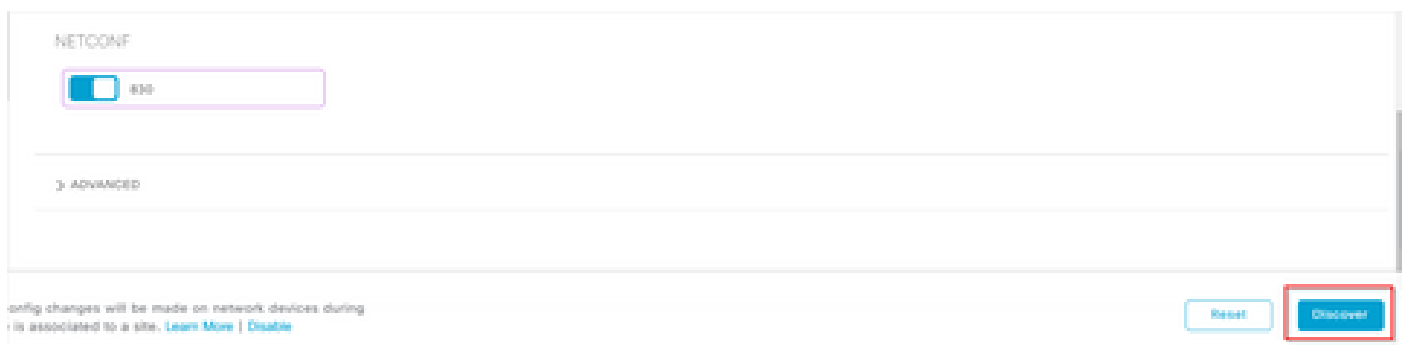
Reset

Save

3. Press the
"Save" button

Note: The default NETCONF port on C9800 is port 830.

Then press the **Discover** button and press the **Start** button:



NETCONF

ON

ADVANCED

Config changes will be made on network devices during
is associated to a site. [Learn More](#) | [Disable](#)

Start Discover

Discover Devices



When

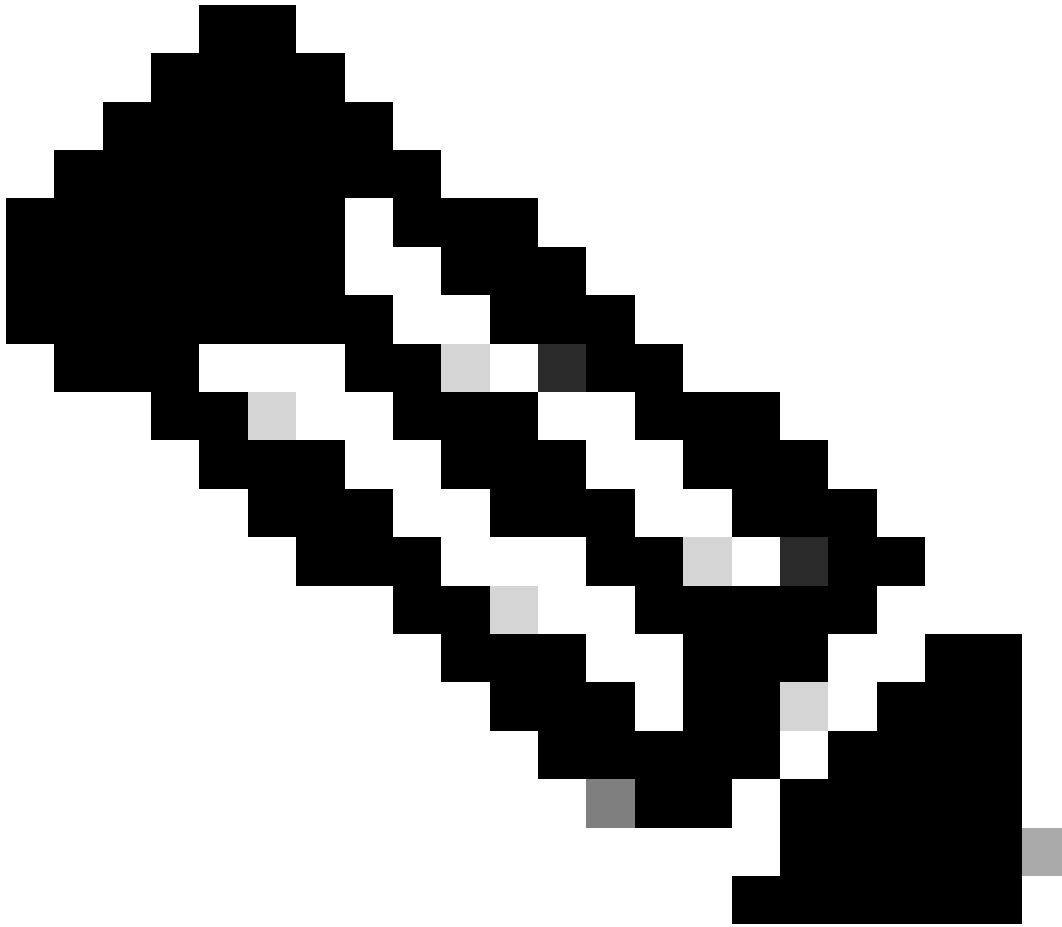
Now Later

Task Name*

Test

Cancel

Start



Note: You can schedule the Discovery process for a different time and date.

If everything got configured correctly on Cisco DNA Center and on the 9800 WLC, then the Discovery can end up looking similar to this:

The screenshot shows the Cisco DNA Center interface. At the top, it displays 'Completed', '1 Reachable Device(s)', and '00h:00m:00s'. Below this is a 'DEVICE STATUS' section with a circular progress indicator showing '1 Device(s)' and a legend for 'Success(1)' and 'Unreachable(0)'. To the right, there is a table with columns for IP Address, Device Name, Status, Model, S/N, SLA, and Response. A red box highlights the 'Status' column, which contains a green checkmark for the single device.

Make sure to validate that the device is in a **Managed** state in the **Inventory** page:

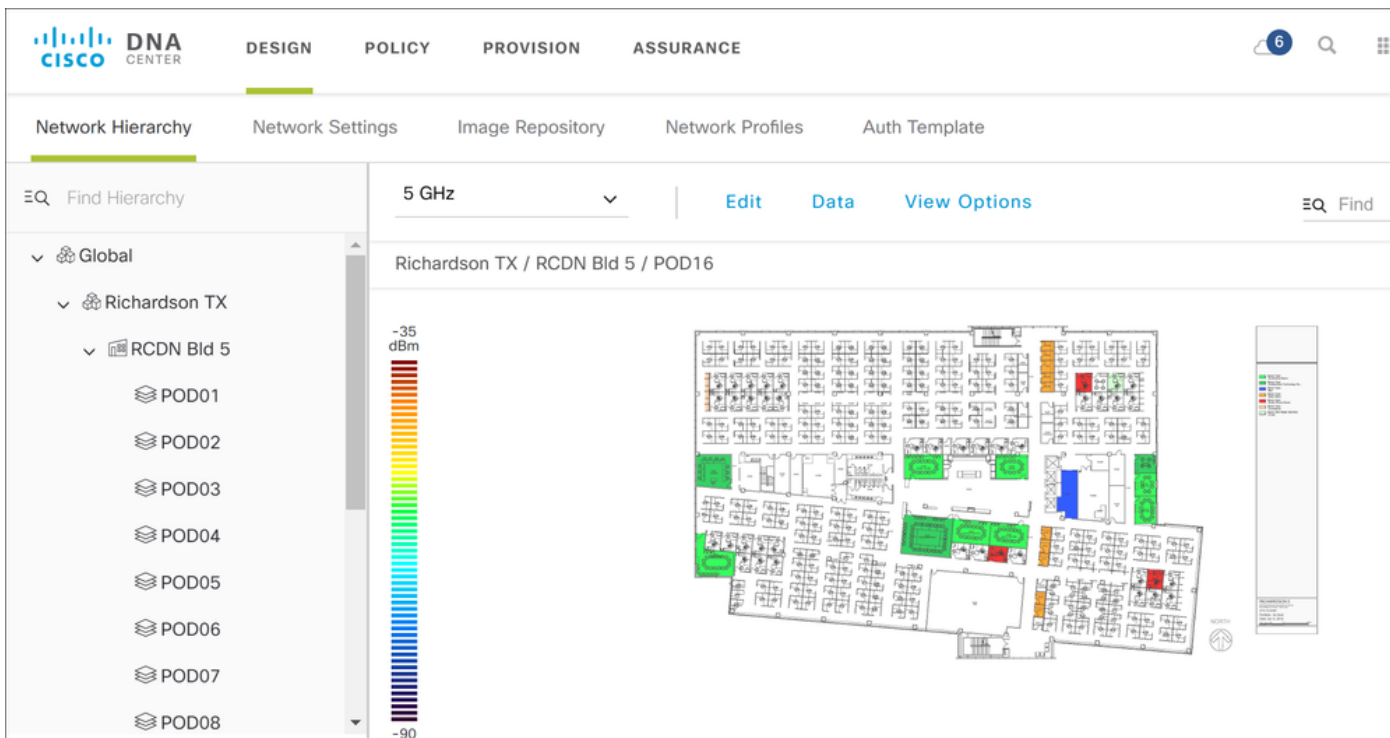
The screenshot shows the inventory page for a device. The device name is redacted. The IP address is 14.2.155.27, and the device type is 'Wireless Controller'. The 'Reachable' and 'Managed' status indicators are highlighted with red boxes, both showing green checkmarks. Other status indicators include 'Compliant' (green checkmark) and 'NA'.

C9800 is now added to Cisco DNAC.

Provisioning C9800 via Cisco DNAC

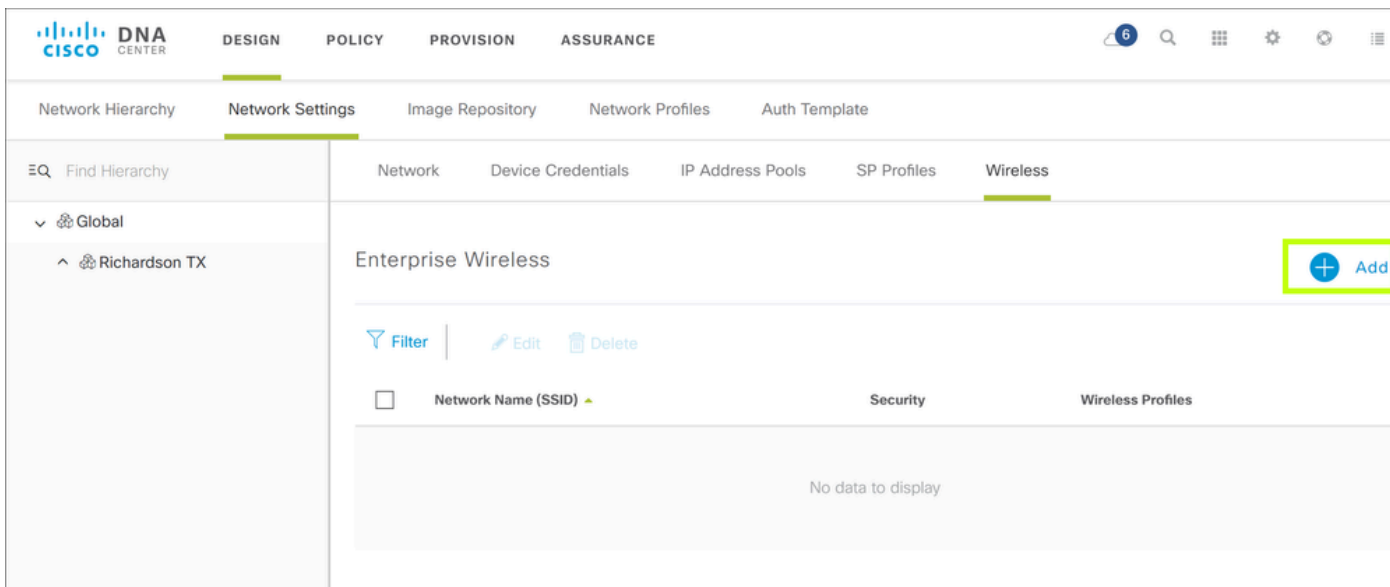
Step 1: Design

1. From the Cisco DNAC home page, click the **Design** tab.



A site map and floor plan has already been added to the Network Hierarchy tab.

2. To add Wireless SSID, click the **Network Settings** tab and navigate to **Wireless** and then click **Add**.



Create an Enterprise Wireless Network

- 1 Enterprise Wireless Network 2 Wireless Profiles

Wireless Network Name(SSID) *

POD09-DNA-C-PSK

TYPE OF ENTERPRISE NETWORK *

Voice and Data

Data only

Fast Lane

Scroll down to access security settings and configure PSK password.

LEVEL OF SECURITY *

WPA2 Enterprise WPA2 Personal Open

More secure

A password (Pre-Shared Key PSK with WPA2 encryption) is needed to access the wireless network

Pass Phrase *

Cisco123

ADVANCED SECURITY OPTIONS

Mac Filtering

Fast Transition (802.11r)

Adaptive Enable Disable

Previous

Cancel

Next

Click the **Next** tab to bring you to the **Wireless Profiles** tab where you configure your wireless profile to be assigned to the specific site.

1

Enterprise Wireless Network

2

Wireless Profiles

Wireless Profile Name *

POD09-Wireless-Profile

Select Interface

management



Flex Connect Local Switching

Sites 0 Site

Click the **Finish** button to add both the WLAN and Wireless Policy profiles you just created.

The screenshot shows the Cisco DNAC interface with the 'Network Profiles' tab selected. A table lists the profile 'POD09-Wireless-Profile' with a type of 'Wireless' and associated with '1 Site'. The table has columns for Profile Name, Type, and Sites. An 'Add Profile' button is visible in the top right corner.

Profile Name	Type	Sites	
POD09-Wireless-Profile	Wireless	1 Site	Edit Delete

Showing 1 of 1

Step 2: Provisioning

Now that the WLAN and profiles have been designed, you can provision them to the respective WLCs. For this, click the **Provision** tab on the top of Cisco DNAC.

1. On the Provision menu, you can filter for your device name under device inventory **Filter** option.

The screenshot shows the Cisco DNA Center interface in the 'PROVISION' tab. The 'Device Inventory' table lists a device named 'POD10' with the following details:

Tags	Device Name	Device Family	IP Address	Site	Serial Number	Uptime	OS Version	OS Image	Last Sync Status	Credential Status	Last Provisioned Time	Provision Status
<input checked="" type="checkbox"/>	POD10	Wireless Controller	10.0.109.4		9JVRXTO9T9Z	4 days, 2:27:48.44	16.10.1	C9800-CL[...] Tag Golden	Managed	Not Provisioned	-	Not Provisioned

The 'Actions' menu is open, and the 'Provision' option is highlighted in a small inset window.

2. Select your WLC and hover over the **Actions** field and navigate to **Provision**.
3. Add device to your site.

The screenshot shows the 'Provision Devices' page with the 'Assign Site' step selected. The 'Choose a site' dialog box is open, displaying a hierarchy of sites. The 'POD10' site is selected and highlighted with a red box. The 'Save' button is also highlighted with a red box.

The 'Choose a site' dialog box shows the following hierarchy:

- Global (1)
 - Richardson TX (1)
 - RCDN Bld 5 (16)
 - POD01
 - POD02
 - POD03
 - POD04
 - POD05
 - POD06
 - POD07
 - POD08
 - POD09
 - POD10**
 - POD11

4. In this example, AP and WLC are in same location. You can skip past the configuration and advanced configuration step here and deploy from the summary page.

Devices

Inventory Plug and Play

Provision Devices

1 Assign Site 2 Configuration 3 Advanced Configuration 4 Summary

WiFi POD10

Serial Number: 9JVRXT09T9Z Devices: POD10 WLC Role: Active Main WLC Guest Anchor WLC

Managing 1 location(s)

Cancel Next

Validate if the provisioning was successful:

Filter | Actions | Tag Device | LAN Automation

Device Name is pod10

Tags	Device Name	Device Family	IP Address	Site	Serial Number	Uptime	OS Version	OS Image	Last Sync Status	Credential Status	Last Provisioned Time	Provision Status
<input type="checkbox"/>	POD10	Wireless Controller	10.0.109.4	...N Bld 5/POD10	9JVRXT09T9Z	4 days, 3:00:47.71	16.10.1	C9800-CL[... Tag Golden	Managed	Not Provisioned	Mar 22 2019 08:55:52	Success See Details

5. Next step is to provision your Access Point using same method as above.

Filter | Actions | Tag Device | 1 Selected | LAN Automation

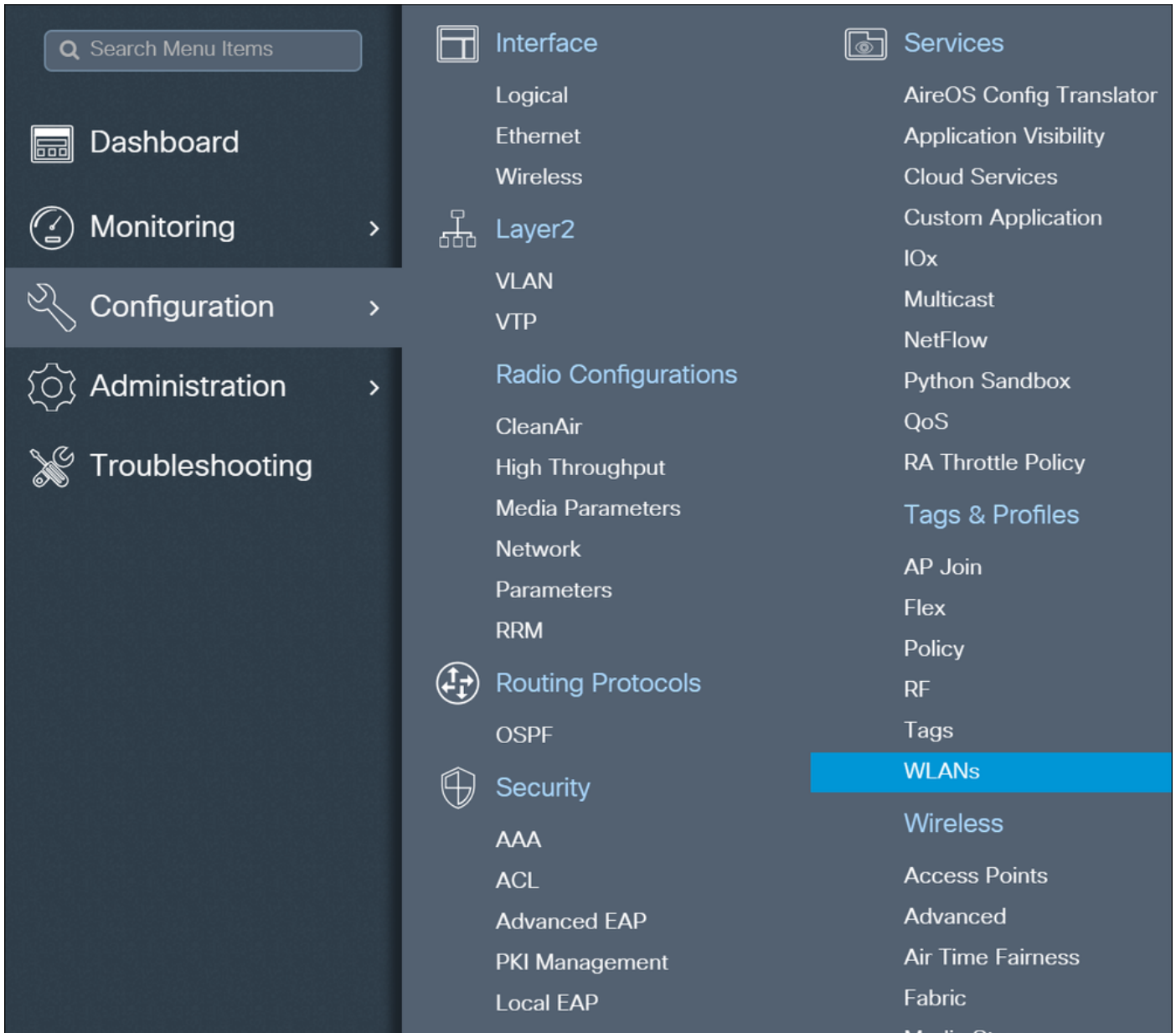
Device Name is Shankar-37021-2

Assign Device to Site

Provision

Tags	Device Name	Device Family	IP Address	Site	Serial Number	Uptime	OS Version	OS Image	Last Sync Status	Credential Status	Last Provisioned Time	Provision Status
<input checked="" type="checkbox"/>	Shankar-37021-2	Unified AP	10.0.111.90	...N Bld 5/POD10	FTX1818S0BL	-04:-33:-01.-140	16.10.1.0		Managed	Not Provisioned	-	Not Provisioned

6. You can now validate the provisioning status from C9800, navigate to **GUI > Configurations > WLAN**.



You have now successfully provisioned WLC/AP via Cisco DNAC.

Troubleshoot

From Cisco DNAC `sudo rca` from the CLI of each Cisco DNAC in the cluster;

From C9800 CLI:

Debugs:

```
debug snmp requests
debug snmp packets
debug netconf-yang level debug
```

```
show platform software yang-management process
```

Verifies whether all the processes are running.

If netconf-yang is running, all the processes except gnmib are UP state.