

Configure URWB on the Catalyst 9800 for Point-to-Multipoint Deployment

Contents

[Introduction](#)

[Background Information](#)

[Acronyms](#)

[Components Used](#)

[URWB Point-to-Multipoint Network Topology Using Catalyst 9800 Controller CLI](#)

[URWB Point-to-Multipoint Configuration from the Catalyst 9800 Controller](#)

[Configuring URWB Network Profile](#)

[Configuring Radio Profile](#)

[Configuring RF tag](#)

[Configuring Access Points](#)

[Configuring the coordinator](#)

[Final Steps](#)

[Troubleshooting and Monitoring the URWB network](#)

[Physical Issues](#)

[High Channel Utilization](#)

[Throughput Issues](#)

[Latency Issues](#)

[Debugs on the WLC](#)

[CLI commands on the AP](#)

Introduction

This document describes configuration for a Point to Multipoint deployment using an AP that supports URWB and is associated with a Catalyst 9800 Series WLC. A single central node connects to multiple remote nodes. This is common in scenarios such as wireless backhaul for several field devices or edge networks connecting to a central hub.

Background Information

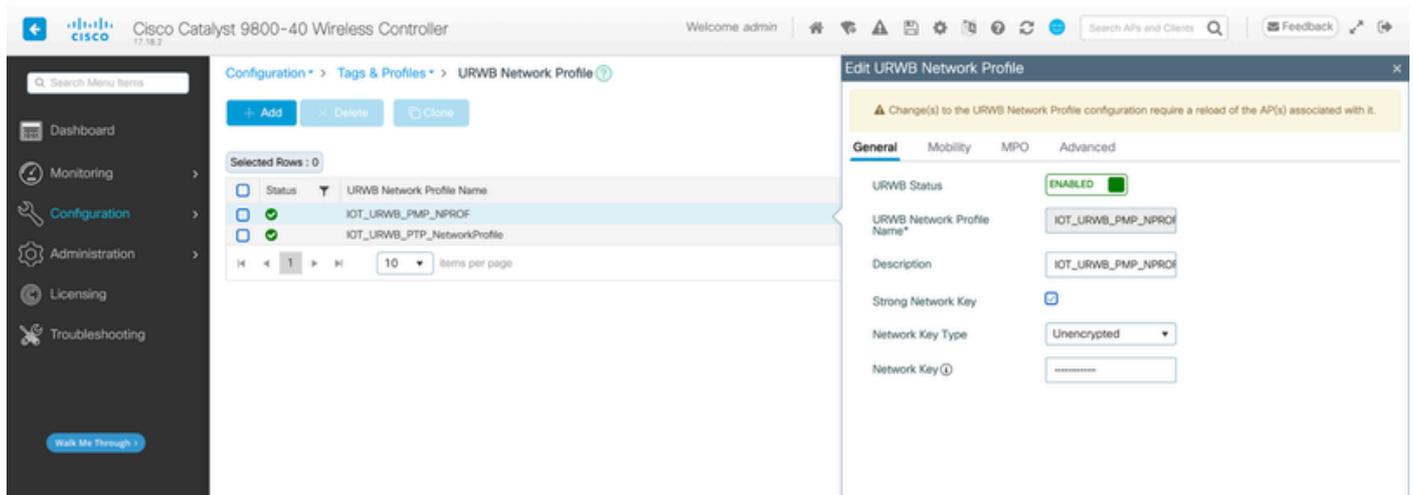
A single central node connects to multiple remote nodes. This is common in scenarios such as wireless backhaul for several field devices or edge networks connecting to a central hub.

Acronyms

- Point-to-Multipoint (PMP)
- Access Point (AP)
- Ultra-Reliable Wireless Backhaul (URWB)
- Wireless LAN Controller (WLC)

Configuring URWB Network Profile

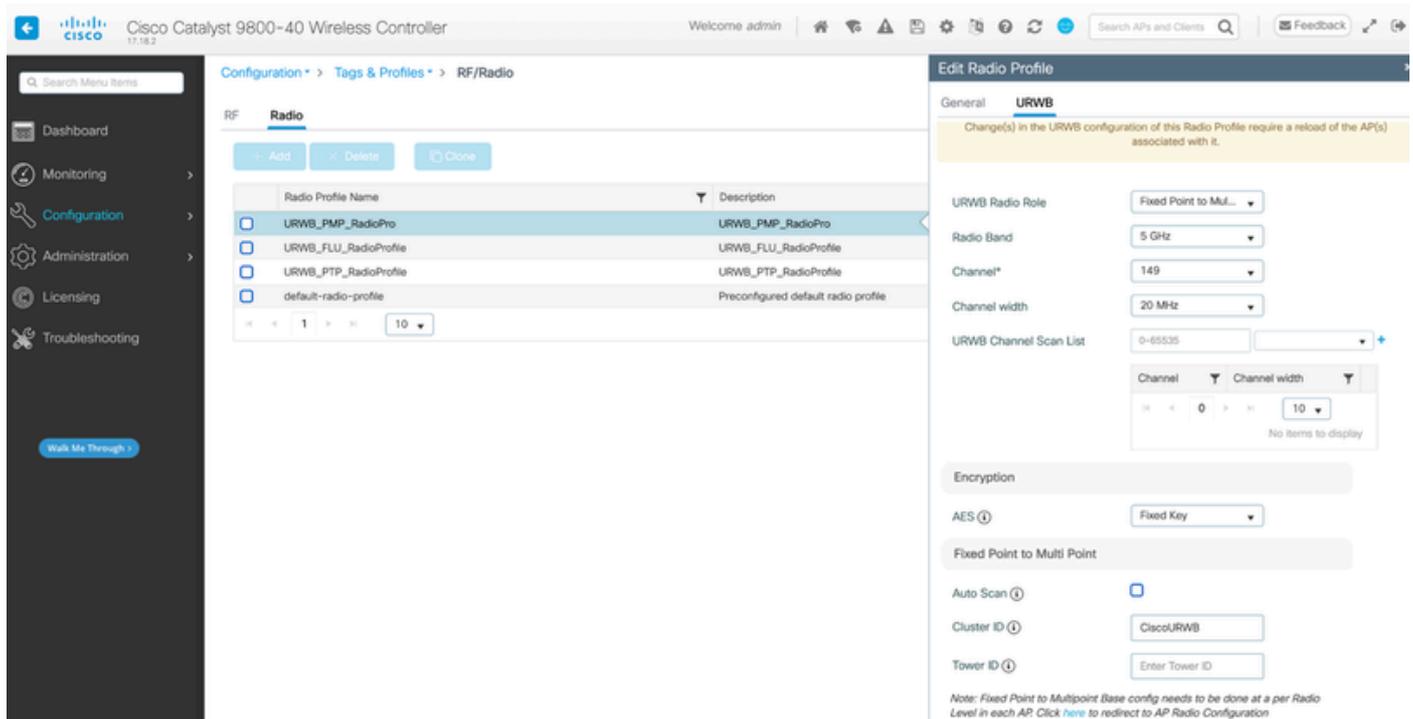
(Configure -> URWB Network Profile)



```
wireless profile urwb IOT_URWB_PMP_NPROF
description IOT_URWB_PMP_NPROF
strong-network-key
network-key key 0 iotURWBpmp123
no shutdown
```

Configuring Radio Profile

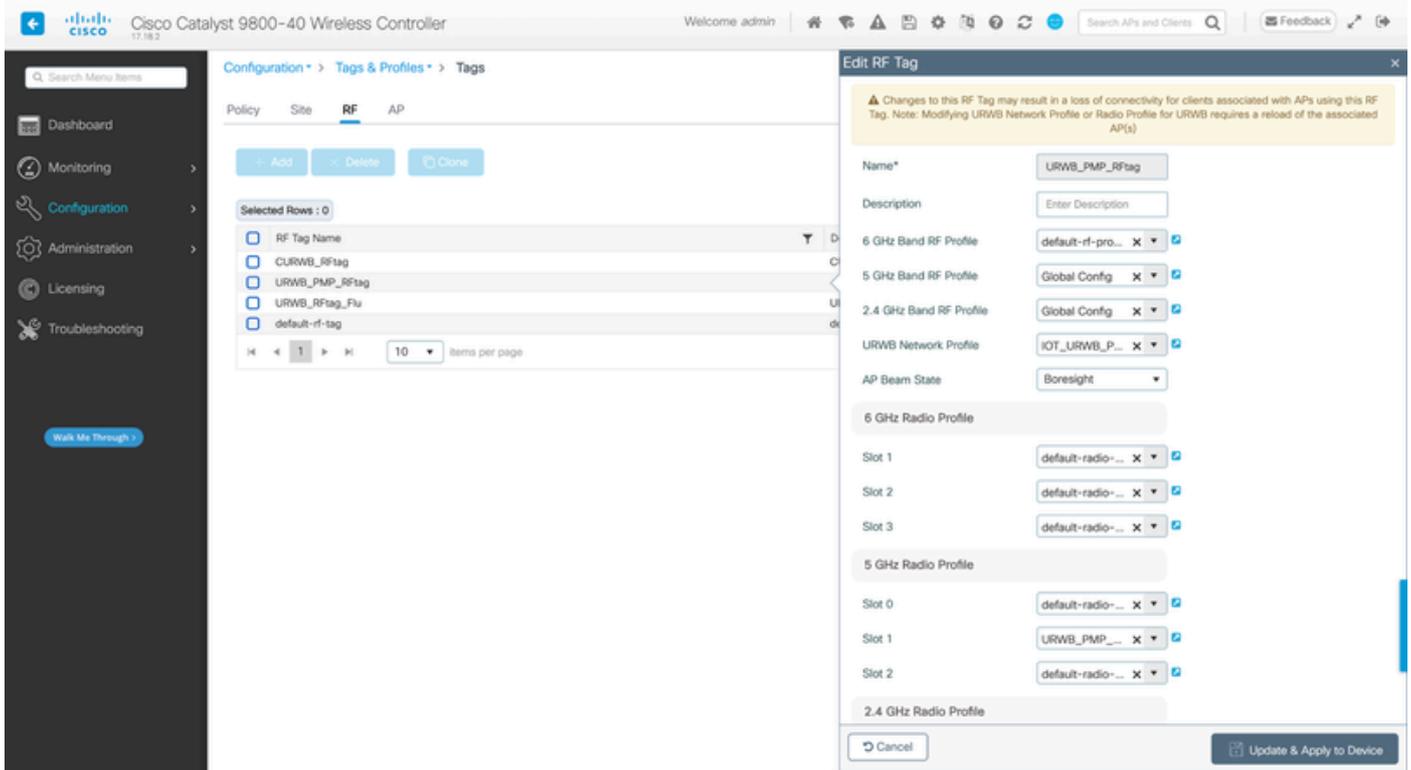
(Configuration -> Tags and Profiles -> Radio -> Radio Tab)



```
wireless profile radio URWB_PMP_RadioPro
description URWB_PMP_RadioPro
urwb channel 5Ghz 149
urwb role point-to-multi-point
```

Configuring RF tag

(Configuration -> Tags and Profiles -> Tags -> RF Tab)



```
wireless tag rf URWB_PMP_RFtag
dot11 5ghz slot1 radio-profile URWB_PMP_RadioPro
urwb-profile IOT_URWB_PMP_NPROF
```

Configuring Access Points

(Configuration -> Wireless -> Access Point)

The screenshot shows the Cisco Catalyst 9800-40 Wireless Controller interface. The left sidebar contains navigation options: Dashboard, Monitoring, Configuration, Administration, Licensing, and Troubleshooting. The main content area is divided into two panes. The left pane shows the 'All Access Points' list with columns for AP Name, AP Model, Slots, and Admin Status. The right pane is the 'Edit AP' configuration window, currently on the 'URWB' tab. The 'URWB' section is expanded to show 'URWB Coordinator [Config on WLC]' and 'URWB Coordinator [Config on AP]'. The 'URWB Coordinator [Config on WLC]' section has a 'Coordinator' checkbox checked and 'Wired-Only Coordinator' unchecked. The 'URWB Coordinator [Config on AP]' section has 'Coordinator' set to 'Enabled' and 'Wired-Only Coordinator' set to 'Disabled'. Other tabs in the 'Edit AP' window include General, Interfaces, High Availability, Inventory, Geolocation, ICap, Advanced, and Support Bundle.

```

ap 2416.1bf6.0200
rf-tag URWB_PMP_RFtag
ap 2416.1bf6.e2c8
rf-tag URWB_PMP_RFtag
ap 2416.1bf6.e308
rf-tag URWB_PMP_RFtag

```

Configuring the coordinator

(Configuration -> Wireless -> Access Point. -> URWB)

This screenshot is identical to the one above, showing the 'Edit AP' configuration window with the 'URWB' tab selected. The 'URWB Coordinator [Config on WLC]' section shows the 'Coordinator' checkbox checked and 'Wired-Only Coordinator' unchecked. The 'URWB Coordinator [Config on AP]' section shows 'Coordinator' set to 'Enabled' and 'Wired-Only Coordinator' set to 'Disabled'.

```
ap name <ap-name> urwb mode coordinator
```

Final Steps

After configuring all settings, save the configuration and apply the changes. If the AP does not reset automatically, it can still require a reset for the changes to take effect. The AP table indicates if the AP requires a reload. If needed, it can be reloaded from the C9800. Once the Access Points (APs) reboot and the radios are back online, you can check the RSSI from the Antenna Alignment page and monitor live connectivity from the URWB Network Topology page.

Configuration > Wireless > Access Points

All Access Points

Total APs : 4

Tag : 0 Country Code : 0 LSC Fallback : 0 URWB : 2 Select an Action

AP Name	AP Model	Slots	Admin Status	Up Time	WLC Association Uptime	IP Address	Base Radio MAC	Ethernet MAC	AP Mode	Power Derate Capable
AP2416.1BF6.0278_PTP_C	NW9167EH-B	3	✓	1 days 22 hrs 40 mins 38 secs	1 days 22 hrs 38 mins 54 secs	14.2.210.100	2416.1bf6.13c0	2416.1bf6.0278	Local	Yes
AP2416.1BF6.E2C8_MB_C	NW9167EH-B	3	✓	5 days 16 hrs 40 mins 1 secs	0 days 0 hrs 1 mins 51 secs	14.2.210.109	24d7.9c05.1640	2416.1bf6.e2c8	Local	Yes
AP2416.1BF6.E308_MB	NW9167EH-B	3	✓	0 days 0 hrs 26 mins 58 secs	0 days 0 hrs 0 mins 47 secs	14.2.210.98	24d7.9c05.1840	2416.1bf6.e308	Local	Yes
AP6871.61F2.C598_PTP_remote	C9136I-B	4	✓	1 days 22 hrs 35 mins 28 secs	1 days 22 hrs 28 mins 24 secs	14.2.210.120	6871.61f9.5180	6871.61f2.c598	Local	Yes

1 - 4 of 4 access points

Configuration > Wireless > Access Points

All Access Points

Total APs : 5

AP Name	AP Model	Slots	Admin Status
AP2416.1BF6.0200_PMP_remote	NW9167EH-B	3	✓
AP2416.1BF6.0278_PTP_C	NW9167EH-B	3	✓
AP2416.1BF6.E2C8_PMP_C	NW9167EH-B	3	✓
AP2416.1BF6.E308_PMP_remote	NW9167EH-B	3	✓
AP6871.61F2.C598_PTP_remote	C9136I-B	4	✓

6 GHz Radios

5 GHz Radios

2.4 GHz Radios

Edit AP

General Interfaces High Availability Inventory URWB Geolocation ICap **Advanced** Support Bundle

Advanced

Country Code* US

Multiple Countries US

Statistics Timer 180

CAPWAP MTU 1485

AP Link Latency Disabled

AP PMK Propagation Capability Enabled

mDNS

Global mDNS Gateway Disabled

mDNS

Services Learnt 0

Deployment Mode

Default Mode Indoor

Current Mode Outdoor

VLAN Tag

VLAN Tag

VLAN Tag State Disabled

AP Image Management

Out-Of-Band AP Upgrade Capable Yes

Instruct the AP to start image predownload

Instruct the AP to swap the image

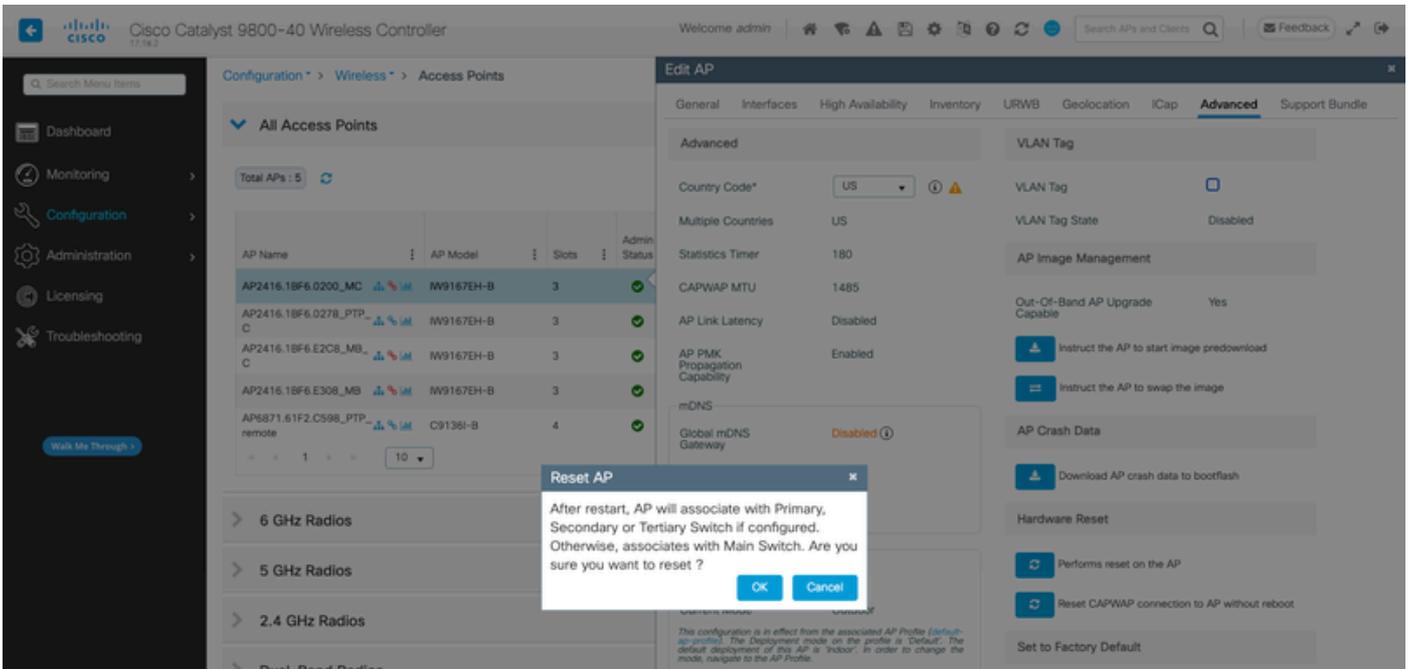
AP Crash Data

Download AP crash data to bootflash

Hardware Reset

Performs reset on the AP

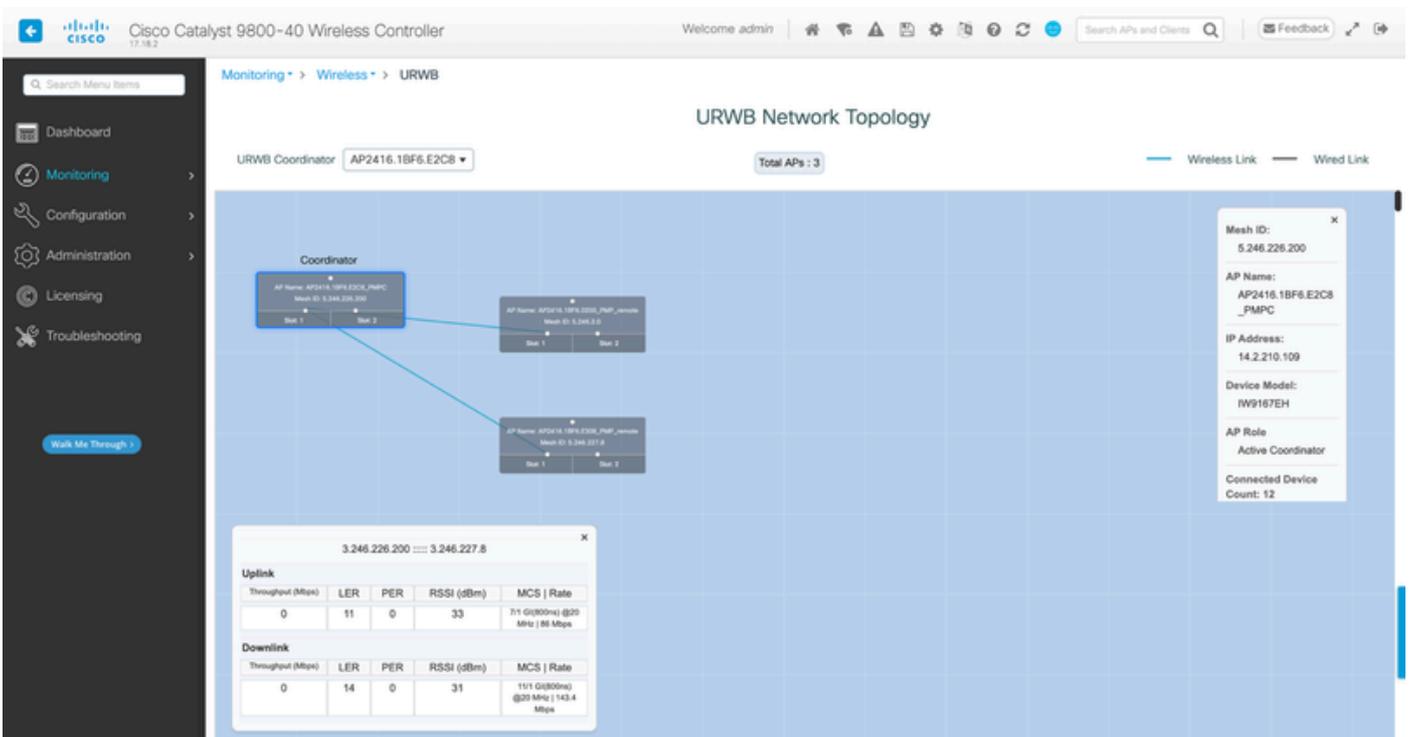
Reset CAPWAP connection to AP without reboot



Troubleshooting and Monitoring the URWB network

(Monitoring -> Wireless -> URWB)

URWB Network Topology allows to check the different network key parameters index values of UPLINK and DOWNLINK. that is,. LER (Link Error Rate), PER (Packet Error Rate), RSSI (Signal Strength), throughput, and so on..



Physical Issues

- Ensure the use of CURWB-supported antennas, correctly connected to radios within recommended guidelines, and oriented in the proper direction.

- Maintain a direct line of sight for radios.

High Channel Utilization

- Mitigate interference through strategic RF planning.
- RF channels need to be scanned, and then a channel must be selected based on the results.

Throughput Issues

Throughput problems can result from several factors:

- Strong signal strength is vital for optimal throughput; weaker signals reduce modulation rates and throughput. Aim for a signal strength between -45 dBm and -70 dBm.
- High channel utilization can also have a severe impact on throughput.

Latency Issues

Latency issues, particularly in sensitive applications, can stem from:

- Inadequate signal strength.
- Interference affecting frequency performance.

Debugs on the WLC

URWB exec debug:

```
set platform software trace wncd chassis active R0 urwb-exec debug
```

URWB config debug:

```
Set platform software trace wncd chassis active R0 urwb-config debug
```

URWB database debug

```
Set platform software trace wncd chassis active R0 urwb-db debug
```

CLI commands on the AP

```
Show urwb modeconfig
```

```
Show urwb mpls config
```

```
Show urwb dot11Radio <> config
```

```
Show urwb mesh route status
```

```
Show urwb eng-stats
```