The bridge to possible

Wireless Network Automation & Assurance with Cisco Catalyst Center

Ramkumar Chellappa, Technical Leader, TME
@ramkchel
BRKEWN-2306

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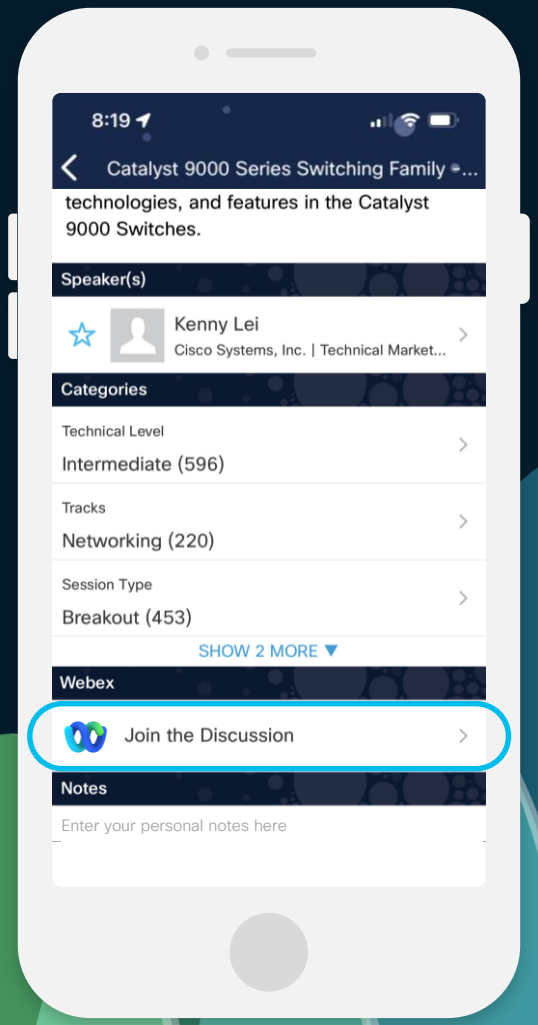


Ramkumar Chellappa

Technical Lead-TME for Catalyst Center NetOps

Scan to add me on LinkedIn! ⟶

www.linkedin.com/in/ramkumarchellappa

Fields of Expertise

14+ years of Experience. TME for Wireless Automation in Catalyst Center

Personal Life

Indian, Chennai. Married with 2 Kids

Hobbies

Playing Cricket, Long Drives

cisco Live!

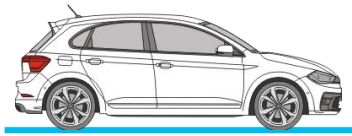
My Road Trip...

Traffic Conditions

Weather Conditions

Bad Roads

Other Drivers



Point A

Point B

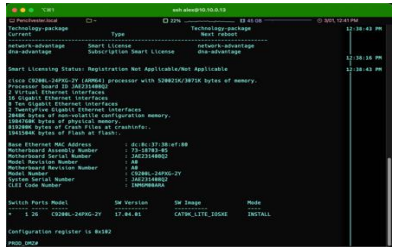
Driving Experience

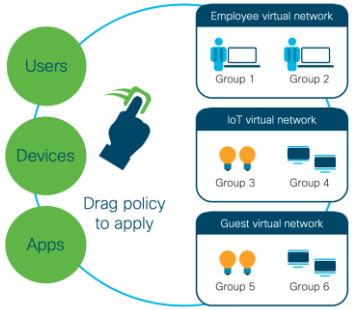
It's about having a fun, safe road trip with **Less** driving **Effort.**

Goals:

- Safety
- Fun
- Enjoyment

Your Road Trip...





Client Density

AP Coverage

RF Noise/Inter

Rogue

User Experience

Point A

Point B

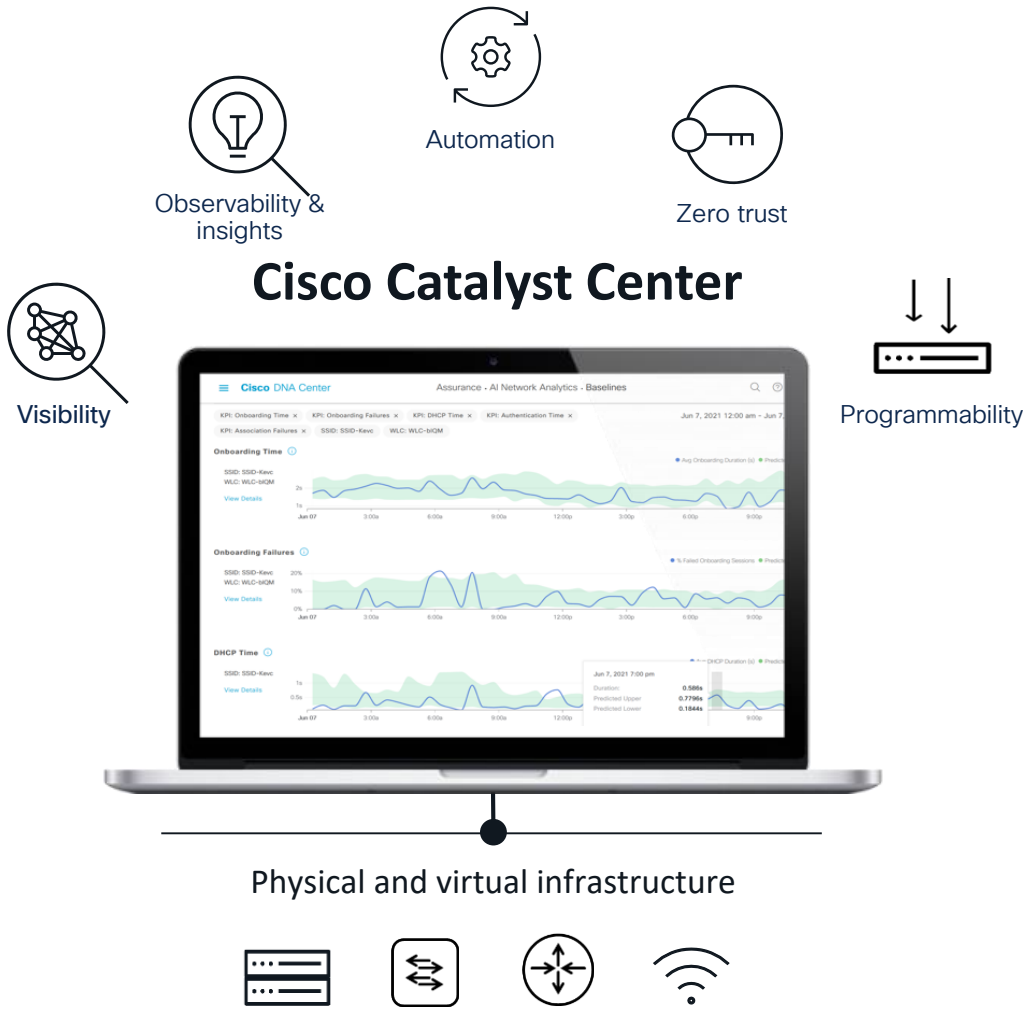
Goals:

- Security
- Visibility
- Accuracy

It's about **Simplifying Networking Operations**, with **Less** driving **Effort**.

Simplifying Network Operations

Facilitating the jobs your teams need to do



NetOps — **Automation and workflows** simplify building and maintaining large scale networks. AI/MR **streamlines and simplifies complex tasks**

AIOps — AI/ML and predictive insights for **proactive optimization** to ensure consistent performance and reliability and the **optimal user experience**

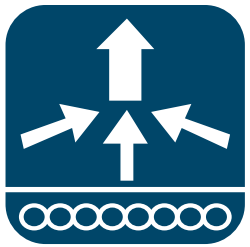
SecOps — AI/ML and DPI Identify and classify endpoints, enforce security policies and mitigate threats for a **complete workplace zero trust solution**

DevOps — Mature APIs, SDKs, and **closed-loop integrations**, untangle the complexities of interconnecting third party systems

Agenda

- Onboard Devices to Catalyst Center
- Manage Brownfield wireless network
- Gain visibility from your network
- Completely Automate Wireless Network

Components



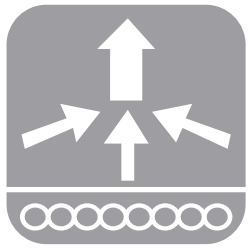
C9800*
17.9/17.14

C91xx
AIR-AP-4800

Cisco Catalyst Center
2.3.7.5

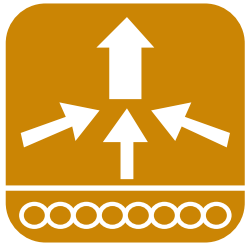
*Local Mode / FlexConnect Mode (Central/Local Switching)

Managed Only vs Managed & Provisioned WLC



Managed only

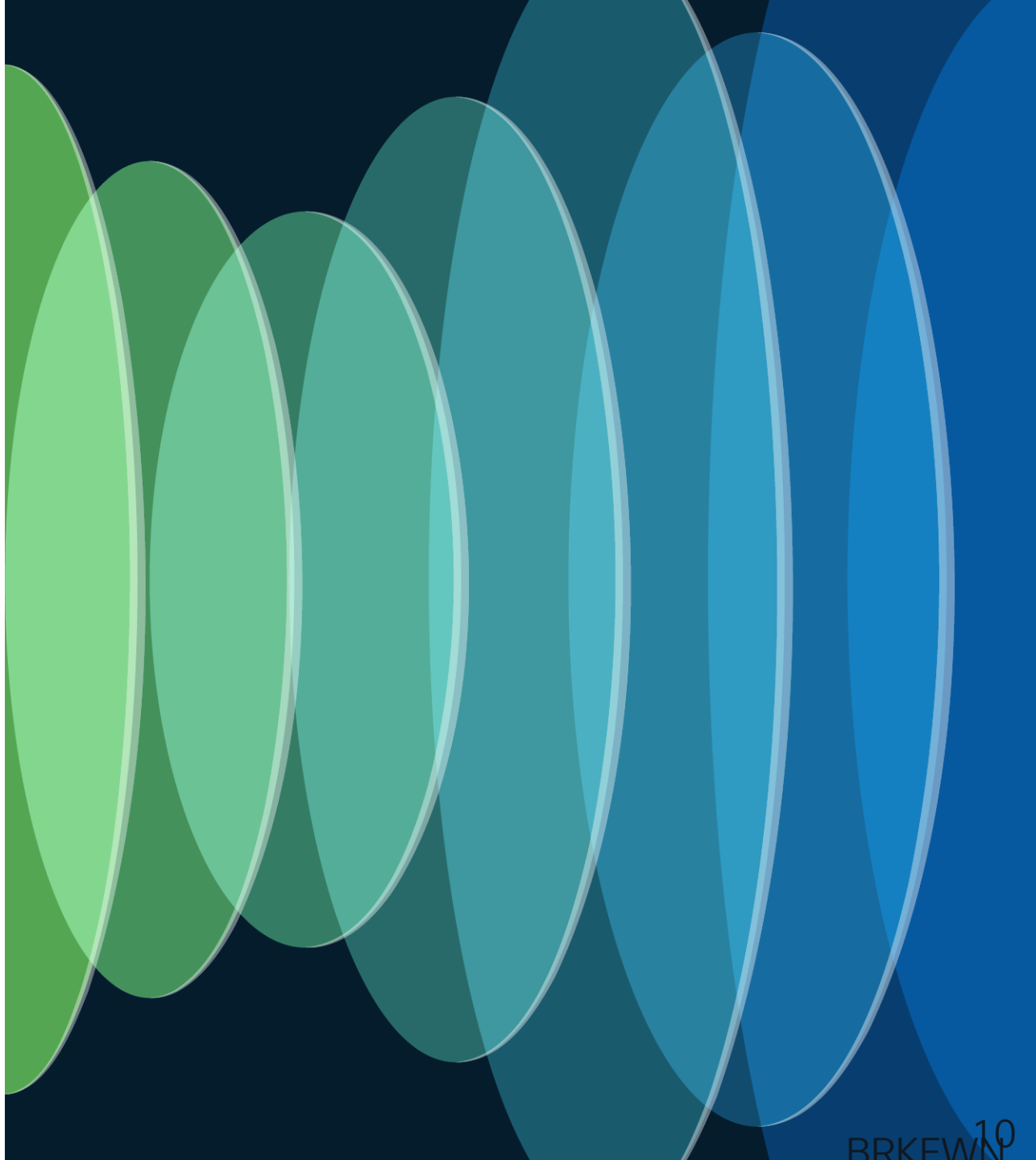
- Wireless LAN Controller (WLC) only managed by Catalyst Center, not configured.
- Wireless configuration is done directly on the WLC.



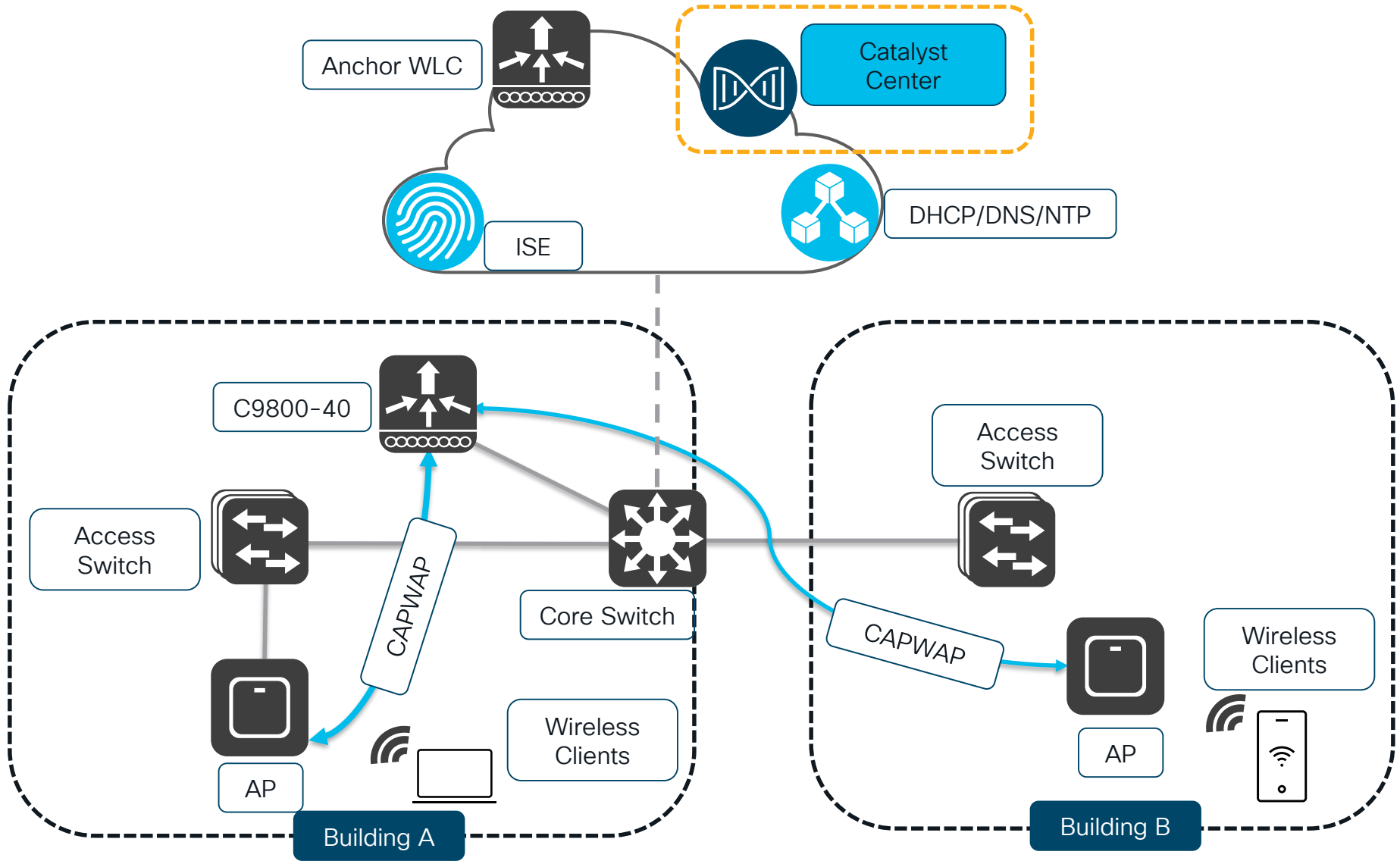
Managed & provisioned

- Wireless LAN Controller (WLC) managed and configured by Catalyst Center

Onboard Network Devices to Catalyst Center

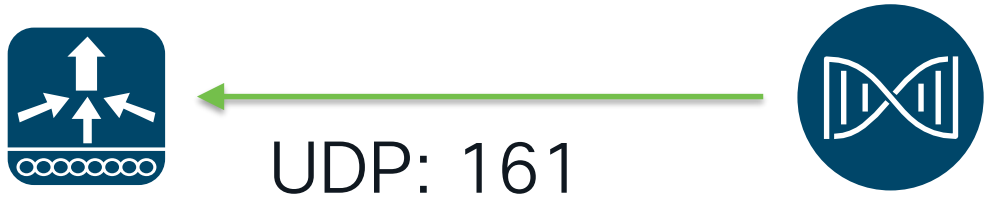


Typical Customer Network

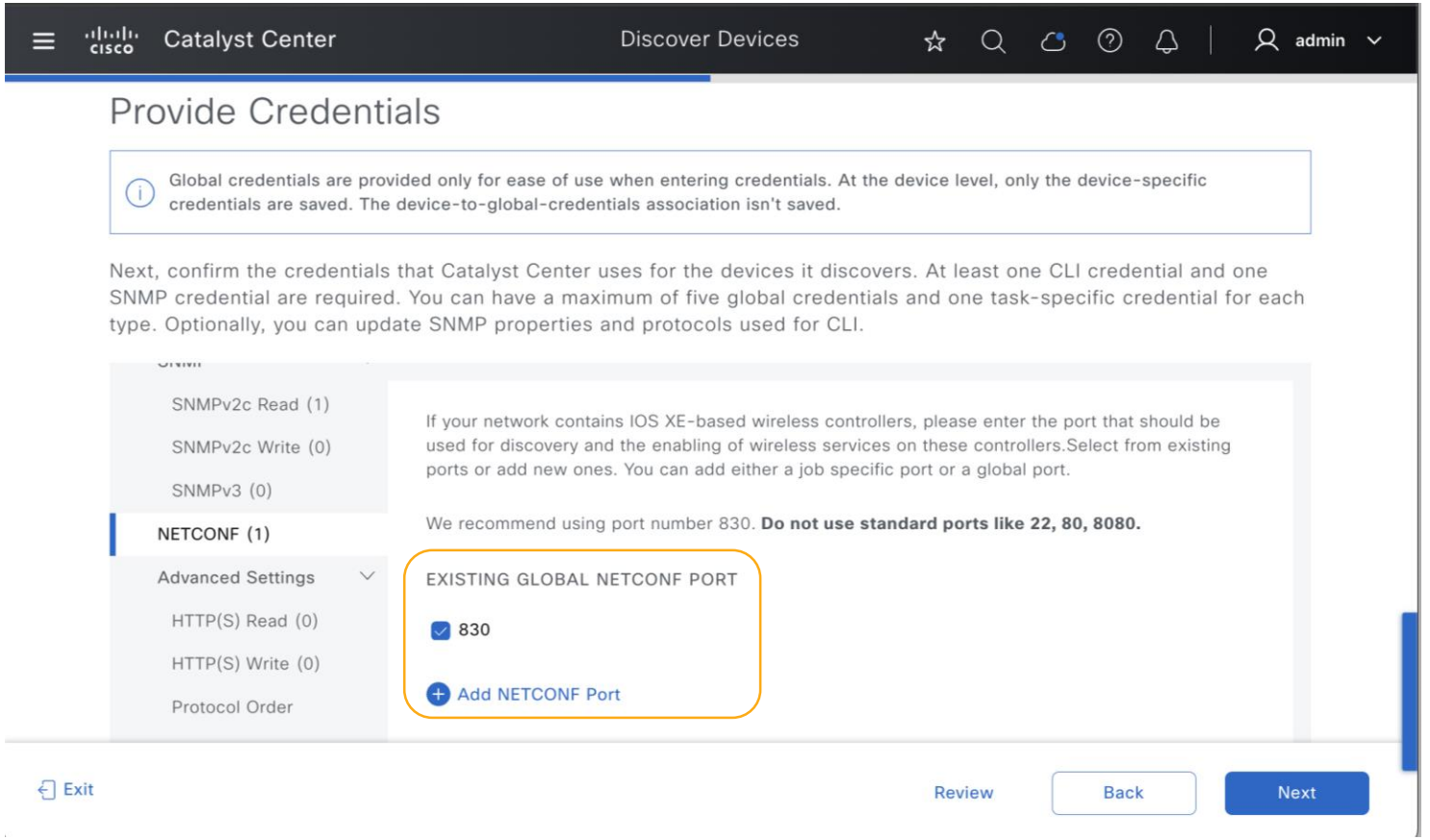


Prerequisites for Onboarding

- CLI Credentials & NETCONF enabled
- Catalyst Center Enterprise IP / VIP allowed in SNMP ACL list



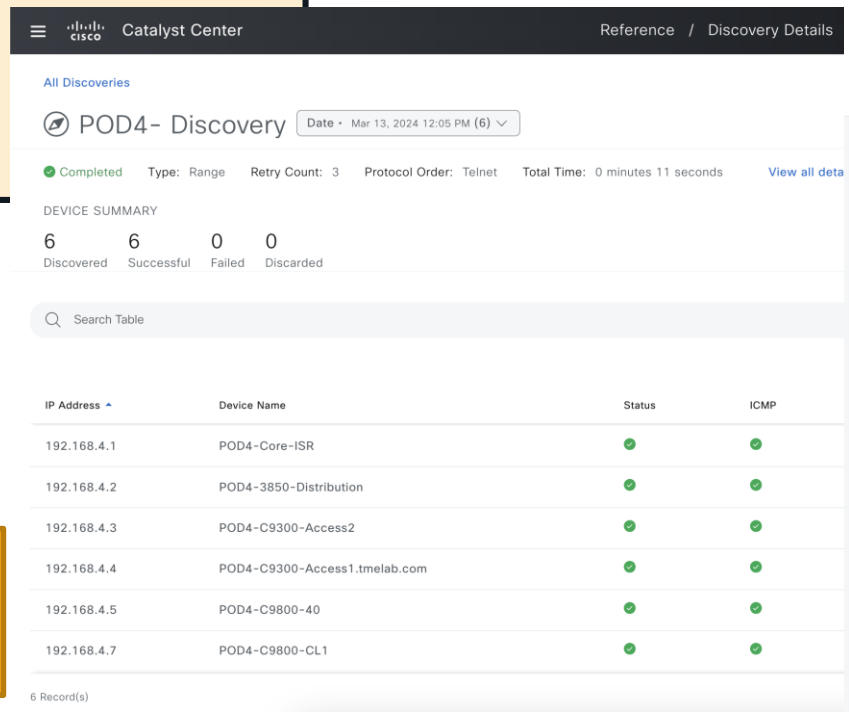
UDP: 161
TCP: 22/830

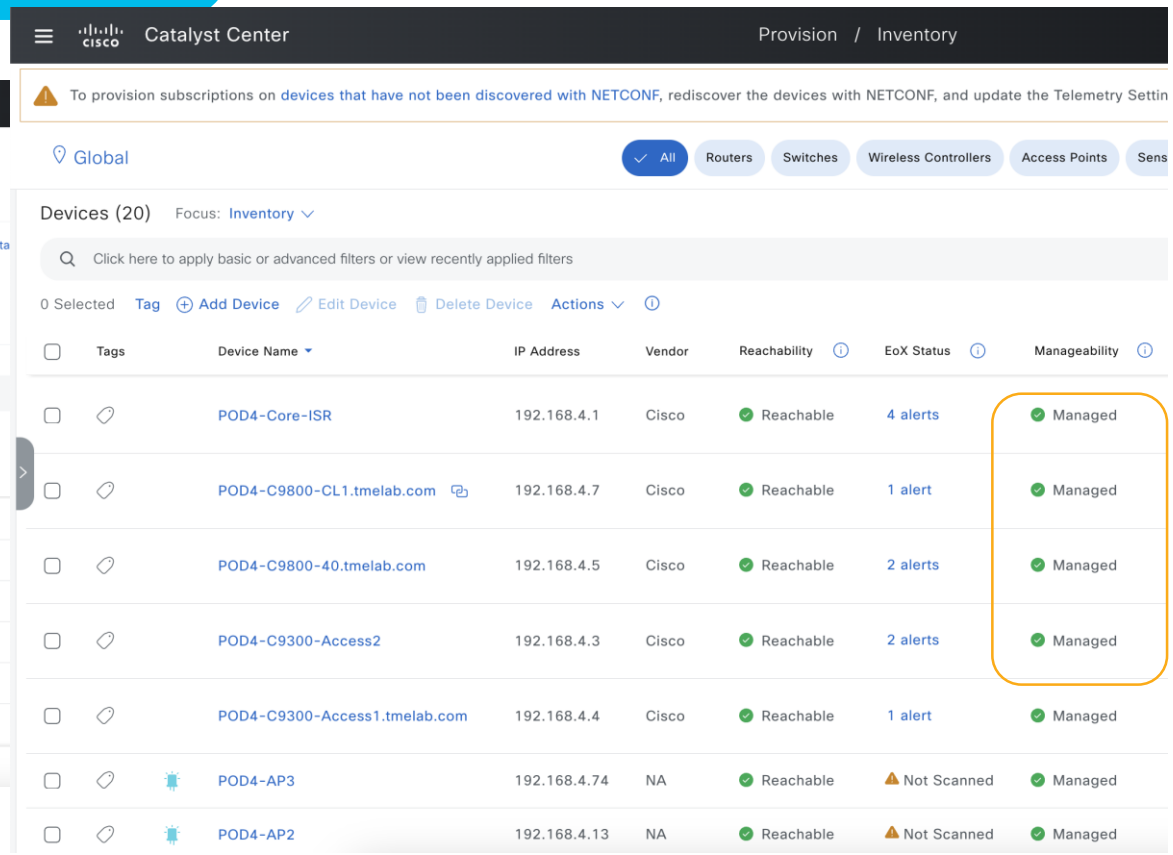


Device Onboarding Process- Wireless Discovery

```
<..config snip..>
SVI
Credentials
NETCONF
SNMP
```

Network Administrator onboards devices in Catalyst Center

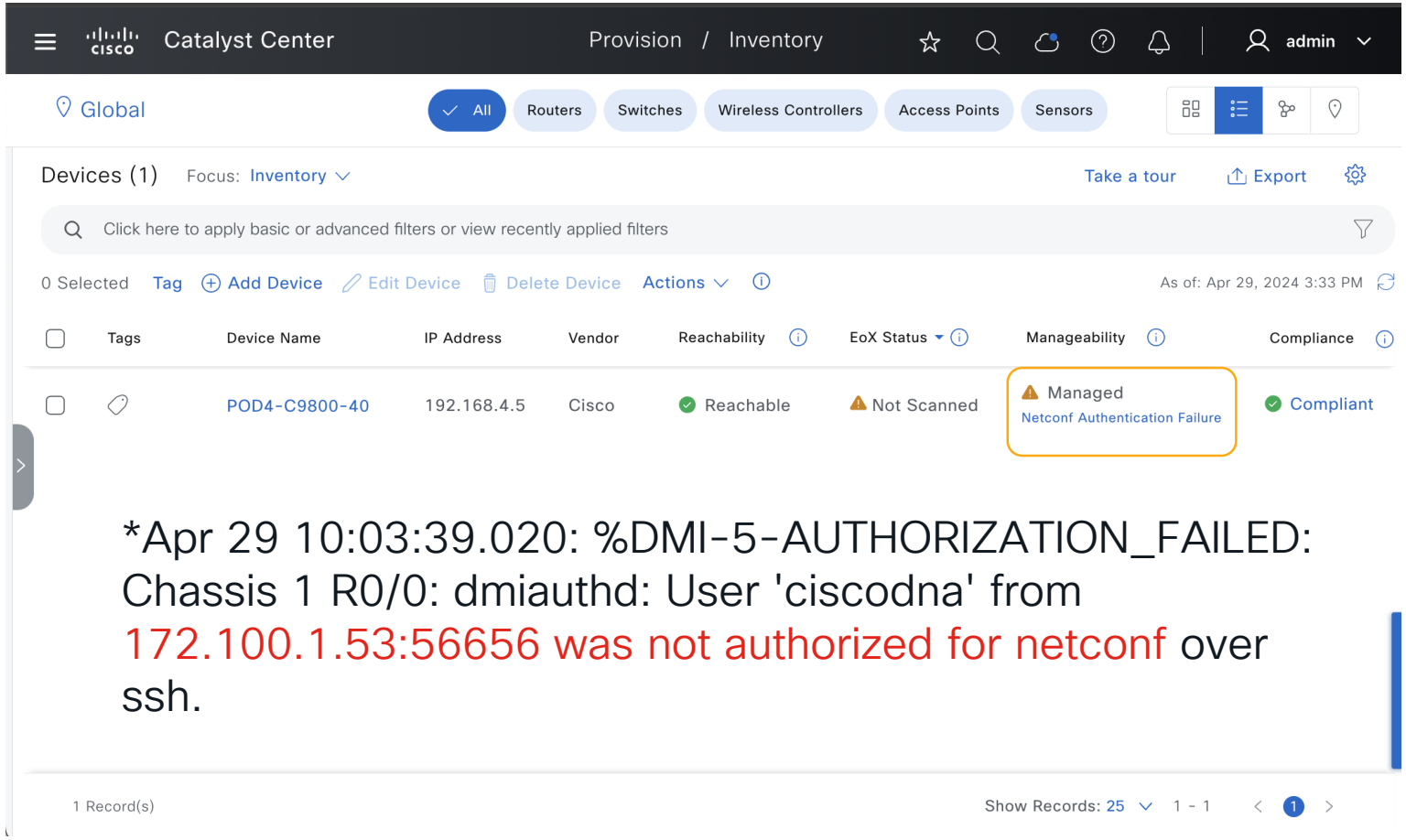




Tips & Tricks

NETCONF not enabled on the devices

AAA method list (default) not configured



Tips & Tricks

Netconf authentication and authorization uses the default group

```
C9800-Virtual#sh run aaa
!
aaa authentication login default group
dnac-network-tacacs-group local

aaa authorization exec default group
dnac-network-tacacs-group local if-
authenticated
```

Tips & Tricks

- Netconf authentication and authorization uses the default group
- AAA method list for programmatic interfaces starting 17.9

```
C9800-Virtual#sh version
Cisco IOS XE Software, Version 17.09.03


C9800-Virtual#sh run aaa
yang-interfaces aaa authentication
method-list <mymethodlist>

yang-interfaces aaa authorization method-
list <mymethodlist>
```

Prime to Catalyst Center Readiness Assessment PDART Tool

Cisco PDART - A Cisco DNA Center Readiness tool for the Cisco Prime Infrastructure

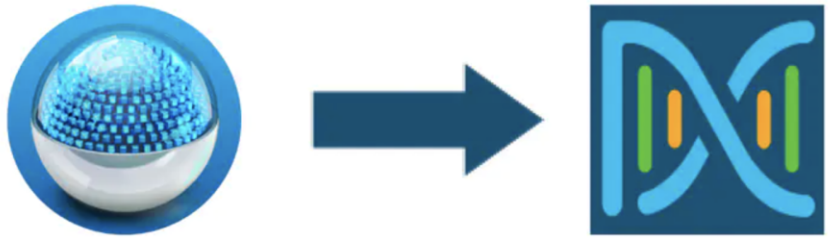
Translations Download Print

Updated: August 8, 2021 **Document ID:** 217059

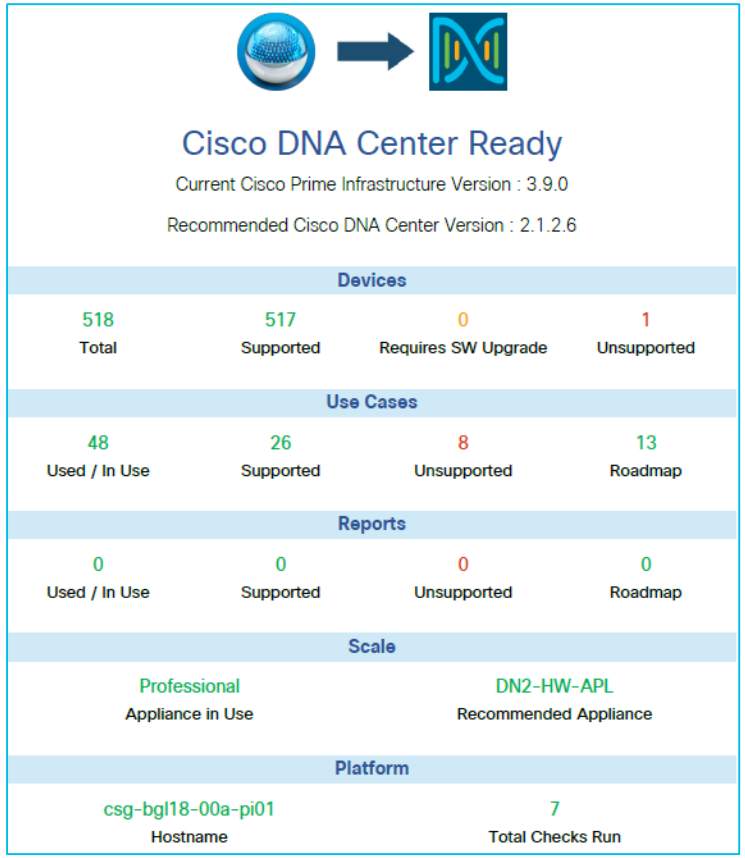
Contents

Introduction

The Cisco PDART (Cisco Prime Infrastructure Cisco DNA Center Assessment & Readiness Tool) analyzes a Cisco Prime Infrastructure deployment and assesses whether Cisco DNA Center supports the current deployment.

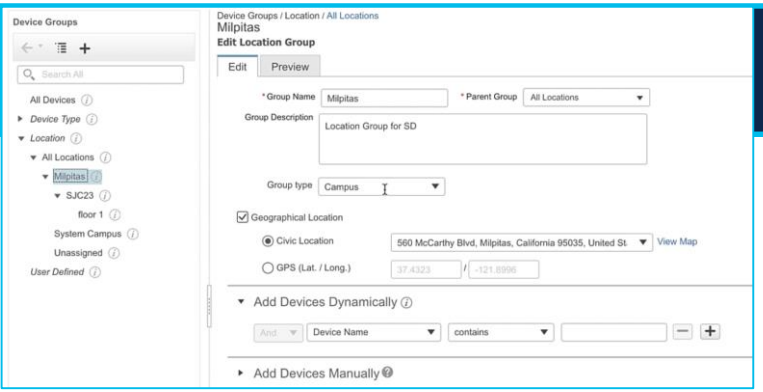


The PDART assesses the Cisco Prime Infrastructure from the following perspectives:



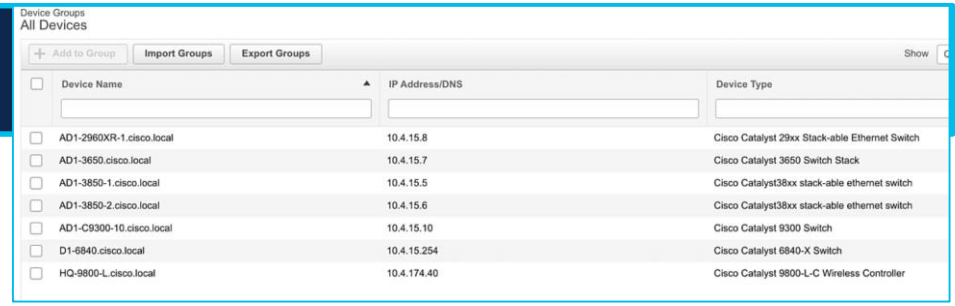
https://www.cisco.com/c/en/us/support/docs/cloud-systems-management/prime-infrastructure/217059-cisco-pdart-a-cisco-dna-center-readine.html

Prime Data Migration Tool



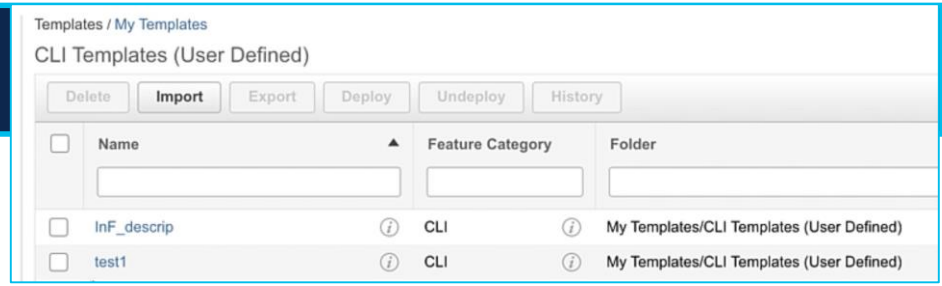
Site Hierarchy

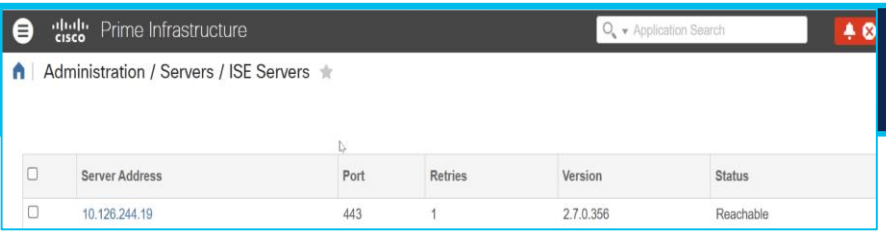
Inventory



Maps

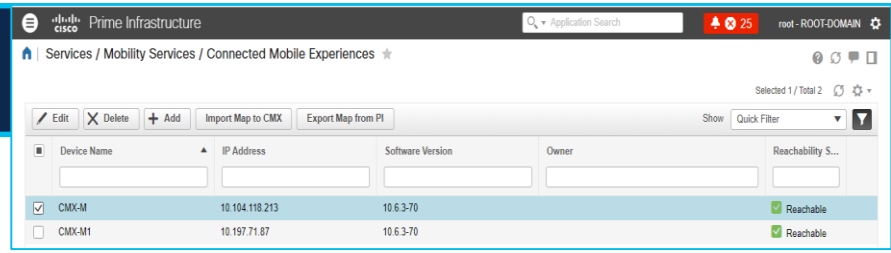
Templates





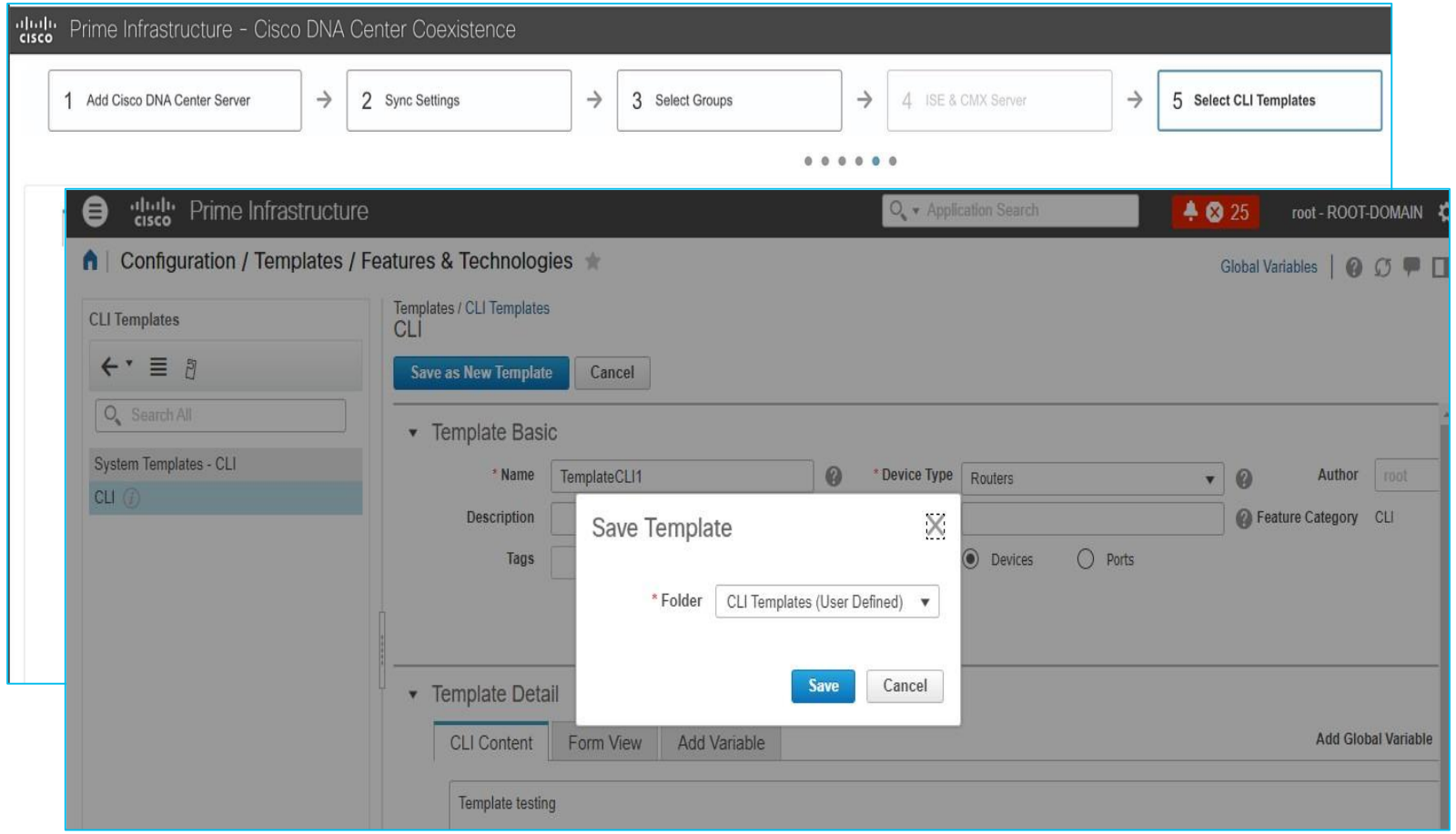
ISE

CMX

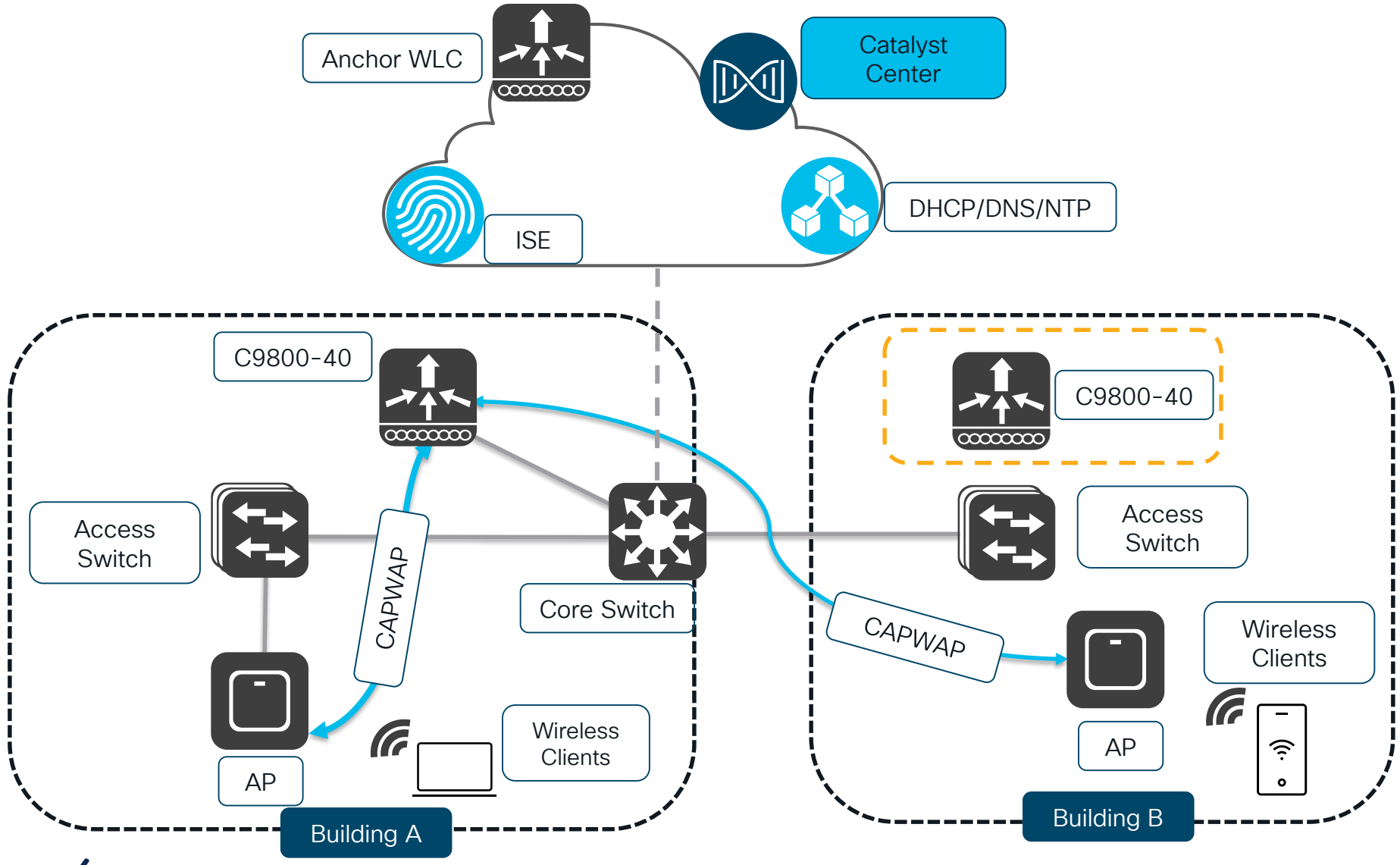


Tips & Tricks- Templates Migration

- User Defined CLI templates with variables and composite templates
- System Defined Templates- Not Migrated
- Migrated Templates moved to Design > CLI Templates > Prime Migrated Templates



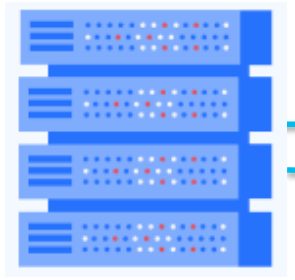
Device Onboarding Process- WLC PnP



Device Onboarding Process- PnP

Device validates server's location and establishes a communication with the server

DHCP Server



Catalyst Center (PnP Server)

IP Address
10.104.49.27

```
<..snip..>
CISCO_PNP.pnpserver
"5A;B2;K4;I10.104.49.27;J80"
<..snip..>
```

Network Devices / Plug and Play — admin

WLC (192.168.1.251)

Serial Number: FCL24140056 Site: Global/Chennai/POD1-Building As of: a minute ago

SUDI Authenticated

Status Device added to Site Global/Chennai/POD1-Building

Details History Configuration TW 0/0/0

History (29) As of: May 7, 2024 2:04 PM

Status	Date Updated	Details	Work Item Details
✓	May 07, 2024 1:46:36 PM	Deleted Device from PnP	NA
✓	May 07, 2024 1:27:00 PM	Task: System Task Completed	Info
✓	May 07, 2024 1:26:39 PM	Executing System Workflow to Initialize Device	NA
✓	May 07, 2024 1:26:39 PM	Executing Task: System Task	NA
✓	May 07, 2024 1:26:24 PM	Device Authenticated Successfully	NA
✓	May 07, 2024 1:26:17 PM	Secured Device	NA
✓	May 07, 2024 1:26:00 PM	Securing Device	NA

Day 1

Remote Installer
- Mount and cable devices
- Power-on

> Network Plug and Play Overview

Device Status: All (2) | Unclaimed (2) | Error (0) | Provisioned (0)

Devices (2) Focus: Default Auto-refresh: • 30 s

Search PnP devices

0 Selected Actions Add Devices As of: May 26, 2024 7:45 AM Refresh

#	Device Name	Serial Number	Product ID	Last Contact	State	Onboarding Progress	IP Address	MAC Address	Source
1	AP5CE1.7628.EE30	FGL2420LGCG	C9120AXI-D	May 26, 2024 7:45:33 AM	Unclaimed	Device is ready to be claimed.	192.168.10.7	5C:E1:76:28:EE:30	Network
2	WLC	FCL24140056	C9800-L-C-K9	May 26, 2024 7:45:21 AM	Unclaimed	Device is ready to be claimed.	192.168.1.252	-	Network

2 Record(s) Show Records: 25 1 - 2

> Network Plug and Play Overview

Device Status: All (2) | Unclaimed (1) | Error (0) | Provisioned (1)

Devices (2) Focus: Default Auto-refresh: • 30 s

Search PnP devices

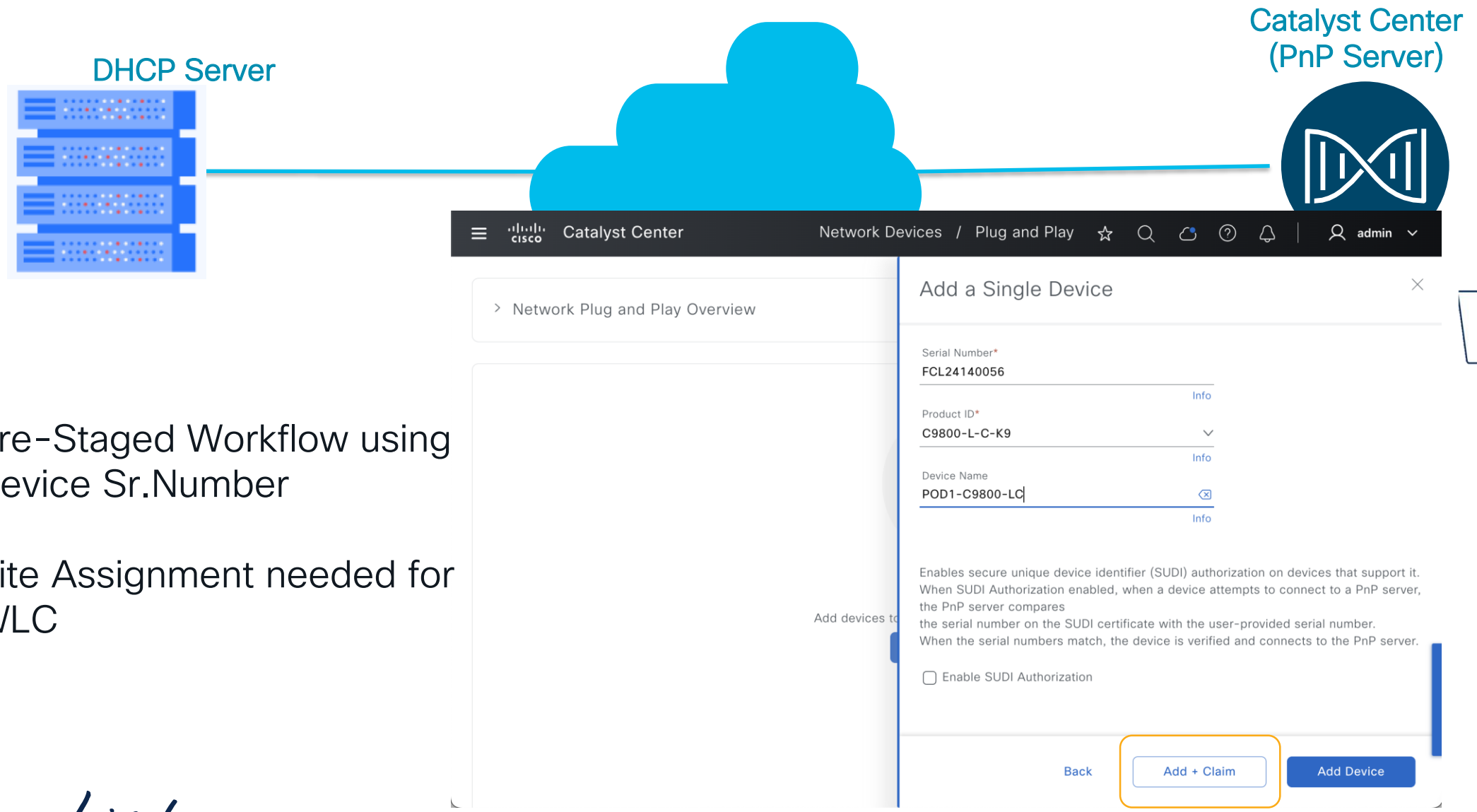
0 Selected Actions Add Devices As of: May 27, 2024 4:17 AM Refresh

#	Device Name	Serial Number	Product ID	Last Contact	State	Onboarding Progress	IP Address	MAC Address	Source
1	AP5CE1.7628.EE30	FGL2420LGCG	C9120AXI-D	May 27, 2024 4:16:09 AM	Unclaimed	Device is ready to be claimed.	192.168.10.7	5C:E1:76:28:EE:30	Network
2	WLC	FCL24140056	C9800-L-C-K9	May 26, 2024 8:07:01 AM	Provisioned	Provisioned	192.168.1.12	-	Network

2 Record(s) Show Records: 25 1 - 2

Device Onboarding Process- WLC PnP

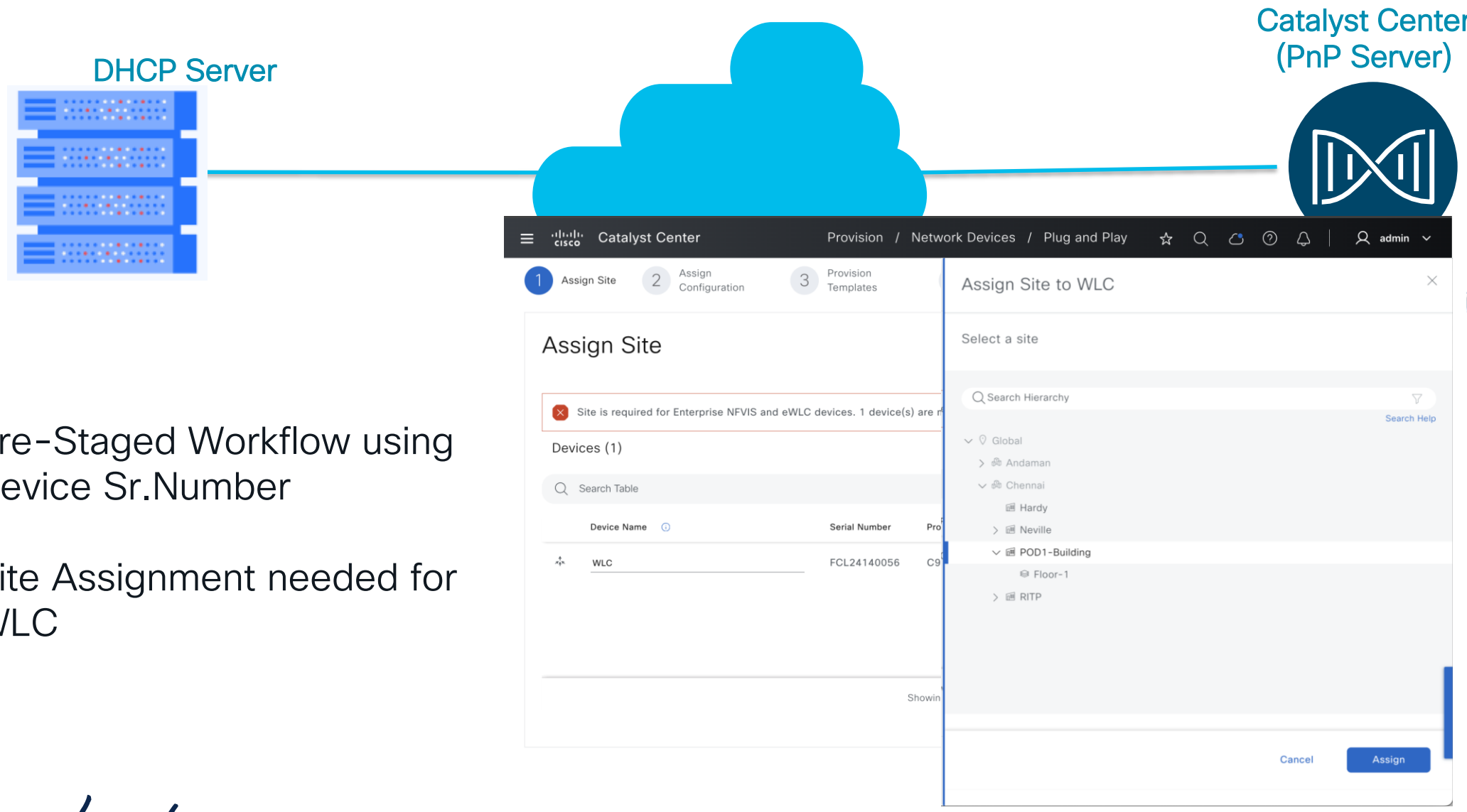
For your reference



- Pre-Staged Workflow using Device Sr.Number
- Site Assignment needed for WLC

Device Onboarding Process- WLC PnP

For your reference



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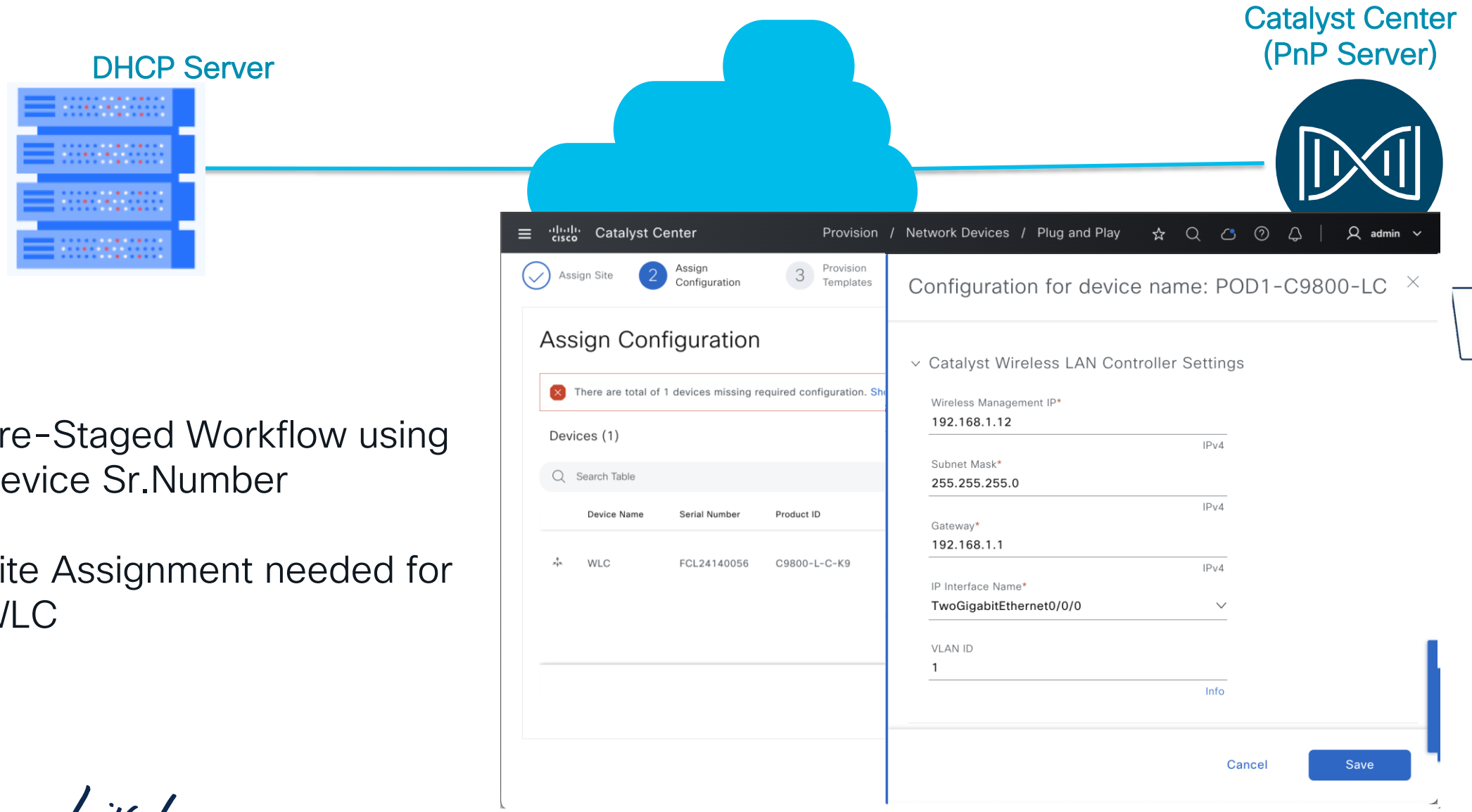

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Device Onboarding Process- PnP

For your reference

Device validates server's location and establishes a communication with the server

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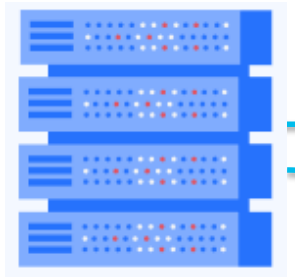

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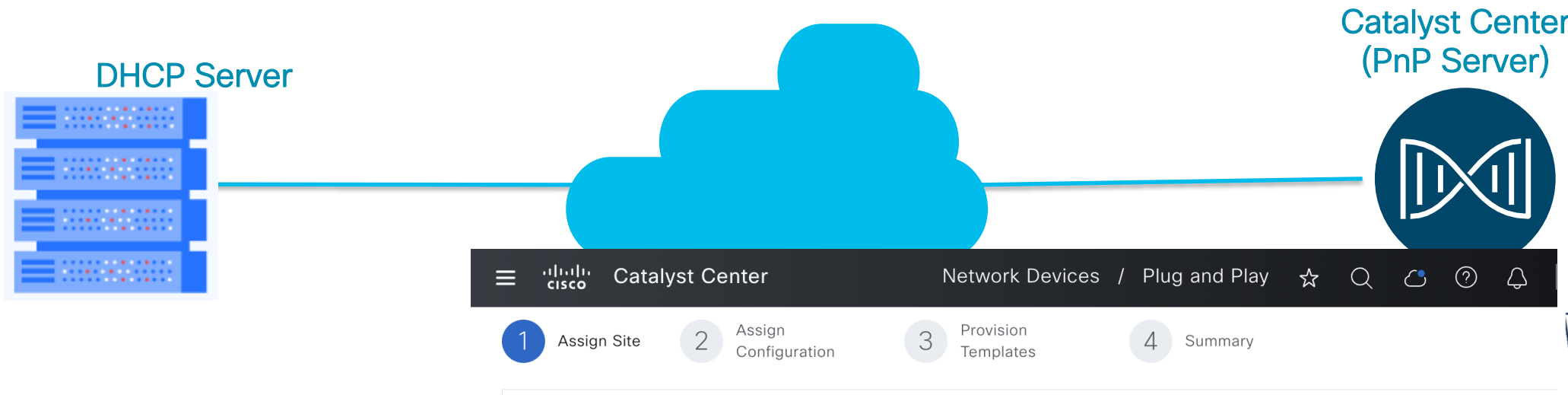
Day 1

Remote Installer
- Mount and cable devices
- Power-on

Device Onboarding Process- AP PnP

For your reference

Managed only



- Pre-Staged Workflow using Device Sr.Number
- Site Assignment is not mandatory

Assign Site

One (1) Warning Alert and One (1) Information Alert on this page. Expand to see details.

Devices (1)

Search Table

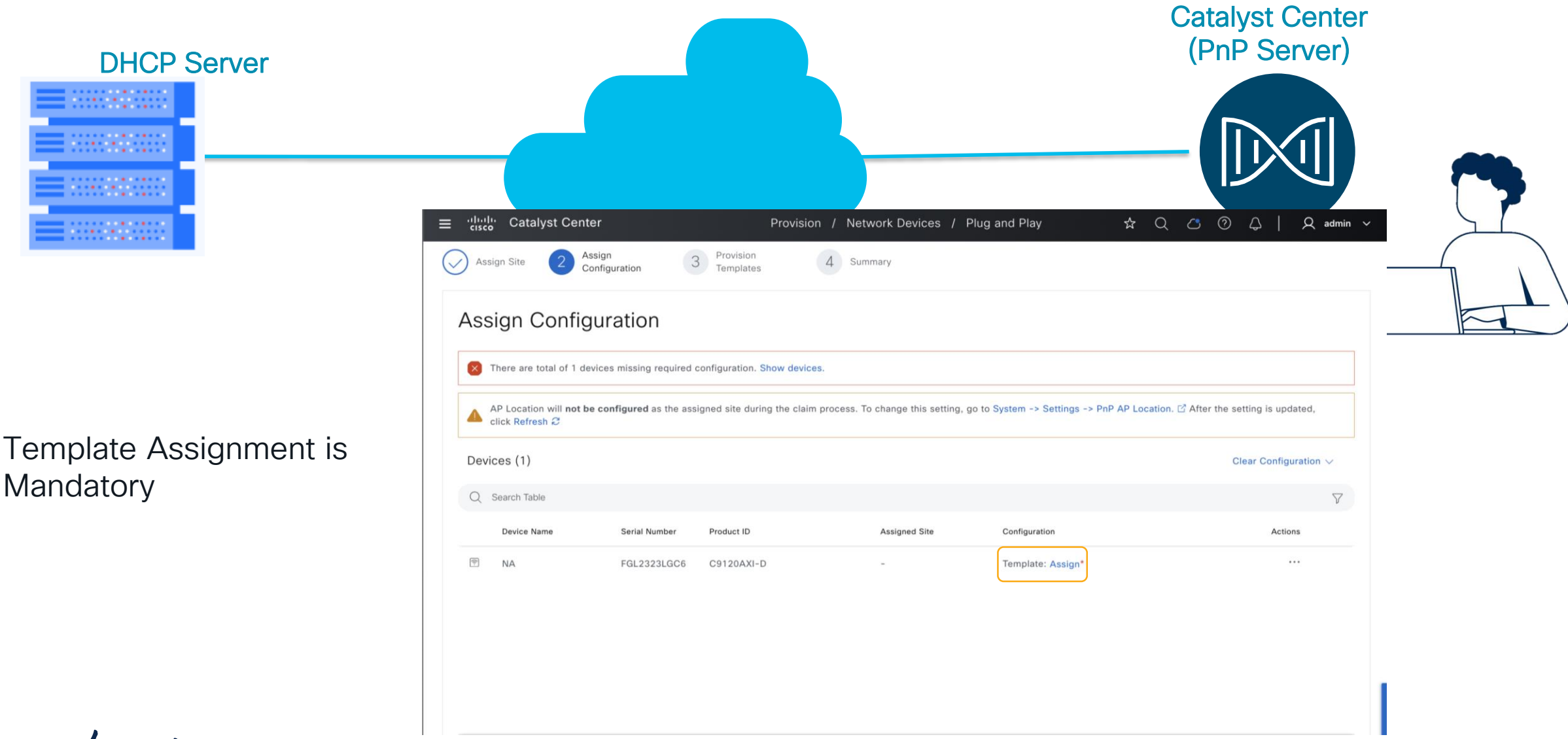
Device Name	Serial Number	Product ID	Device Type	Site (Recommended)
CL-AP-Demo	FGL2323LGC6	C9120AXI-D	AP	Assign

Showing 1 of 1

Device Onboarding Process- AP PnP

For your reference

Managed only

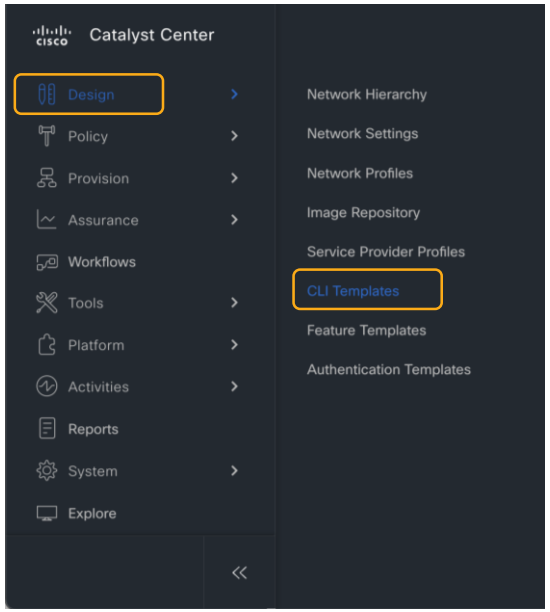


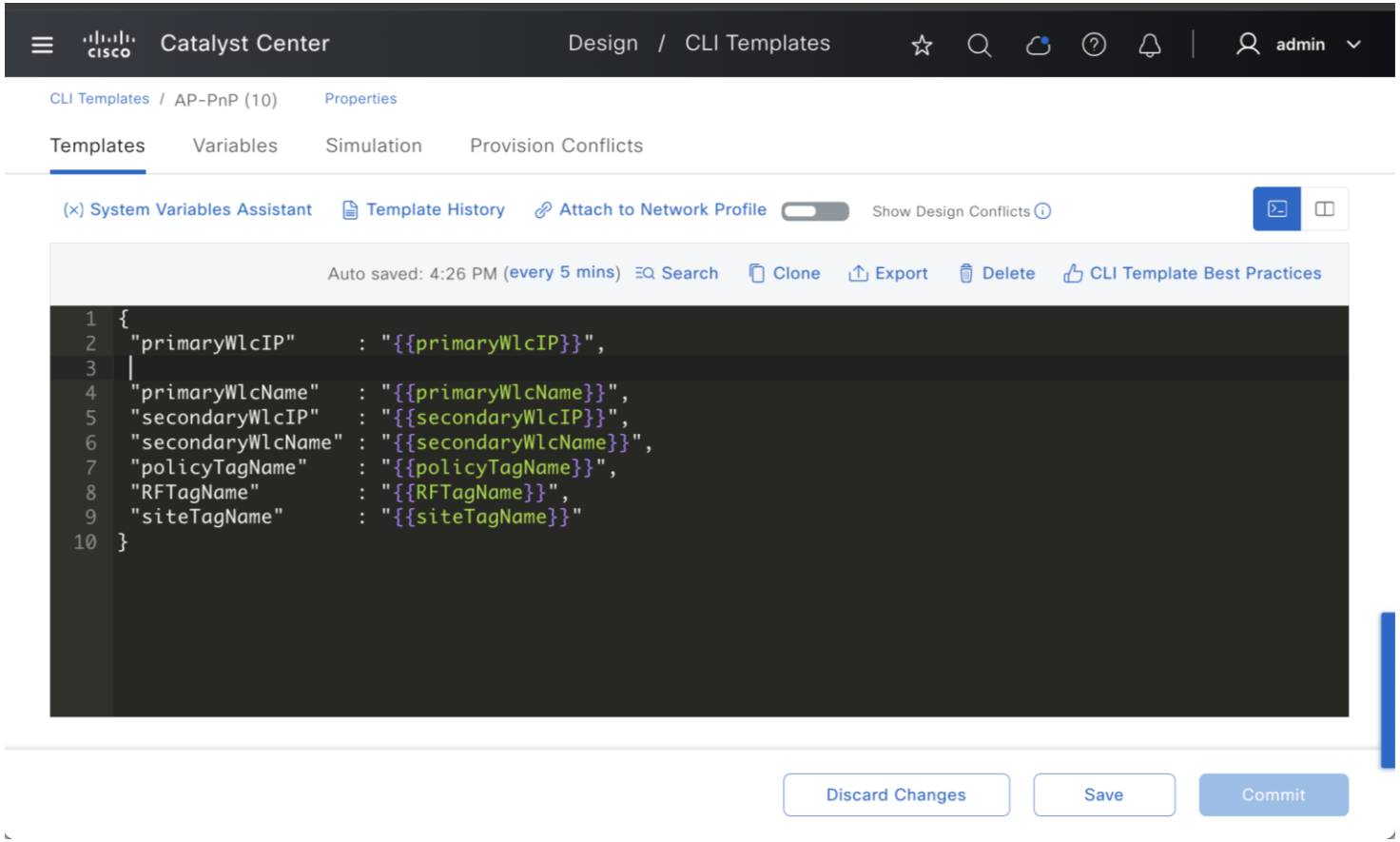
- Template Assignment is Mandatory

How to build Templates for AP PnP

For your reference

Managed only



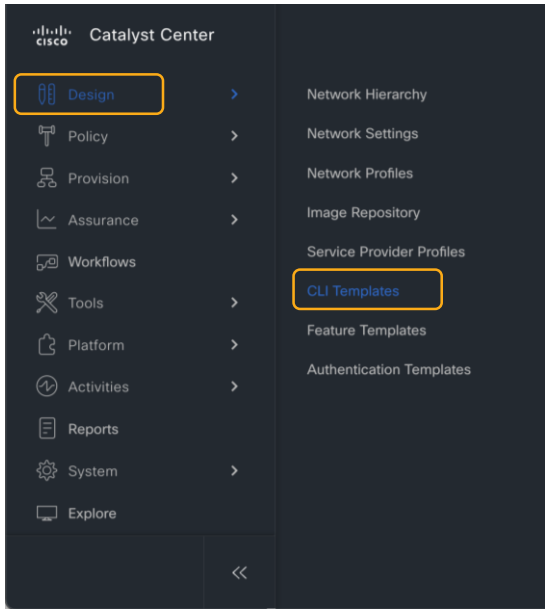


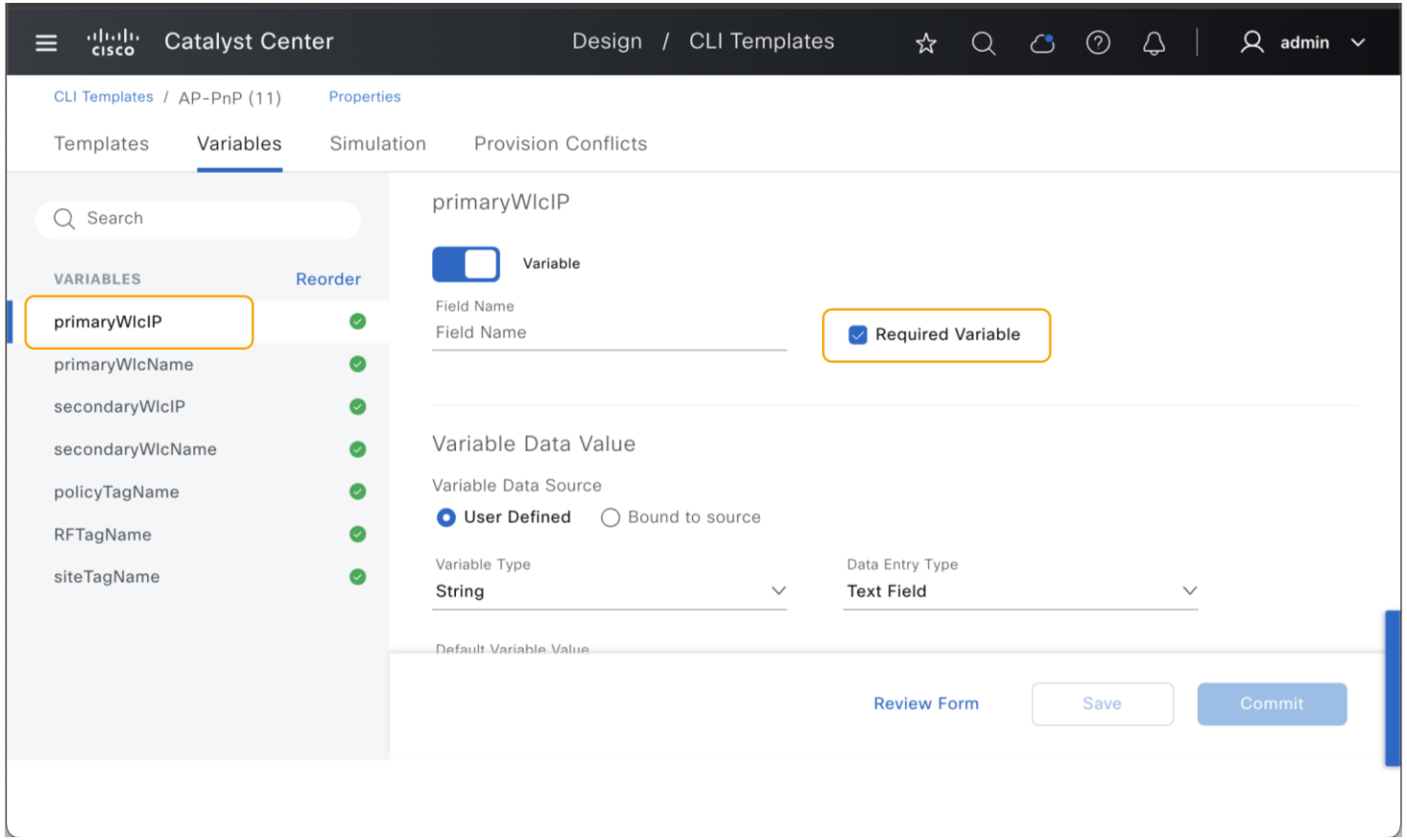
- Project Name: Onboarding Configuration
- Language: Jinja / Velocity
- Device Family: Wireless Lan Controller
- Software Type: IOS-XE

How to build Templates for AP PnP

For your reference

Managed only





- Required Variable: primaryWLCIP
- Rest other variables is Optional

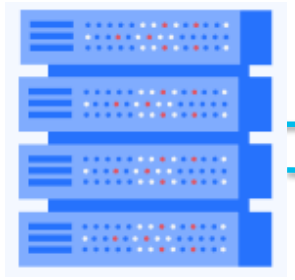
Device Onboarding Process- AP PnP

For your reference

Managed only

Device validates server's location and establishes a communication with the server

DHCP Server



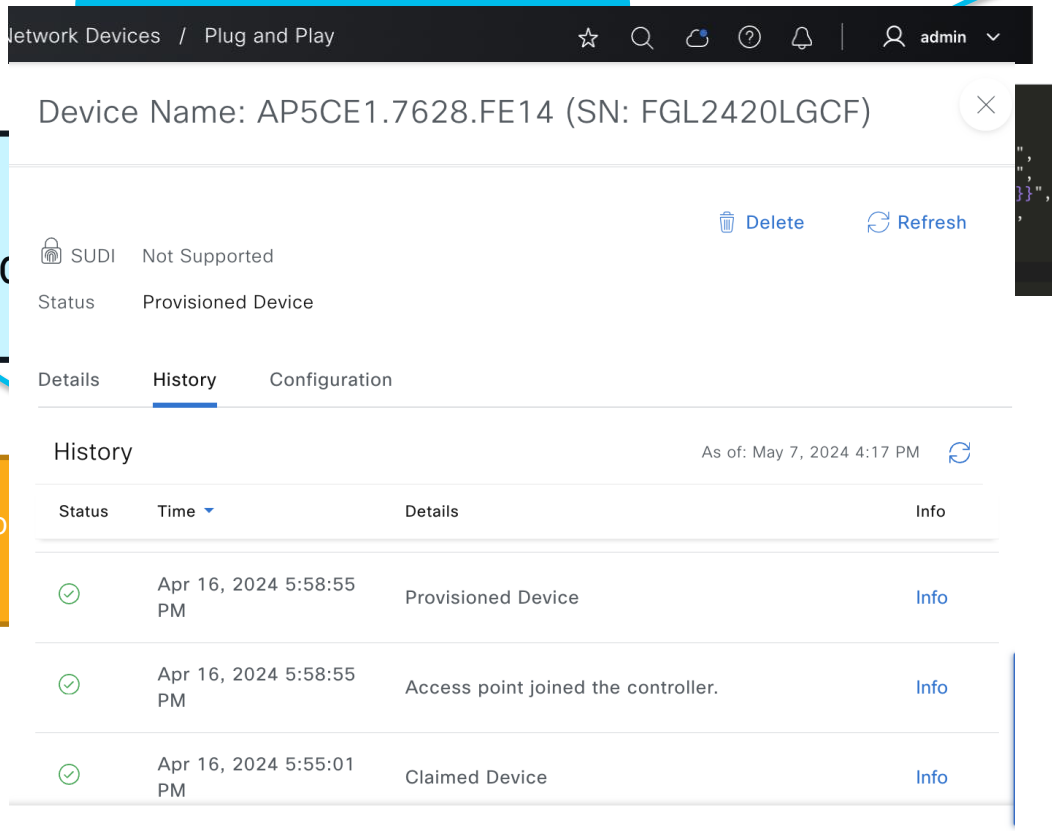
Catalyst Center (PnP Server)

```
<..snip..>
CISCO_PNP.pnpserver
"5A;B2;K4;I10.104.49.27;J8
<..snip..>
```

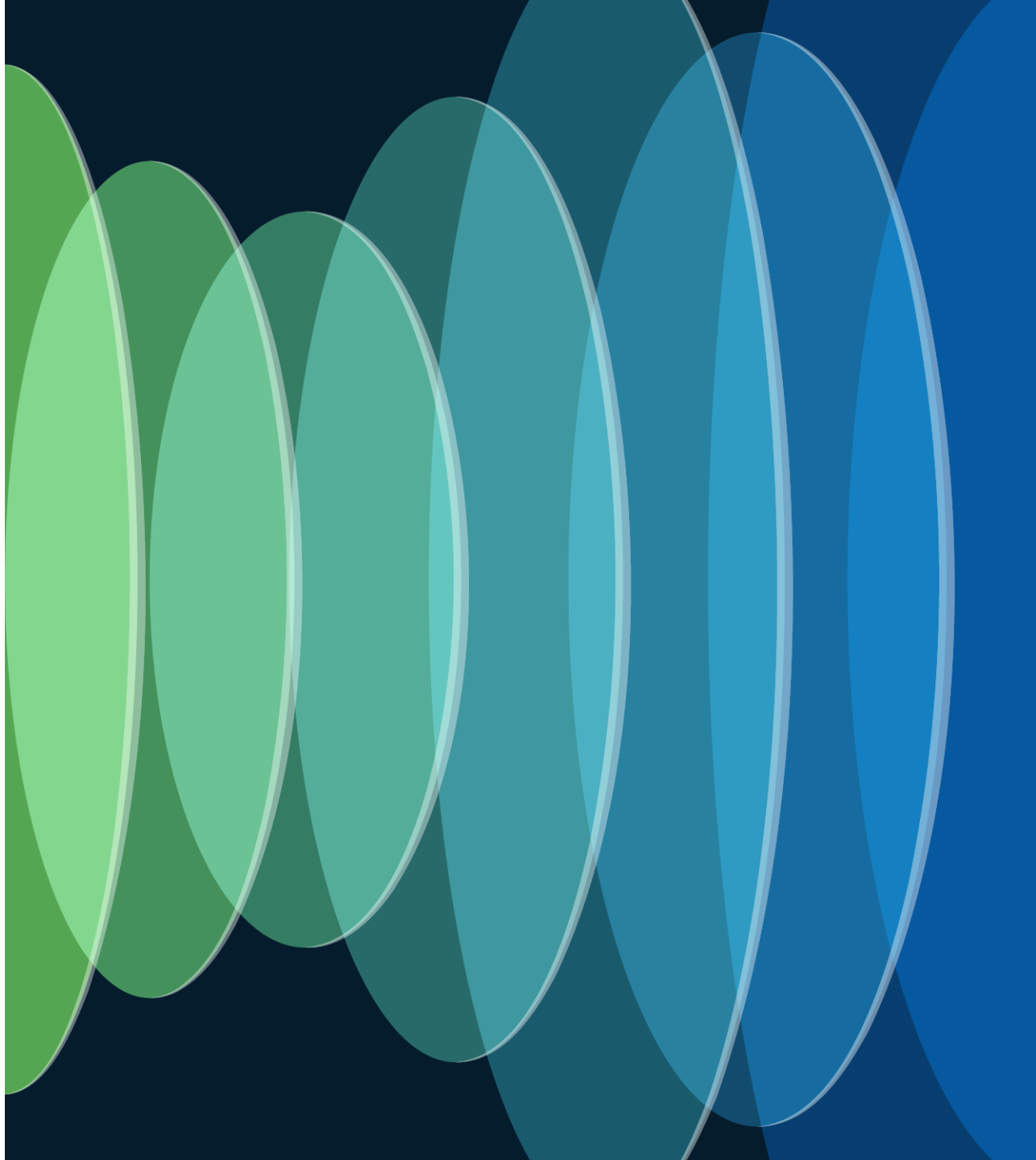
IP Address
10.104.49.27

Day 1

Remote Installer
- Mount and cab devices
- Power-on



Manage Brownfield wireless network



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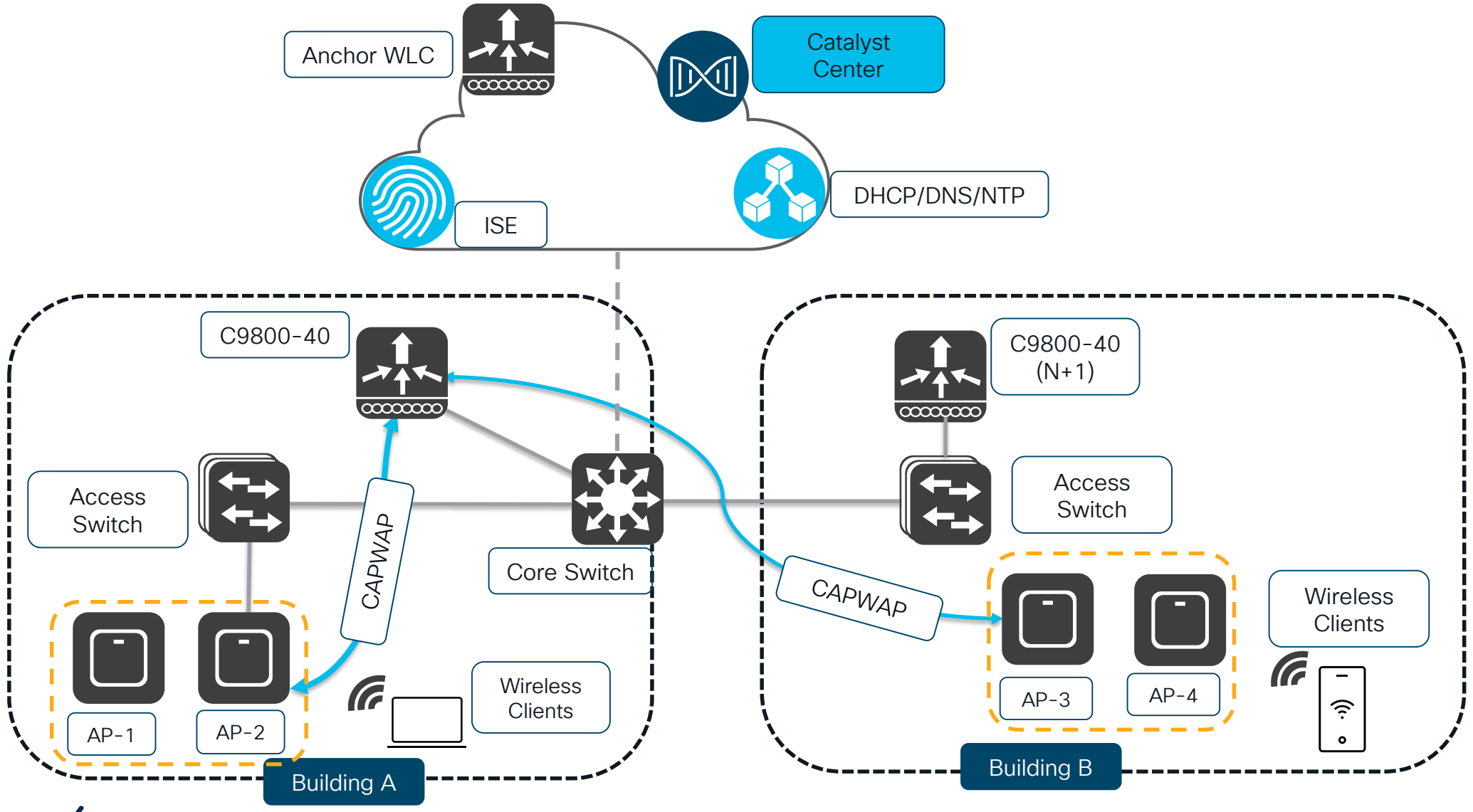
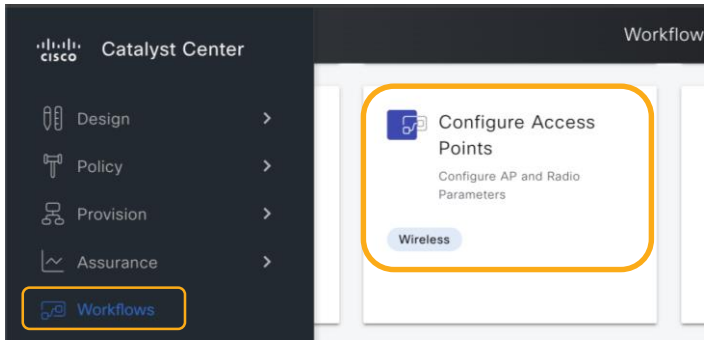
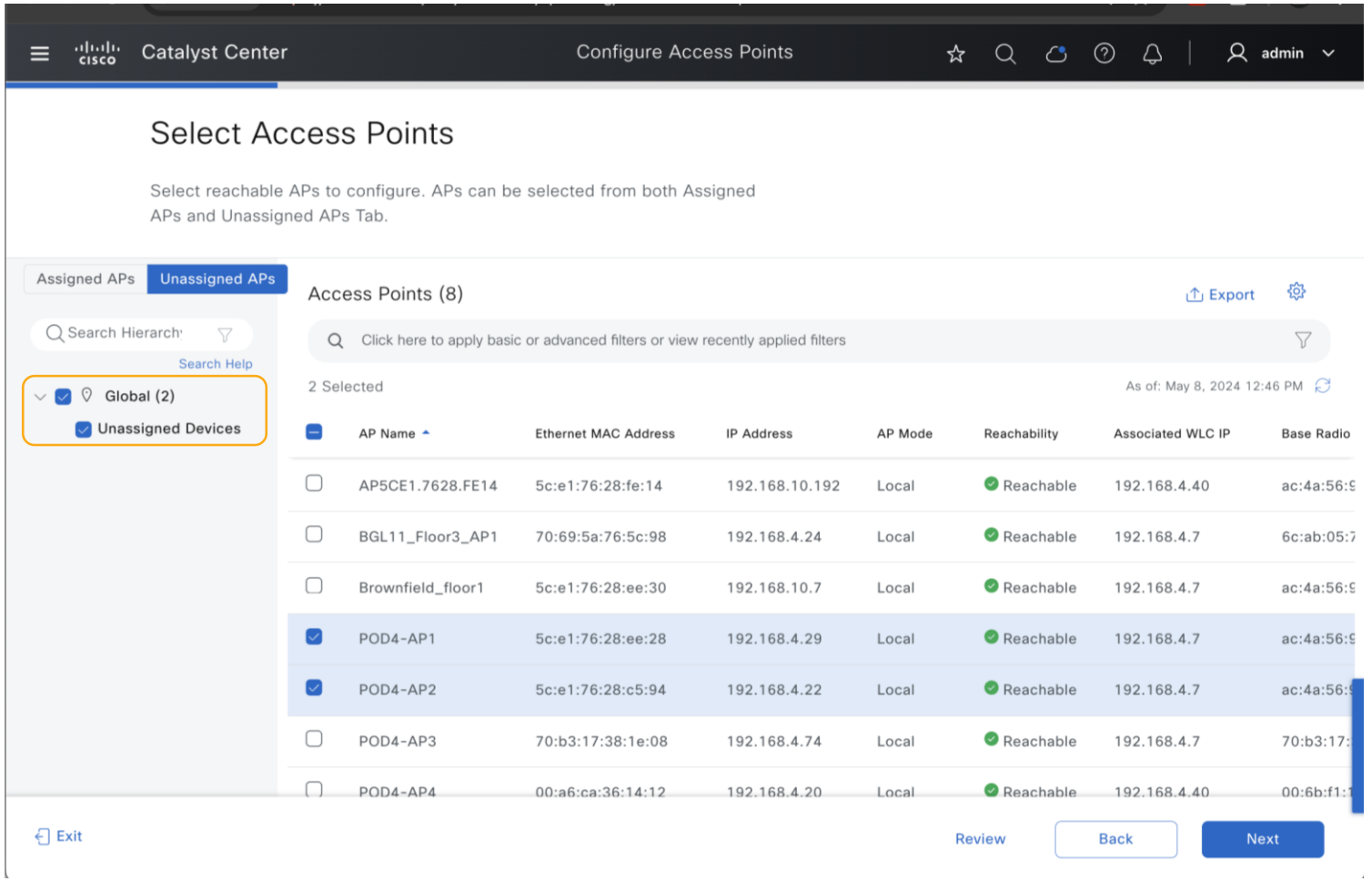
Configuring High Availability for APs



Configuring High Availability for APs





Select All Steps

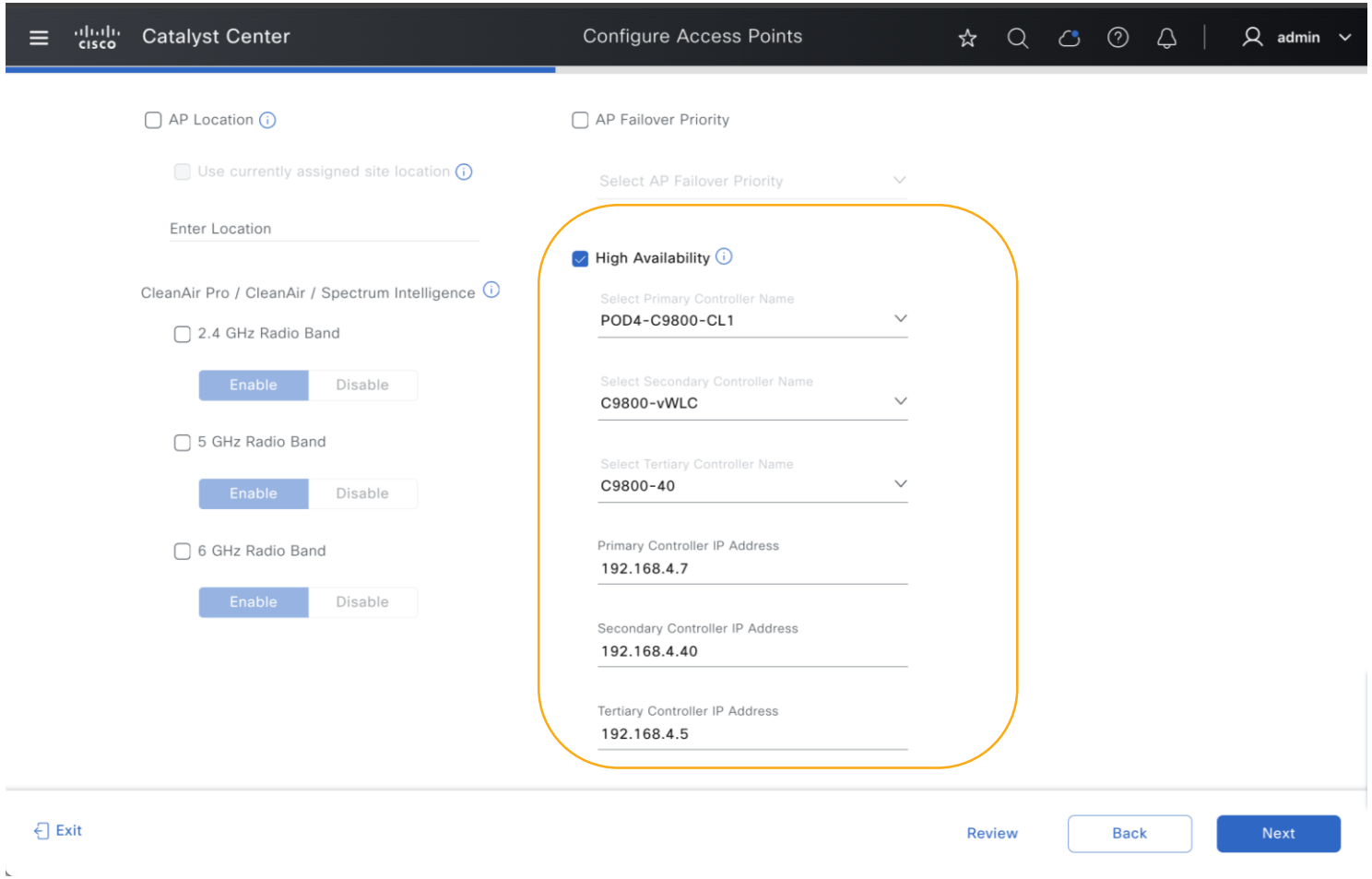
Select the steps you want to configure

- Modify AP Name
- Configure AP Parameters
- Configure 5 GHz Radio Parameters
- Configure 2.4 GHz Radio Parameters
- Configure 6 GHz Radio Parameters
- Configure Dual-Band (XOR) Radio Parameters
- Configure Tri-Radio Parameters

It is NOT MANDATORY for APs to be Assigned to Sites

Configuring High Availability for APs

- AP Parameters for WLC High Availability
- Configure Managed or Unmanaged WLC as Primary/Secondary/Tertiary WLC for AP
- Other AP Parameters include:
  - Admin Status
  - LED
  - Location
  - Radio Parameters
    - Admin Status
    - Antenna
    - Channel Power

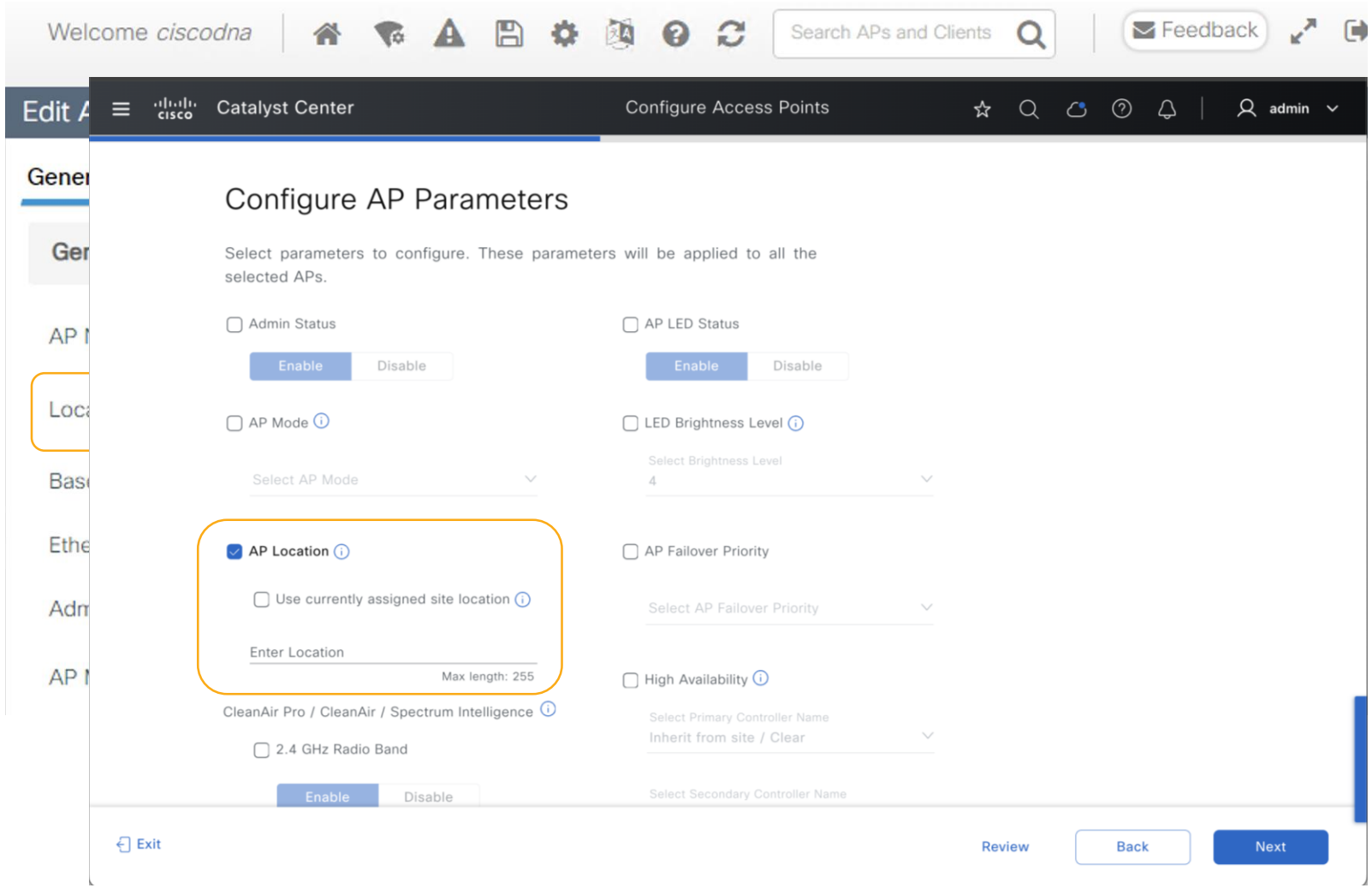


Tips & Tricks

AP Provisioning does not update the location field

Location needs to be updated using Config AP Workflow

Only Applicable for AP Provisioning and not for AP Provisioned via PnP

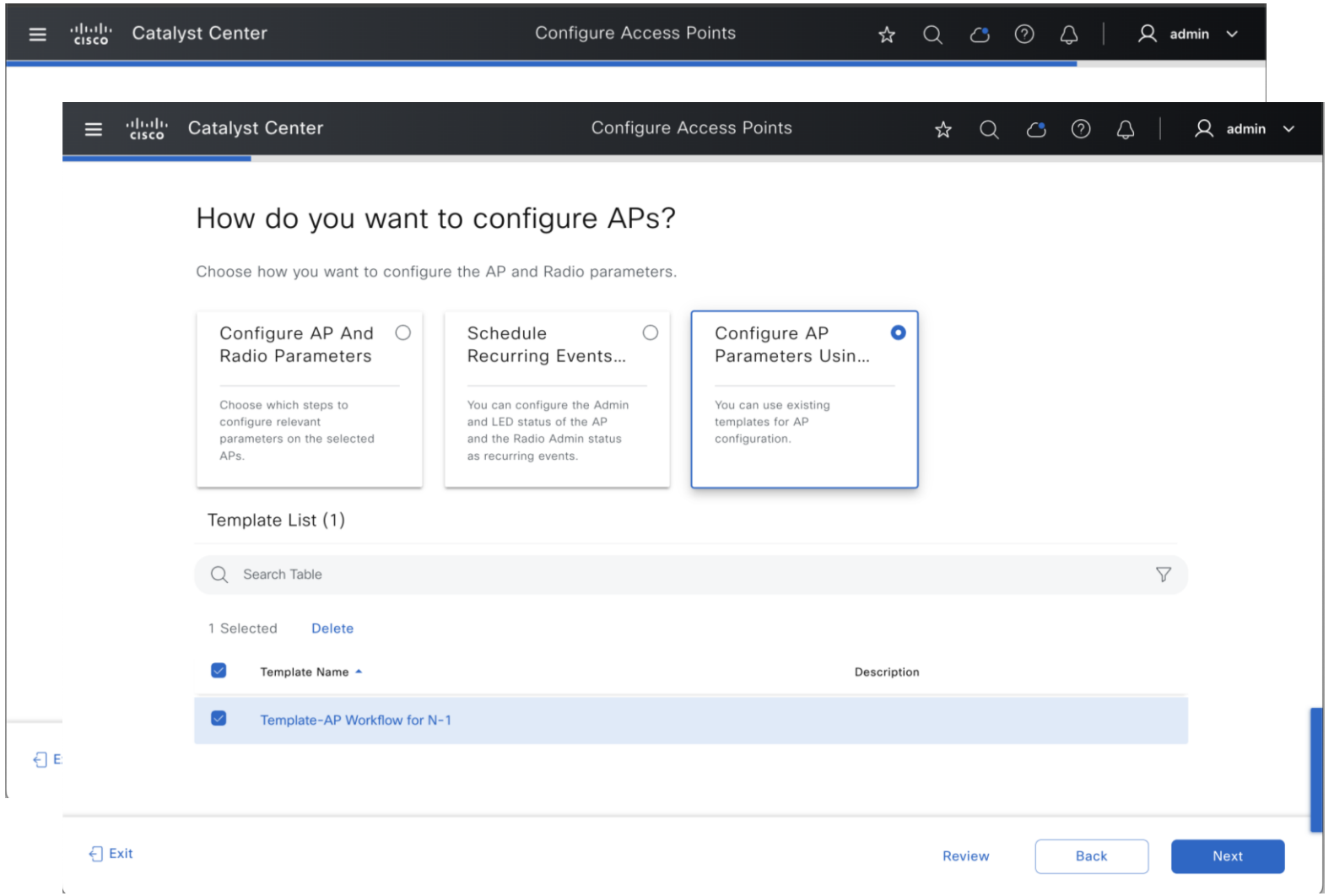


Reusable Templates- Configure AP Workflow

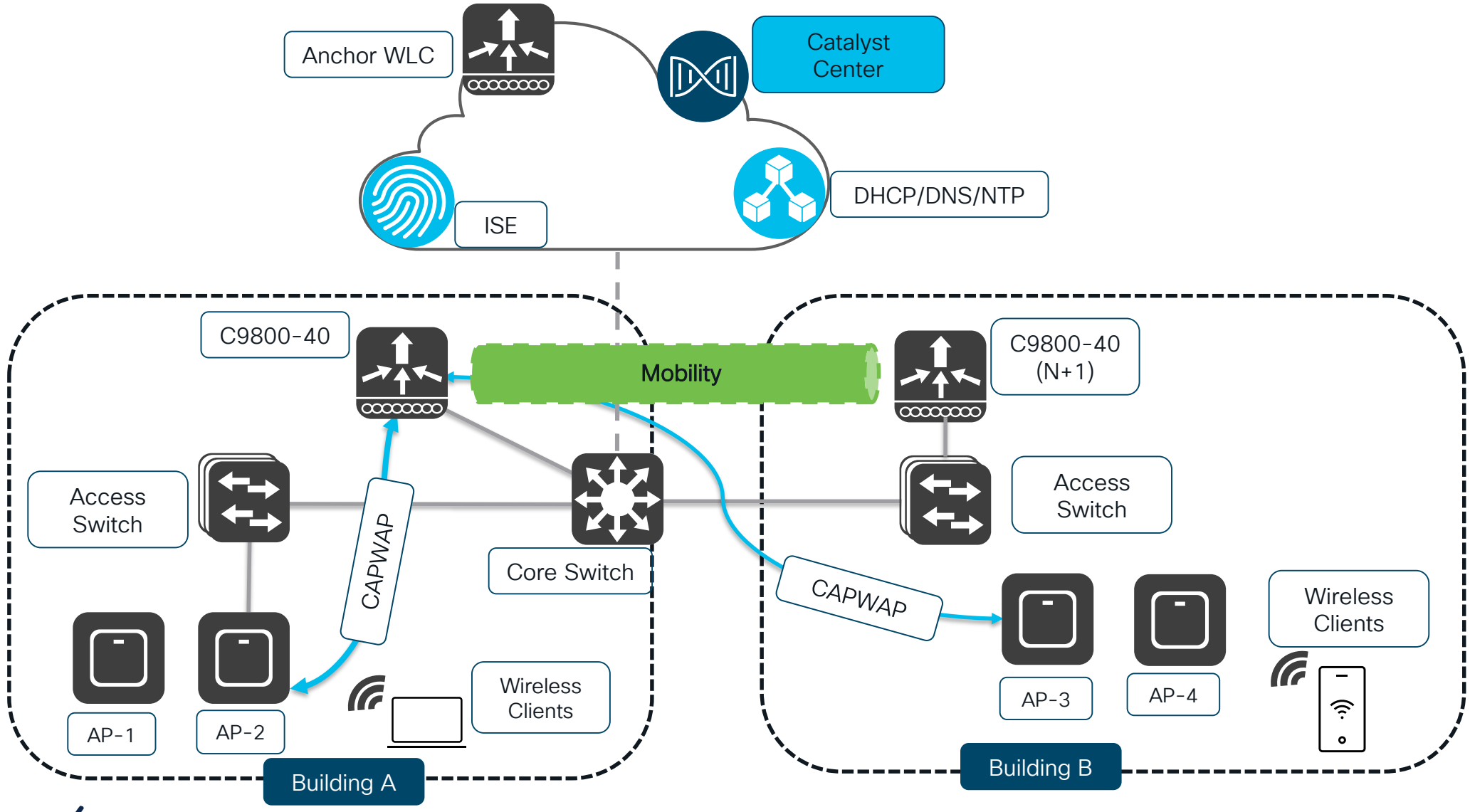
Managed only

Save the workflow as Reusable Template for quicker deployments

Template can be launched from **Configure AP Workflow**



Configuring Mobility for Endpoint



Mobility Provisioning- How it works??

Manual Mobility Configuration Steps

Step 1: Configure C as Peer in A

Step 2: Configure Mobility Group in C and A as Peer in C

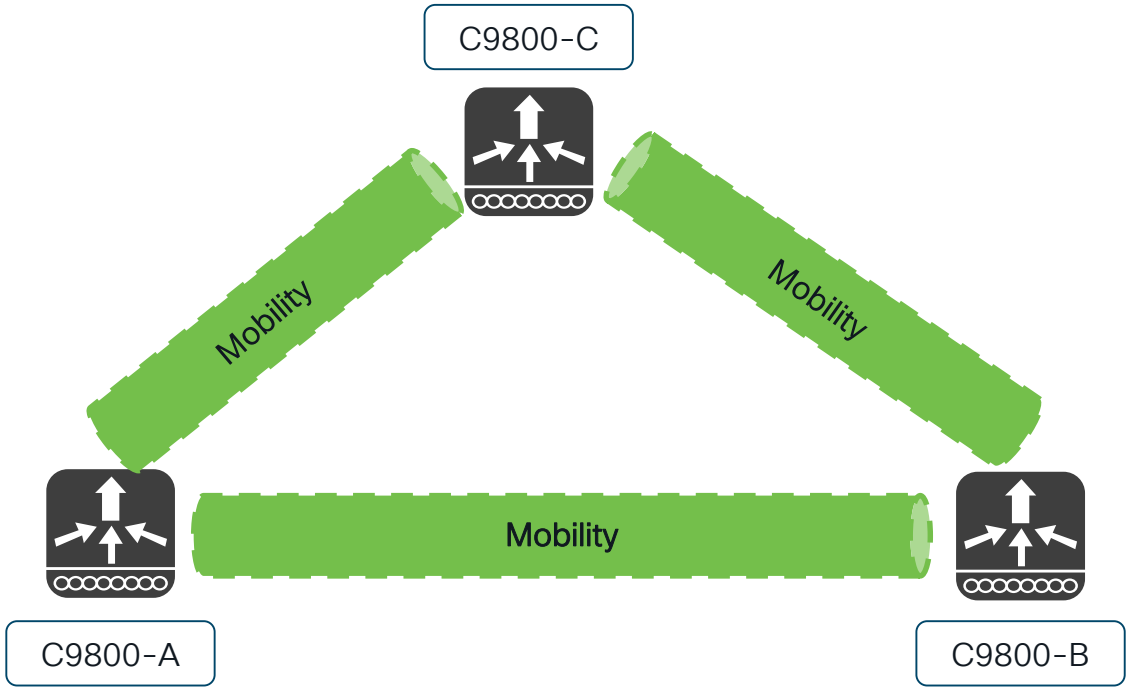
Step 3: Configure B as Peer in C

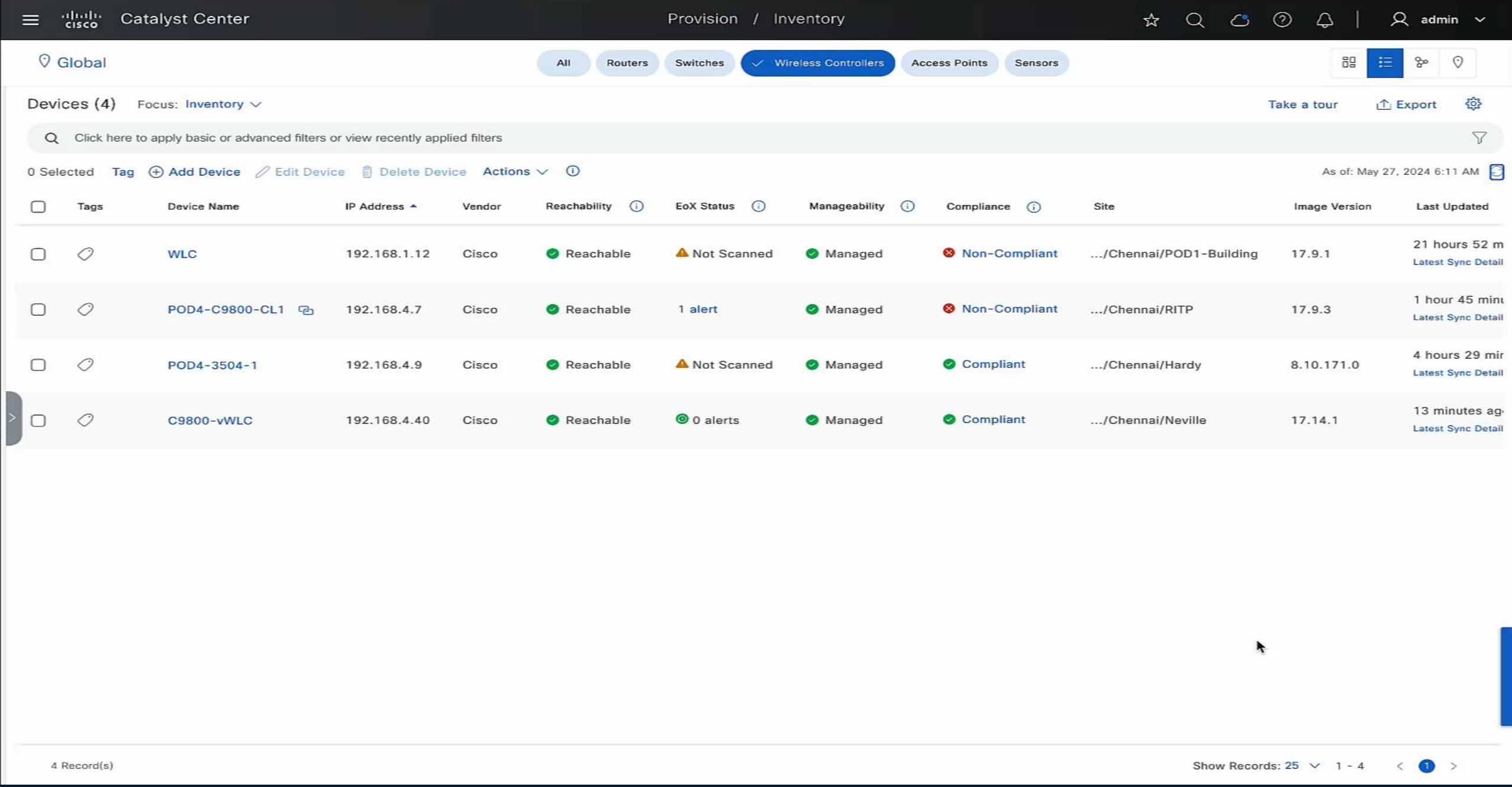
Step 4: Configure C as Peer in B

Mobility Configuration Steps in CC

Step 1: Configure Mobility Group in C

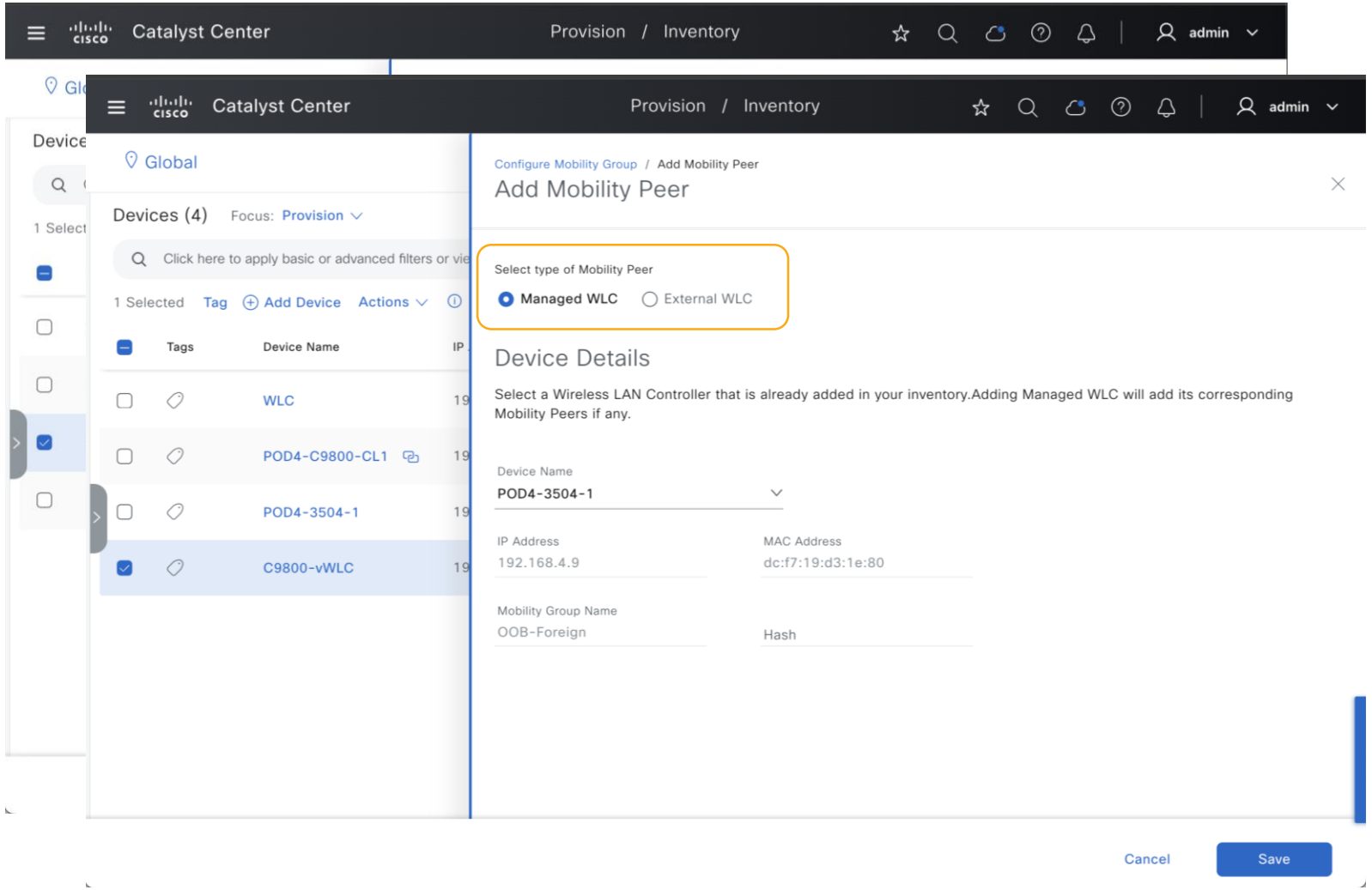
Step 2: Configure C as Peer in A



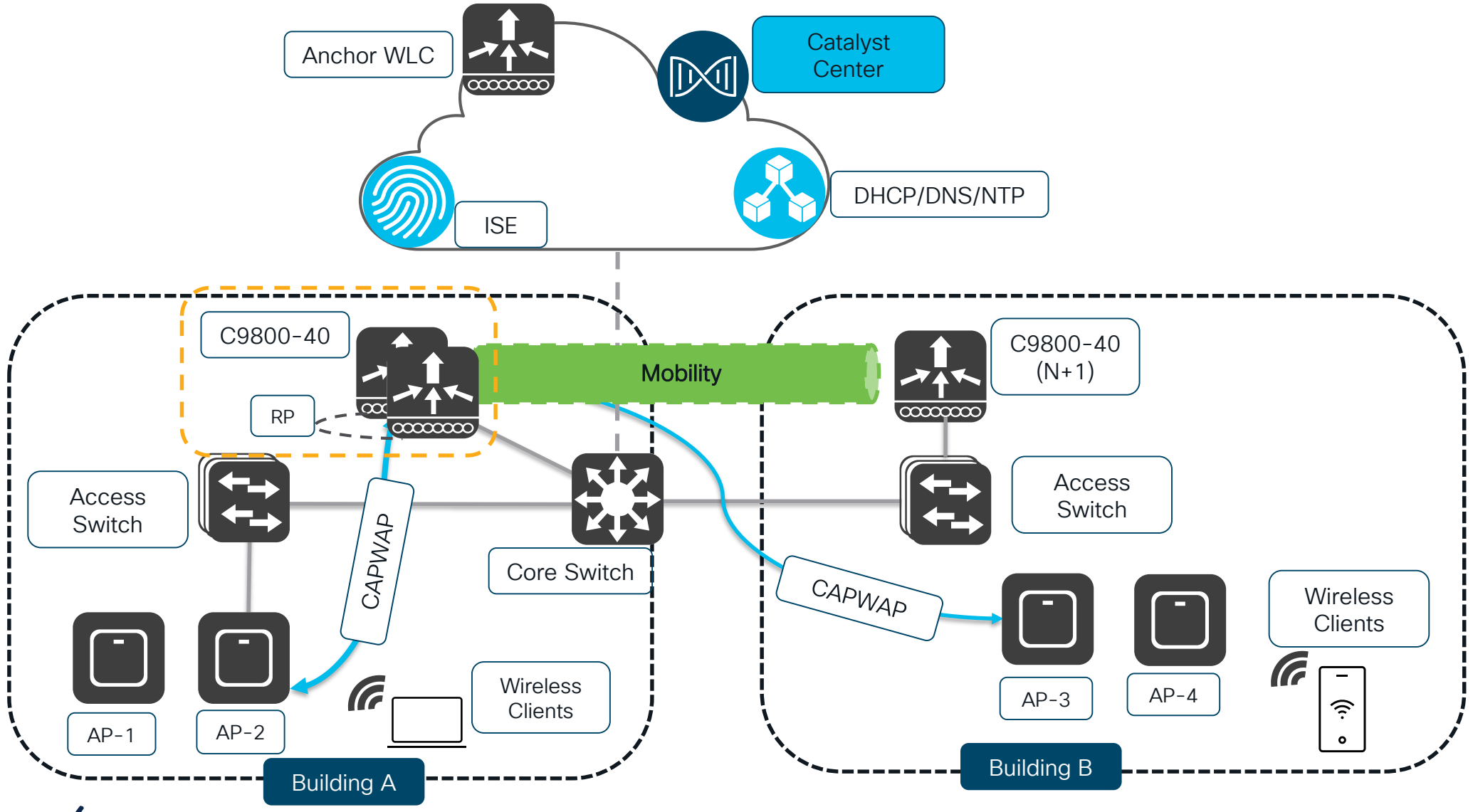


Mobility

- Learns any existing Mobility Peers configured
- Ability to add additional Peer which are part of Catalyst Center or Unmanaged
- Configure Peers from Actions > Provisioning > Configure WLC Mobility
- For Intra controller mobility (Different Subnet) ports 16666 and 16667 is Open

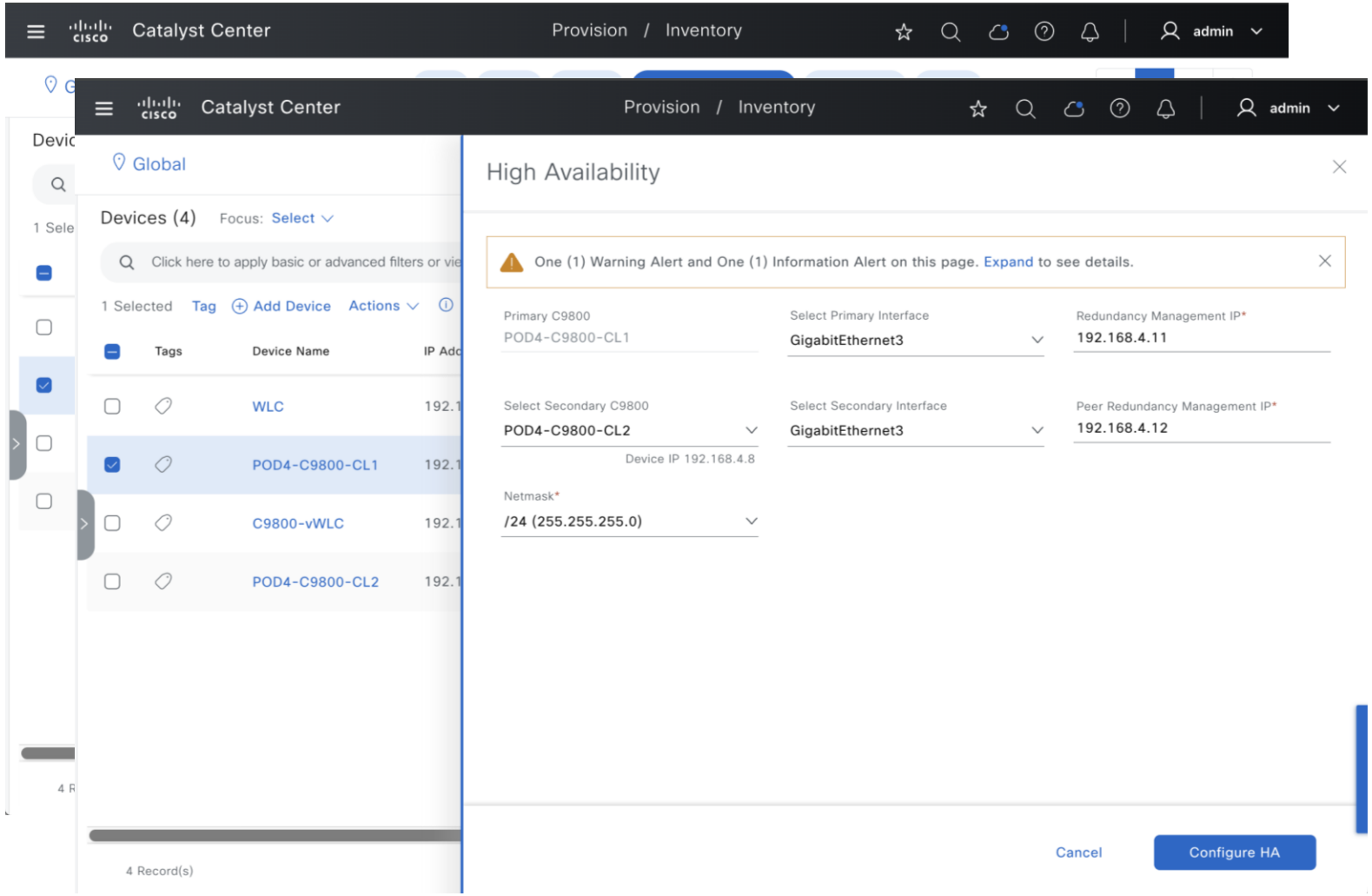


Configuring High Availability-SSO



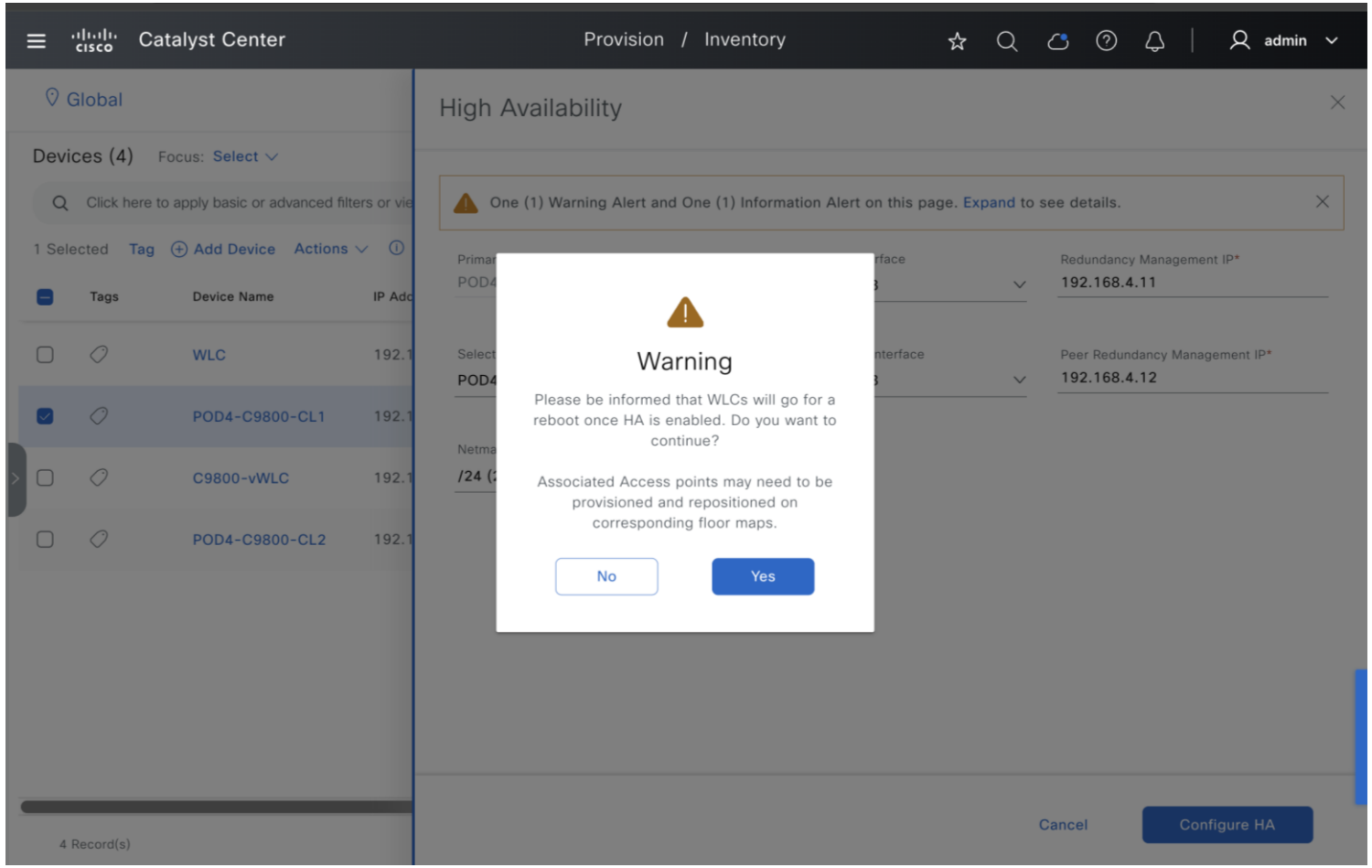
Configure HA-SSO

- Launch Workflow from Actions > Provision > Configure WLC HA
- Select secondary WLC from drop down
- Select Primary & Secondary RMI Interface
- Provide IP address for RMI interfaces



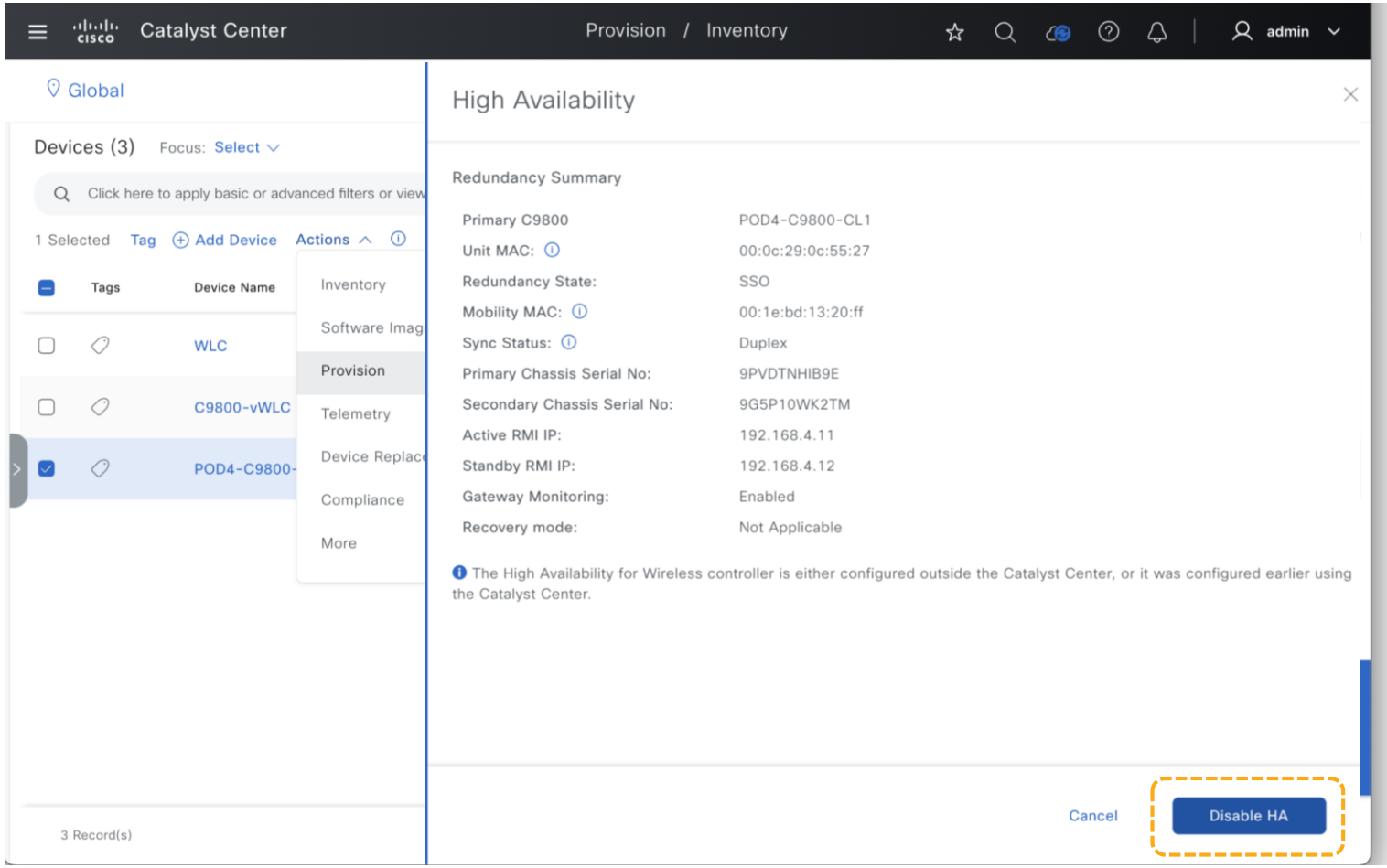
Tips & Tricks

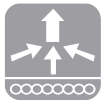
- Configuring HA will reboot both the WLCs
- Both the WLCs should be running same software version
- If WLC was provisioned from CC, AP may need Re-provisioning



Break HA

- If you "write erase; reload" in HA mode, you will lose G3.
- "show romvar" will show "CHASSIS_HA_IFNAME = GigabitEthernet3"
- "clear chassis redundancy" is your friend





Managed only

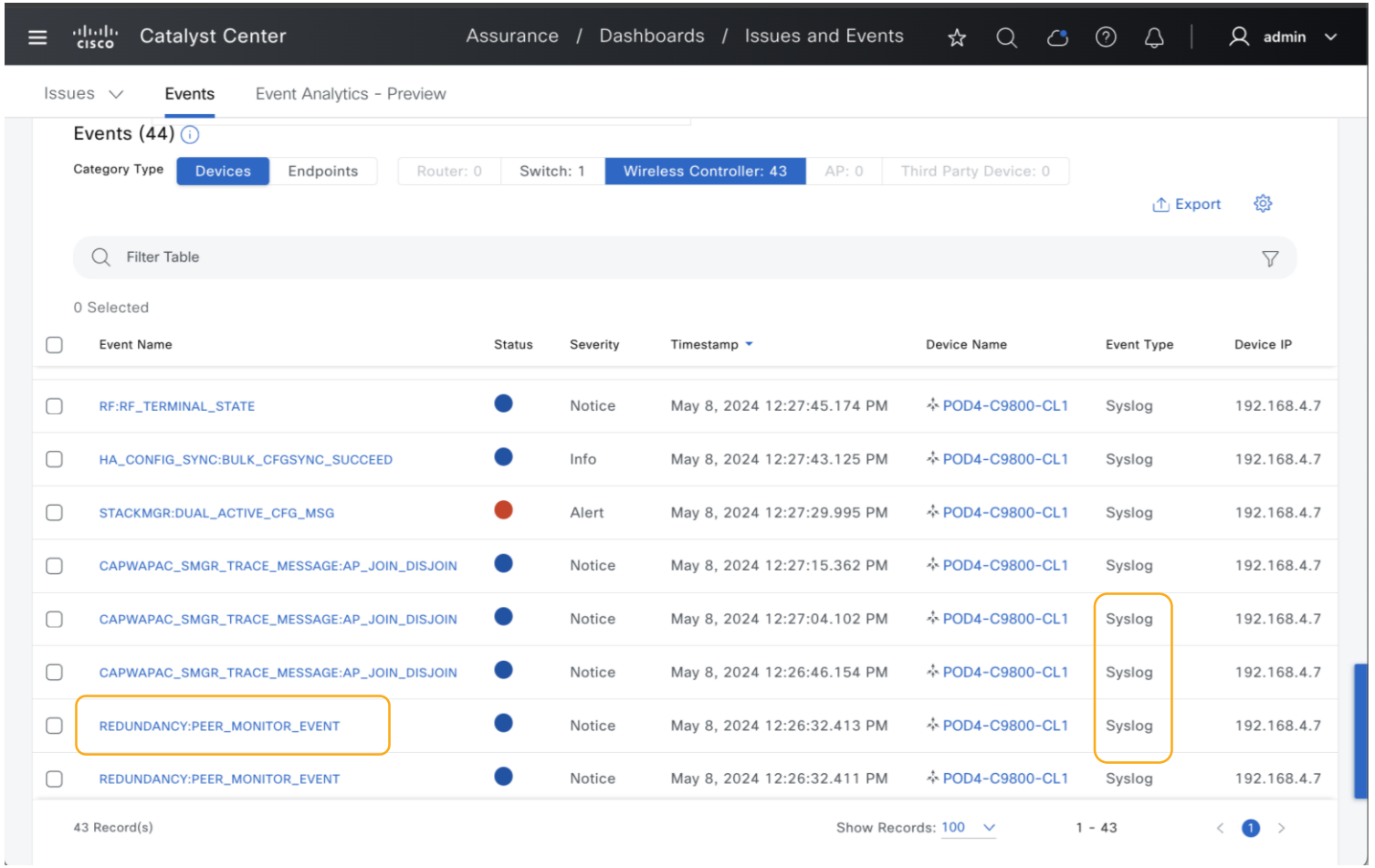
Tips & Tricks

```
POD4-C9800-CL1#sh ip int br
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet1       unassigned      YES unset  administratively down down
GigabitEthernet2       unassigned      YES unset  administratively down down
GigabitEthernet3       unassigned      YES unset  up                    up
Vlan1                  192.168.4.7     YES NVRAM  administratively down down
```

- Disable HA will reload standby chassis after clearing HA and Startup config WLC version 17.6 & below
- 17.7 & above, standby controller boots with active config

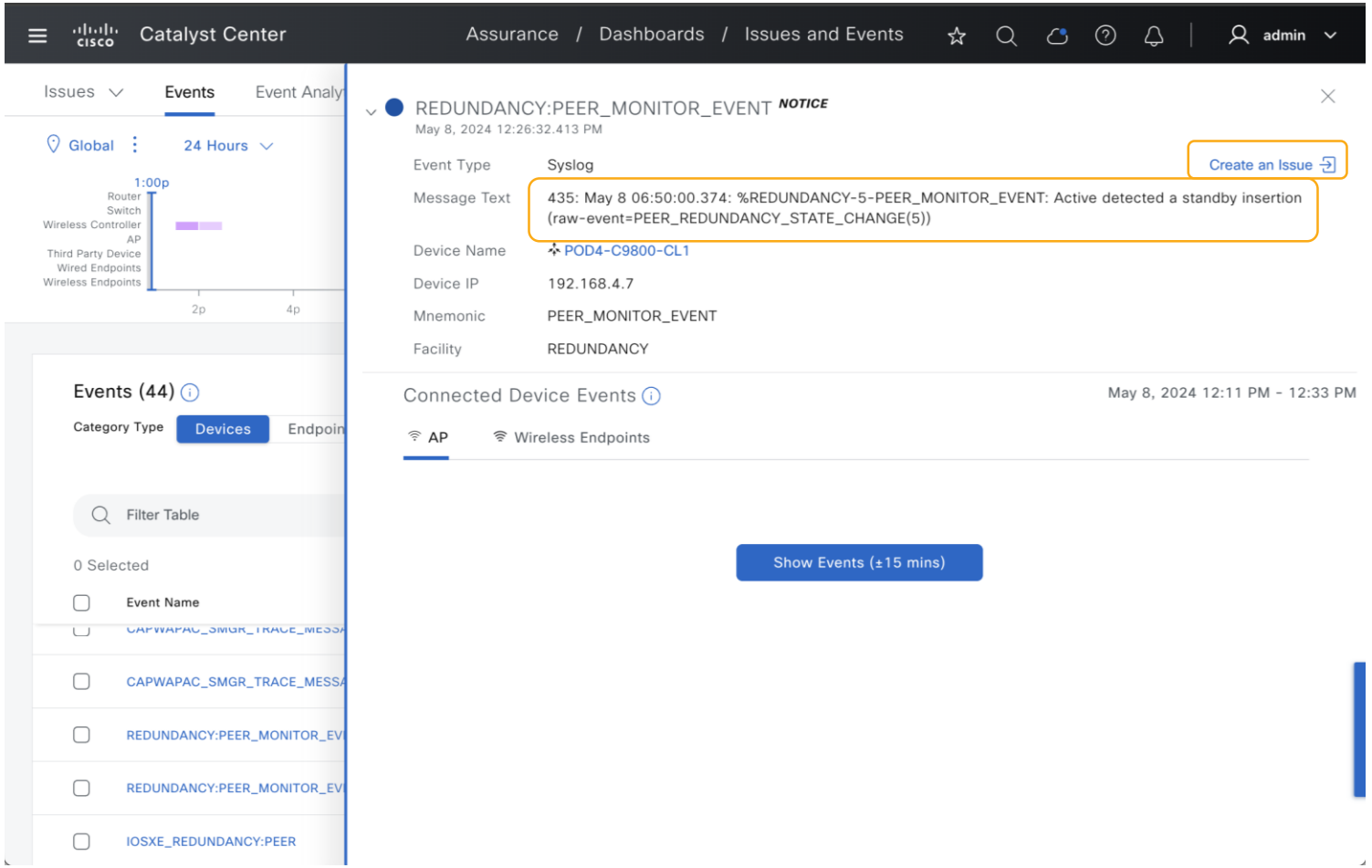
Monitor HA Status of WLC

- HA State change events logged as Syslog events
- Events can be viewed from Assurance > Issues and Events



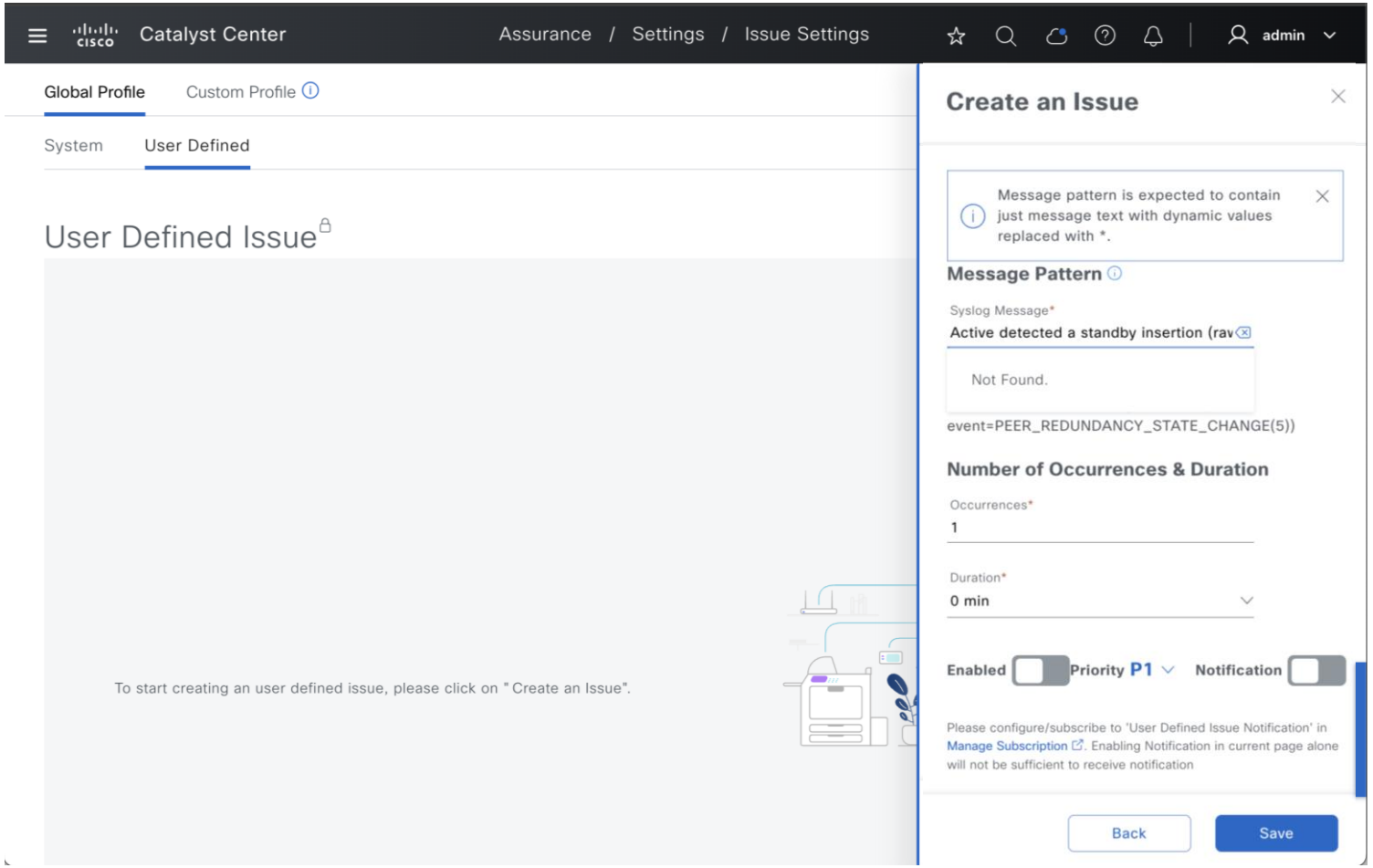
Alerting HA State events

- View Details of HA events and connected AP/Endpoint events
- Convert these Events into User Defined Issues

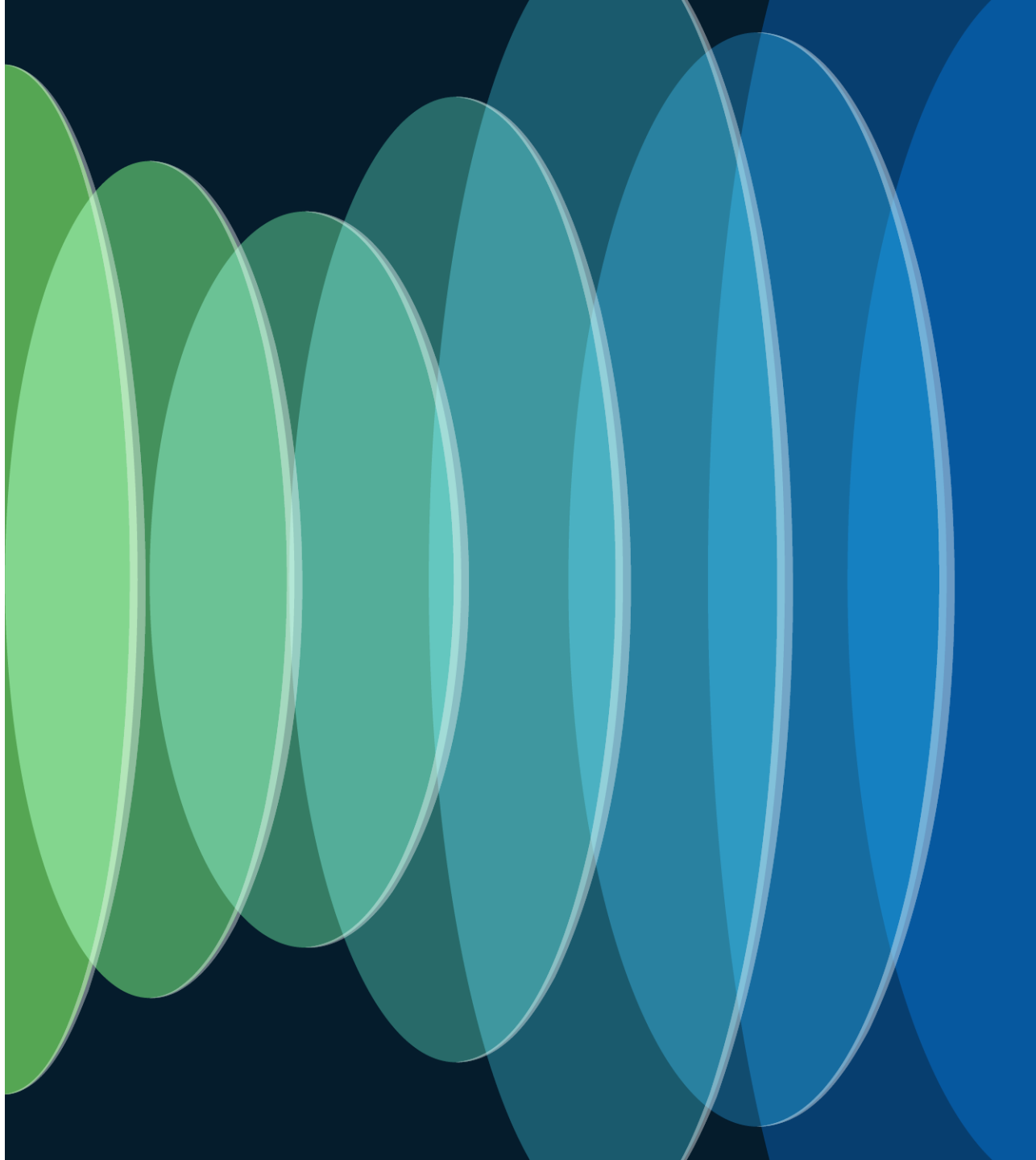


Alerting HA State events

- Severity, Facility & Mnemonic auto populated
- Message Pattern to match Regex string
- Custom Threshold definition
- Notification alerts sent to Email, Webhook, Syslog servers



Learn how to get visibility from your network



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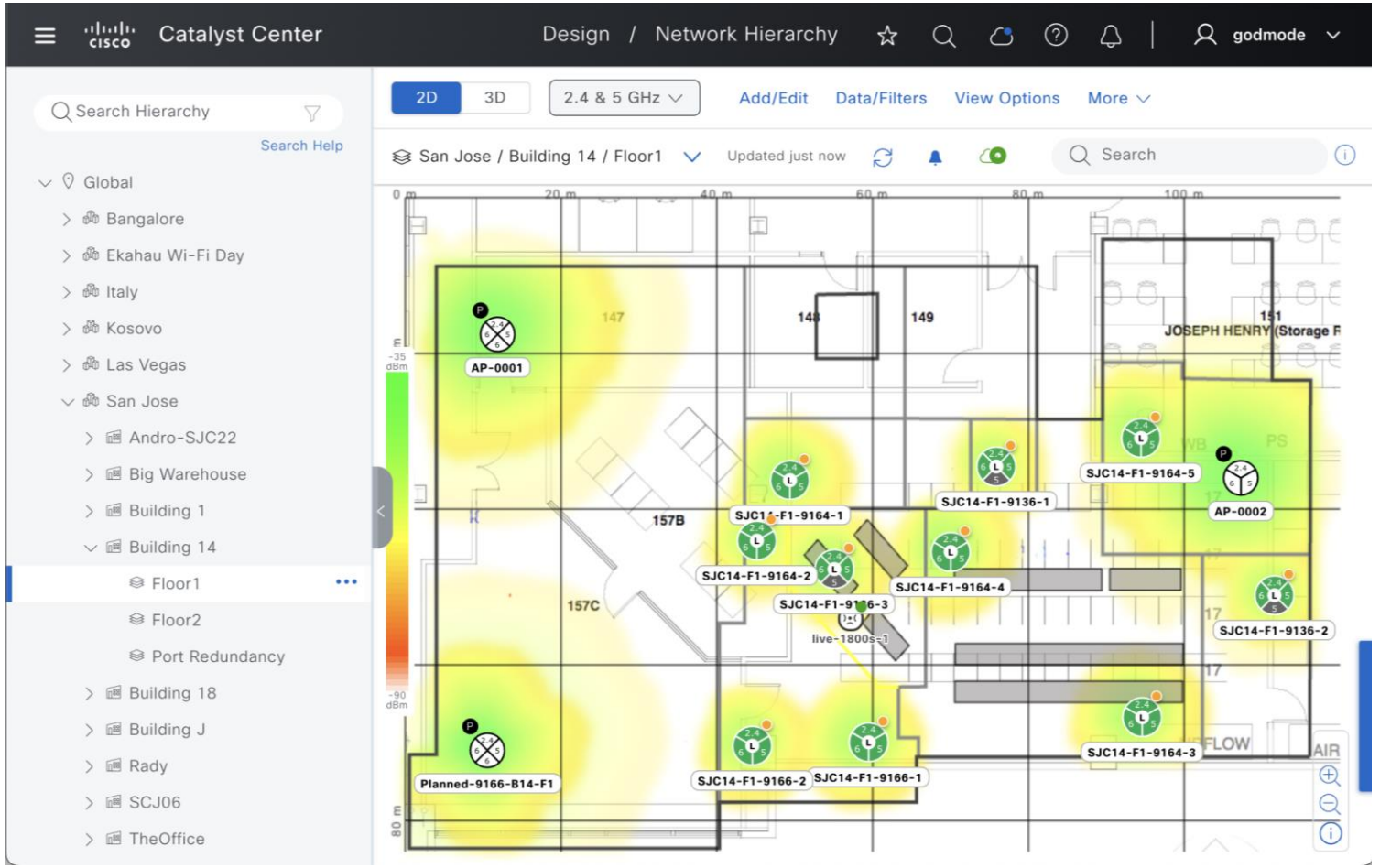
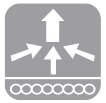
Prerequisites for Visibility

UDP: 162/ 514
TCP: 80/ 443/ 25103

UDP: 161
TCP: 22/830

TCP: 443/ 32626





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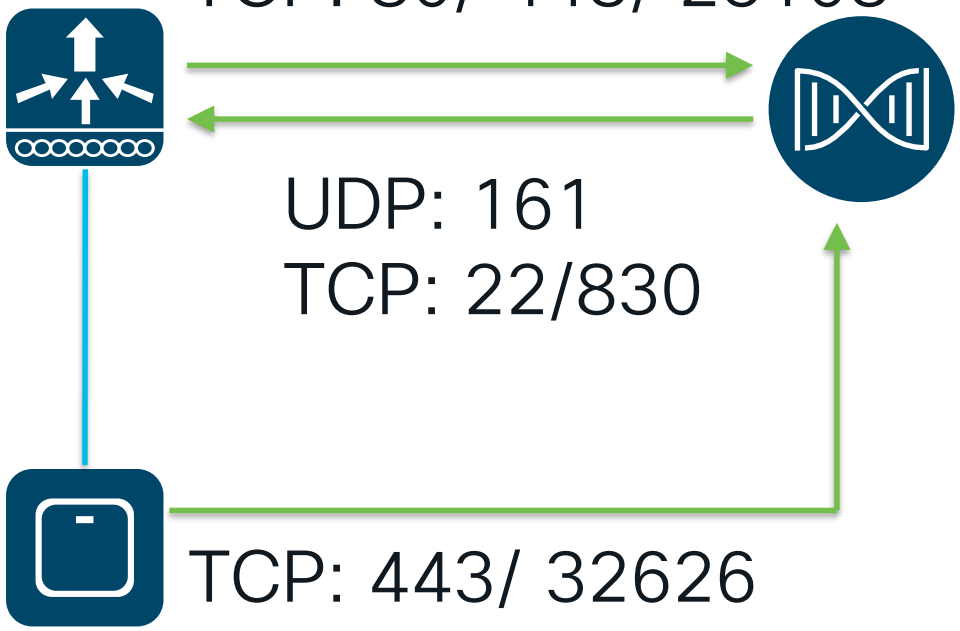
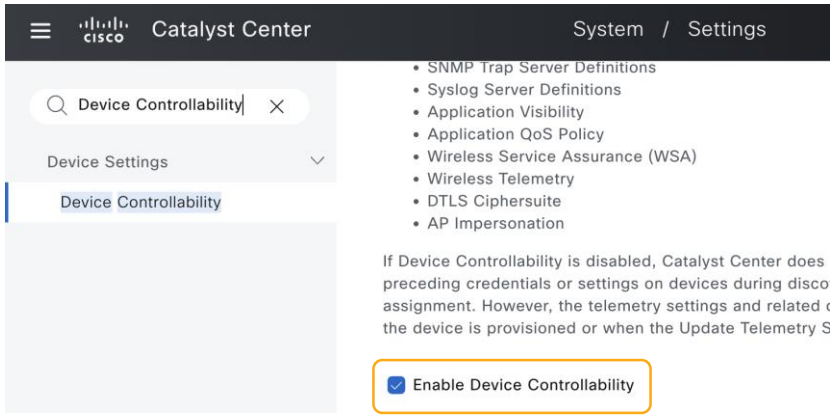
Prerequisites for Visibility

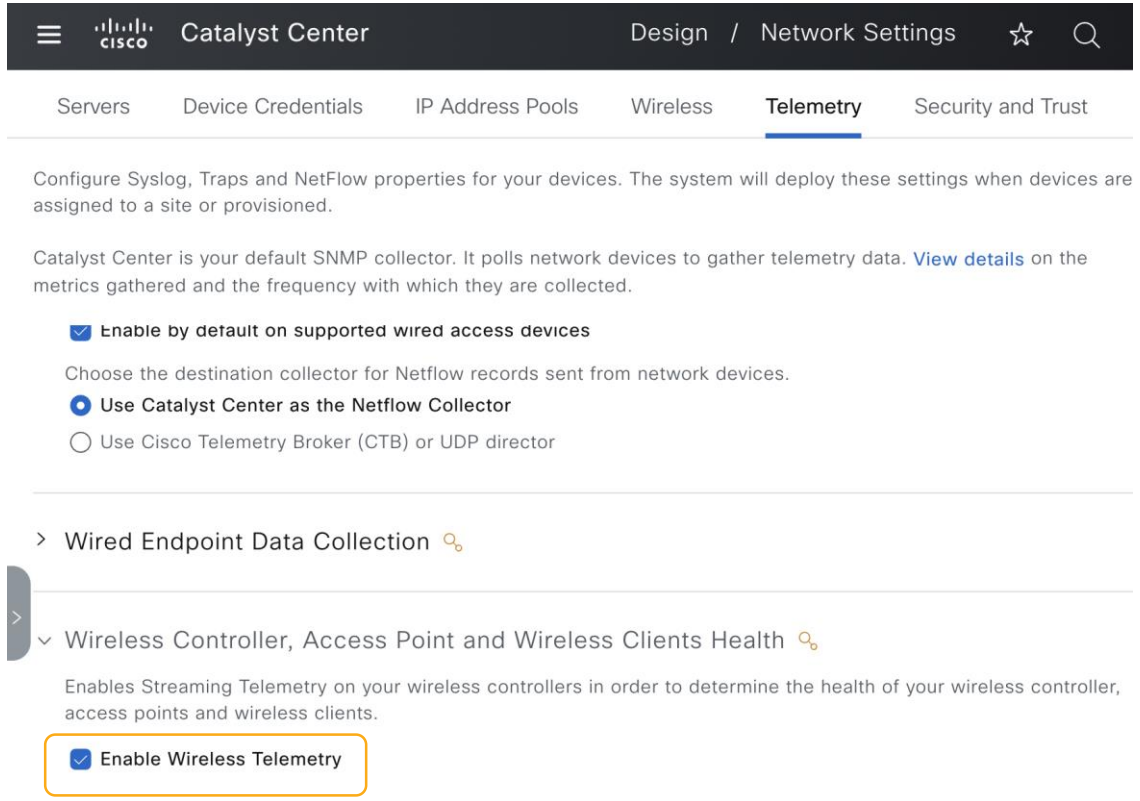
UDP: 162/ 514
TCP: 80/ 443/ 25103



UDP: 161
TCP: 22/830

TCP: 443/ 32626





Wireless Assurance- Site Assignment

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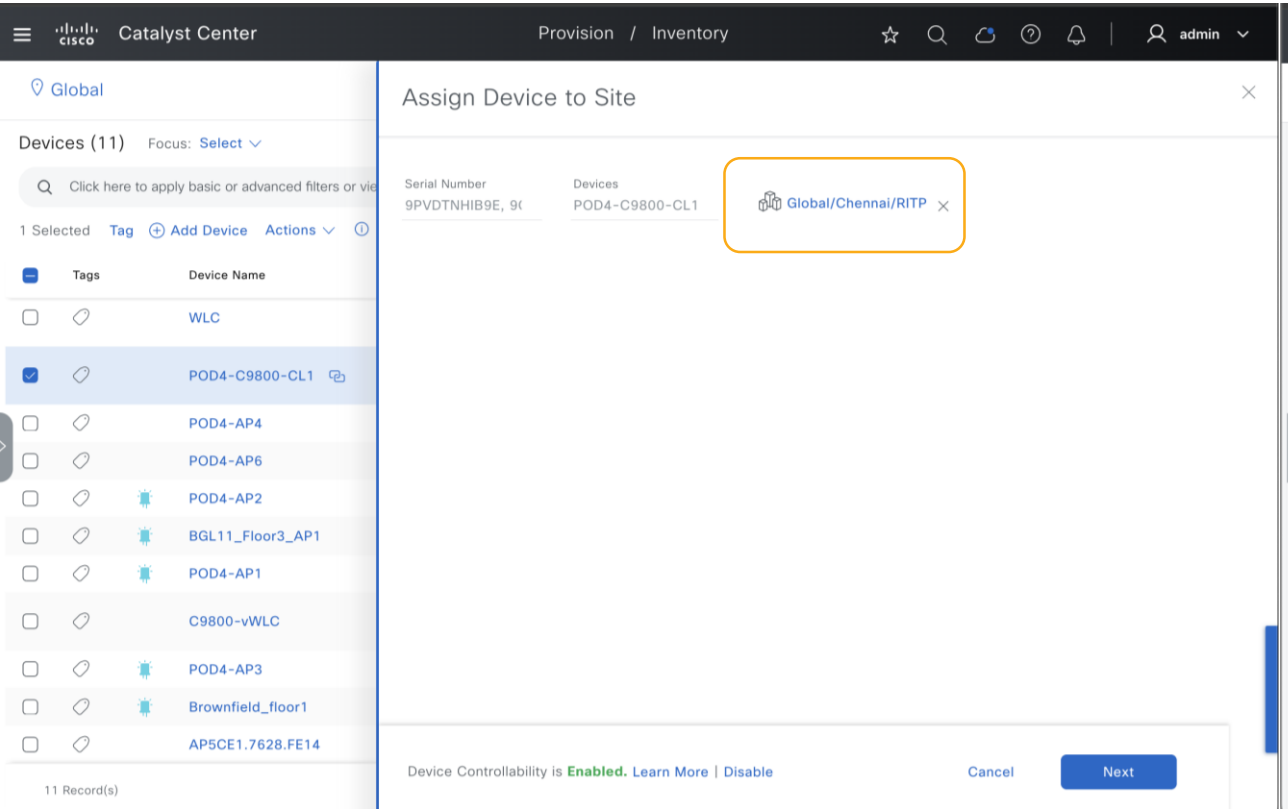
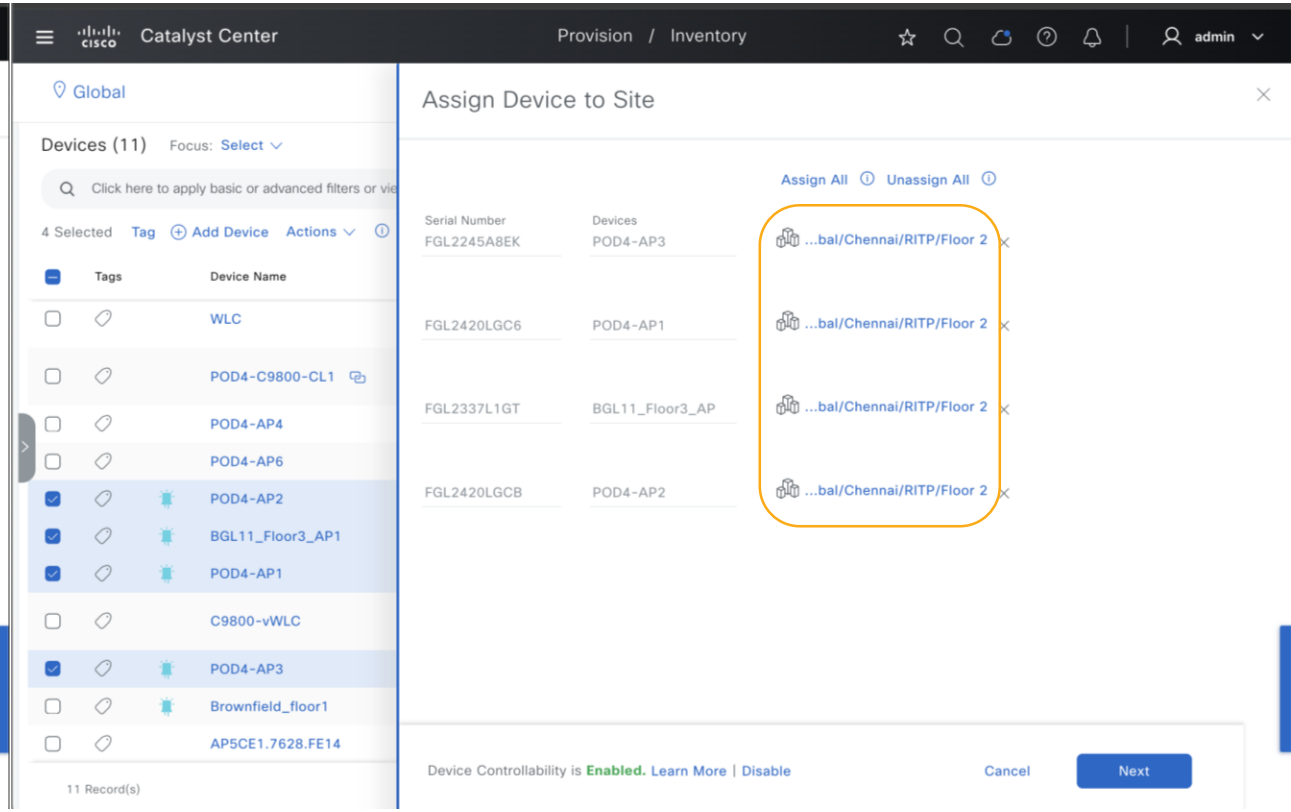
Assign WLCs to Buildings

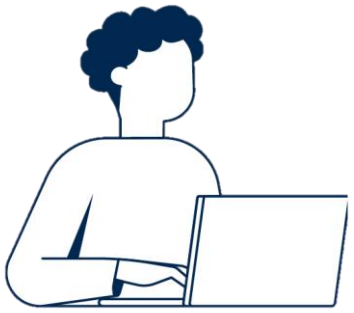


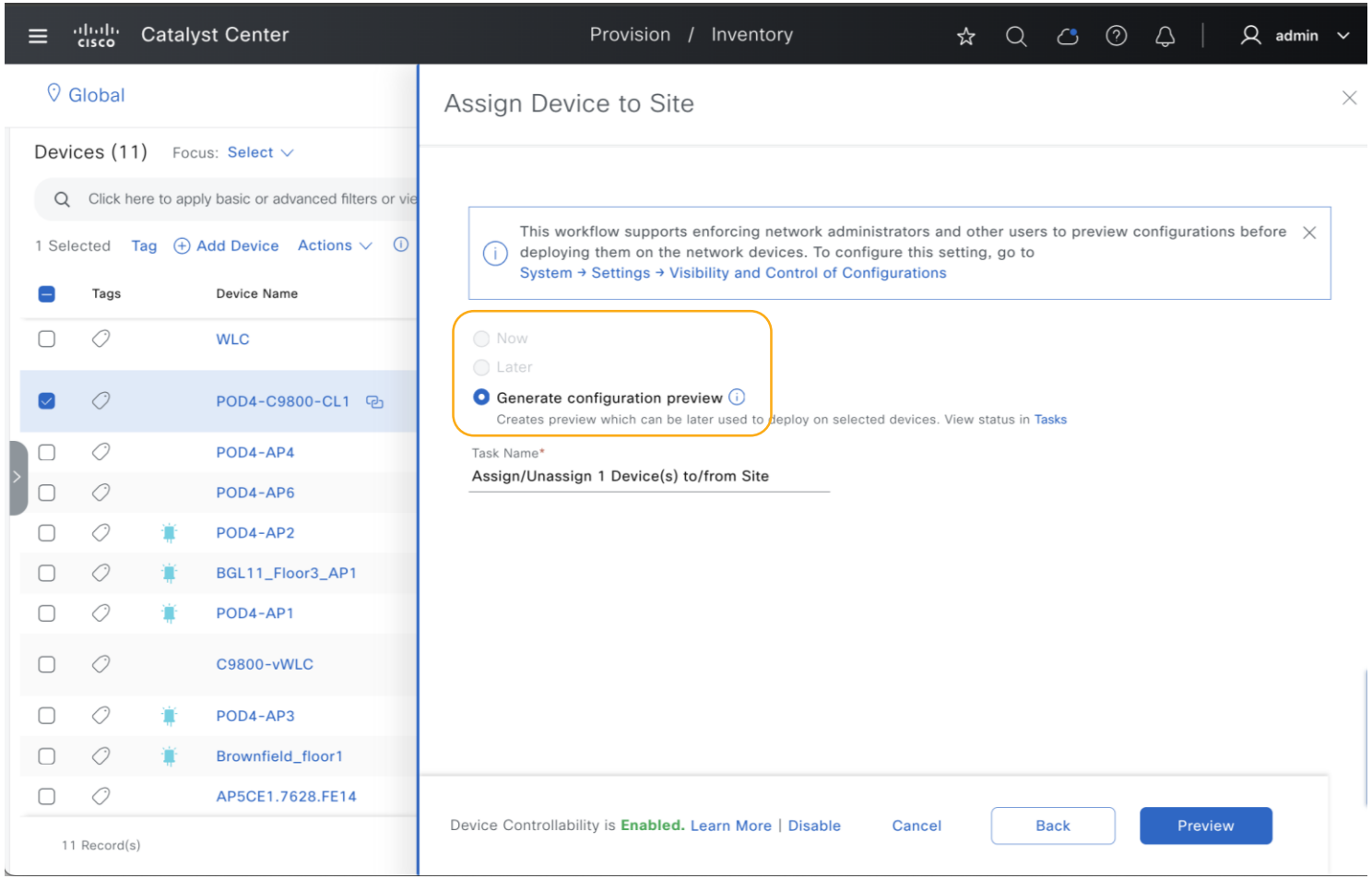
Assign APs to Floors



Configuration Preview (Visibility & Control)

For better control, ‘Configuration Preview’ is enabled by default under **System > Settings > Visibility and Control**

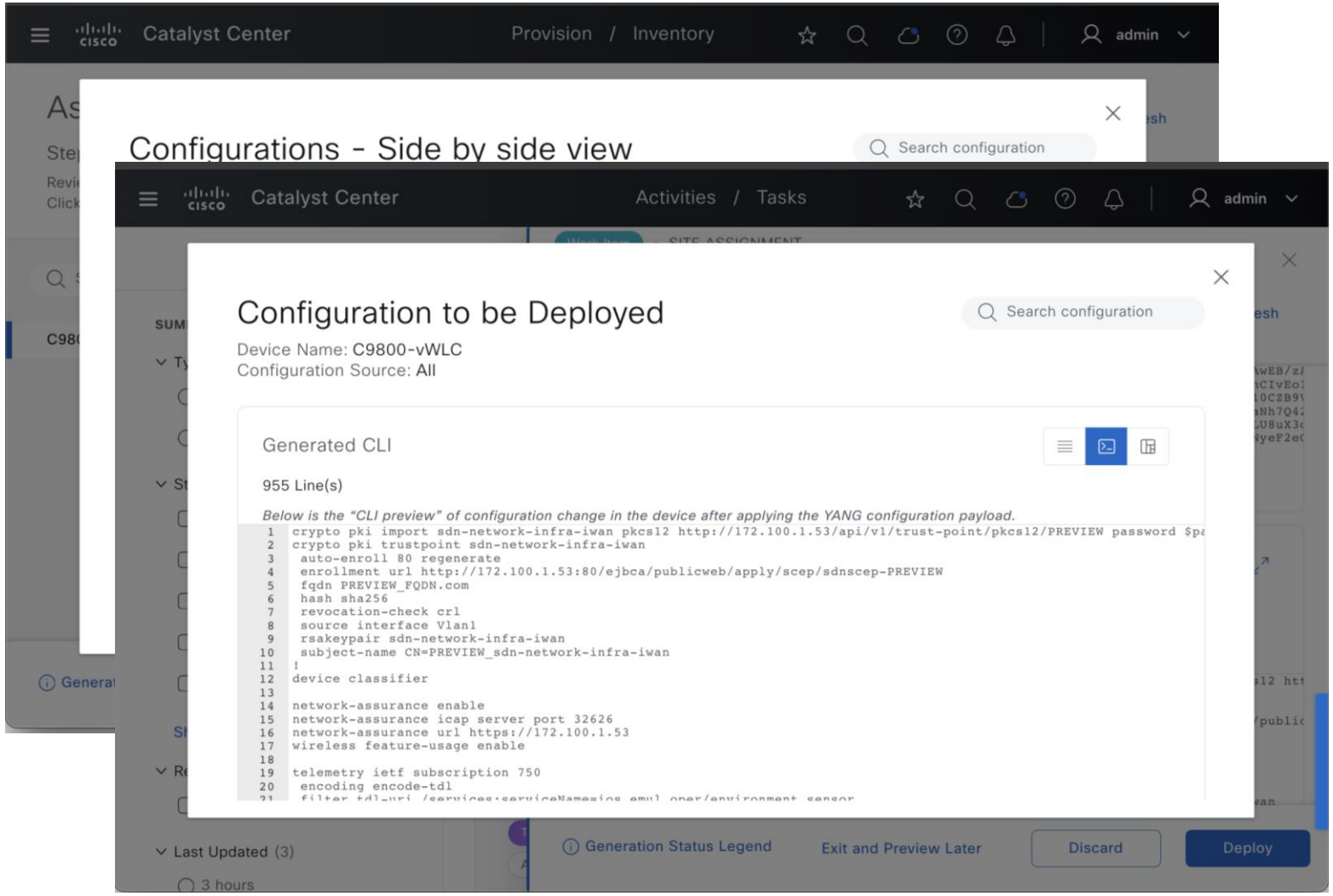




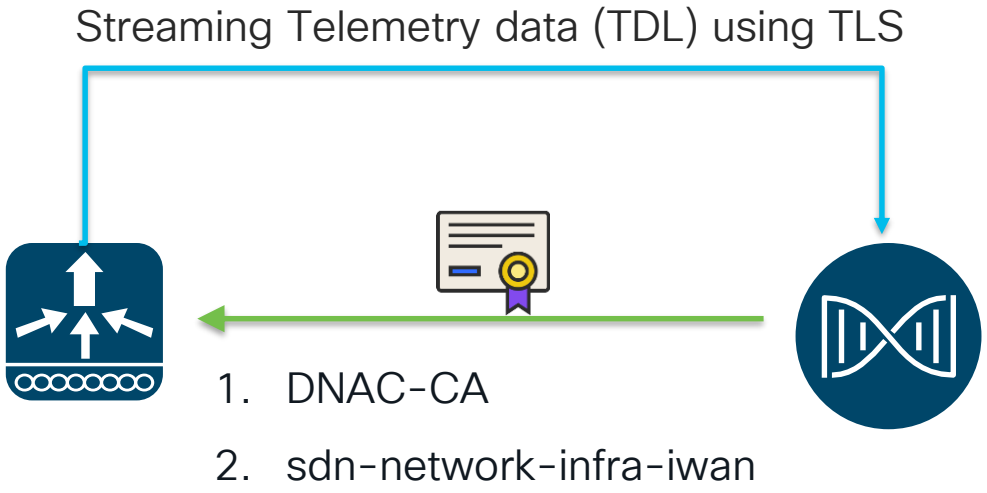
Configuration Preview (Visibility & Control)

Starting IOS-XE 17.13 and above, Configurations can be viewed in CLI format

Running config compared with CLI generated



Certificates- Recommendations



Catalyst Center System Certificate (DNAC-CA)

If custom required, replace before adding devices

Device Certificate (sdn-network-infra-iwan)

Catalyst Center issuer of Device Certificate

Catalyst Center can be a Sub CA of External CA

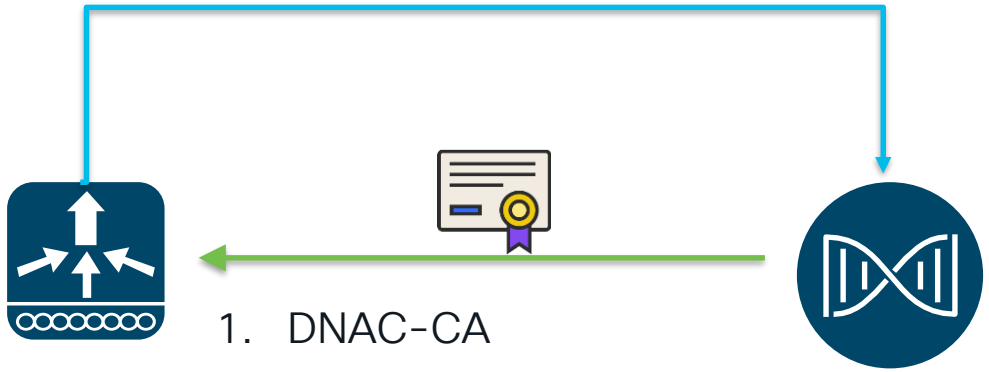
Can query external CA with SCEP URL

Certificates- Tips & Tricks

For your reference

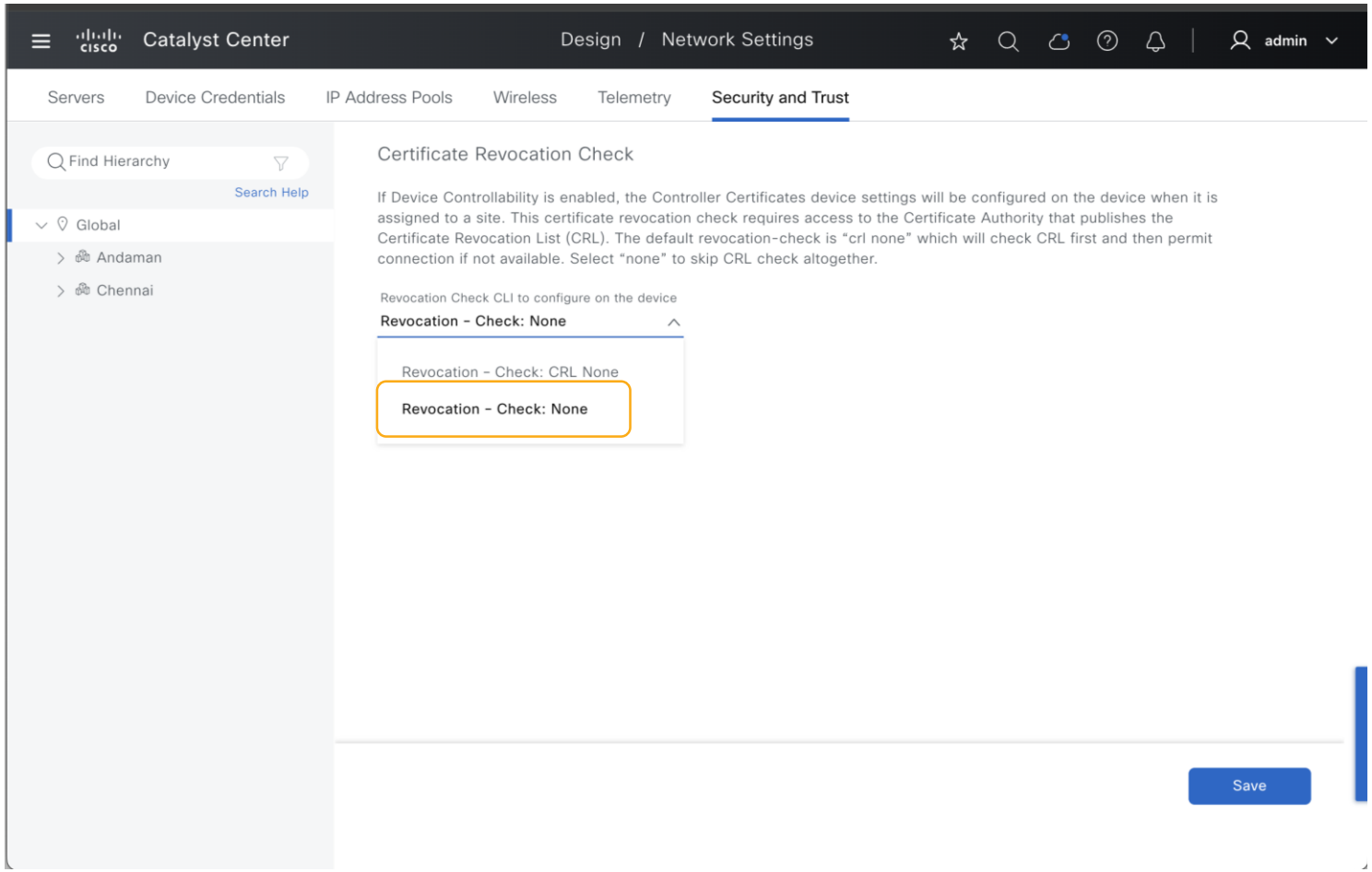
Managed only

Streaming Telemetry data (TDL) using TLS



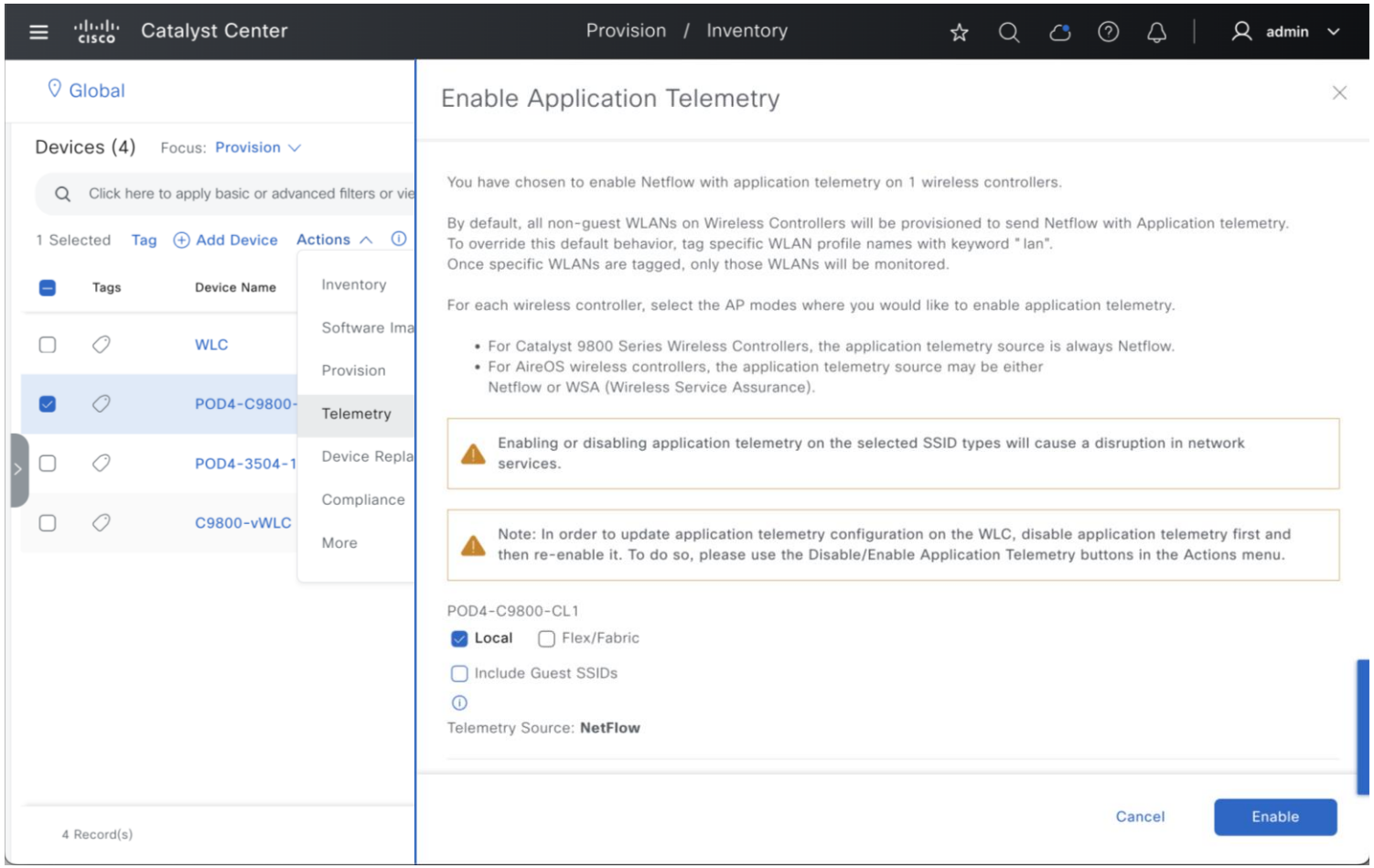
1. DNAC-CA
2. sdn-network-infra-iwan

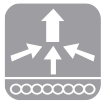
Disable Certificate Revocation Checks



Application Visibility

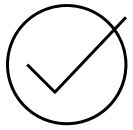
- Enable Application Telemetry from Provision > Actions > Telemetry > Enable Application Telemetry
- WLC need not be provisioned for enabling Application telemetry
- Supported for local, Flex/Fabric SSIDs





Managed only

Application Visibility- Tips & Tricks



Enable Application Telemetry temporarily Disables policy profiles

```
C9800-Virtual#wireless profile policy
xxx
shutdown
ipv4 flow monitor avc_ipv4_assurance
input
ipv4 flow monitor
avc_ipv4_assurance_dns input
ipv4 flow monitor
avc_ipv4_assurance_rtp input
…
no shutdown
```

Application Visibility- Tips & Tricks

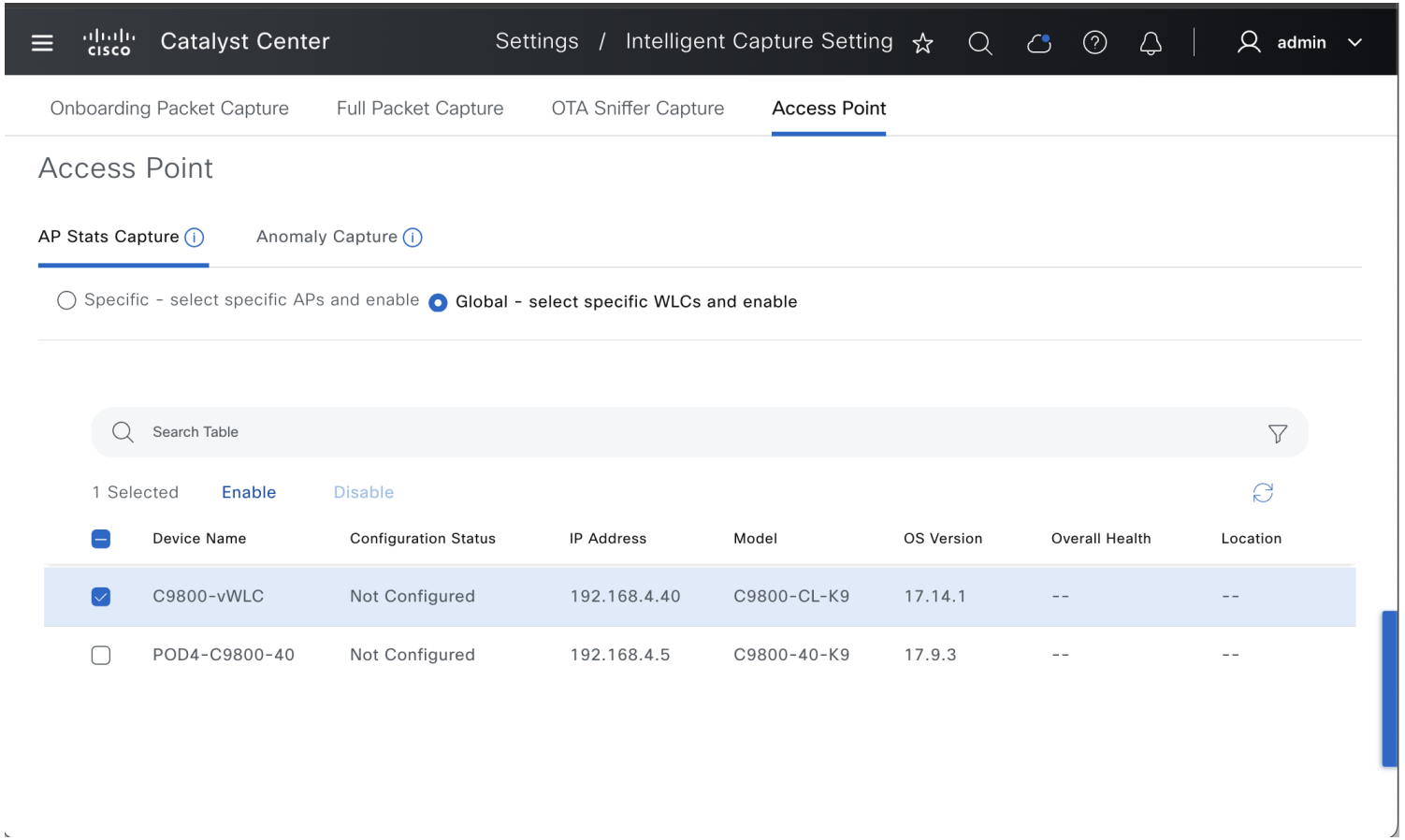
- Enable Application Telemetry temporarily Disables policy profiles
- Application Telemetry enables DNS Service monitoring (local mode) 17.10 and above for both IPv4 and IPv6

```
C9800-Virtual#wireless profile policy
xxx
shutdown
ipv4 flow monitor avc_ipv4_assurance
input
ipv4 flow monitor avc_ipv4_assurance_dns
input
ipv4 flow monitor avc_ipv4_assurance_rtp
input
…
no shutdown
```

Intelligent Capture & Anomaly Detection

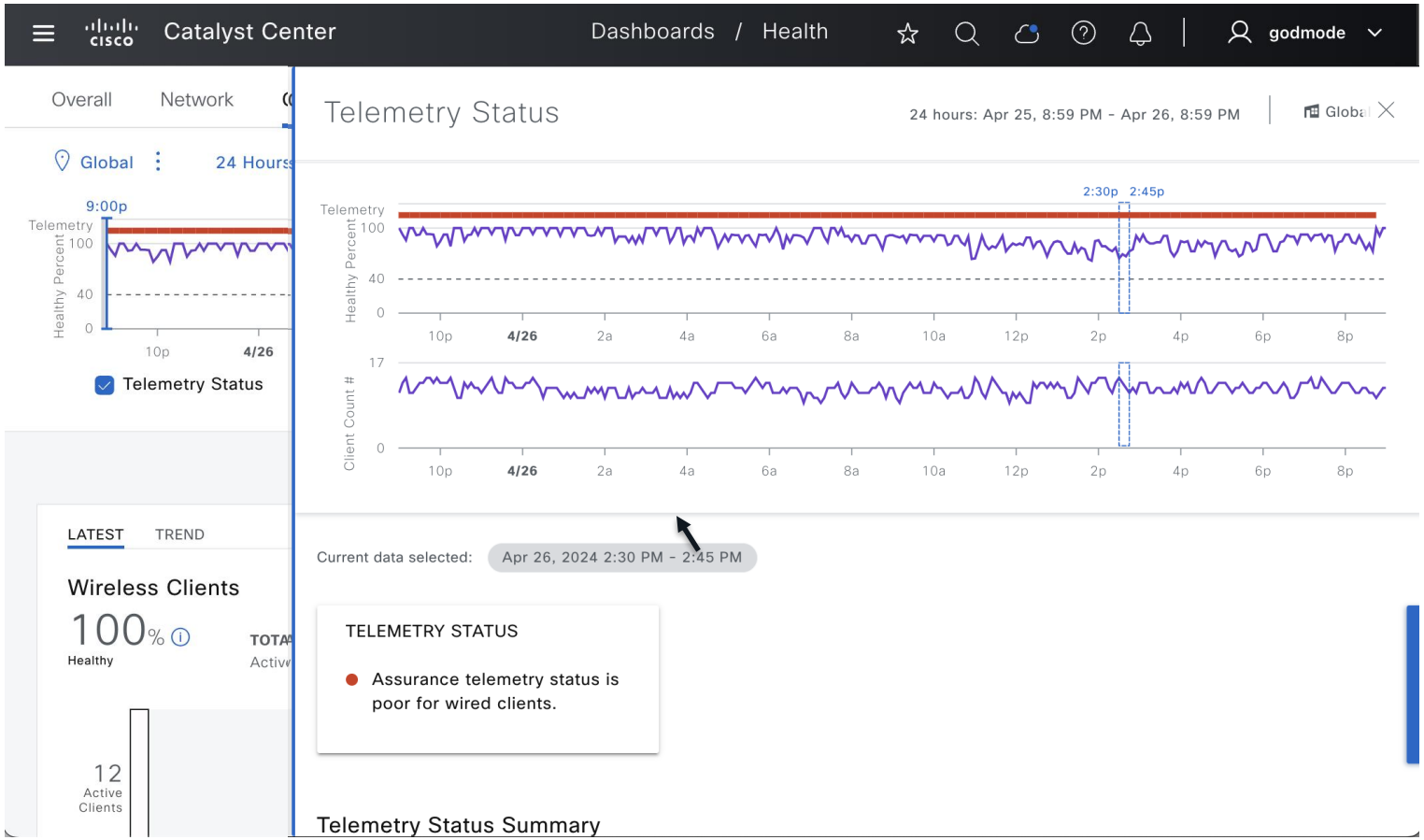
Assurance > Settings > Intelligent Capture Settings

- Enable AP Stats and Anomaly Capture for Specific APs or Selected WLC
- AP stats limited to 1000 APs
- For newly added AP Join Profiles, iCAP needs to be pushed by Disabling & Enabling



Visibility into Telemetry Status

- Gain Visibility into Telemetry received for Network Devices, Clients and Applications
- Insights into summary of Telemetry Status for easier troubleshooting



Troubleshoot Telemetry

```
POD4-C9800-CL1#sh telemetry connection all
Telemetry connections

Index Peer Address           Port  VRF Source Address          State     State Description
----- ---------------------- ----- --- ----------------------- --------- ------------------
  109 172.100.1.53           25103 0   192.168.4.7             Active    Connection up
```

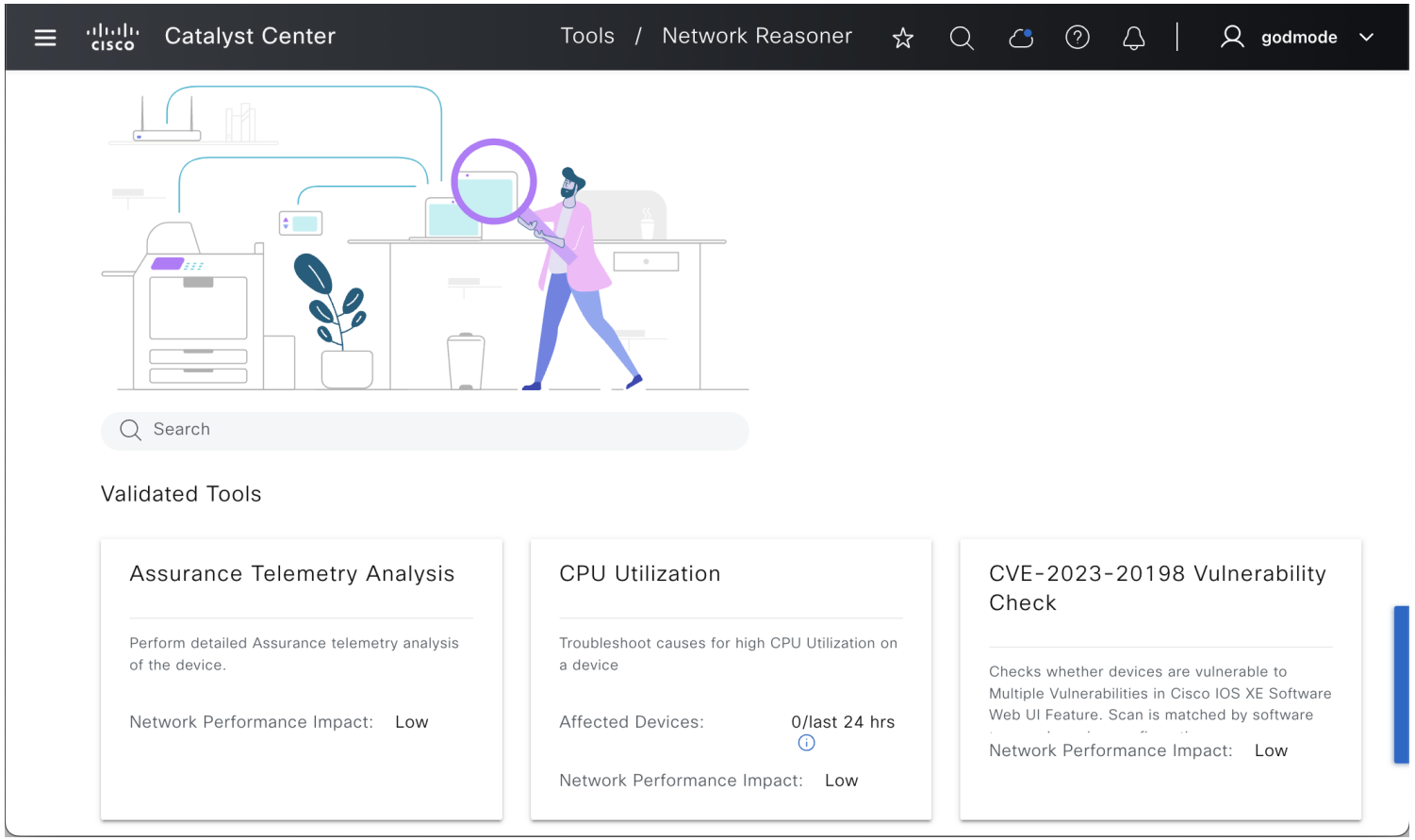
```
POD4-C9800-CL1#sh telemetry ietf subscription summary
Subscription Summary
====================
Maximum supported: 128

Subscription     Total       Valid       Invalid
-----------------------------------------------
All              112         112         0
Dynamic          0           0           0
Configured       112         112         0
Permanent        0           0           0
```

`Active` – All good
`Connecting` – Cert/FW issue
`N/A` – Telemetry config missing

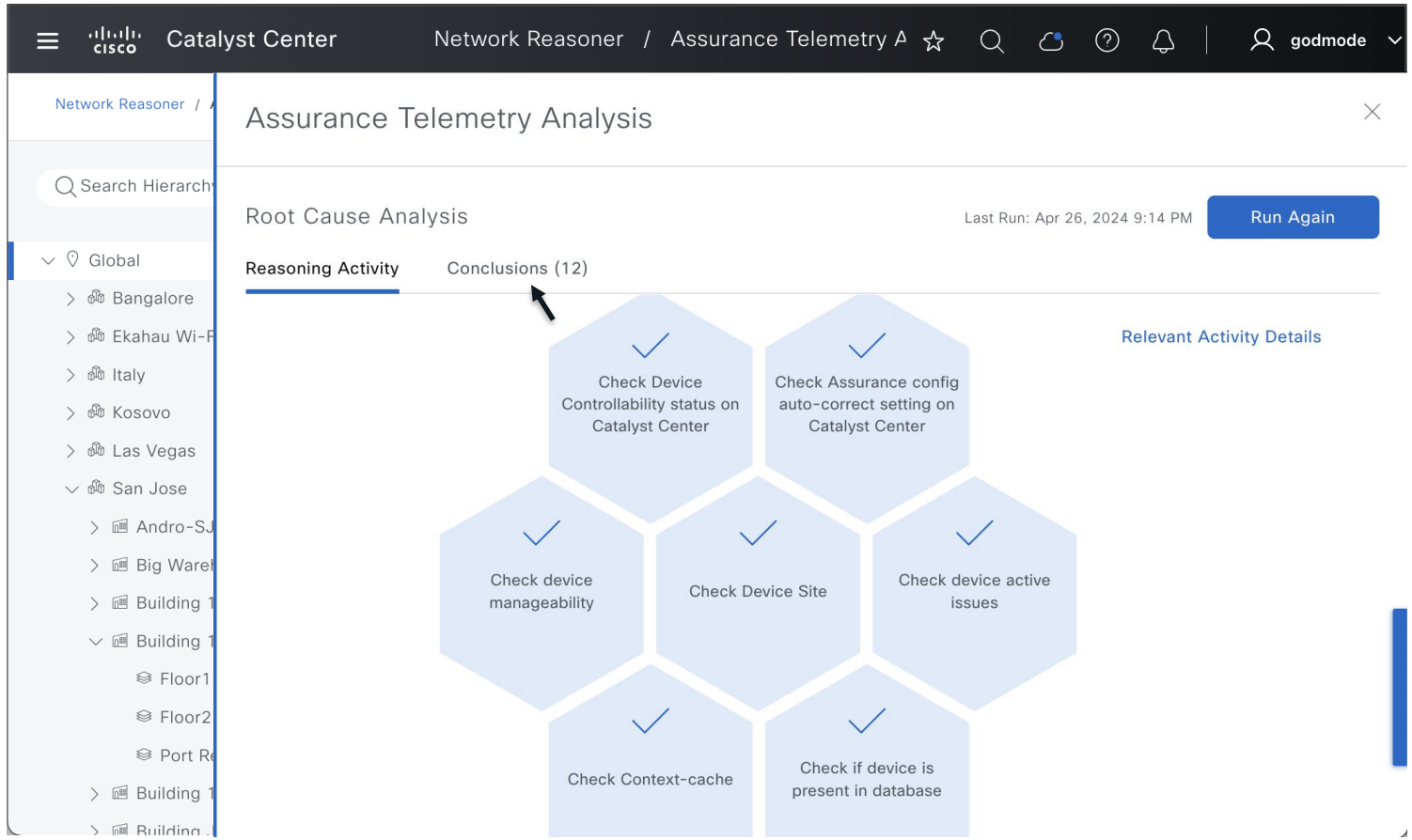
MRE- Troubleshoot Telemetry

From Tools > Network Reasoner, Launch Assurance Telemetry Analysis



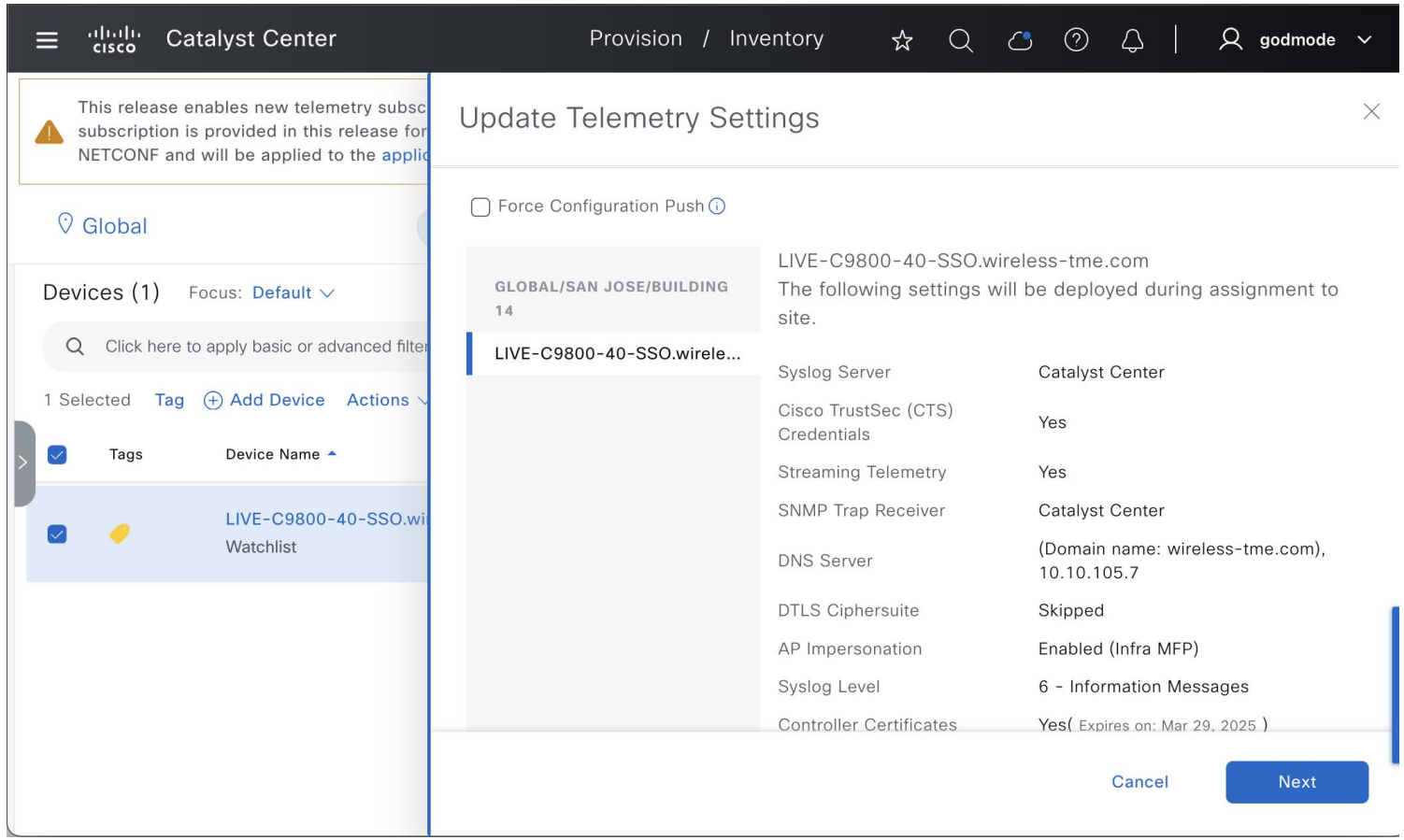
MRE- Troubleshoot Telemetry

- Select the device and click troubleshoot for MRE to analyze Telemetry data collection
- Conclusions provide details on what might cause telemetry issues



Telemetry- Force Push

Force push telemetry config from Inventory > Actions > Telemetry > **Update Telemetry Settings**



Scenario- User Onboarding Issue

Not able to connect to my application

Helpdesk

Authentication Problem?, RF Issue or app problem?

Network is stable. Must be the app.

Network Ops

IT Routing Loop

Code is fine. Don't care about anything else

AppDev

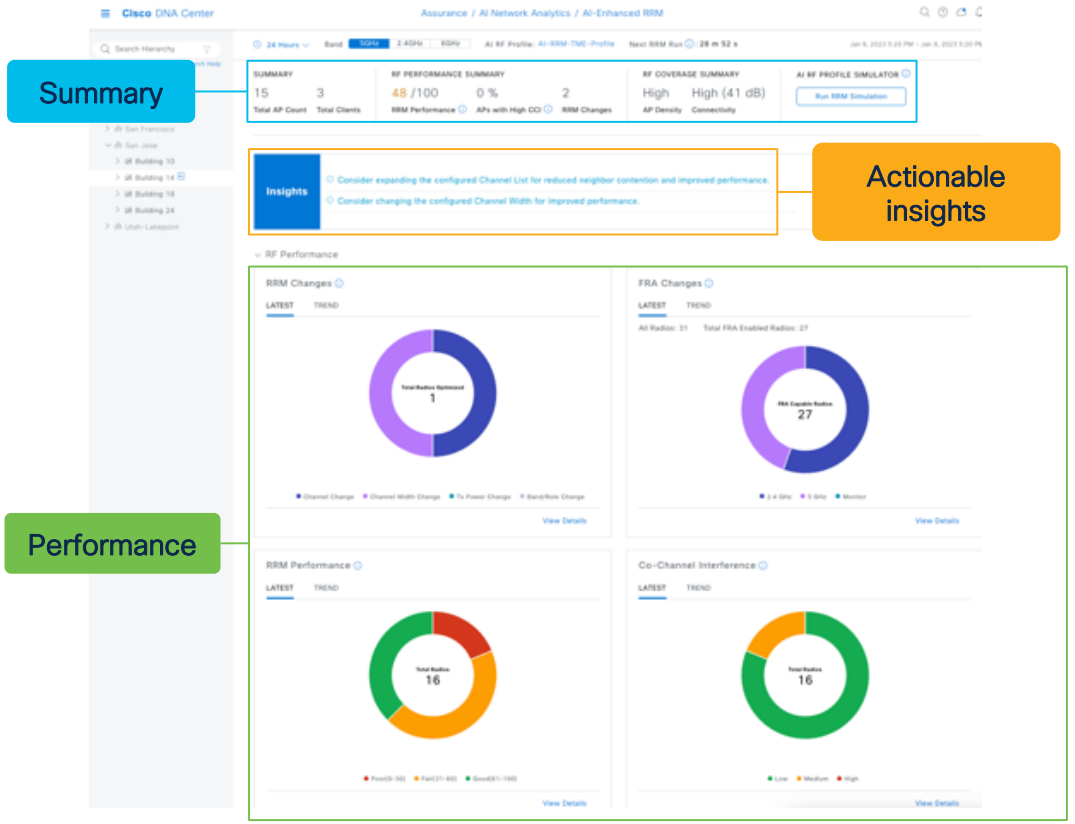
Dear User: We do not have enough info/context to troubleshoot further and are thus wait/closing your case.

AI-Enhanced RRM

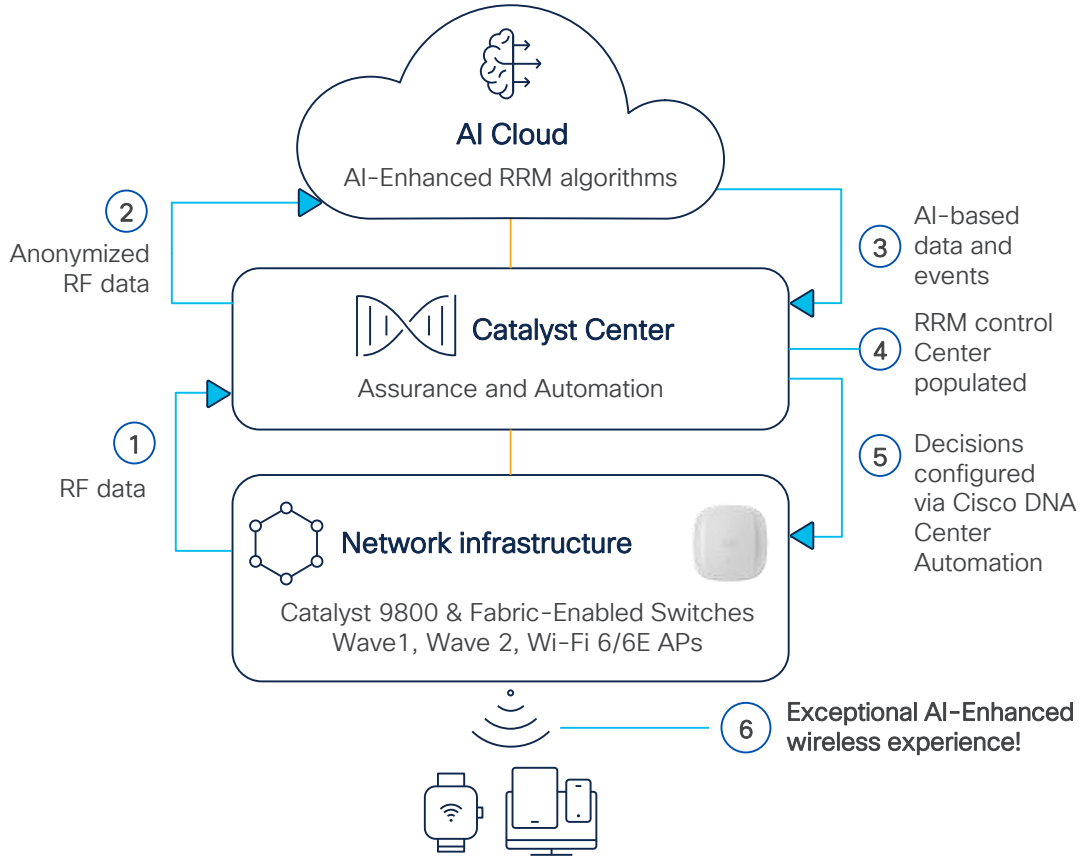
For your reference

Managed only

Instantaneous visibility



Proactive optimizations



Enabling AI-Enhanced RRM-Assurance Only

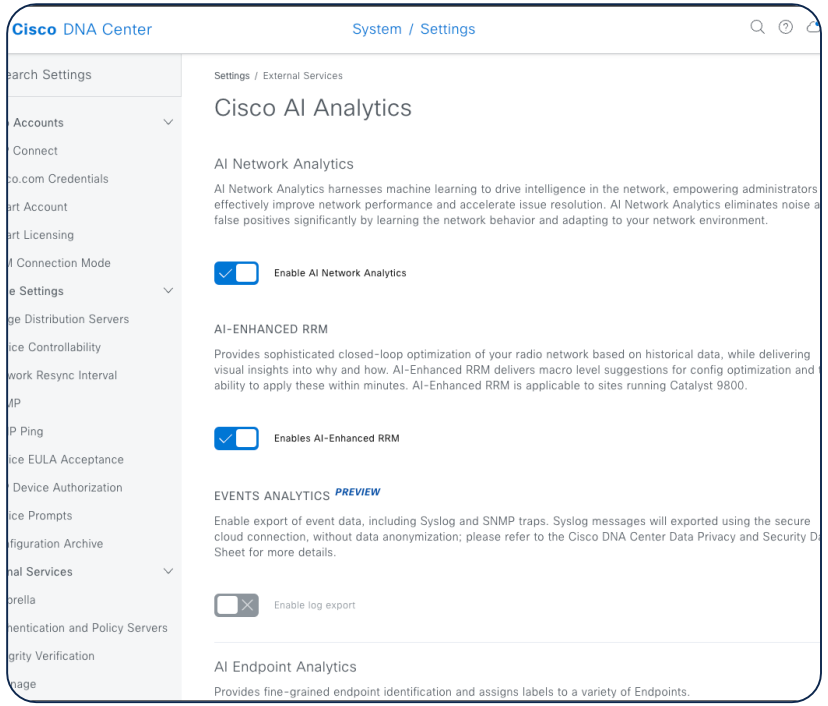
For your reference

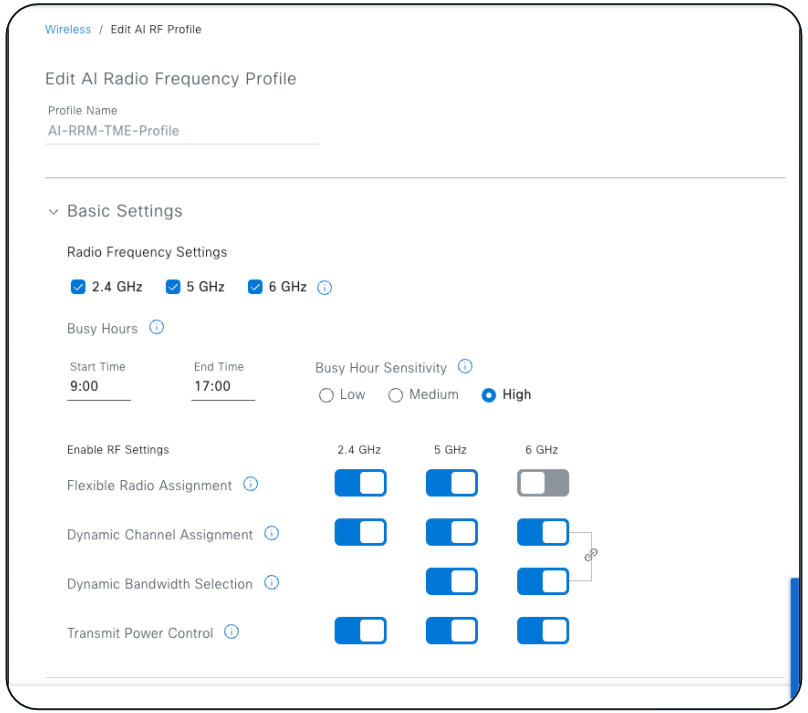
Managed only

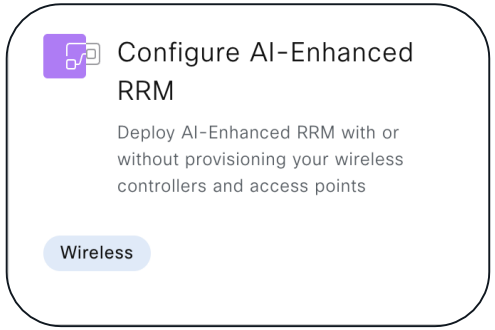
1 Give AI-Enhanced RRM Cloud Access in Settings.

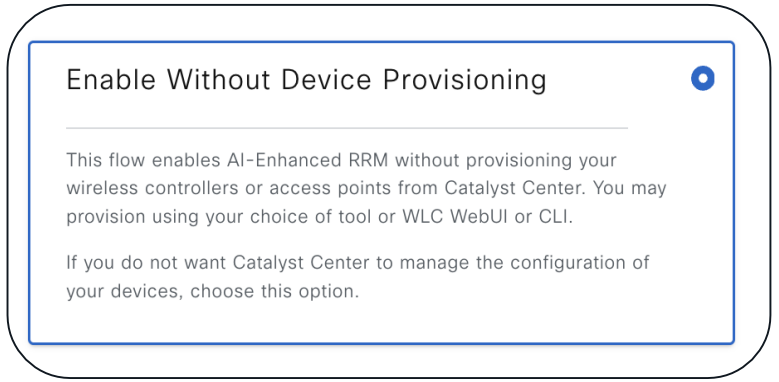
2 Create an AI RF Profile.

3 Assign AI RF Profile C9800 WLC.



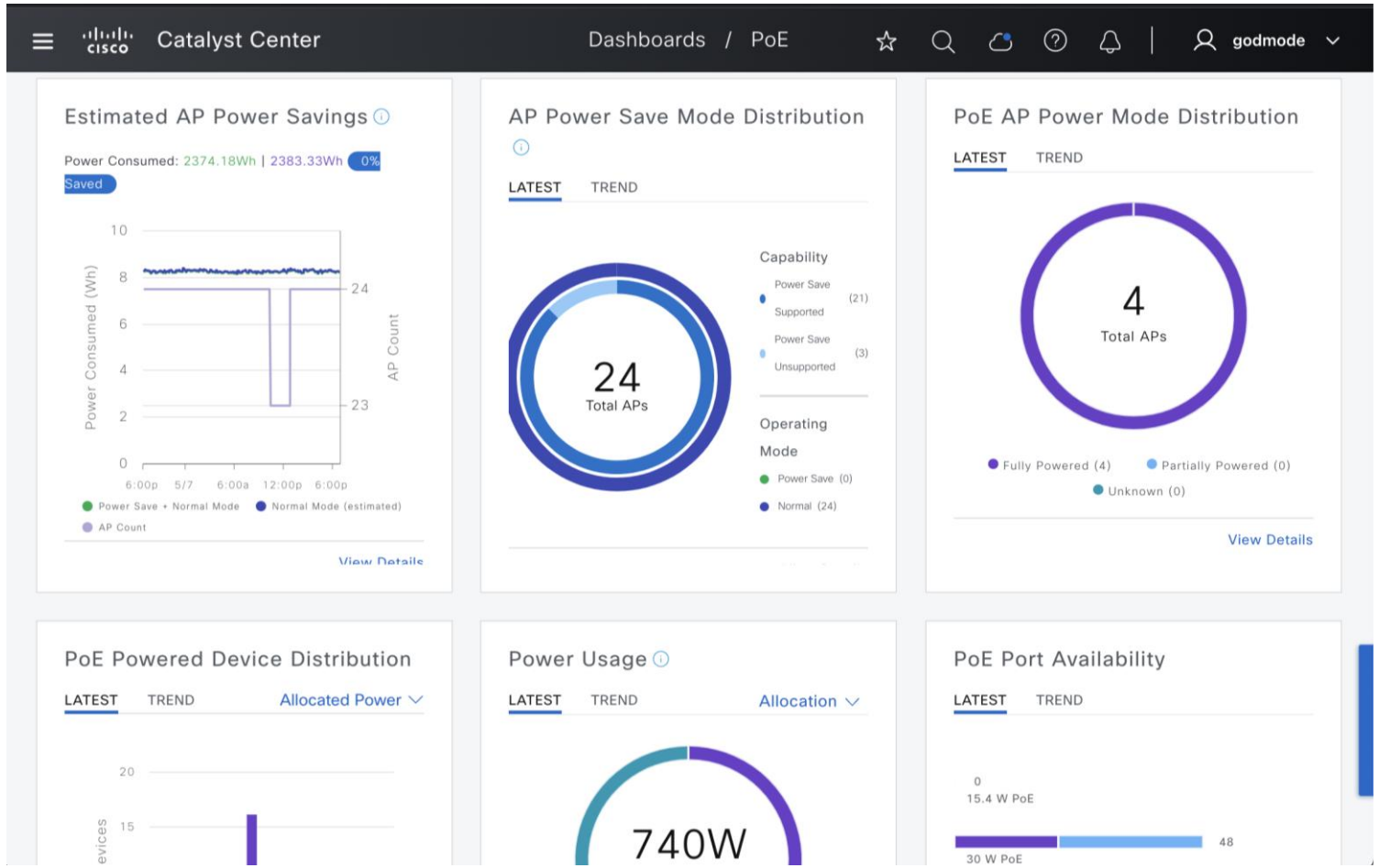






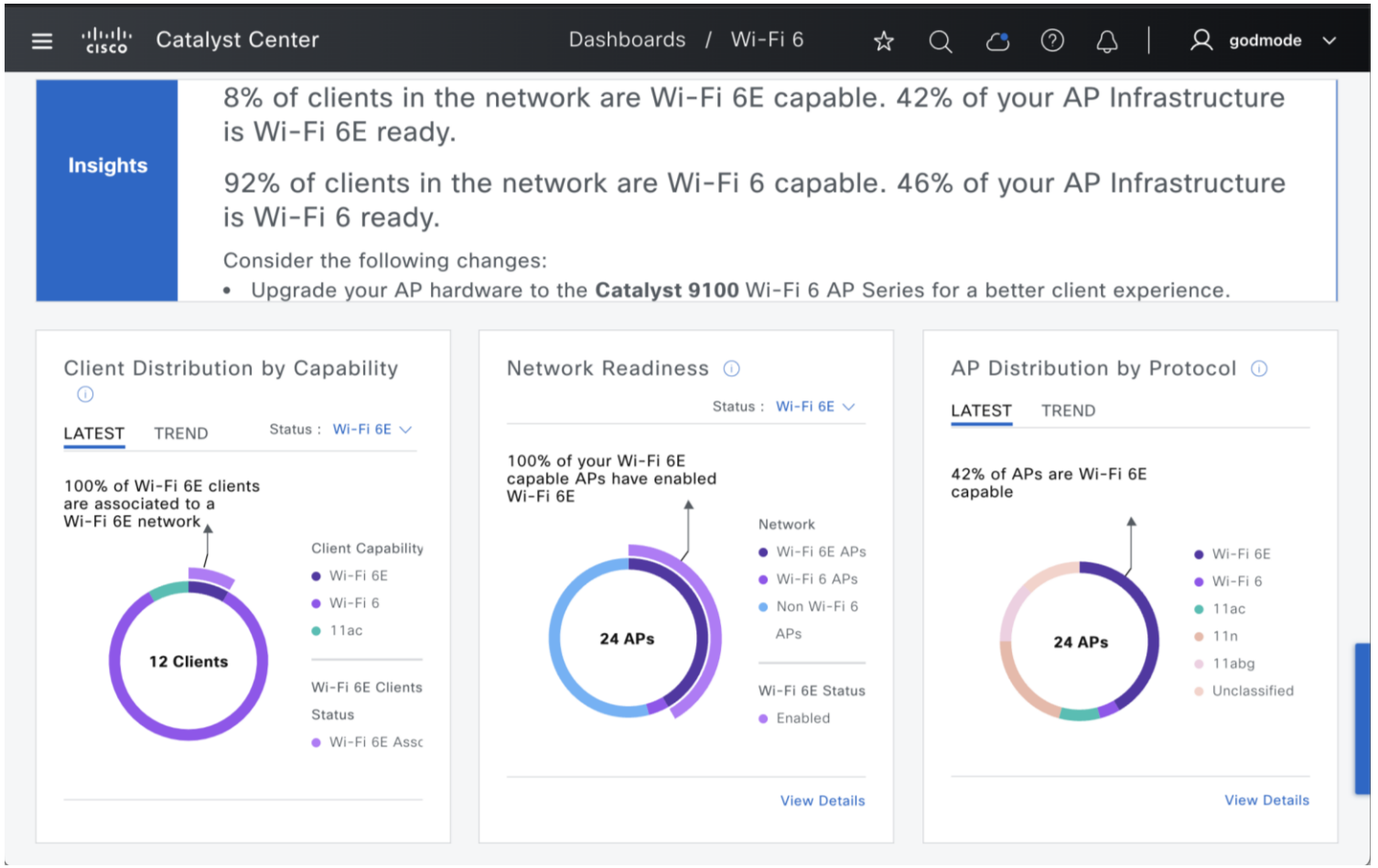
Observe PoE Analytics

- Assurance > PoE Dashboard
- Requires IOS-XE 17.10 and above
- Switches where APs are connected needs to be added to inventory
- Switches should be enabled with NETCONF and telemetry



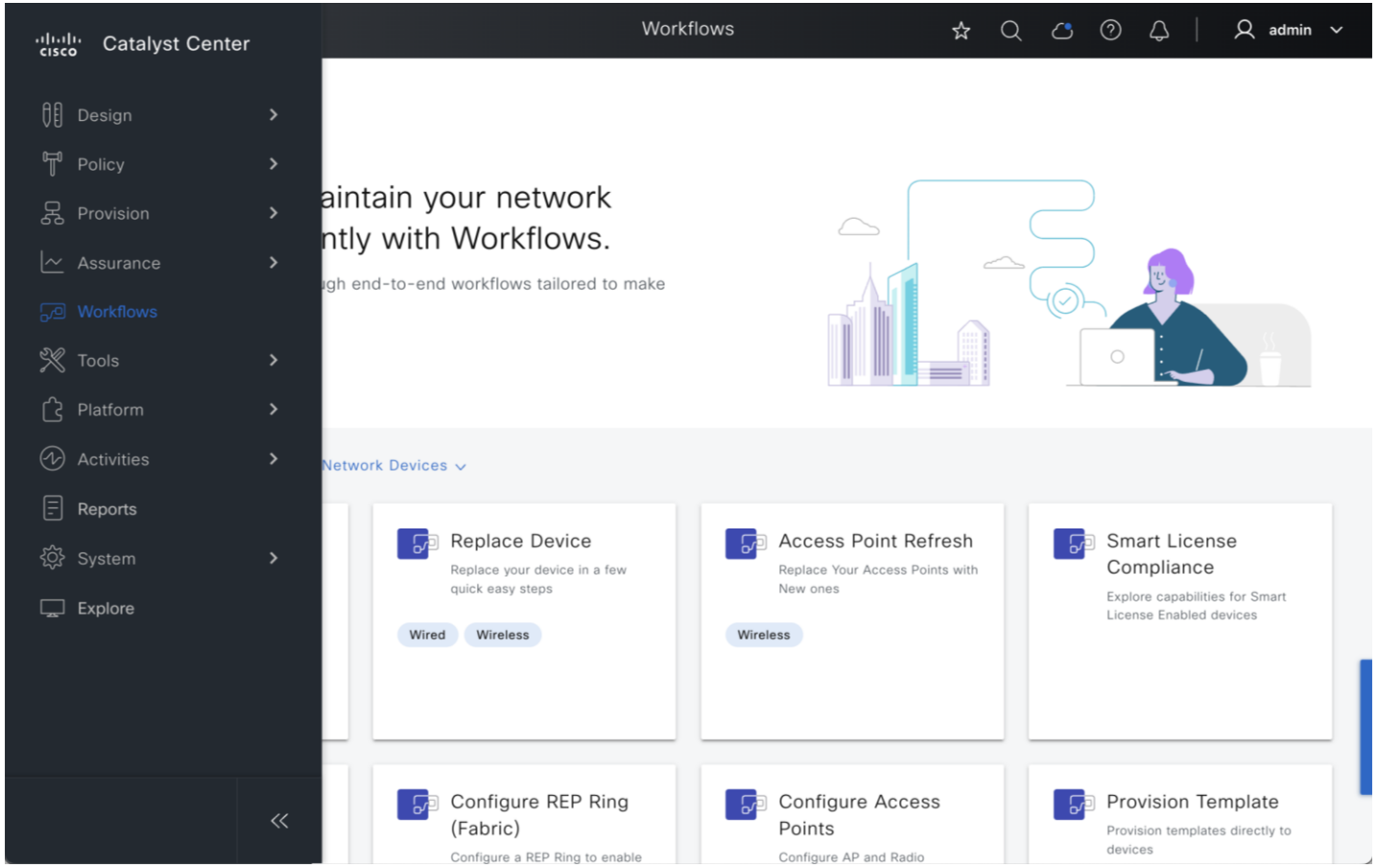
Observe Wi-Fi6 Dashboard

- Insights into Wi-Fi 6/6E readiness
- Details of Client Distribution by capacity
- Network Readiness, Wireless Air Time Efficiency



Helps plan upgrade your network to Wi-Fi 6E for Enhanced Security (WPA3), Increased Bandwidth with Lesser interference

Refresh AP



Assurance Usecase

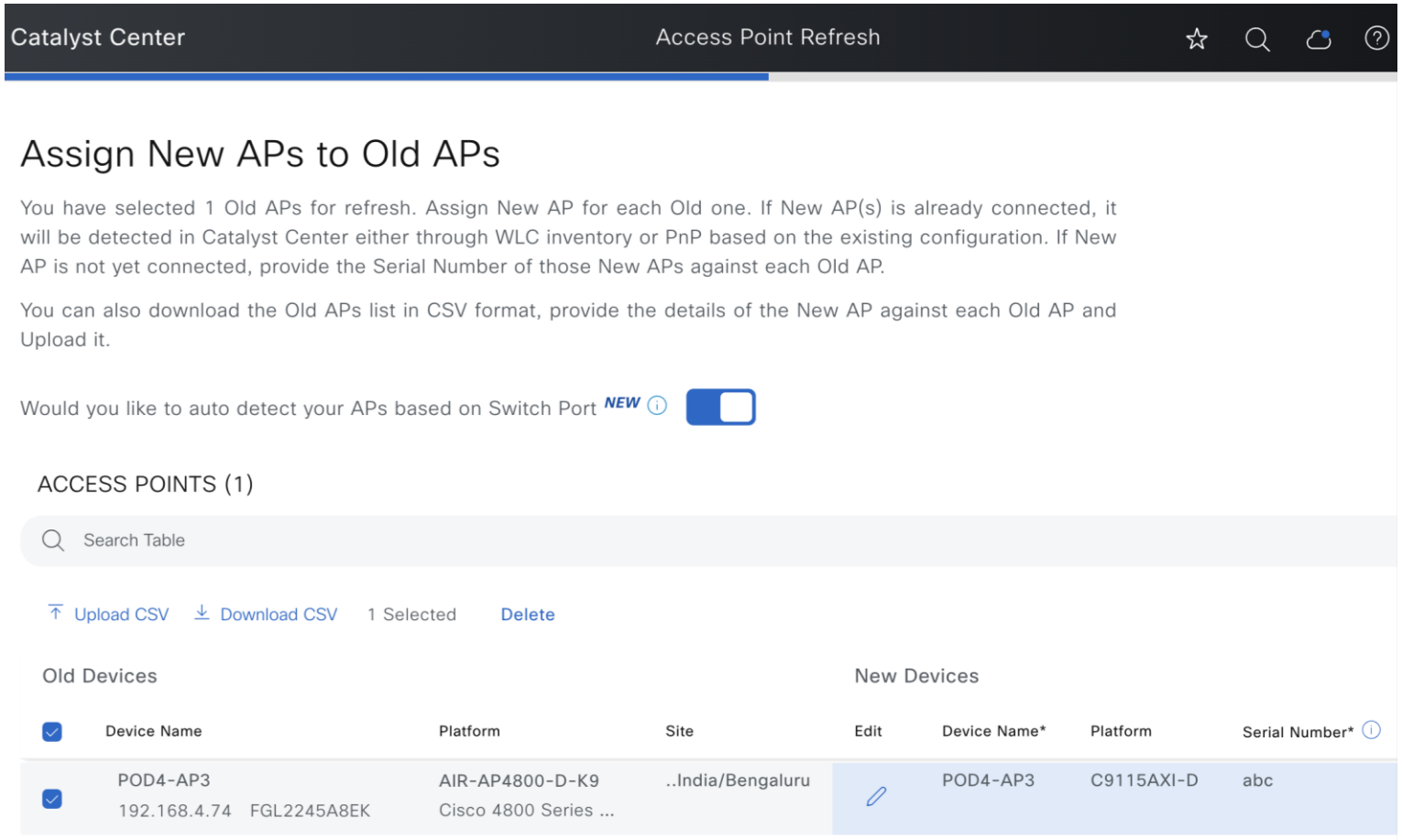
AP will not be provisioned in this scenario and only old configuration will be copied

Automation Usecase

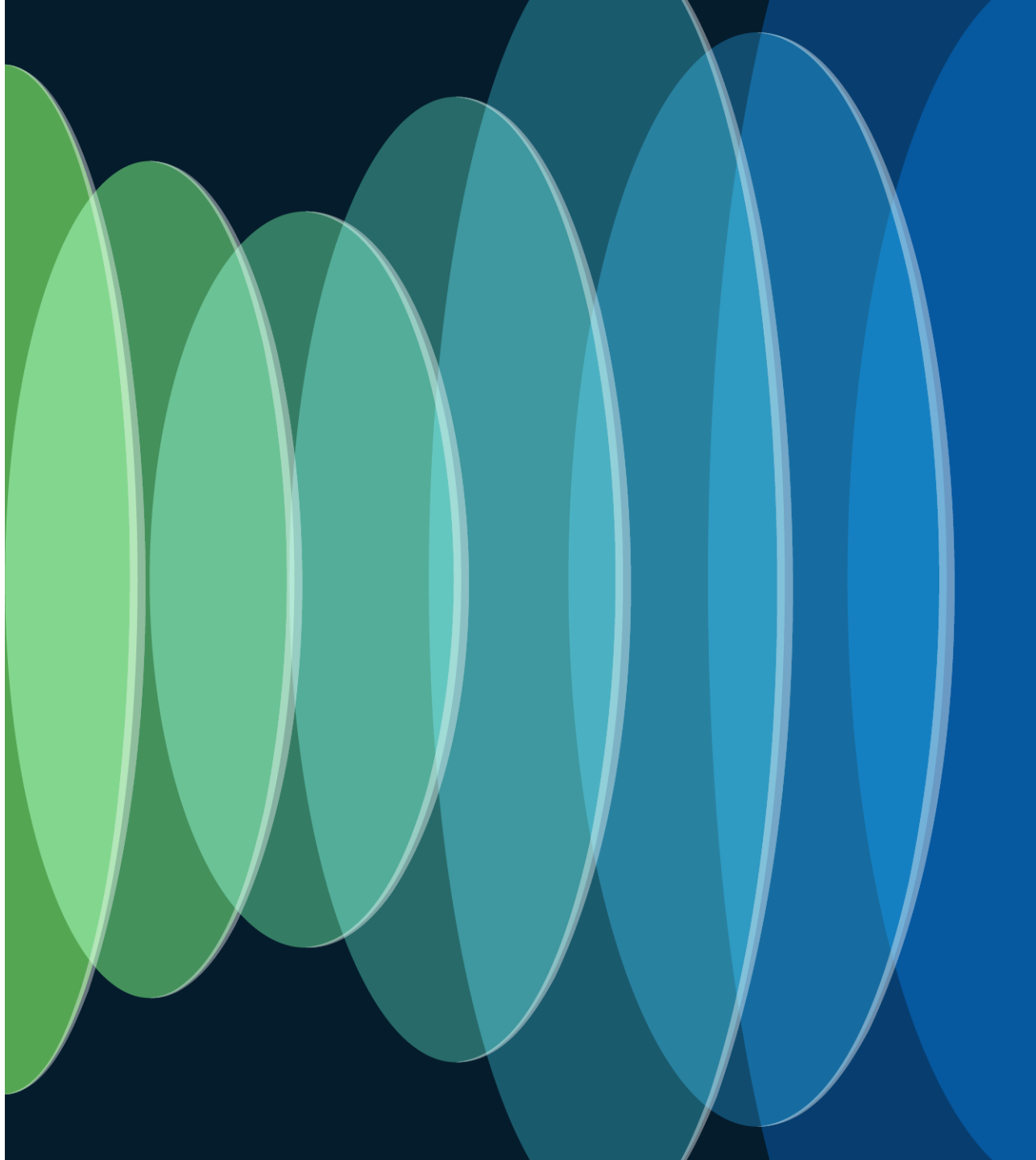
AP will be provisioned in this scenario

Refresh APs- Tips & Tricks

- Old AP **needs to be** Assigned to Site
- New AP **should not** be Assigned to Sites
- For Pre-staging, Old AP need not be in unreachable state for completing the workflow
- If new AP is connected to same switch port, workflow will auto detect new AP

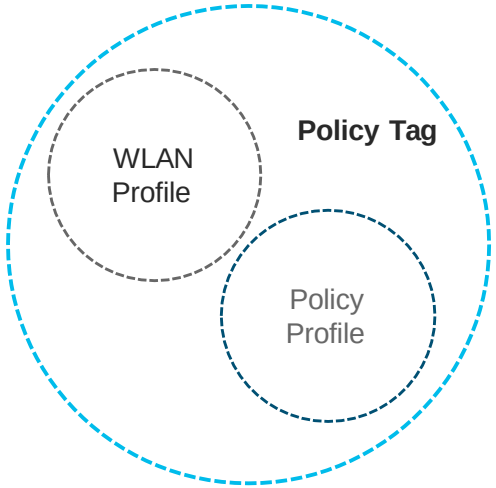


Learn how to Completely Automate Wireless Network

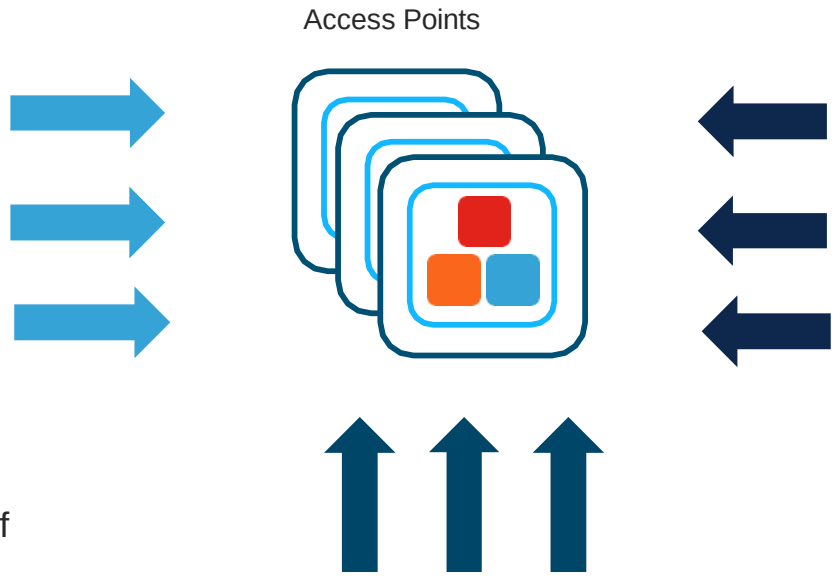


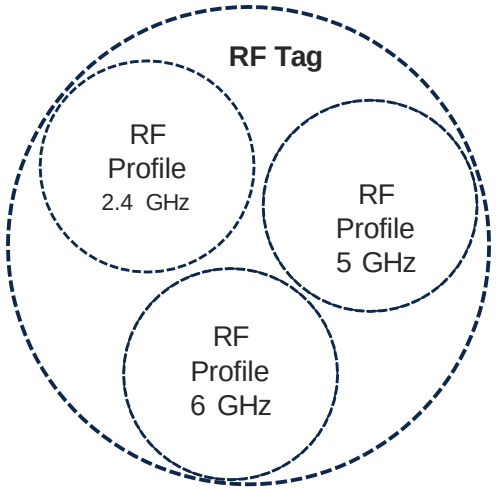
cisco Live!

Cisco C9800 Config Model

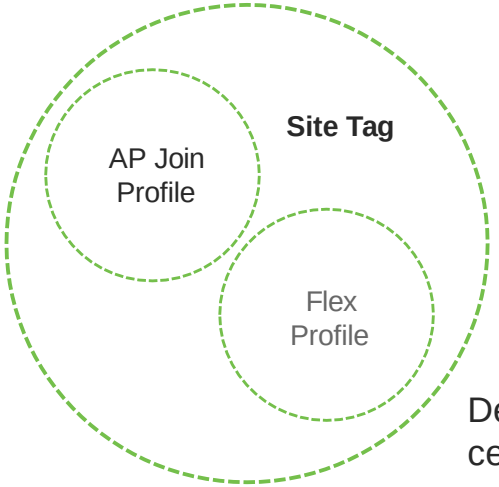


Defines the broadcast domain (list of WLANs to be broadcasted) with the properties of the respective SSIDs





Defines the RF properties of the network



Defines the properties of the central and the remote site APs

Catalyst Center Wireless Intent Design

SSIDs

Configure SSIDs for enterprise and guest wireless networks. You can assign them to sites via Wireless Network Profiles.

Interfaces & VLAN Groups (1)

Configure Interfaces and VLAN Groups. VLAN Groups can have upto 64 Interfaces and support large number of wireless clients.

Anchor Groups

Set up Anchor Groups of controllers with different priorities to manage the traffic of anchored SSIDs.

FlexConnect Settings

Configure FlexConnect VLAN and AAA Override VLAN settings.

Policy Tag

AP Profiles (2)

Access Point Profile is used to manage and provision access points. You can assign them to sites by associating them to Wireless Network Profiles. You can manage mesh settings here.

Power Profile

Create a Power Profile here and attach it to AP Profiles.

Site Tag

Network Profile

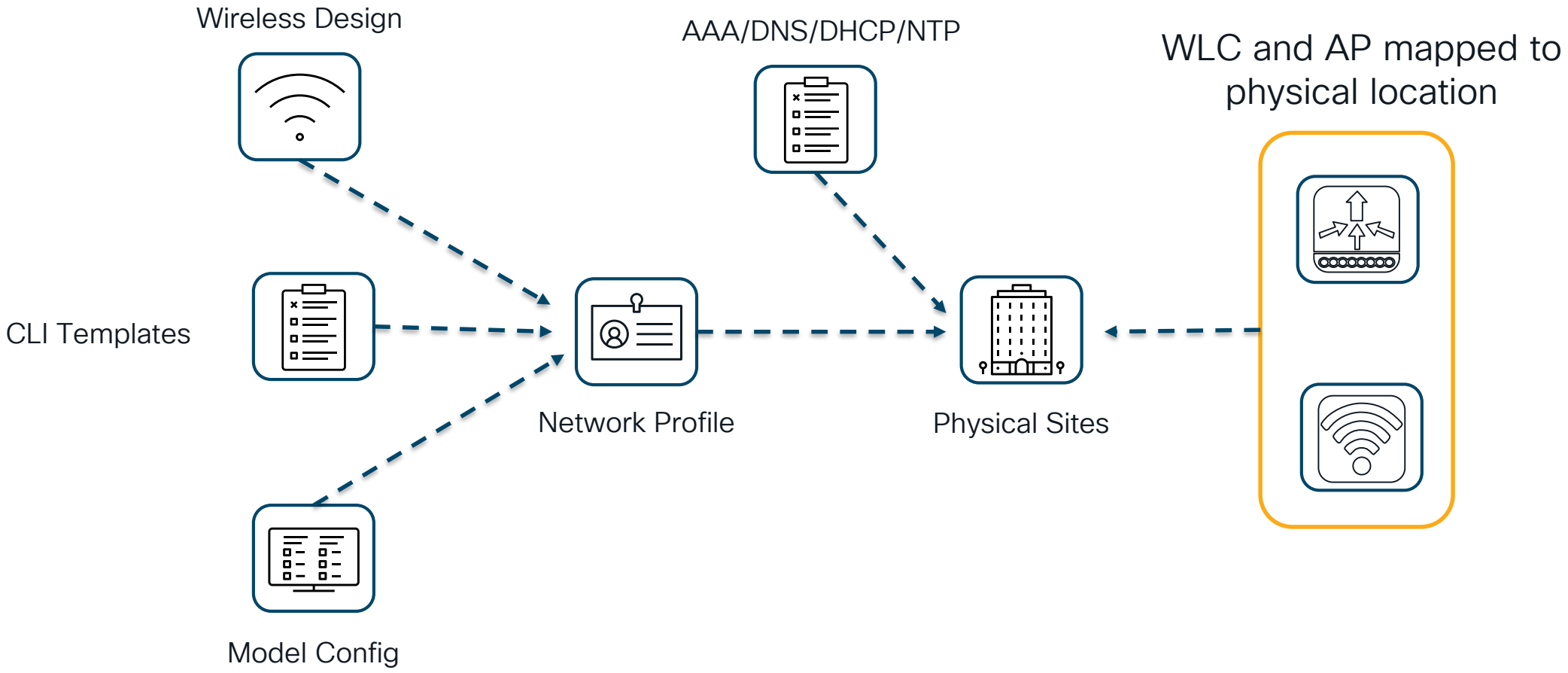
RF Profiles (3)

Configure Wireless Radio Frequency Profiles. You can assign them to access points during AP provisioning.

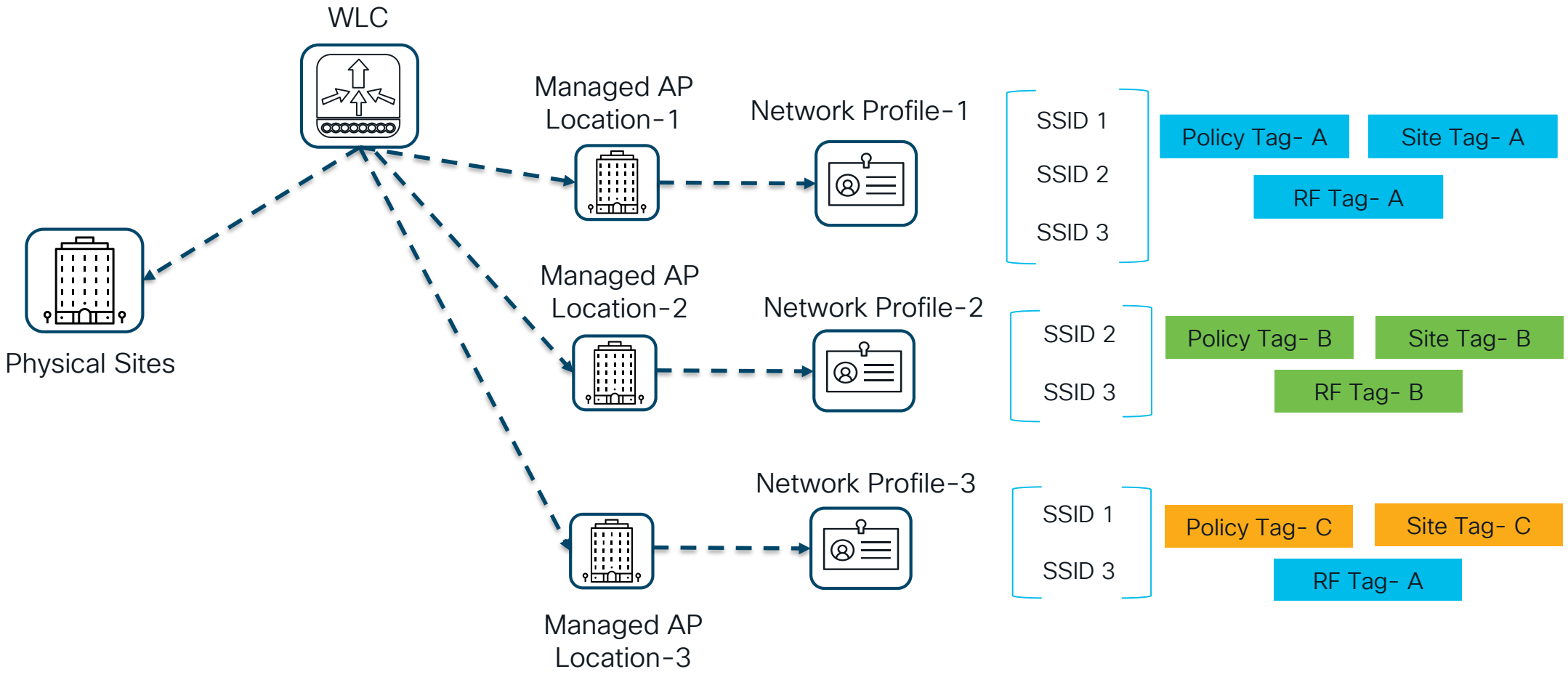
RF Tag

Managed & provisioned

Catalyst Center Wireless Intent Design

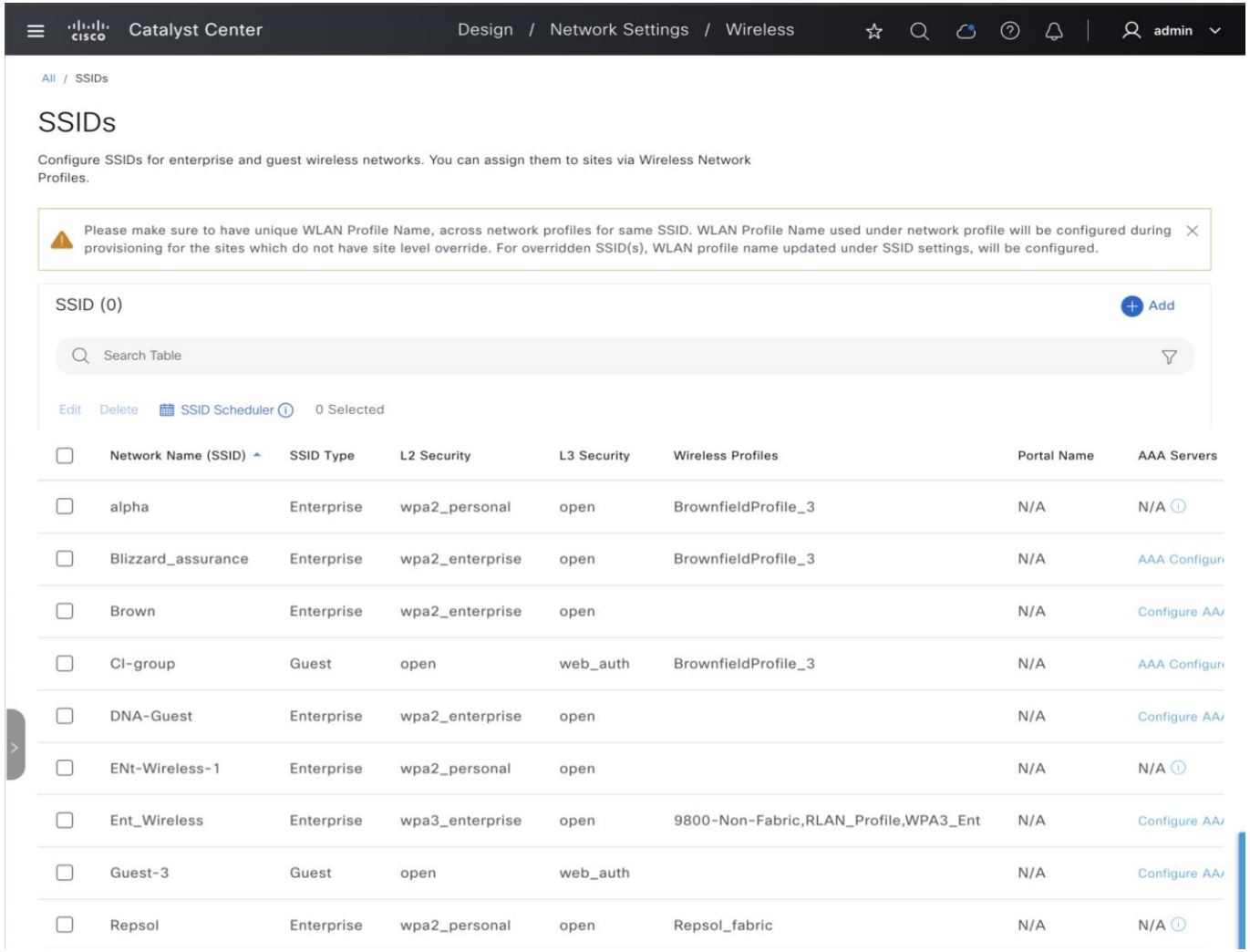


Managed AP Location & Network Profile



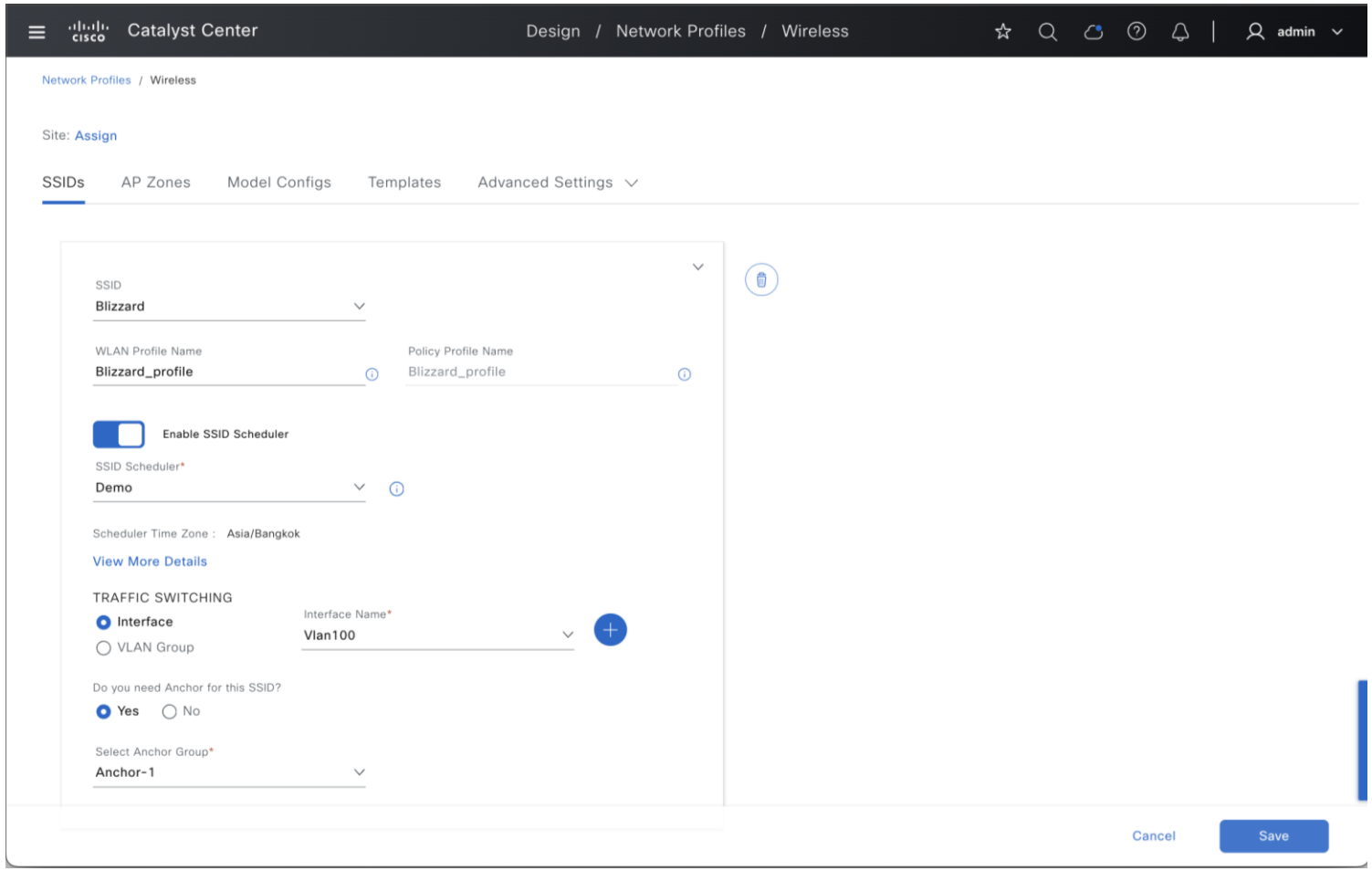
Wireless Design- Definition Areas

Wireless Settings	Site Element
SSID	Global/Area/Building/Floor
SSID Scheduler	Global
RF	Global
Wireless Interface	Global
Antenna Radio Profile	Global
AP Authorization List	Global
Anchor Group	Global
VLAN Group	Global
Pre-Auth ACL	Global
AP Authentication (PnP)	Global
DNA Spaces/CMX Integration	Global/Area/Building/Floor
Flex Connect VLAN	Global/Area/Building/Floor
AAA Override VLAN	Global/Area/Building/Floor
AP Impersonation	Global/Area/Building/Floor
aWIPS and Forensic Capture	Global/Area/Building/Floor
Configure DTLS Cipher suites	Global/Area/Building/Floor
Remote Teleworker	Area
Mesh Settings	Floor



Network Profile Mappings

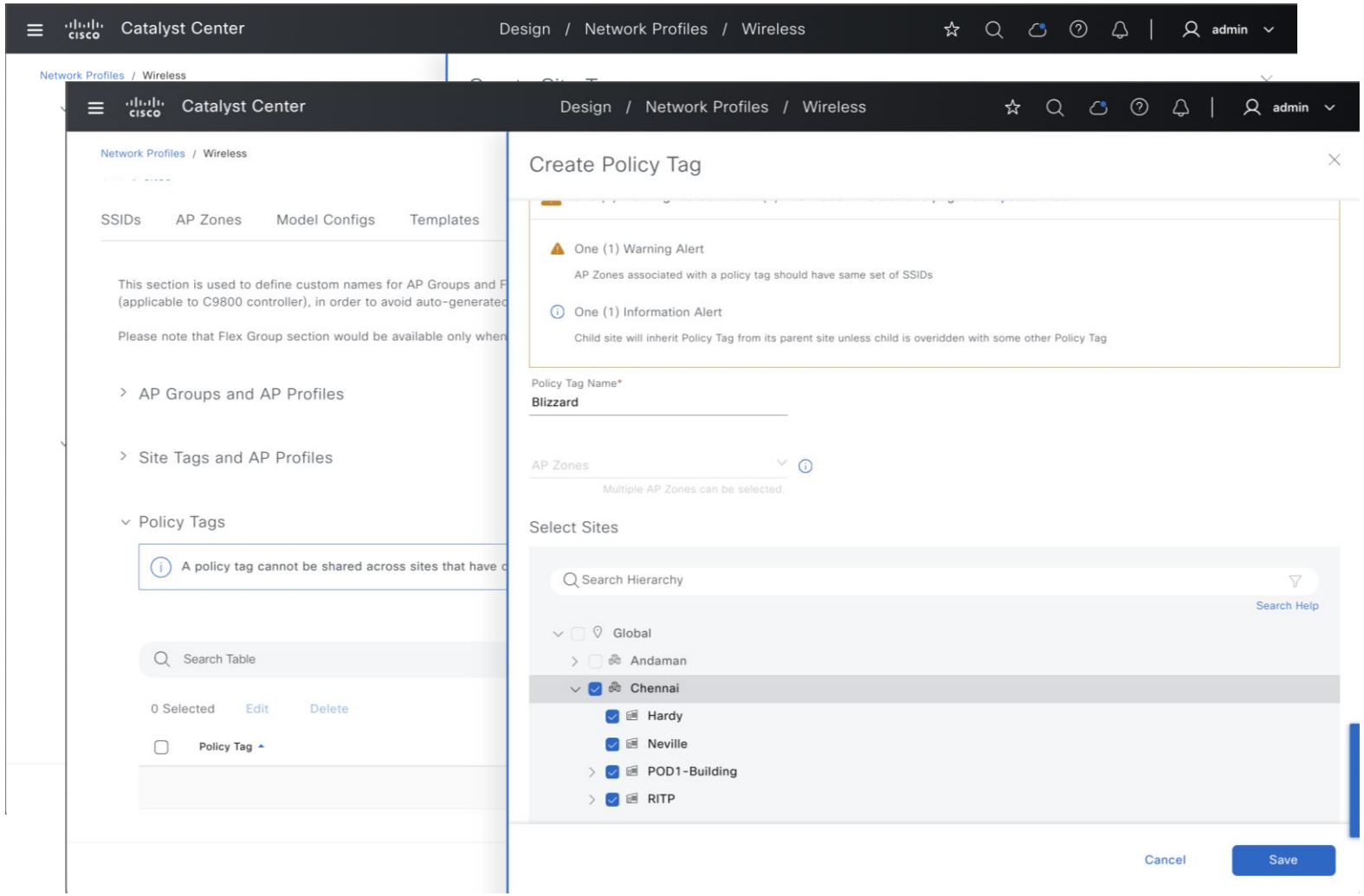
- Design > Network Profile > Wireless
- Options to enable
  - SSID Scheduler
  - Create additional L2 Interfaces
  - Map Anchor Groups
- Assign Network Profiles to Sites



Managed & provisioned

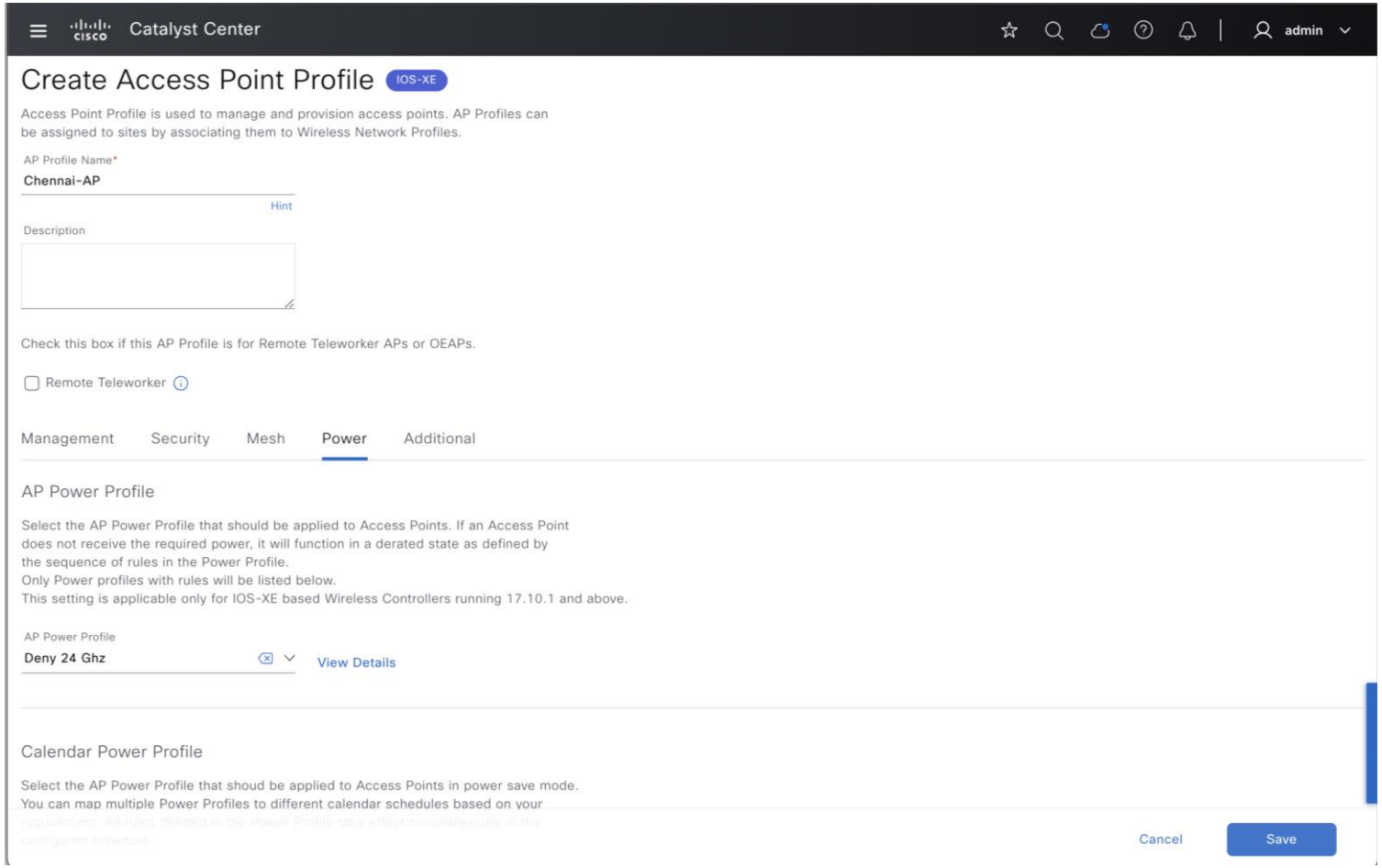
Custom Site Tags & Policy Tags

- Site & Policy Tags can be re-used across multiple floors in a building
- AP Join Profiles mapped to Custom Site Tags
- AP Zones mapped to Policy Tags



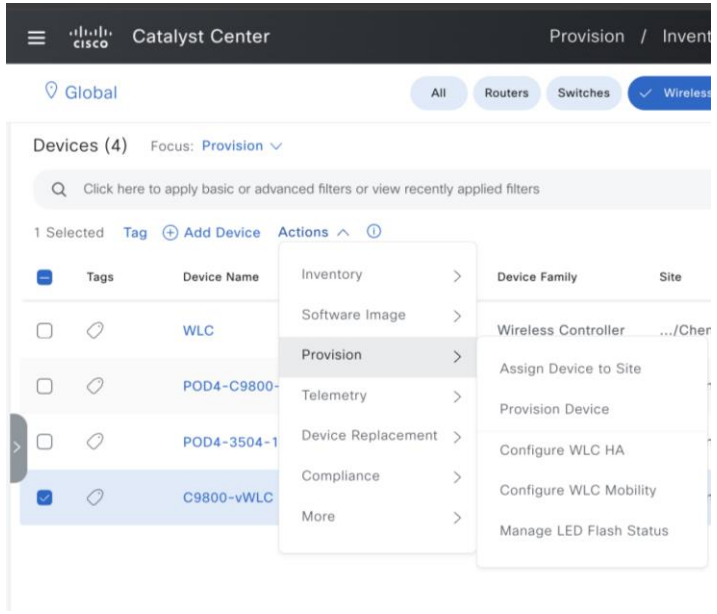
AP Join Profile

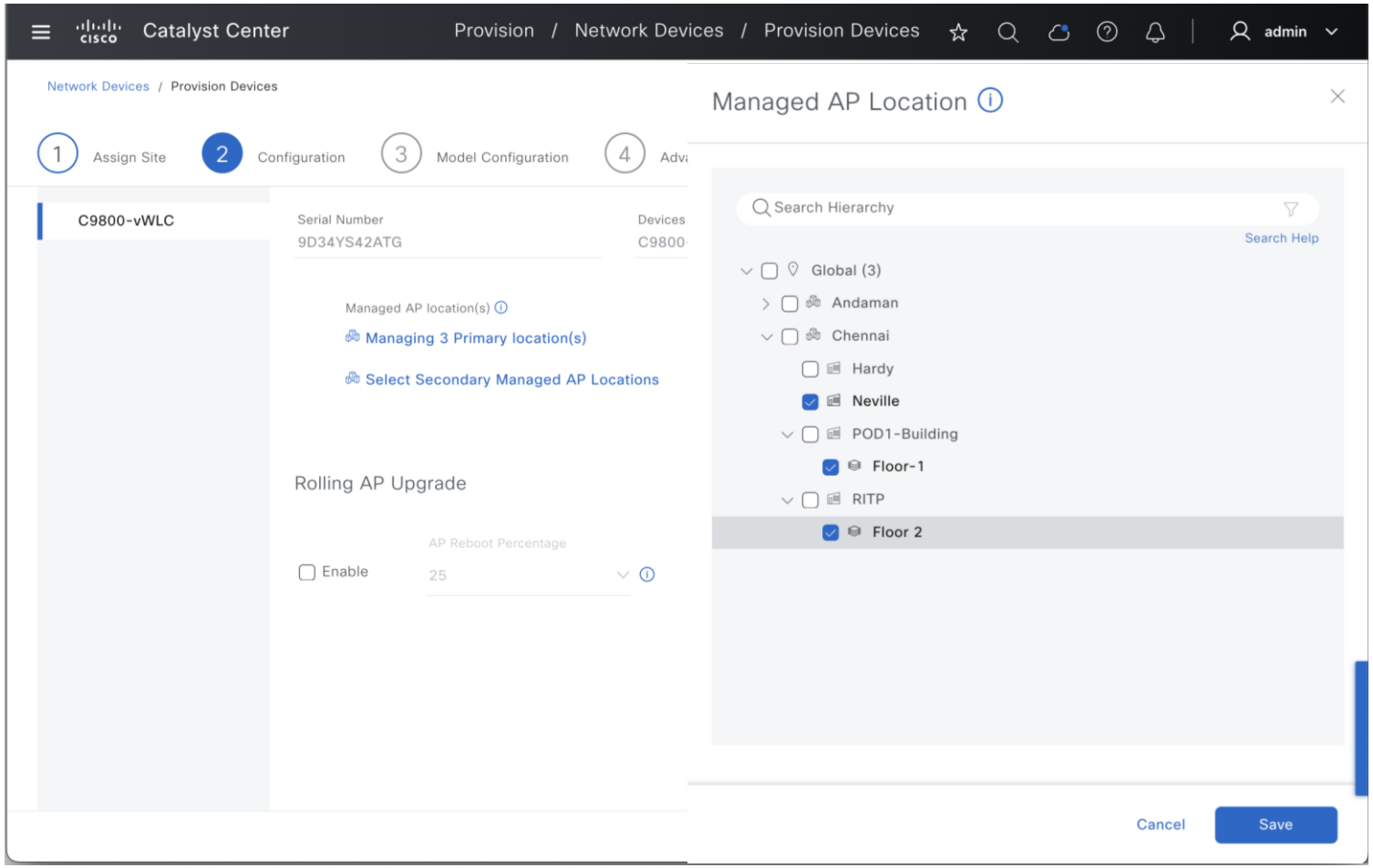
- Configure AP Credentials
- aWIPS/Rogue Detection Settings
- Mesh Bridge Group & Backhaul settings
- Power Profiles and Calendar Profiles for APs



Provisioning WLC (Primary WLC)

Managed & provisioned

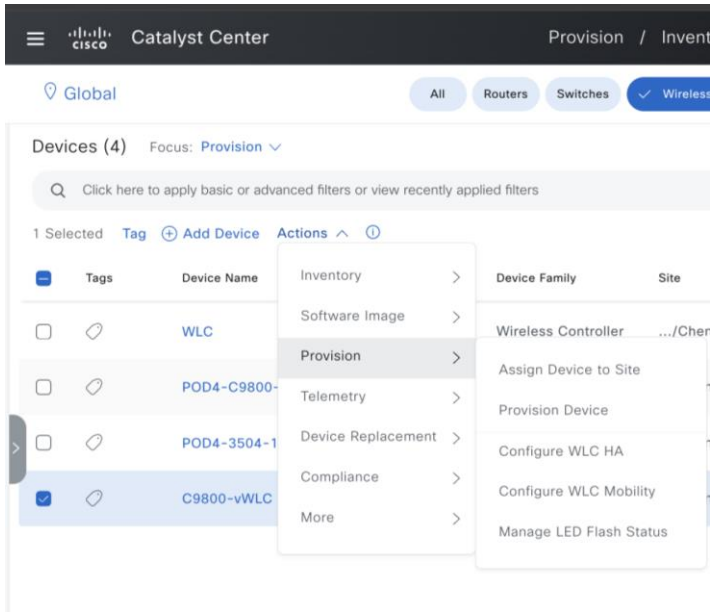


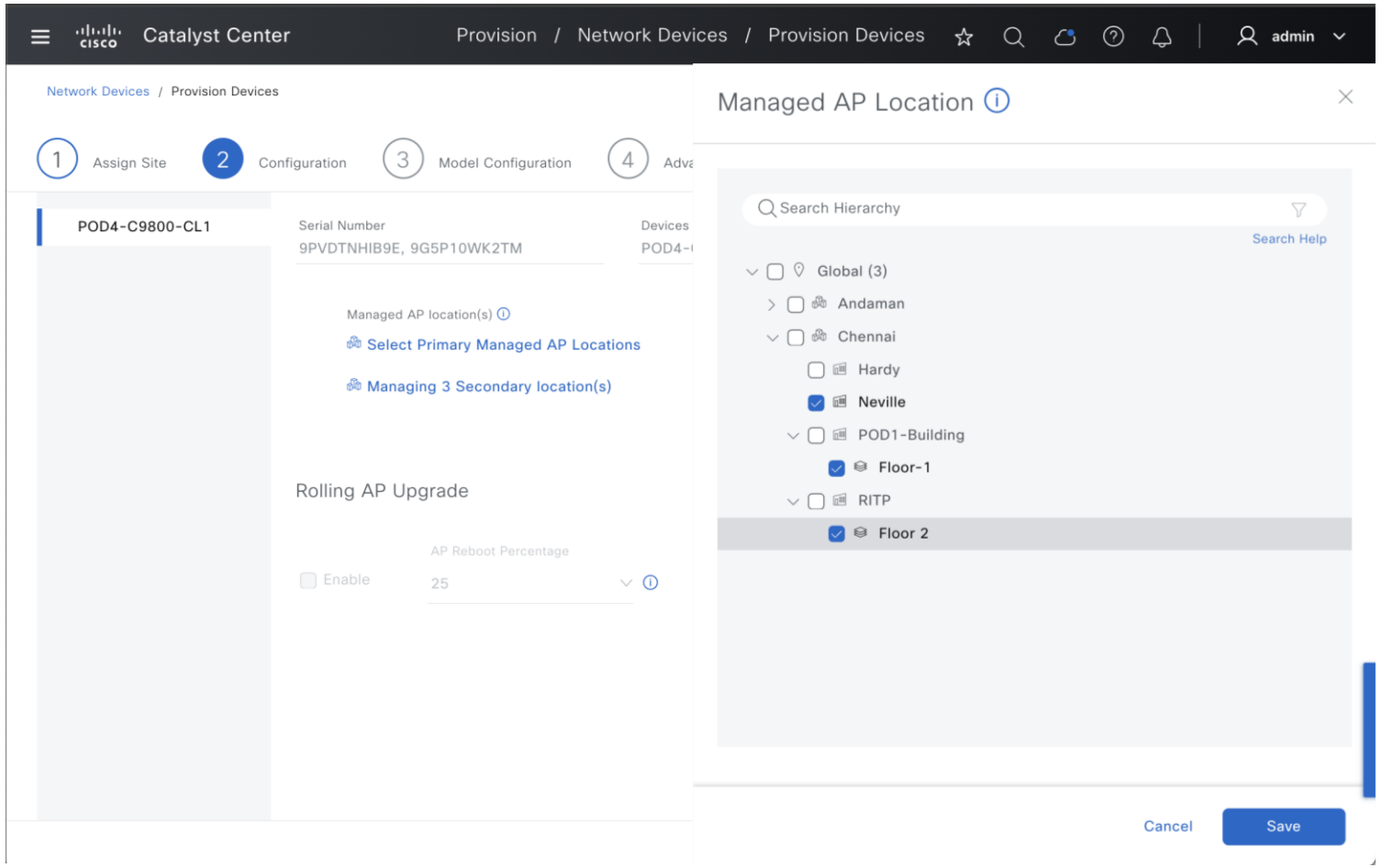


- Define WLC Role Active or Anchor
- Select Buildings or Floors which are going to be managed by the WLC

Provisioning WLC (N+1 WLC)

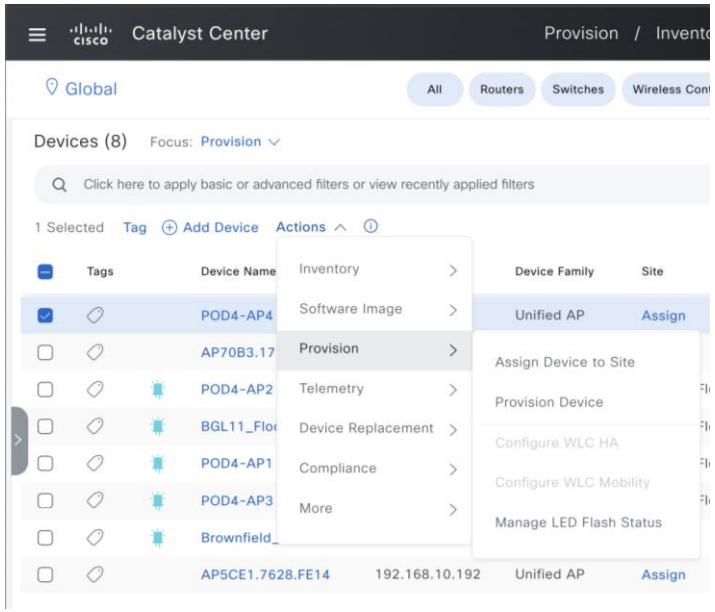
Managed & provisioned

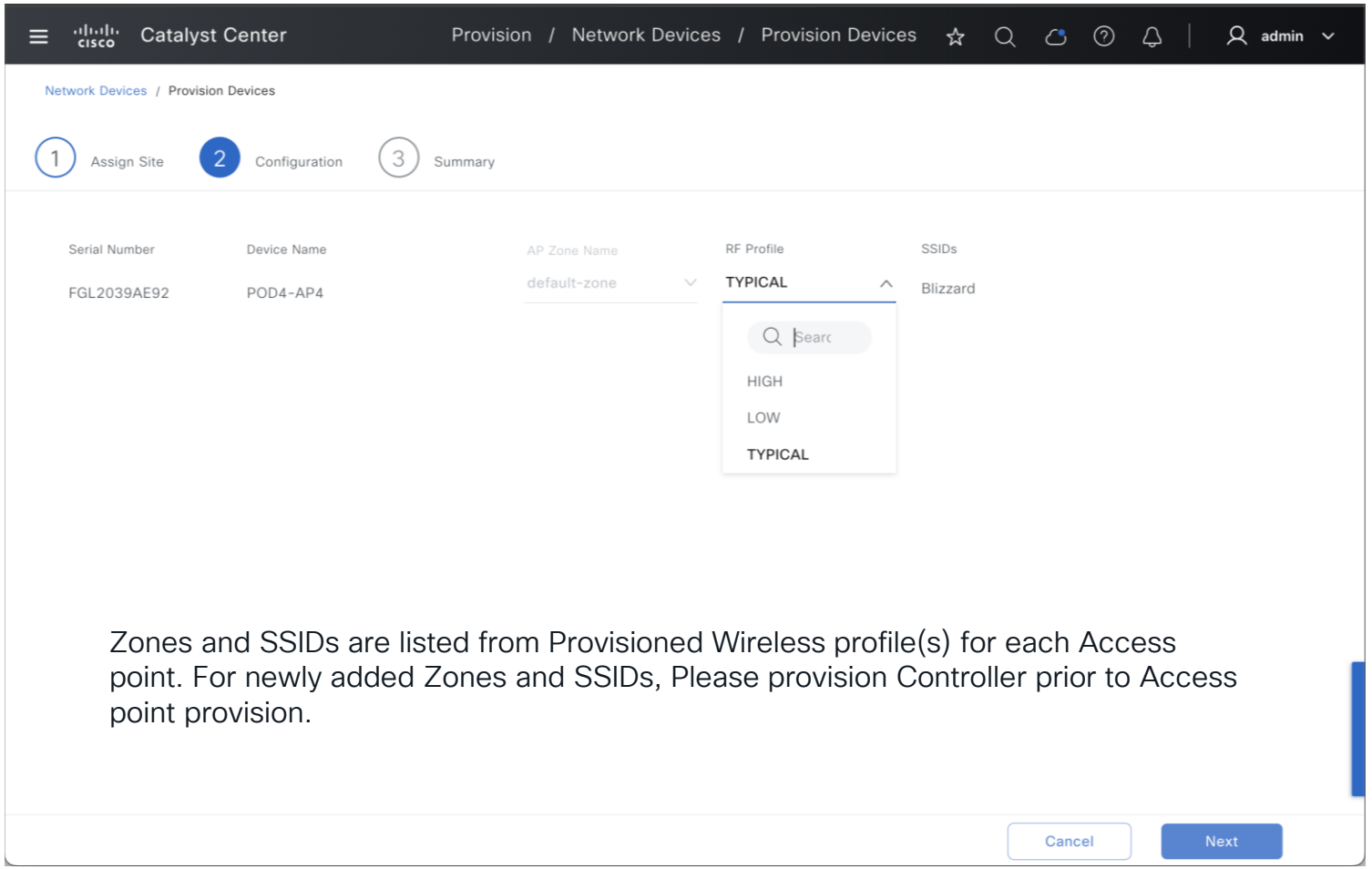




- Define WLC Role Active or Anchor
- Select Buildings or Floors which are going to be managed by the WLC

AP Provisioning





Select RF/AI RF Profile to be pushed to APs

Zones and SSIDs are listed from Provisioned Wireless profile(s) for each Access point. For newly added Zones and SSIDs, Please provision Controller prior to Access point provision.

Cisco Live US Catalyst Center Learning Map

Sunday–2nd

TECOPS-2001 2PM
The Ultimate Guide to Install, Onboard, Operate your Campus Network with Catalyst Center

LTRSEC-2005 2PM
Building Cisco SD-Access with Cisco Catalyst Center and ISE

LTRENS-2890 9AM
Deploying and Operating Cisco SD-Access with Pub-Sub using Cisco Catalyst Center

Monday–3rd

BRKOPS-2548 8AM
Network Troubleshooting Using Cisco Catalyst Center APIs

BRKEWN-2029 9:30AM
7 Ways to Optimize User Experience using Catalyst Center Wireless AIOps and Assurance

BRKOPS-2416 10:30AM
7 Habits for Success with Cisco Catalyst Center

DEVWKS-1004 11AM
Deploy Cisco Catalyst Center with Rest-APIs in Seconds

IBOOPS-2882 1PM
Let's Talk about Catalyst Center Integrations

BRKOPS-2596 1PM
Revolutionize Your Network Management with Cisco Catalyst Center: Physical or Virtual on AWS or VMware ESXi

BRKOPS-1461 1PM
Discovering and Managing Brownfield Deployment with Cisco Catalyst Center

BRKIOT-2016 2:30PM
Automating OT Services with Cisco Catalyst Center Best Practices

Tuesday–4th

BRKOPS-2208 10:30AM
Discovering the Secrets of AI/ML in Cisco Catalyst Center

DEVNET-1087 12PM
Cisco Catalyst Center Platform: APIs, Event Notifications, Integrations, and DevOps Resources

BRKCOC-2041 1PM
Catalyst Center Automation and Use Cases in Cisco IT

BRKOPS-2402 3PM
Automate the Deployment of a Wireless Network with the Help of Cisco Catalyst Center

Wednesday–5th

BRKOPS-2032 10:30AM
3 Catalyst Center and ITSM Workflows: CMDB, Incident Management, and SWIM

BRKENS-1601 10:30AM
Catalyst Center and Meraki Cloud: The Right Choice for your Catalyst 9000 Switch Management!

BRKGRN-1012 10:30AM
Fostering Sustainable Campus Communities: Cisco Catalyst Center and Smart Buildings

IBOENS-2600 10:30AM
Revolutionizing Campus Networks: The Power of Automation with Catalyst Center

DEVWKS-2041 2PM
Cisco Catalyst Center and Targeting Event Notifications via Webex Messaging

TACENT-2011 2:45PM
Unlocking the troubleshooting power of Cisco Catalyst Center

DEVNET-3000 3PM
Chatbot for Catalyst Center—on Open Source AI-based Bot

Thursday–6th

BRKOPS-2343 8:30AM
Decoding Site Reliability Engineering Through Catalyst Center

SKILLS-1660 9AM
Introduction to Catalyst Center

SKILLS-1661 10AM
Introduction to Catalyst Center Platform

BRKEWN-2306 1PM
Wireless Network Automation and Assurance with Cisco Catalyst Center

BU-led sessions

cisco Live!

Cisco Live US Campus AIOps Learning Map

Sunday–2nd

TECEWN-2004 9AM
Wireless Design, AIOps, and Assurance: Optimize Your Wi-Fi Networks with Cisco Catalyst Wireless

TECAPP-2903 2PM
Supercharge End-to-End visibility with ThousandEyes using APIs and Integrations

Monday–3rd

BRKENT-2209 11AM
AI/ML for Network Engineers

BRKXAR-1008 1PM
Modern Network Design Is More Complex Than Ever, Leverage AI as Your Cheat Code to Survival

CENETI-1001 1PM
Is Your Organization AI-Ready? How To Manage, Secure, and Scale AI-Powered Technologies

ITLBRK-1113 3:15PM
Strategies for Safer, Faster Deployment of GenAI Apps and Services at Scale

BRKENT-1105 11AM
An Introduction to GenAI Technologies & Solutions

DEVNET-1084 11AM
Explore Generative AI Capabilities

AIHUB-1004 12PM
Redefine your AI/ML networks with Cisco Silicon One

PSOIND-1013 12PM
The AI Revolution is Helping to Enable and Secure Critical Infrastructure!

Tuesday–4th

BRKOPS-2208 10:30AM
Discovering the Secrets of AI/ML in Cisco Catalyst Center

BRKEWN-3007 1PM
Demystifying the Role of Applied AI in Your Cisco Wireless Deployments

CENCX-1004 2PM
Accelerating AI-Ready Infrastructures and Execution Strategies

PSOAPP-1020 2:30PM
Harnessing AI and AIOps in Cisco Full-Stack Observability for Unparalleled Insight

AIHUB-2005 4:30PM
Leverage your enterprise data assets to build AI assistants with Motific

Wednesday–5th

BRKEWN-2926 10:30AM
Tune Your Cisco Wi-Fi Designs for the Most Demanding Clients and Applications, Boosted with Applied AI

AIHUB-1009 12:00PM
Cross Architecture Approach to AI

PSOENT-1013 12:30PM
Power proactive business outcomes with AI Assistant

IBOIOT-2101 1PM
Revolutionizing Industrial Operations: Unveiling the Power of AI in IIoT with Cisco Solutions and Emerging Industry Trends

DEVNET-3000 3PM
Chatbot for Catalyst Center—on Open Source AI-based Bot

CSSOPS-1050 4PM
Powering Automation and Security: Software Defined Access and Catalyst Center's Impact on a Global Energy Giant

Thursday–6th

BRKETI-2010 9:30AM
Beyond the Noise: Harnessing Generative AI for Telemetry Data

BRKXAR-3001 10:30AM
End-to-End Visibility and Actionable Insights Using ThousandEyes, DNAC, ISE, and SD-WAN

BRKNWT-2403 11AM
GenAI-Driven Network Test Automation: A Groundbreaking Strategy for Comprehensive Network Transformation Using Advanced Technologies

AIHUB-2008 11:15AM
How Cisco uses Generative AI to make TAC Engineers Super-Human

Complete Your Session Evaluations

Complete a minimum of 4 session surveys and the Overall Event Survey to be entered in a drawing to **win 1 of 5 full conference passes** to Cisco Live 2025.

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- Book your one-on-one Meet the Engineer meeting
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- Visit the On-Demand Library for more sessions at www.CiscoLive.com/on-demand

Contact me at: ramkchel@cisco.com


The bridge to possible
Thank you
#CiscoLive

References

Prime to Catalyst Center Gradual Migration	https://www.youtube.com/watch?v=oCMp-LcdfTI
Co-Existence Prime & Catalyst Center	https://www.youtube.com/watch?v=uCdLUBnBy6M
Prime 3.10 to Catalyst Center Migration	https://www.youtube.com/watch?v=Yla0YJYknGs
Prime to Catalyst Center Migration	https://www.youtube.com/watch?v=L-JaloEyW78

Tips and Tricks for Prime Infrastructure to Cisco Catalyst Center Migration

Best Practice for Prime to Cisco Catalyst Center migration

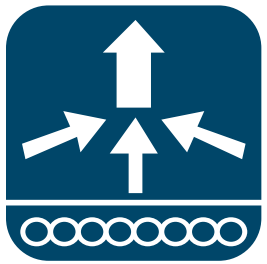
Intel Connectivity, Apple, Samsung Analytics

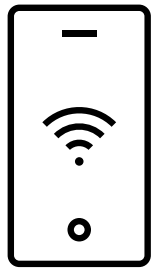
	Driver Version Device Type	Catalyst Center	IOS-XE Release
Intel Connectivity Analytics	Intel 22.50.1 or newer on AX1650/1675 AC8561/9560 AX200/201/210/211/411	2.3.3	17.6.1
Apple Analytics	iOS 11 on iPhone 7 or later	2.2.1	16.12.1s
Samsung Analytics	Android 9 or later on Galaxy S10 or newer	2.2.1	17.1.1

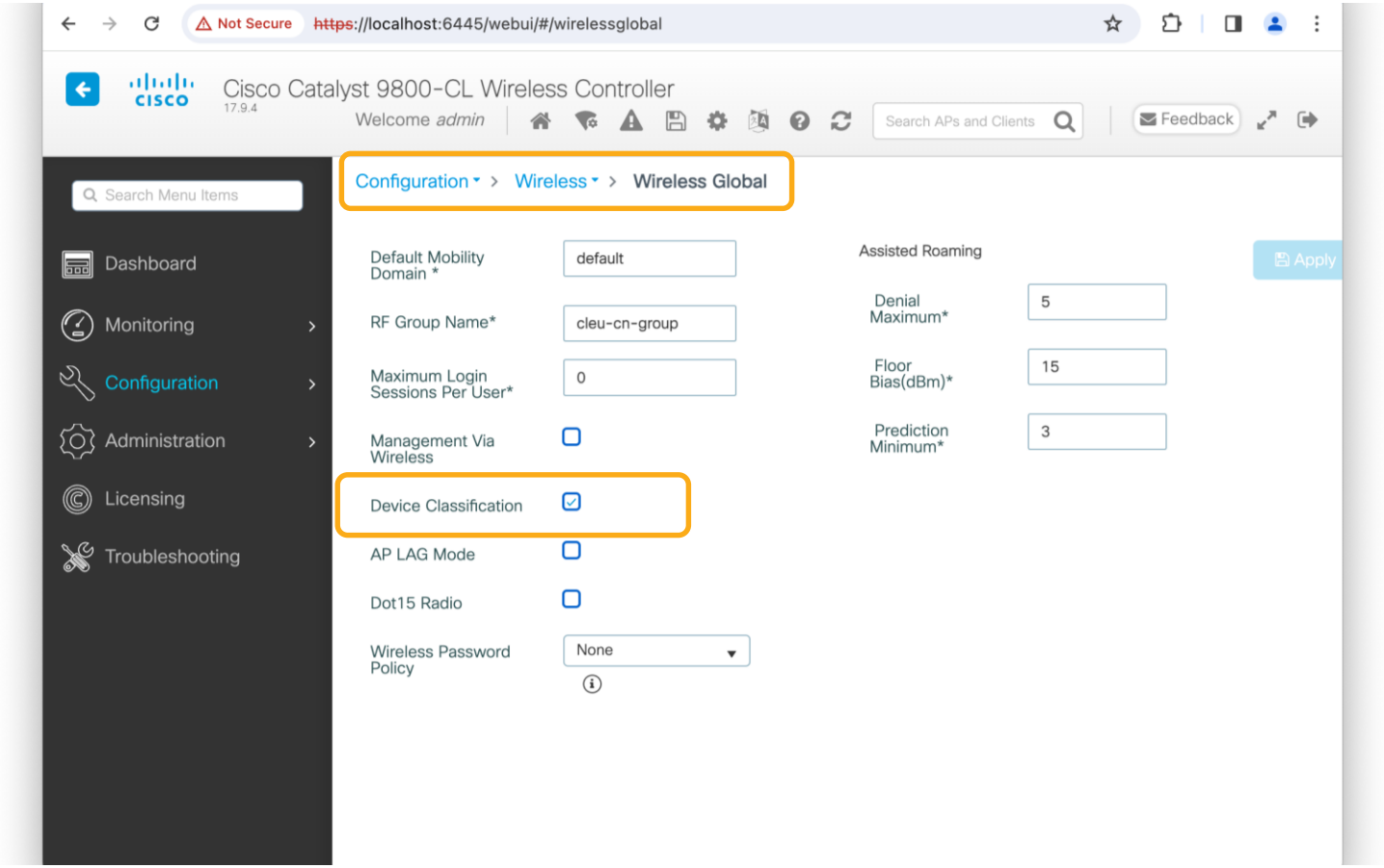
How to configure Client Analytics?

Wireless Global

Configure
Device Classifier



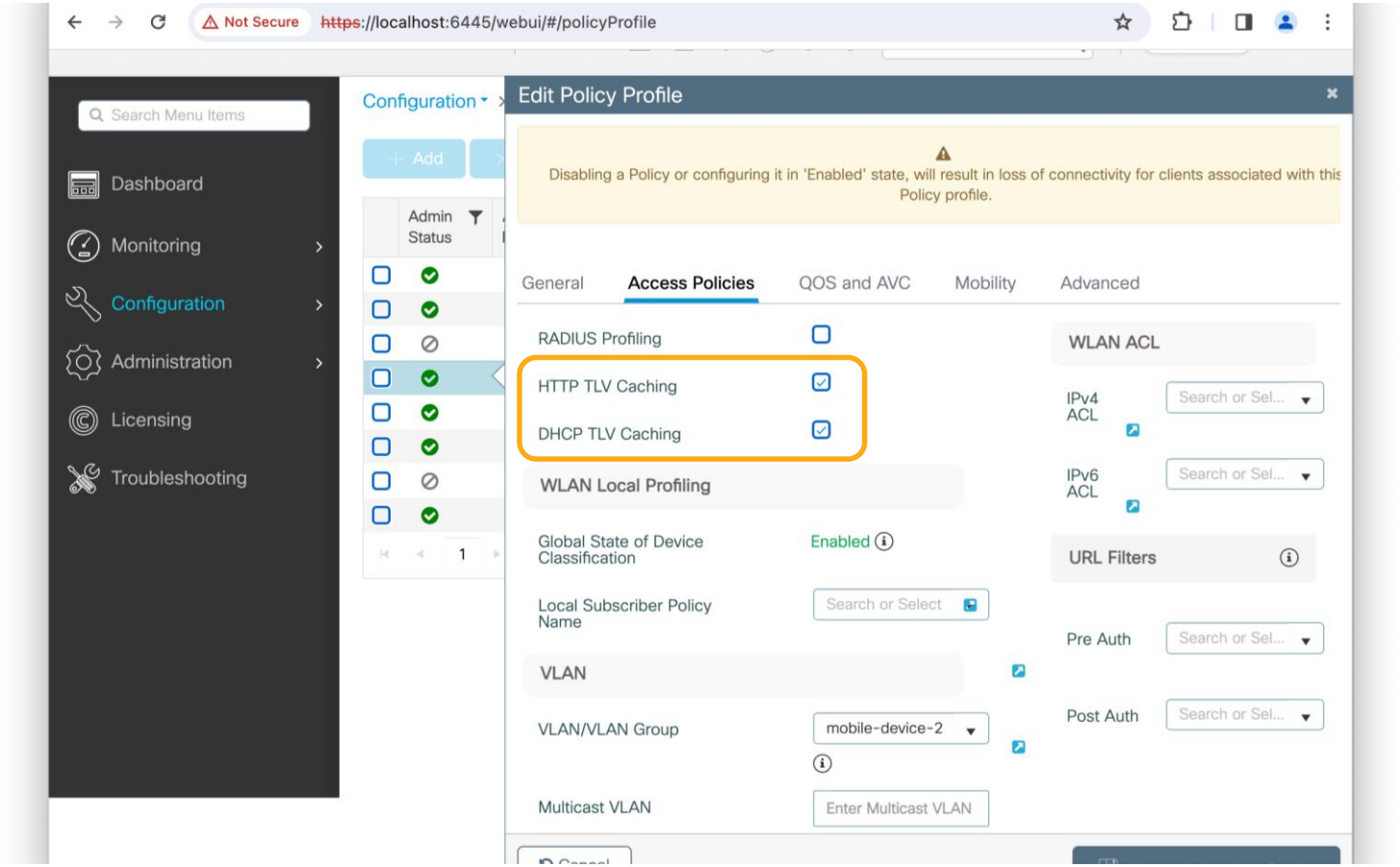


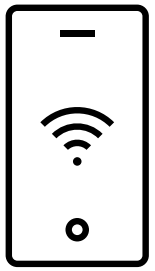


How to configure Client Analytics?

Policy Profile | Access Policies

Configure
Device Classifier

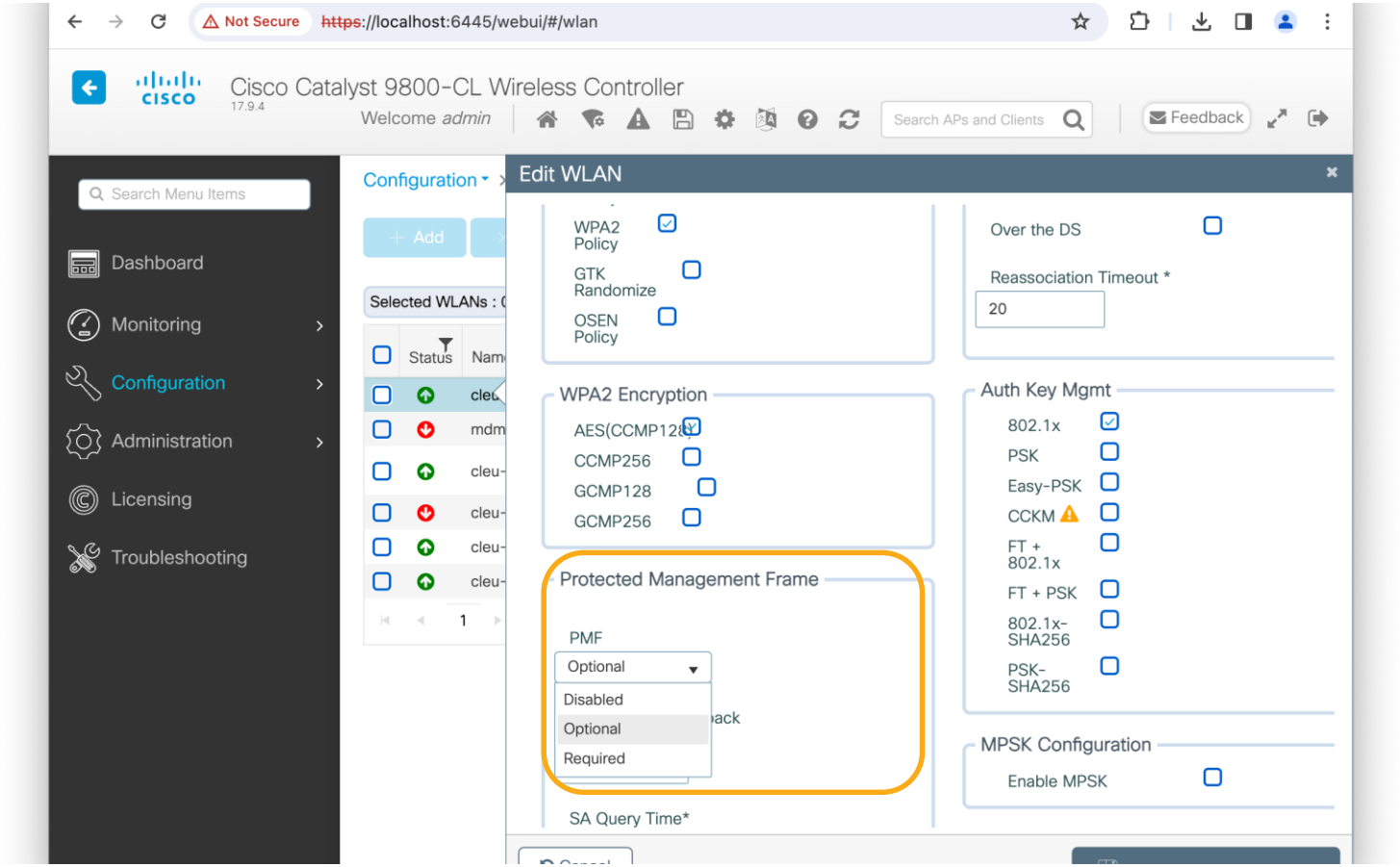




How to configure Client Analytics?

WLANs | Security | Layer 2

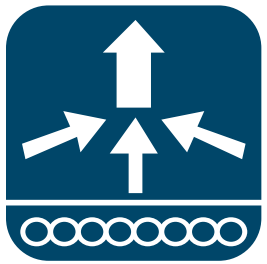
PMF Optional or Required

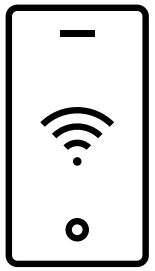


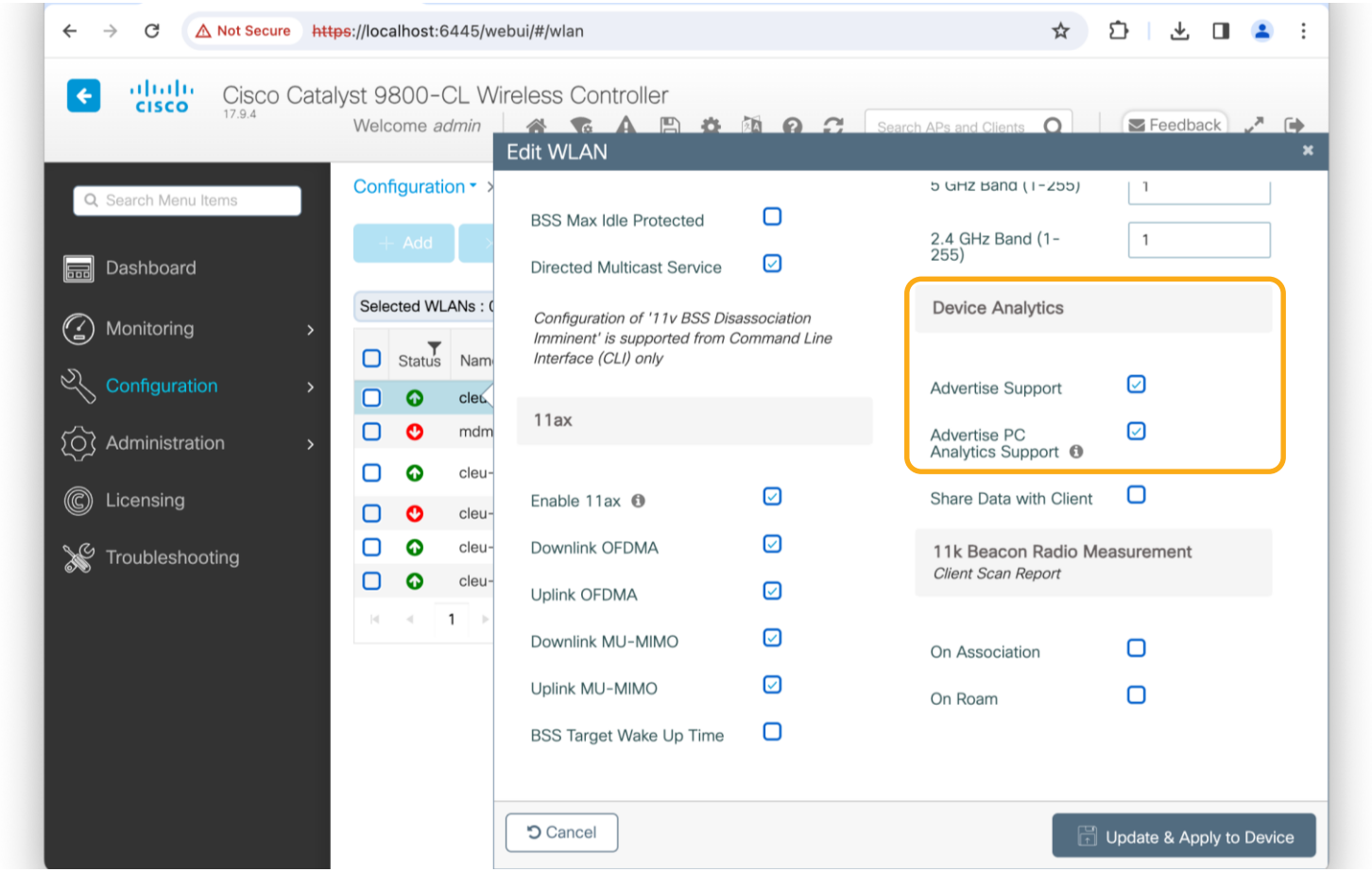
How to configure Client Analytics?

WLANs | Advanced

Advertise Support



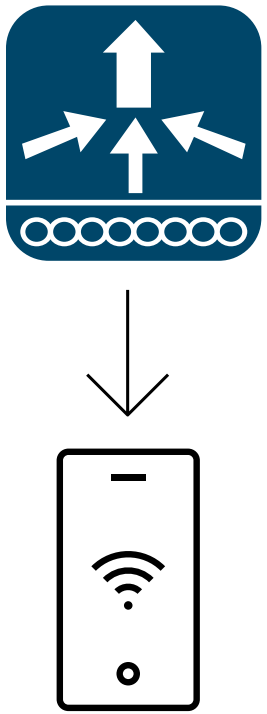


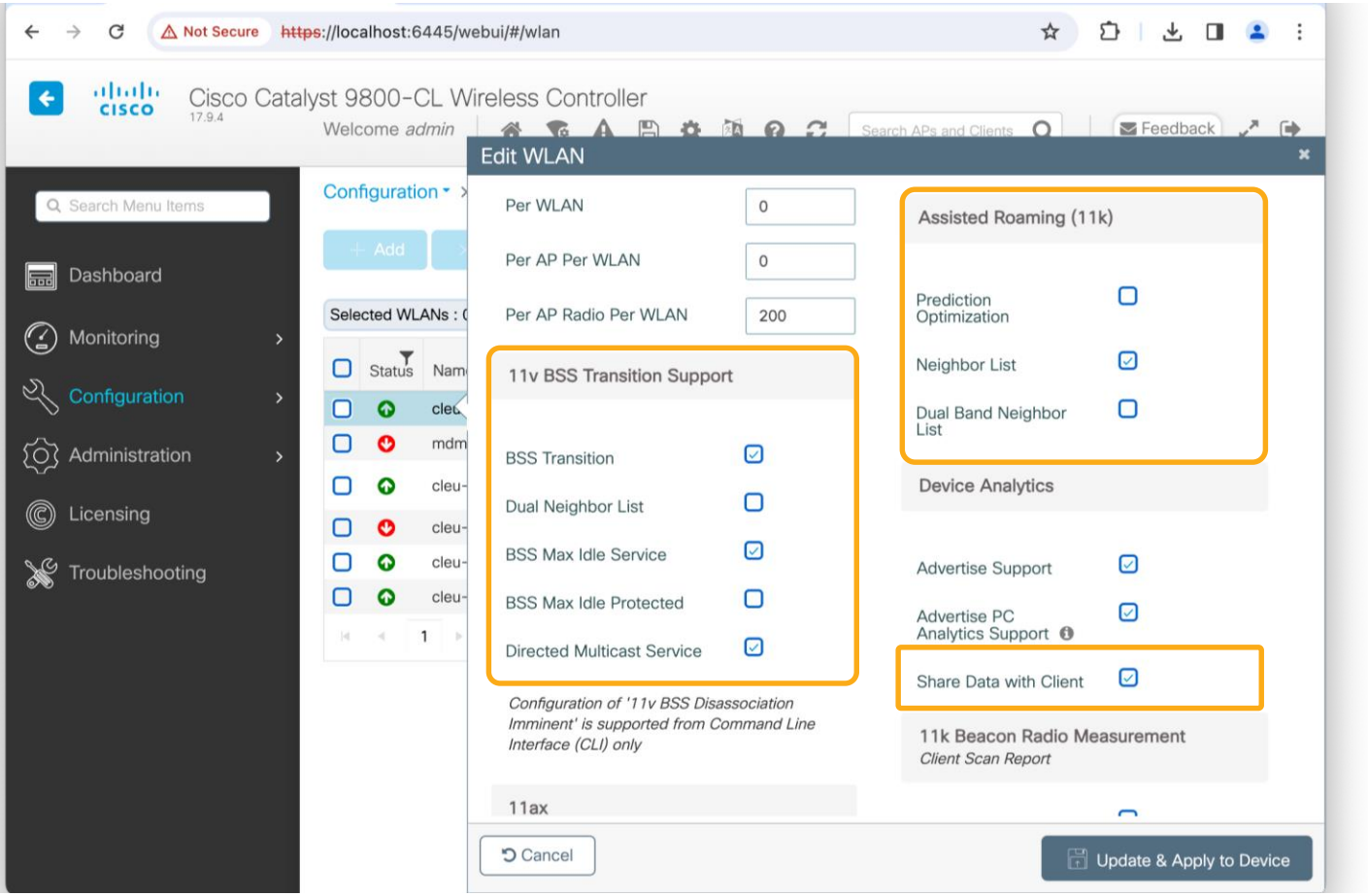


How to support the Clients? - optional

WLANs | Advanced

802.11k/v and 'Share Data' with client

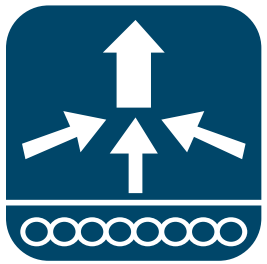


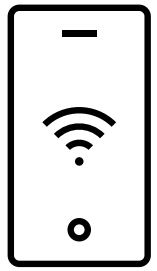


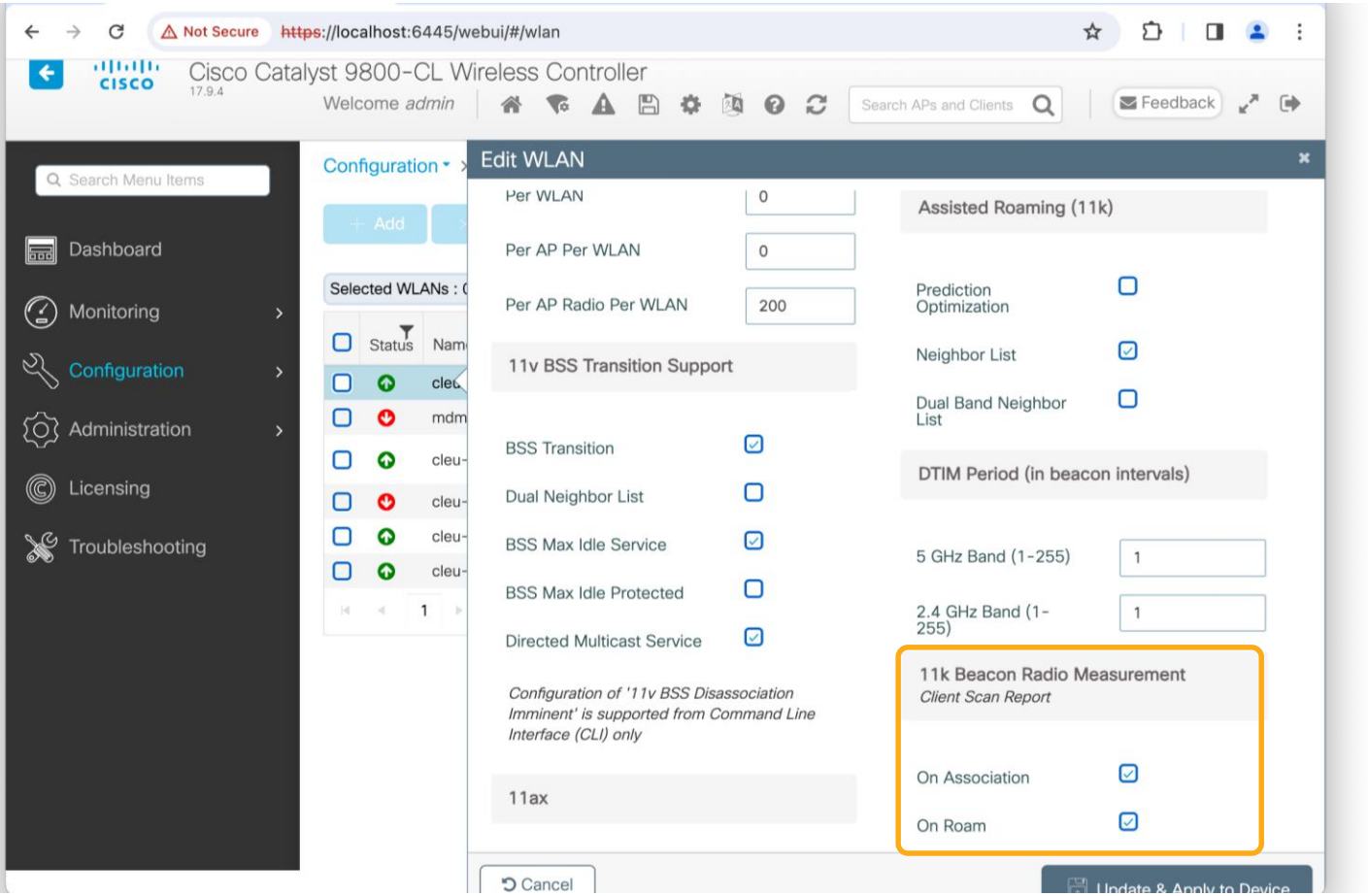
How to get the Client view? - optional

WLANs | Advanced

Receive Radio Measurement







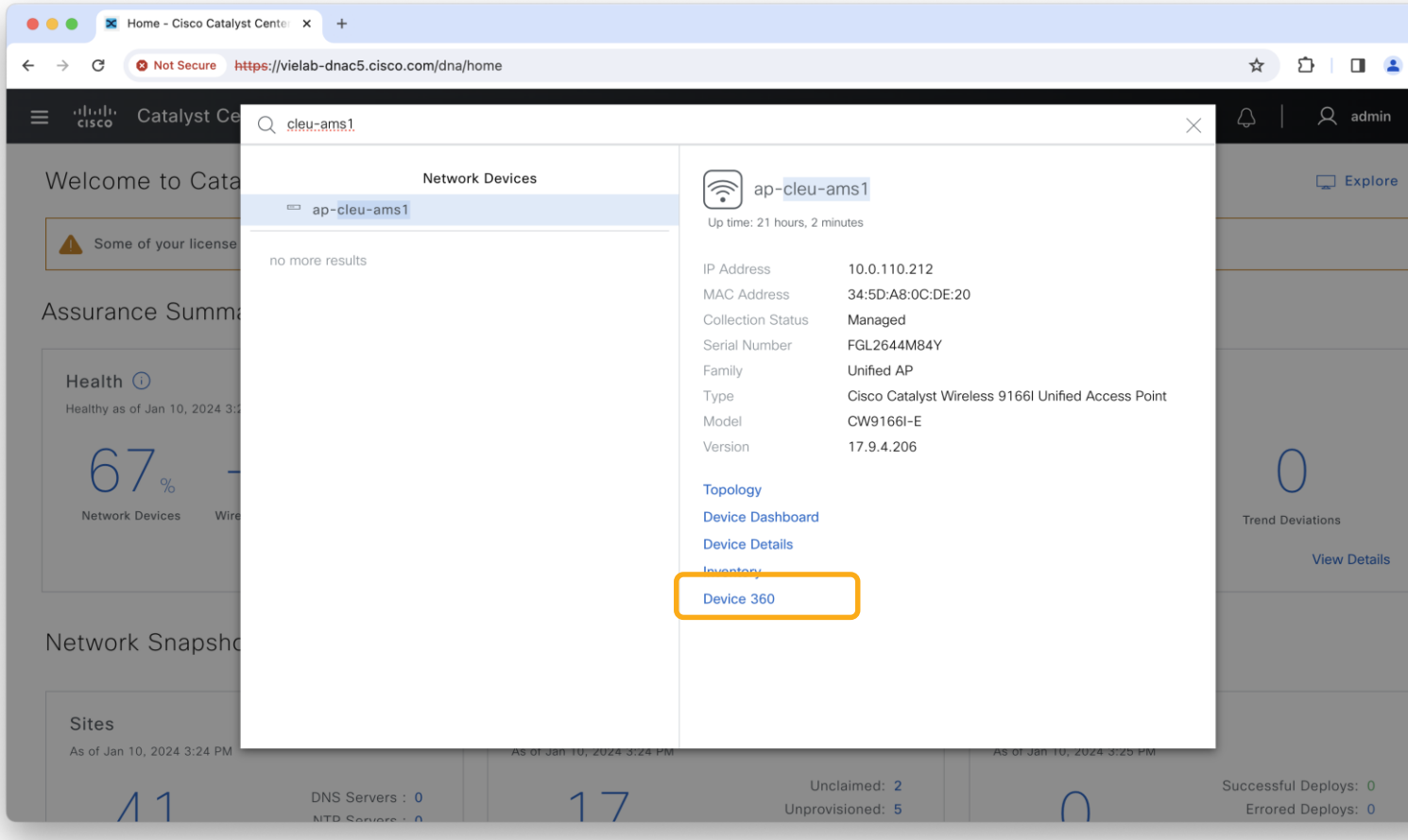
How to get the Client view? - optional

```
C9800#
! Required Config
network-assurance enable
wlan ciscolive 24 ciscolive
 shutdown
 mbo
 no shutdown

! How to request Client report
wireless client mac-address H.H.H scan-
report once mode …
! Display Result
show wireless client mac-address H.H.H
detail | sec Scan
```

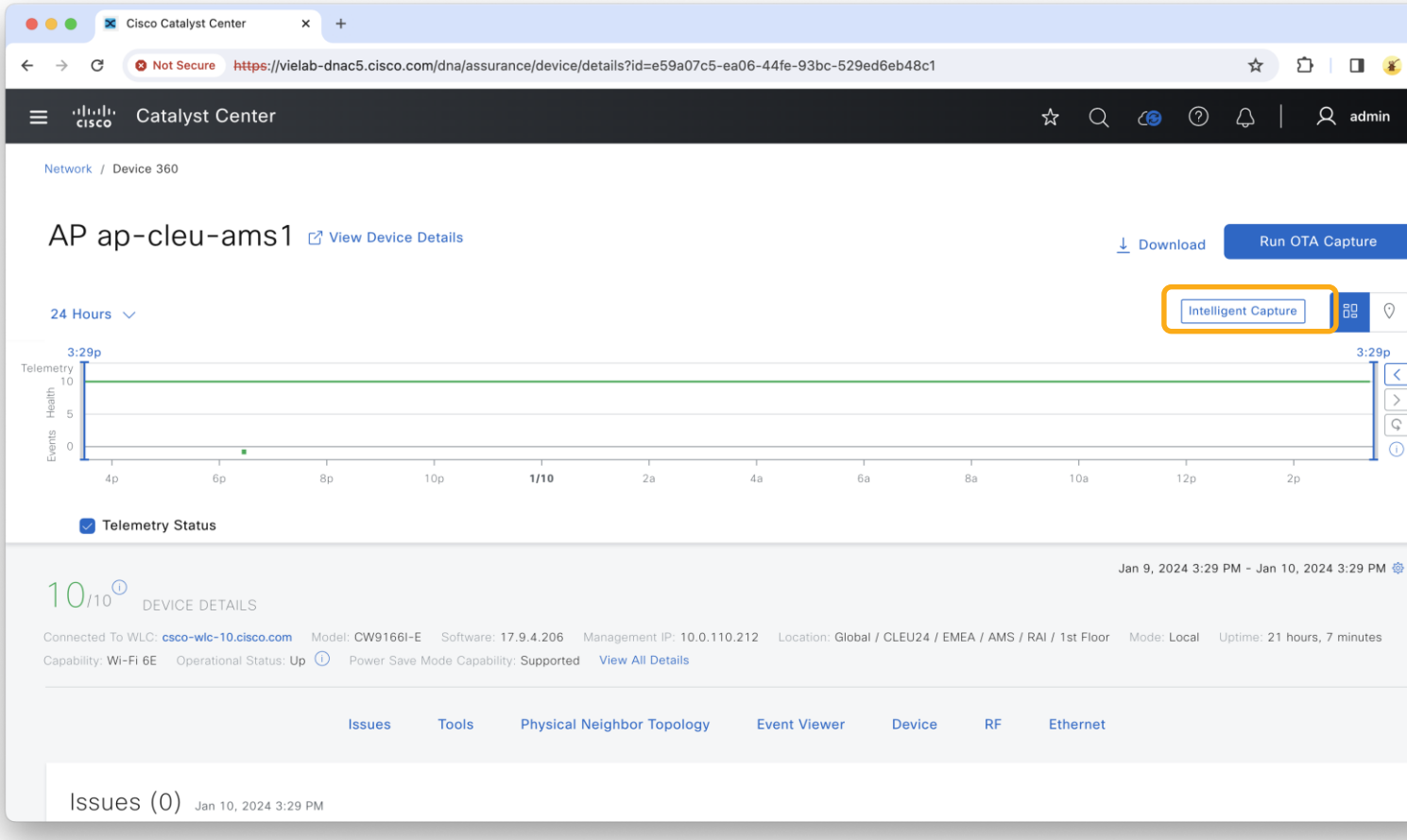
How to enable Spectrum Analysis?

- Go to Accesspoint Device 360 View



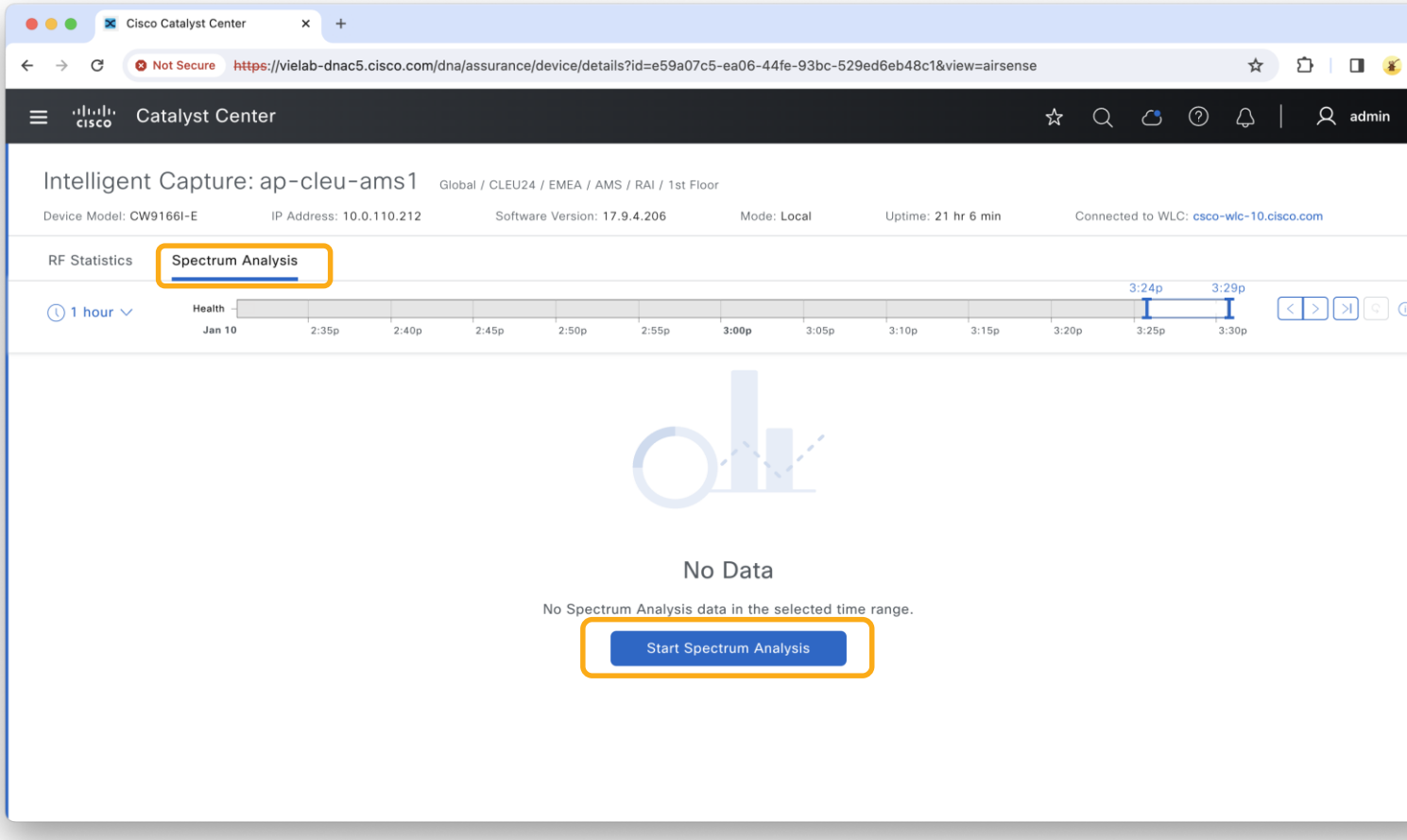
How to enable Spectrum Analysis?

- Go to Accesspoint Device 360 View
- Intelligent Capture



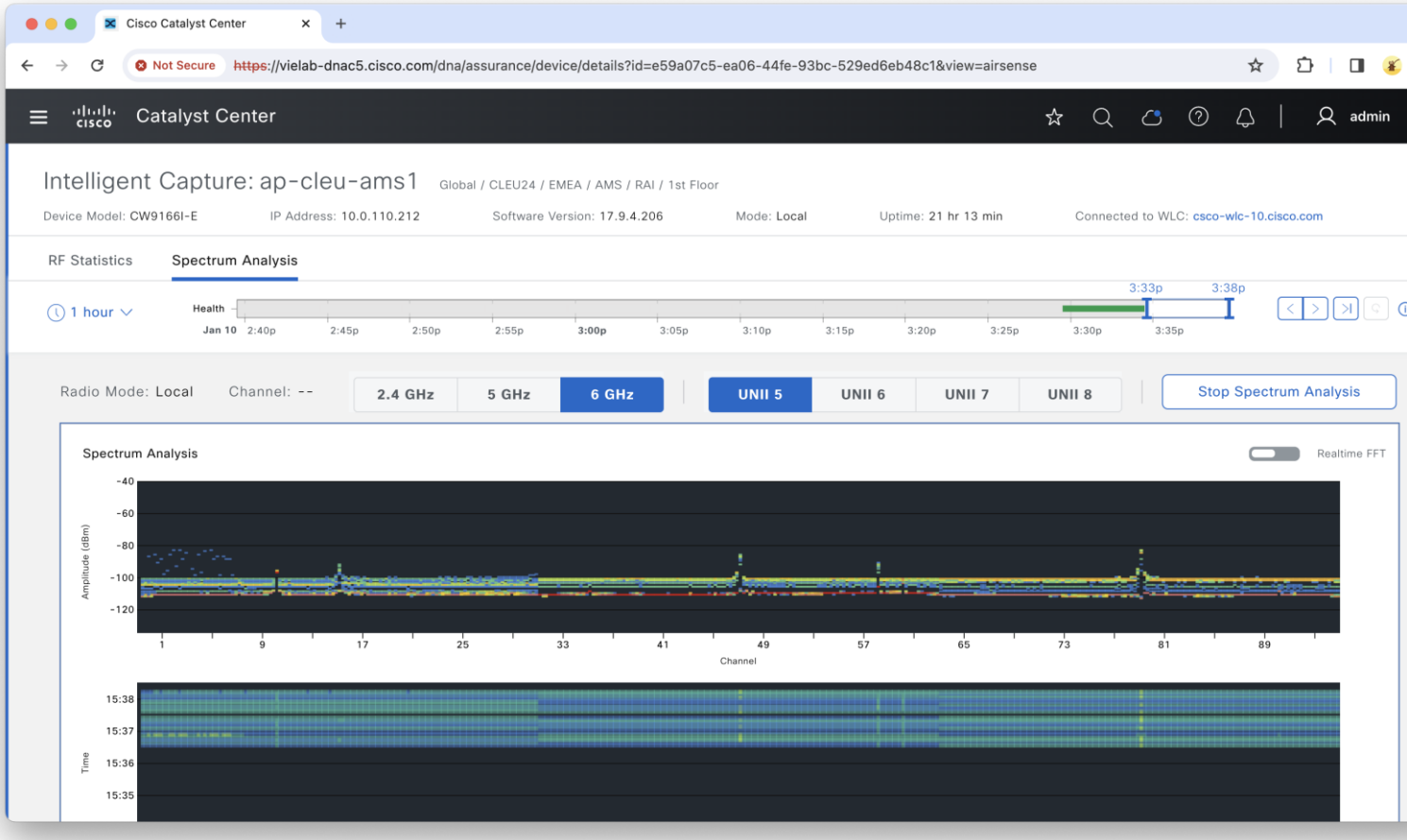
How to enable Spectrum Analysis?

- Go to Accesspoint Device 360 View
- Intelligent Captures
- Start Spectrum Analysis



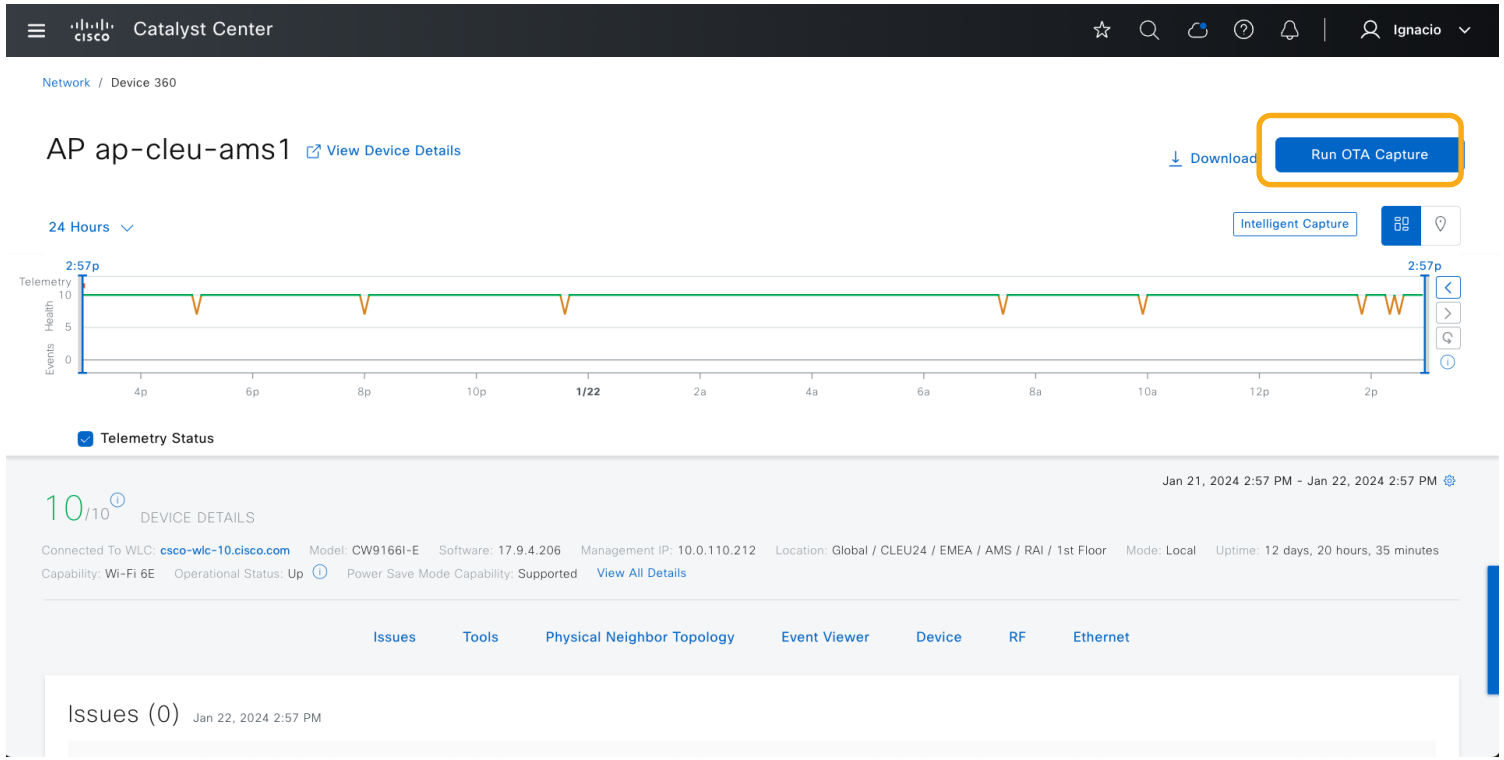
How to enable Spectrum Analysis?

- Go to Accesspoint Device 360 View
- Intelligent Capture
- Start Spectrum Analysis



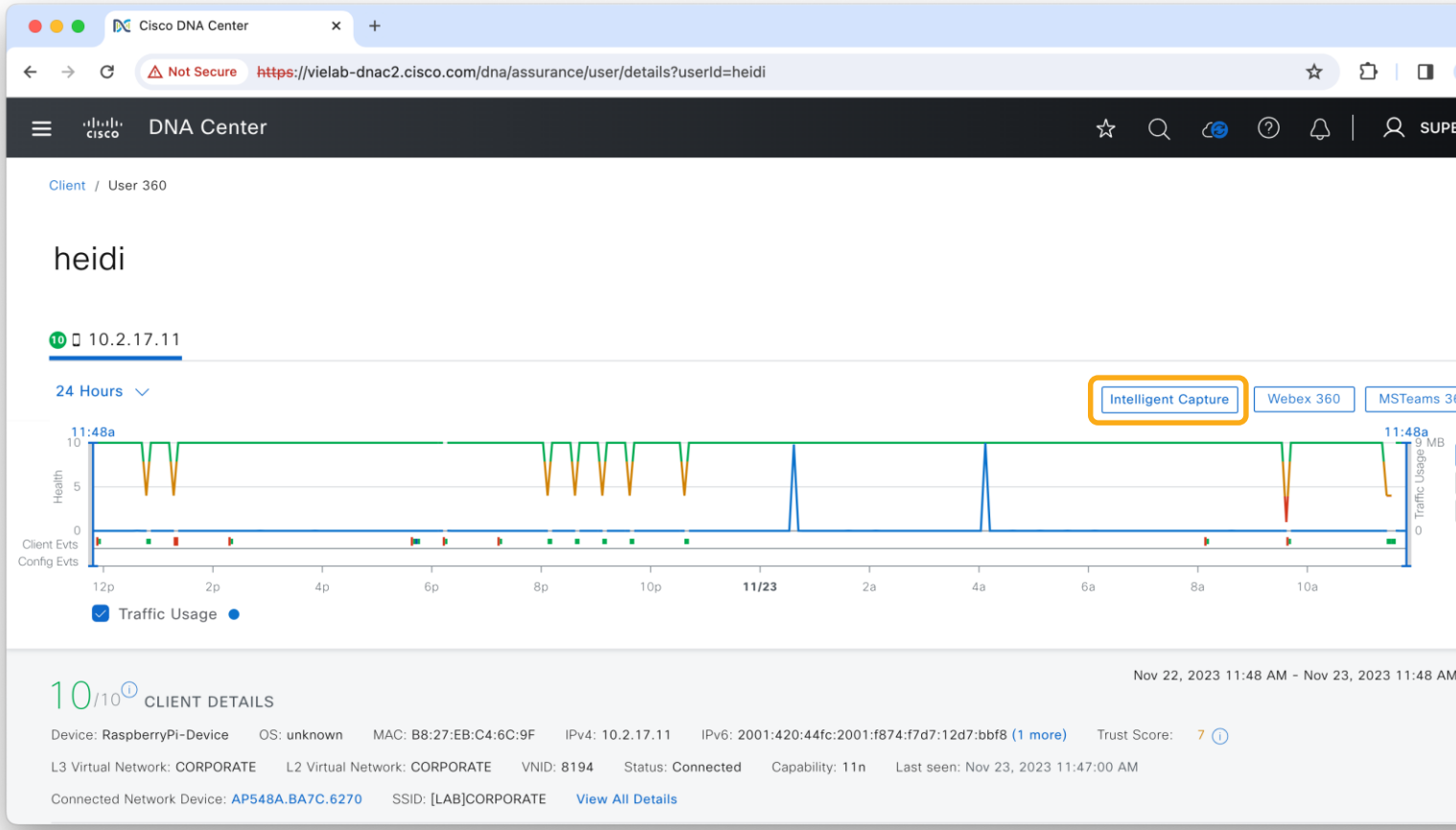
How to run over the air (OTA) capture?

- Go to Accesspoint Device 360 View
- Run OTA Capture
- Select band, radio, channel width and channel



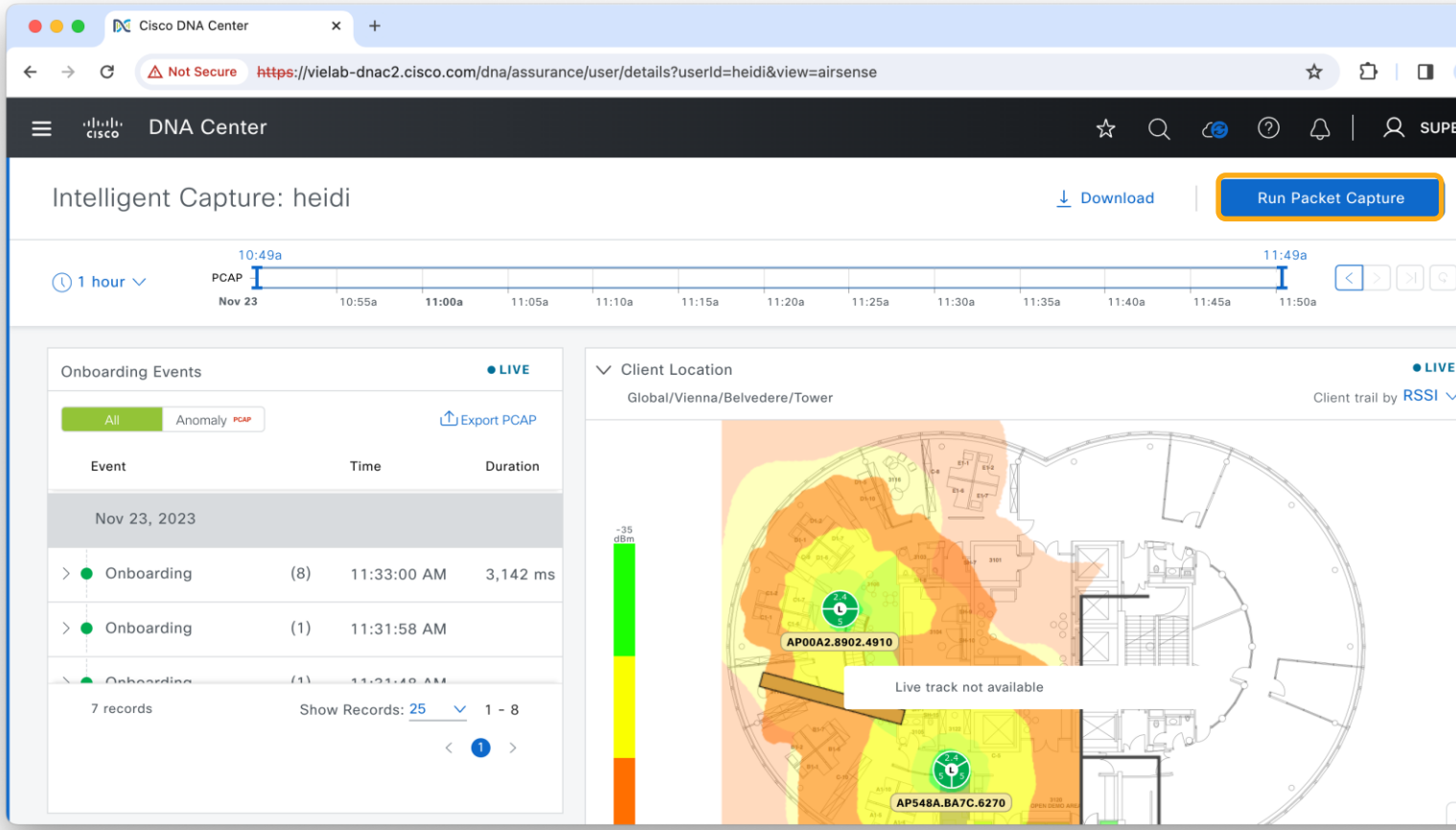
How to run client Live Packet Capture?

- Go to Client 360 View > Intelligent Capture



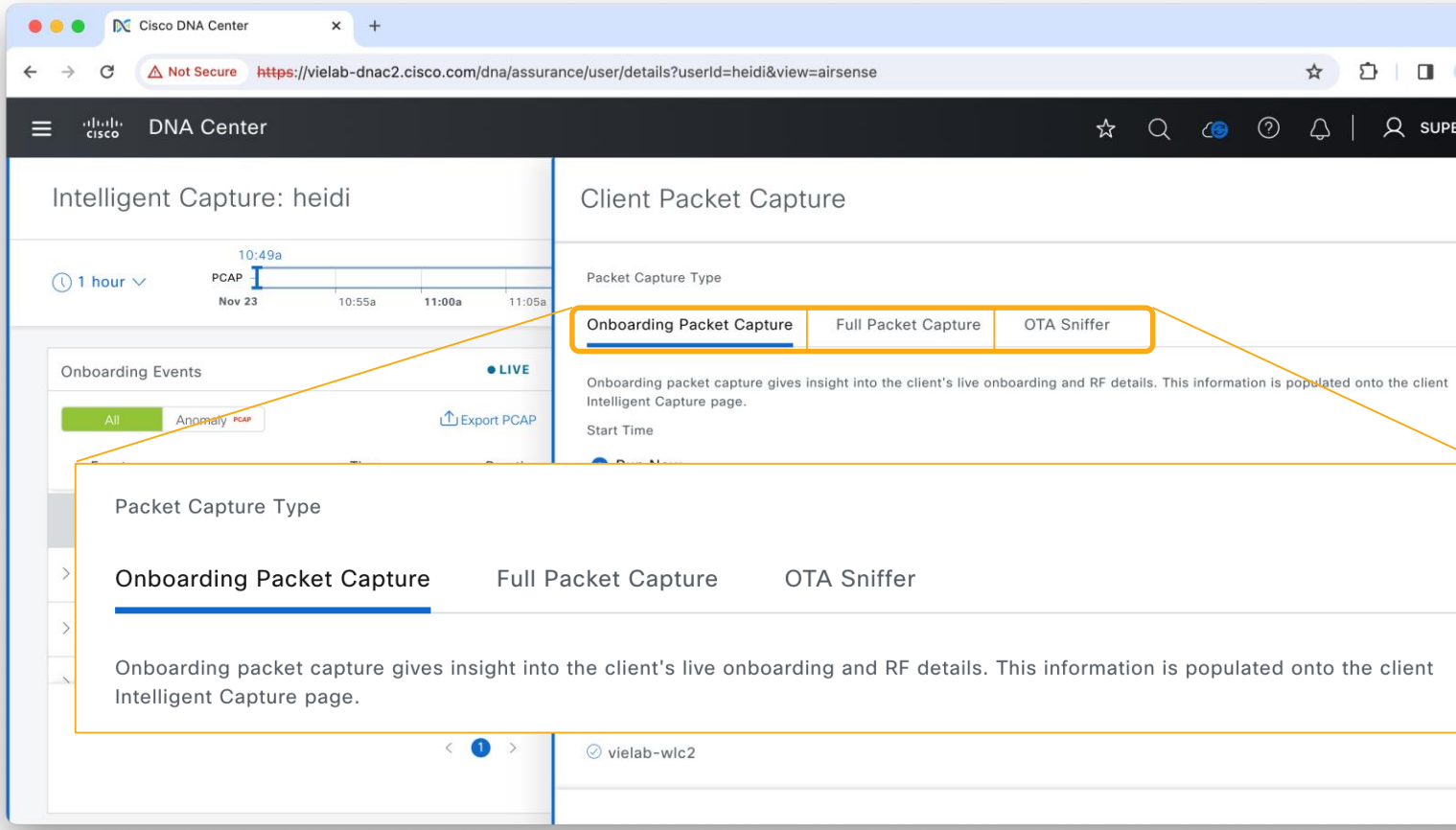
How to run client Live Packet Capture?

- Go to Client 360 View > Intelligent Capture
- Run Packet Capture



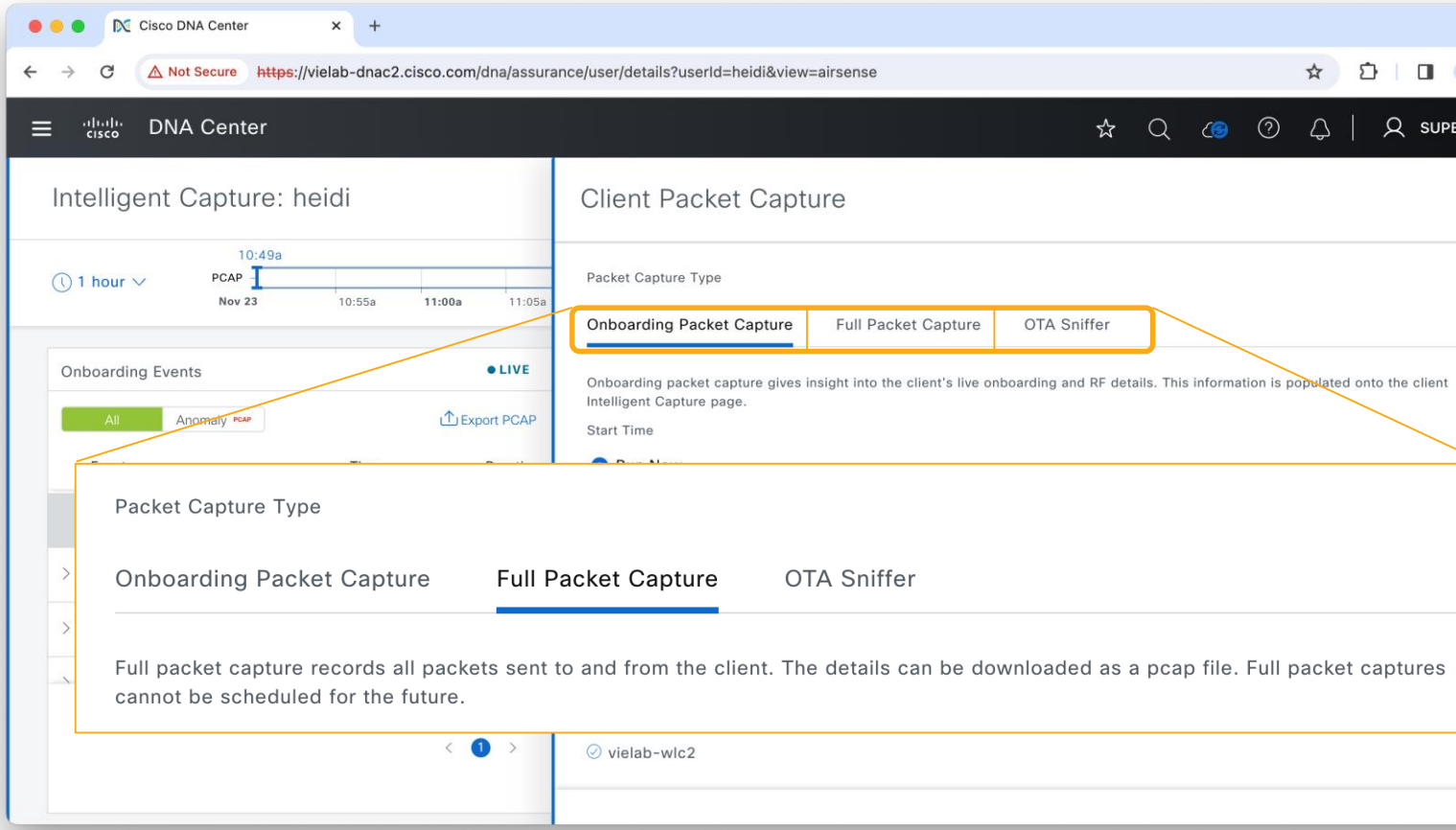
How to run client Live Packet Capture?

- Go to Client 360 View > Intelligent Capture
- Run Packet Capture
- Select Packet Capture Type



How to run client Live Packet Capture?

- Go to Client 360 View > Intelligent Capture
- Run Packet Capture
- Select Packet Capture Type



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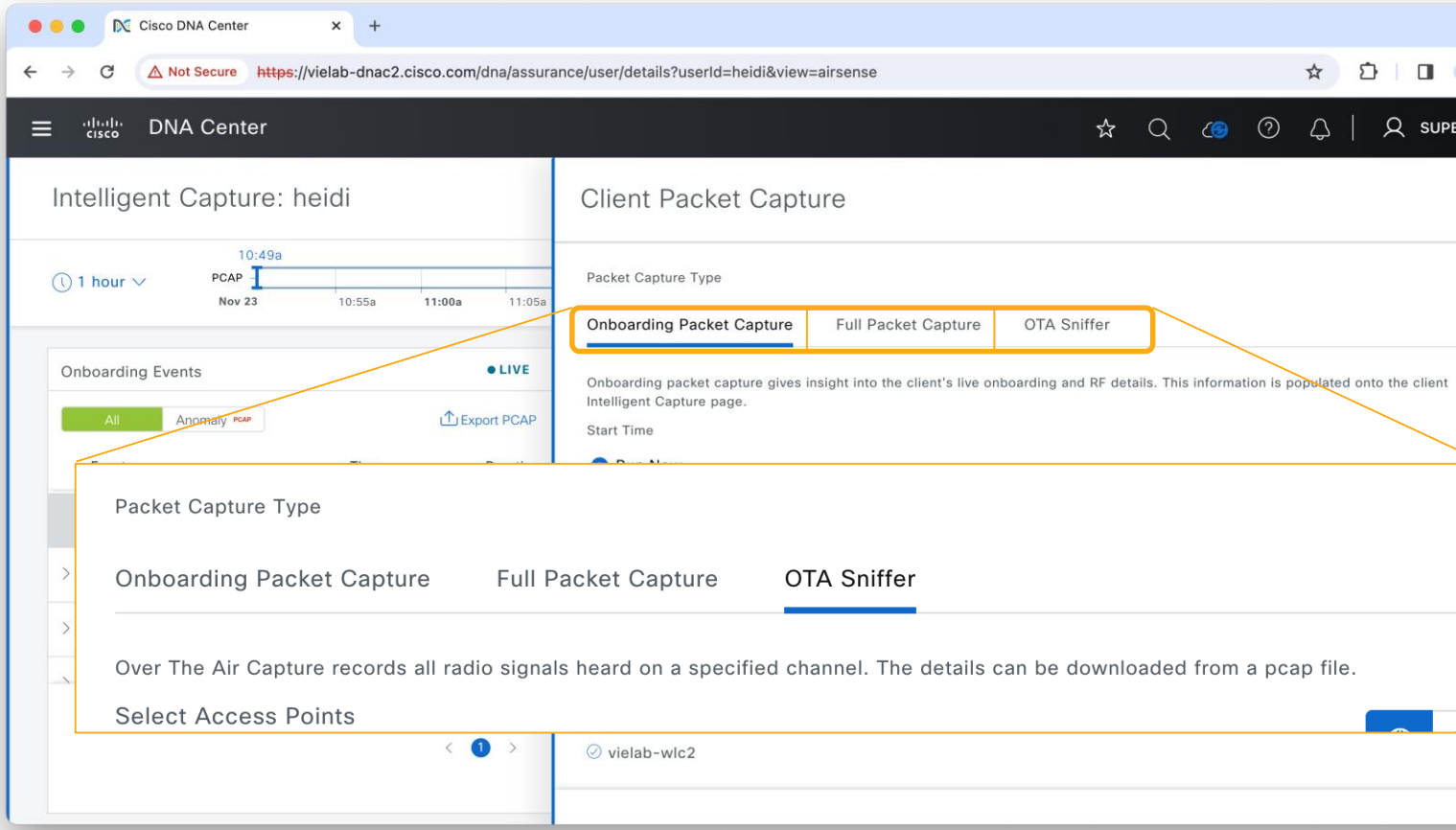
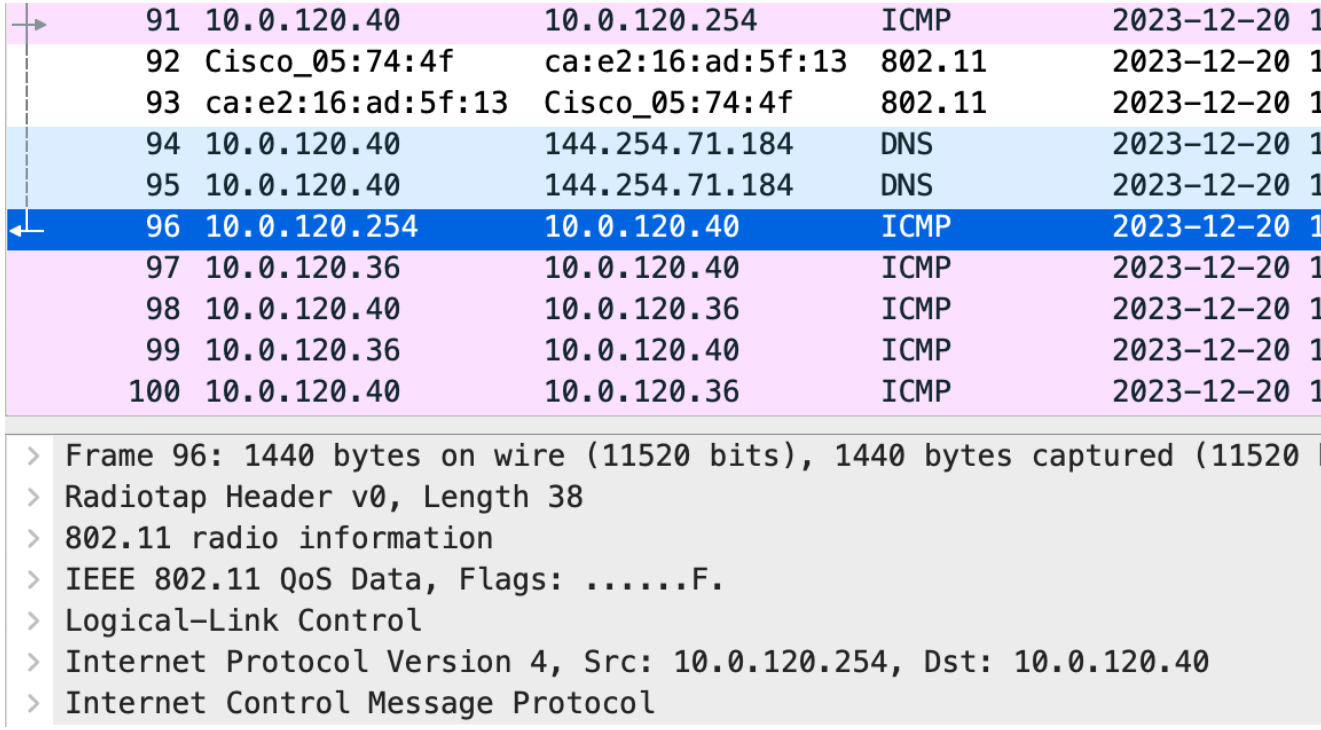
- Go to Client 360 View > Intelligent Capture
- Run Packet Capture
- Select Packet Capture Type



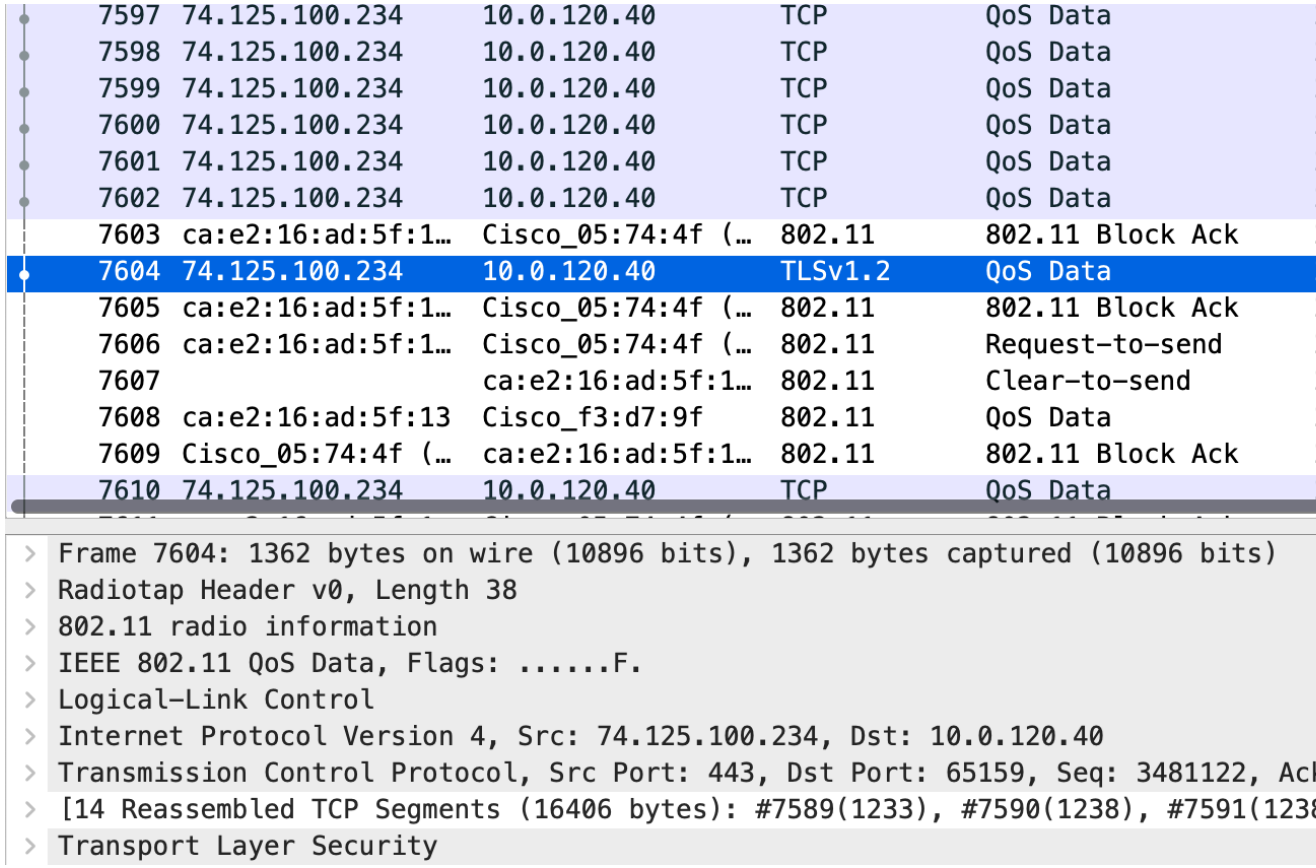
Packet Capture Types

- Onboarding Packet Capture
  - At AP radio level
  - No client impact
  - Onboarding Packets for a client (EAP, ICMP, DNS,...)



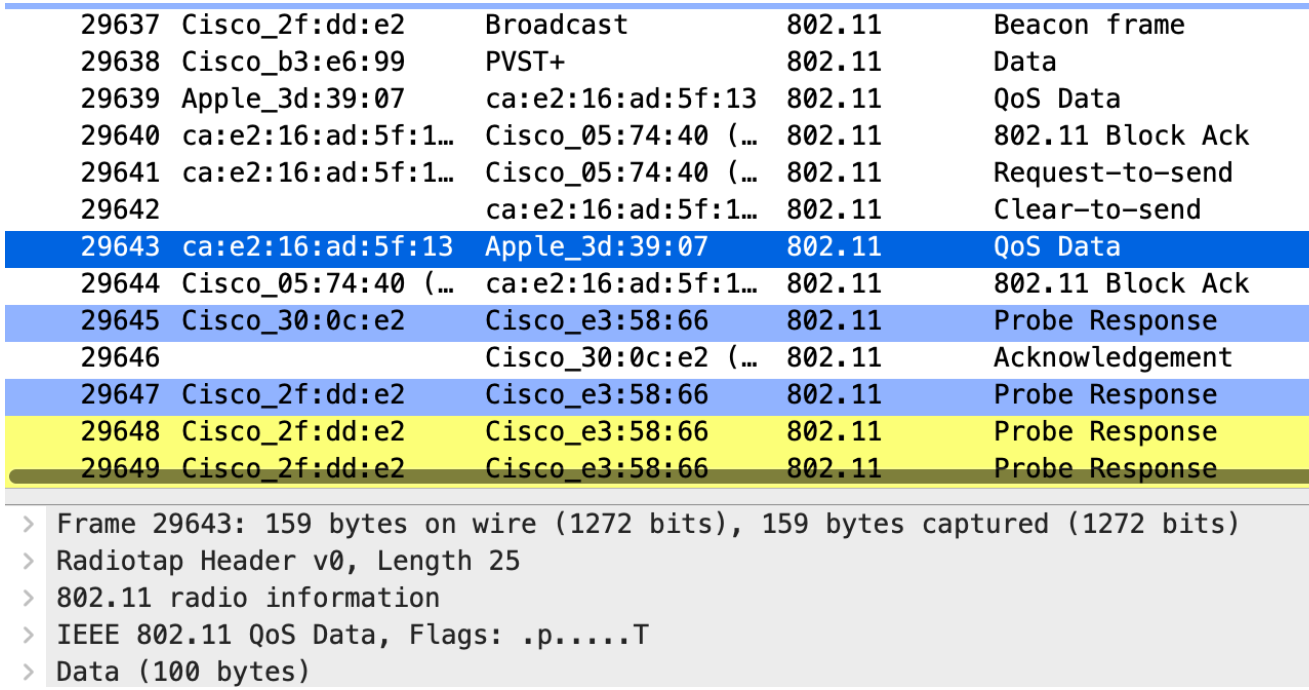
Packet Capture Types

- Onboarding Packet Capture
  - At AP radio level
  - No client impact
  - Onboarding Packets for a client (EAP, ICMP, DNS,...)
- Full Packet Capture
  - At AP radio level
  - No client impact
  - All data packets for a client
  - APs: C9130/C9136/CW9166



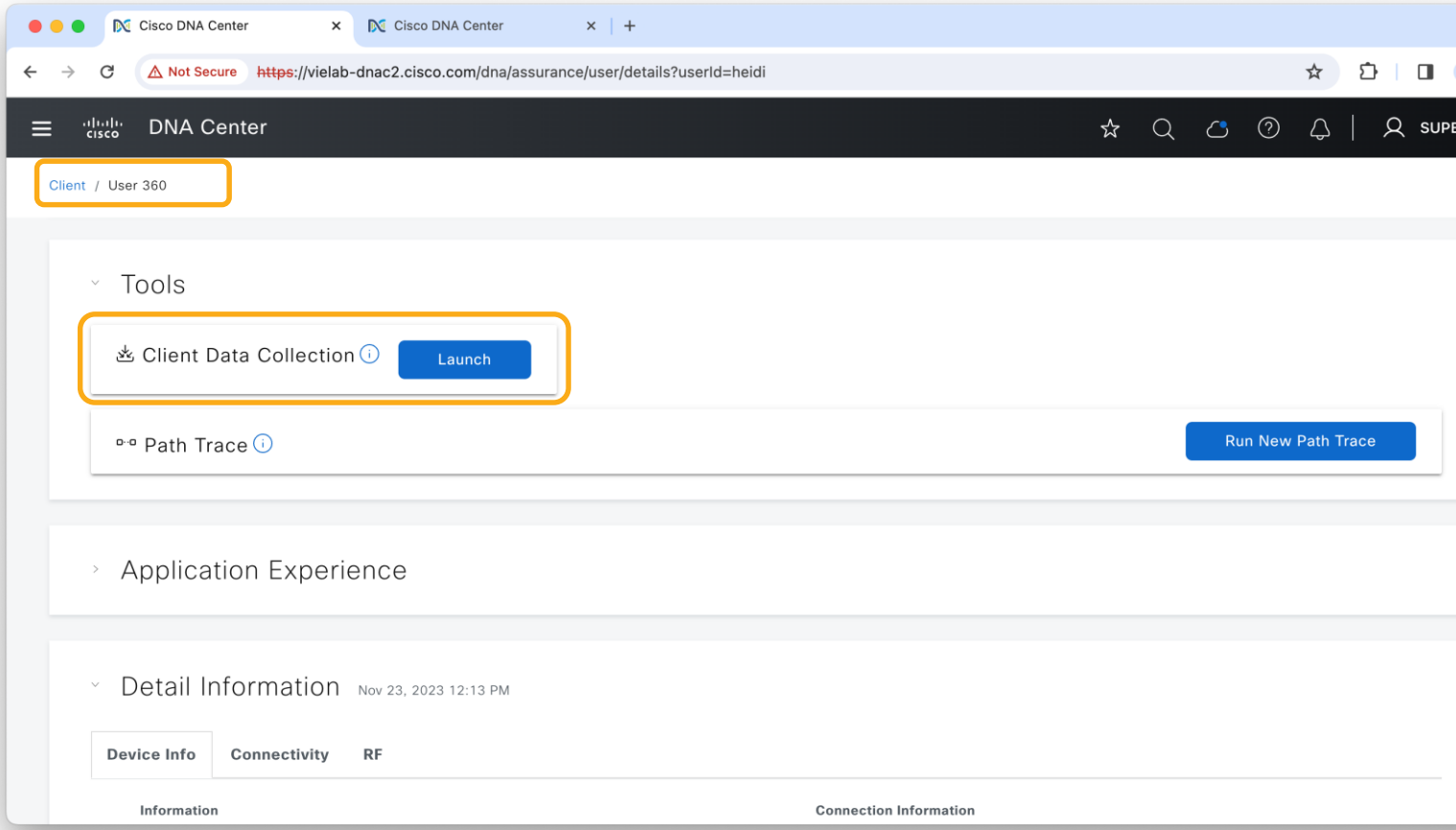
Packet Capture Types

- OTA Sniffer
  - At AP radio level
  - Turns radio into Sniffer mode, no client serving capability
  - Captures all packets on specific channel
  - Requires 17.11 and 2.3.7



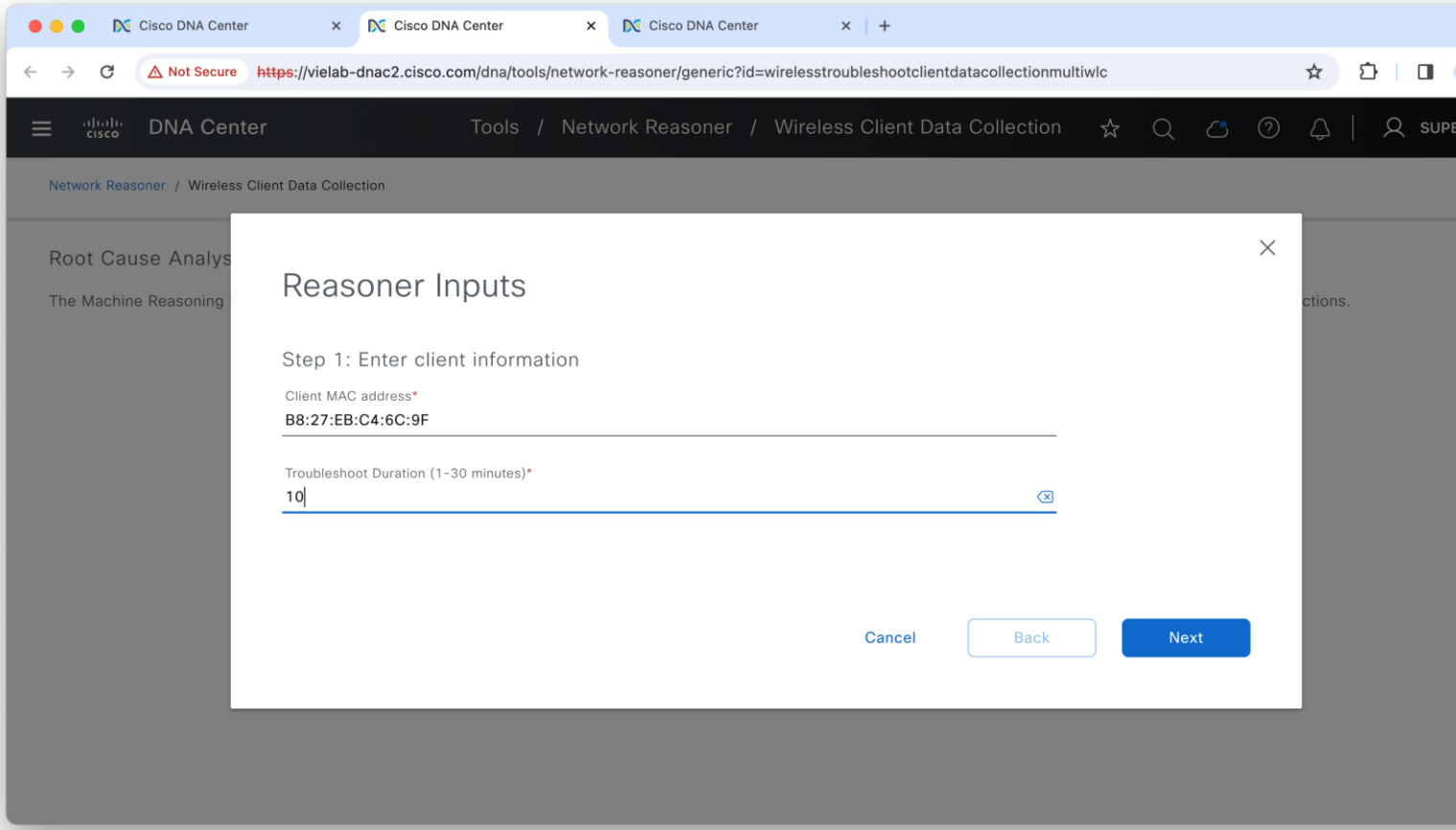
How to collect AP/Client Wireless data?

- Go to Device/Client 360 Tools section



How to collect AP/Client Wireless data?

- Go to Device/Client 360 Tools section
- Launch the MRE workflow and collect the data



How to collect AP/Client Wireless data?

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