

在Catalyst 9800上為移動部署配置URWB

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簡介

本檔案介紹使用支援URWB且與Catalyst 9800系列WLC關聯的AP進行行動化部署的組態。

背景資訊

此拓撲支援移動資產（如車輛或機器人）的連線。對於在運行中要求持續、低延遲通訊的使用情形而言，這是至關重要的。

縮寫說明

- 移動基礎(MB)
- 行動化使用者端(MC)
- 存取點(AP)

- 超可靠無線回程(URWB)
- 無線區域網路控制器(WLC)

採用元件

該配置涉及兩種不同型別的硬體元件：

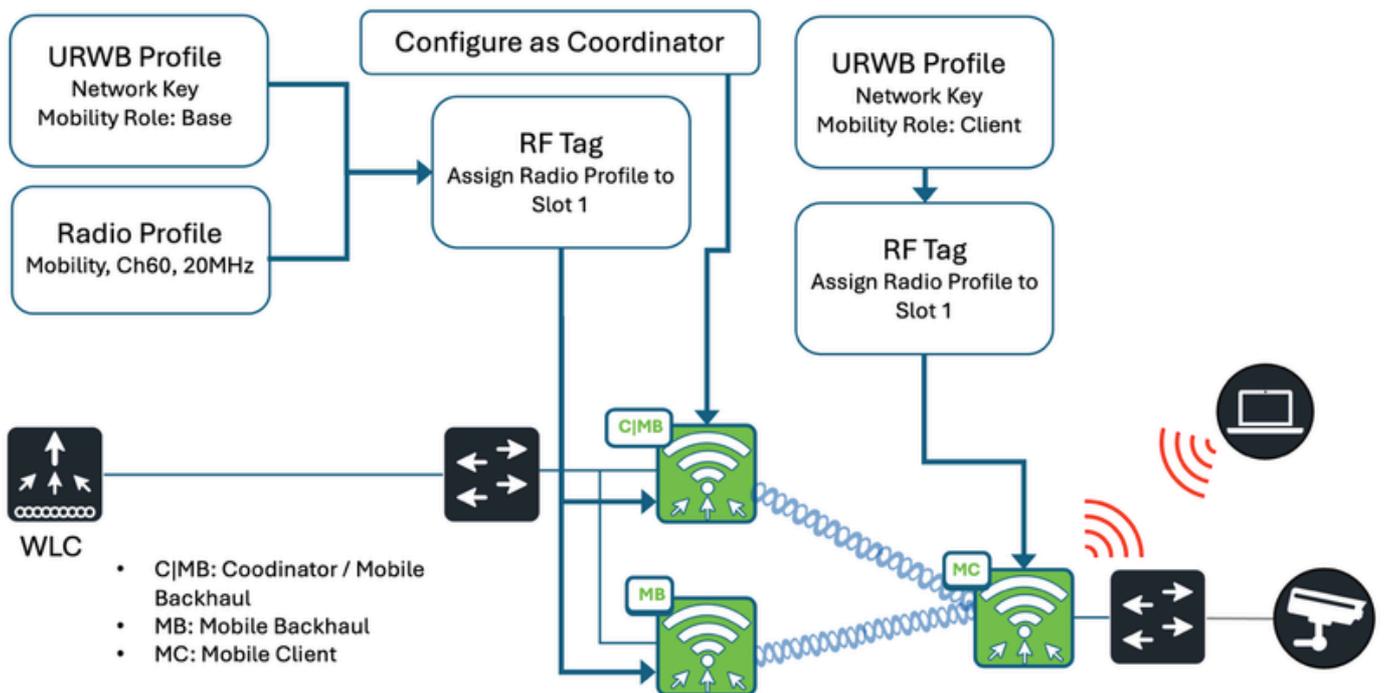
- 3個Cisco Catalyst IW9167
- C9800-40

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

請參閱此處的「舊術語」和「新術語」。

使用Catalyst 9800控制器CLI的URWB行動化網路拓撲

Example: Simple URWB mobility network



Catalyst 9800控制器上的URWB行動化組態

在高級別上，部署需要三個步驟：

1. 支援URWB的存取點(AP)必須與Catalyst 9800 WLC關聯。
2. 將必要的配置應用到接入點。
3. 在網路中部署接入點。

配置URWB網路配置檔案

(配置 —> URWB網路配置檔案)

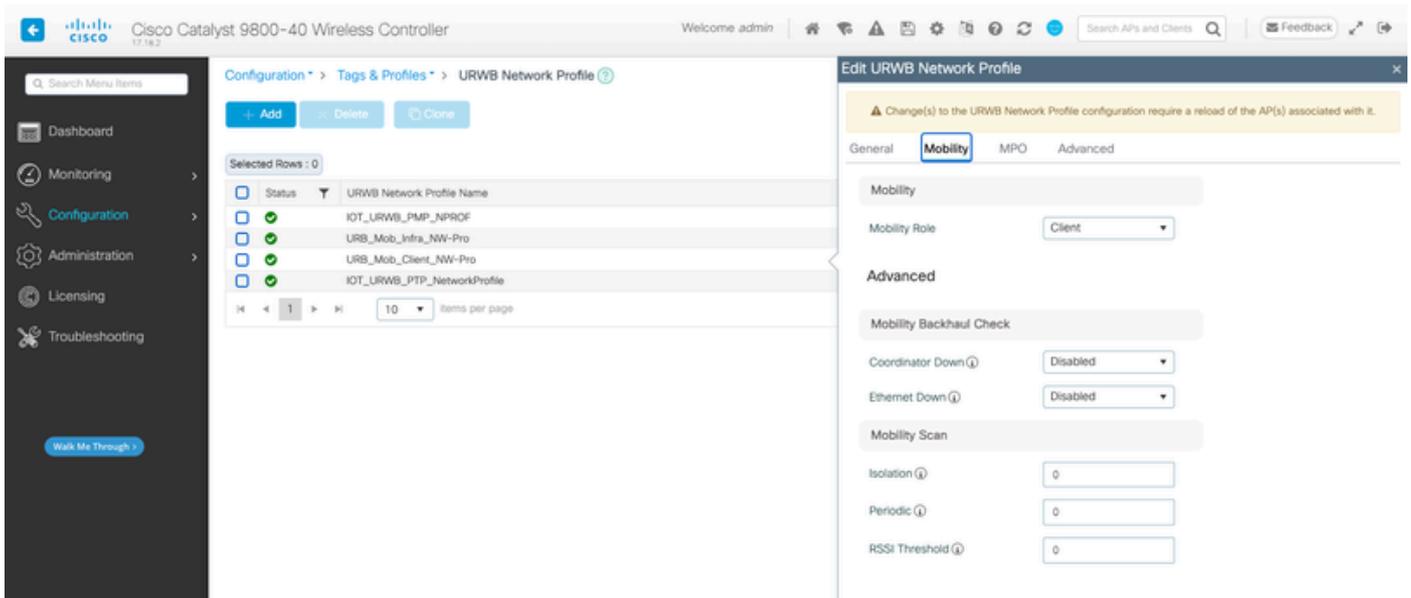
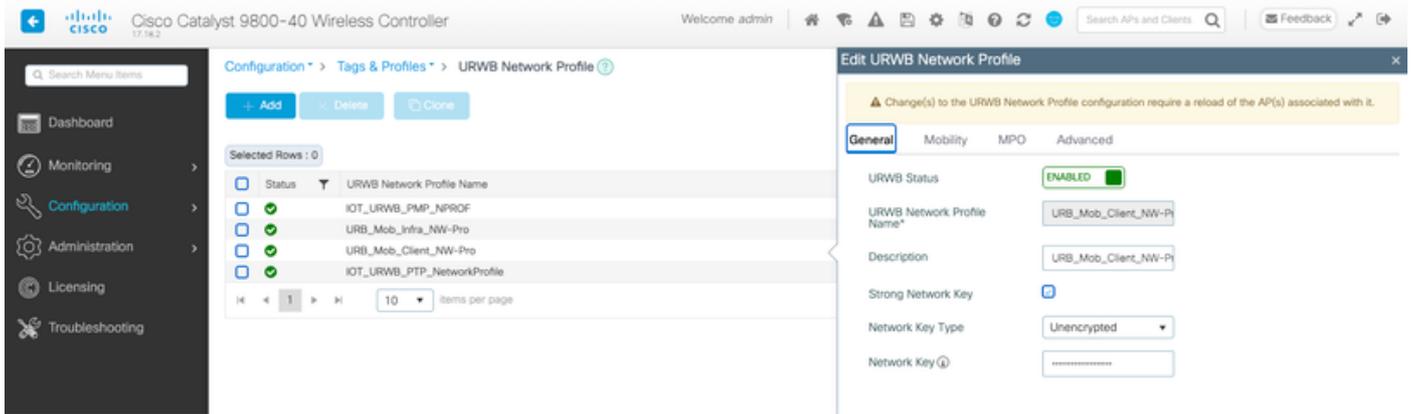
移動性基礎的網路配置檔案

The screenshot shows the Cisco Catalyst 9800-40 Wireless Controller configuration interface. The left sidebar contains navigation options: Dashboard, Monitoring, Configuration, Administration, Licensing, and Troubleshooting. The main content area is titled "Configuration > Tags & Profiles > URWB Network Profile". It features a table with columns for Status and URWB Network Profile Name. The table lists four profiles: IOT_URWB_PMP_NPROF, URB_Mob_Infra_NW-Pro, URB_Mob_Client_NW-Pro, and IOT_URWB_PTP_NetworkProfile, all with a status of "OK". Below the table is a pagination control showing "1" items per page. On the right, the "Edit URWB Network Profile" dialog is open, showing the "General" tab. The "URWB Status" is set to "ENABLED". The "URWB Network Profile Name" is "URB_Mob_Infra_NW-Pro", and the "Description" is "URB_Mob_Infra_NW-Pro". The "Strong Network Key" is checked, and the "Network Key Type" is "Unencrypted".

This screenshot shows the same configuration page as above, but with the "Mobility" tab selected in the "Edit URWB Network Profile" dialog. The "Mobility Role" is set to "Base". Under the "Advanced" section, the "Mobility Backhaul Check" is configured with "Coordinator Down" and "Ethernet Down" both set to "Disabled". The "Mobility Scan" section has "Isolation", "Periodic", and "RSSI Threshold" all set to "0".

```
wireless profile urwb URB_Mob_Infra_NW-Pro
description URB_Mob_Infra_NW-Pro
strong-network-key
network-key key 0 S3cretK3y8675309!!!
no shutdown
```

行動化使用者端的網路設定檔

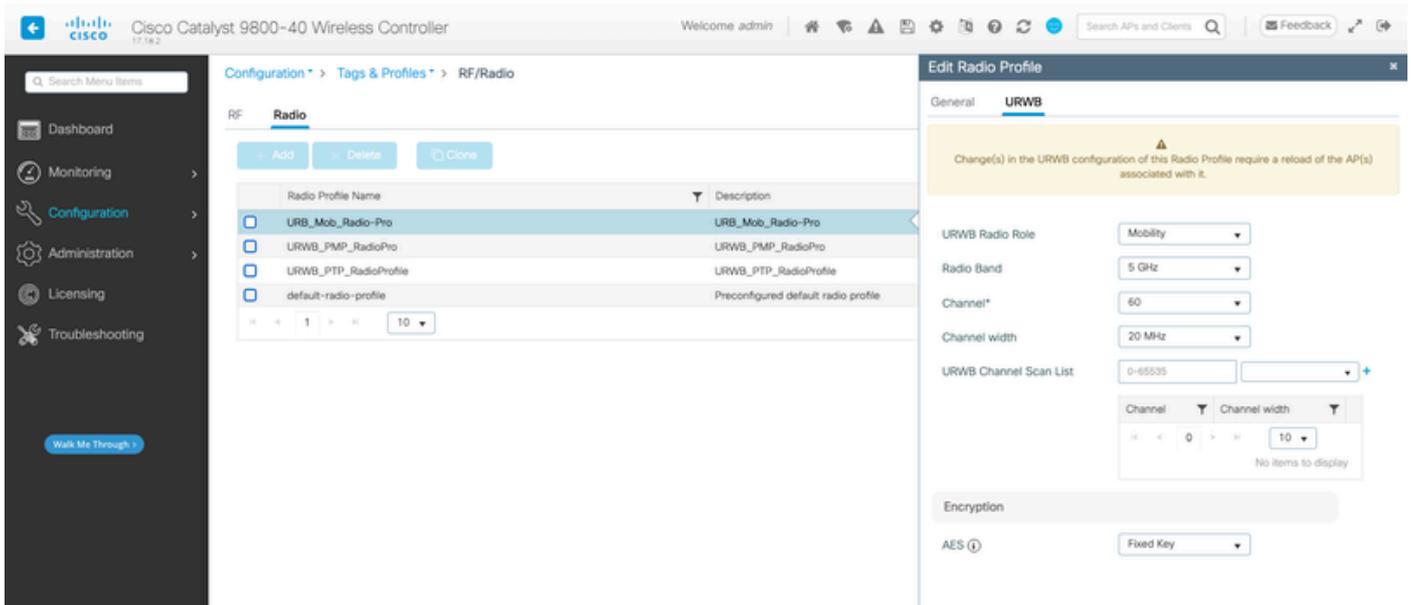
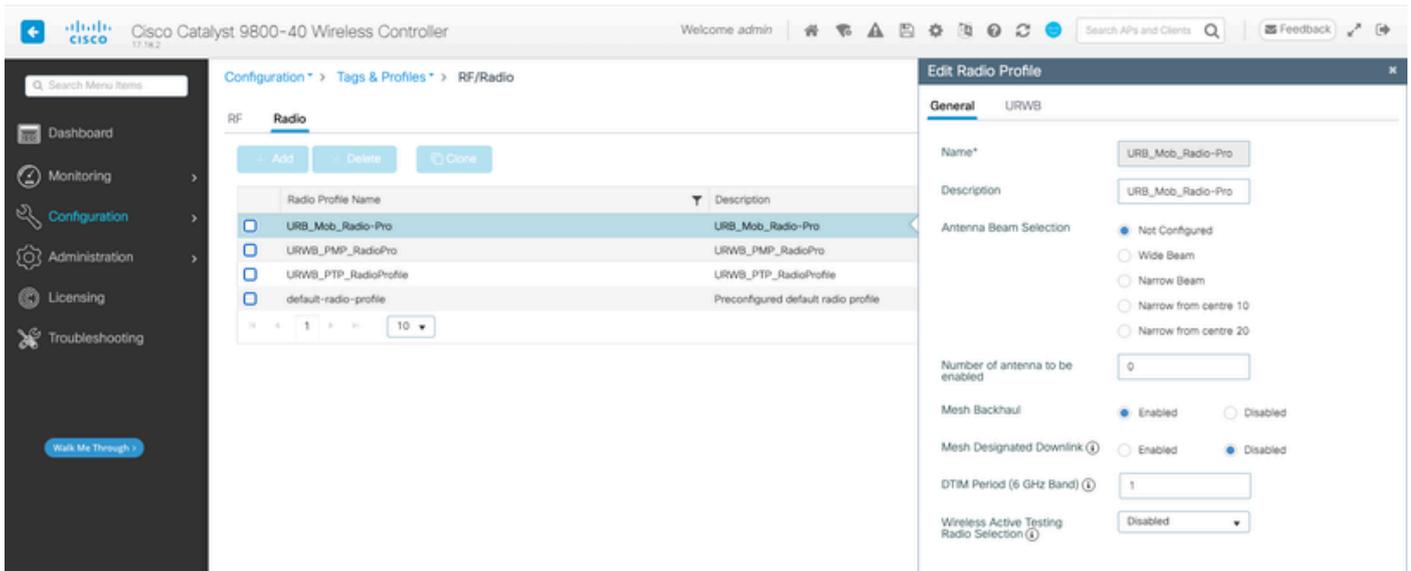


```
wireless profile urwb URB_Mob_Client_NW-Pro
description URB_Mob_Client_NW-Pro
strong-network-key
network-key key 0 S3cretK3y8675309!!!
mobility role client
no shutdown
```

附註：在移動集群中，所有基礎裝置和客戶端裝置的網路金鑰必須相同，才能建立MPLS隧道並彼此通訊。

配置無線電配置檔案

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

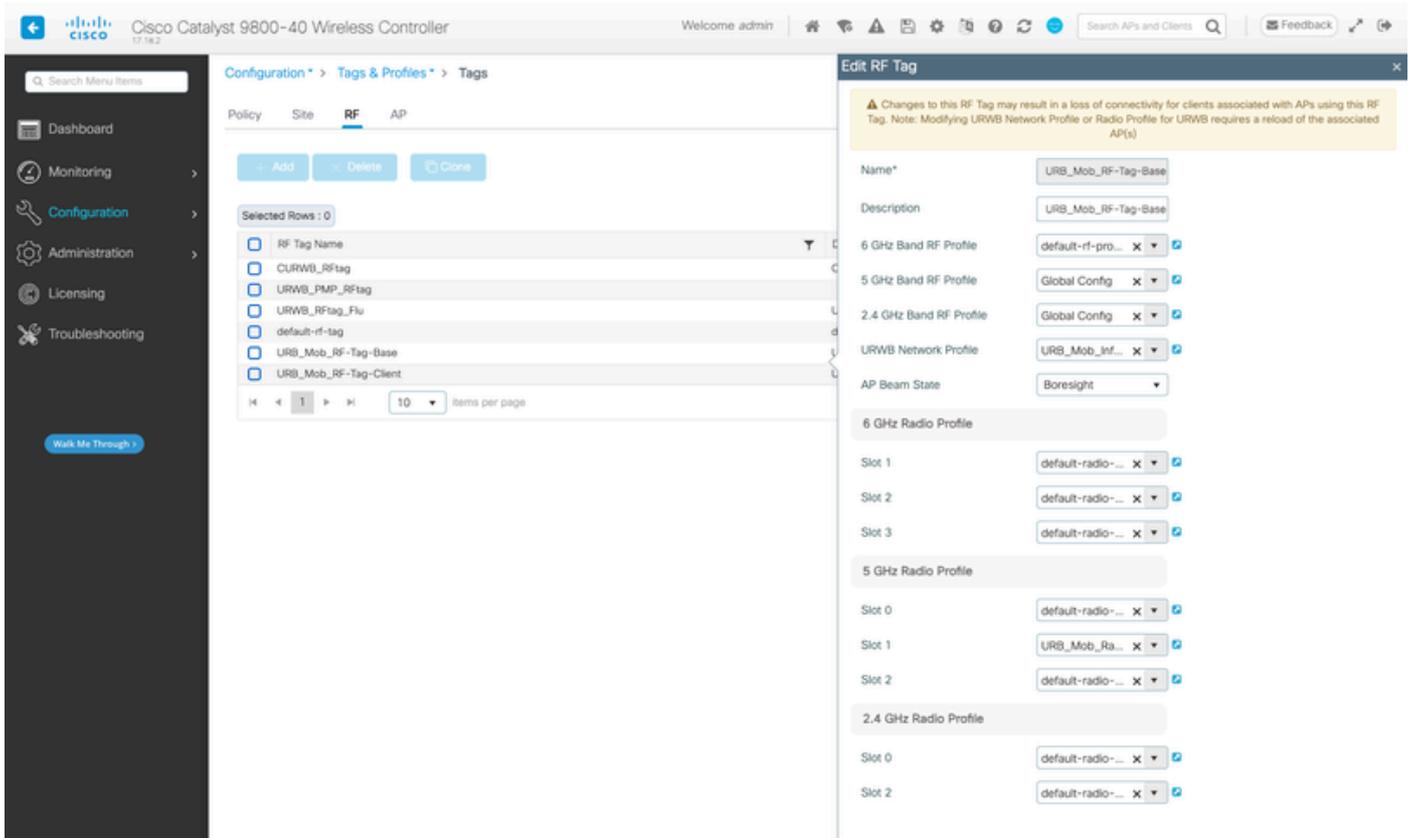


wireless profile radio URB_Mob_Radio-Pro
description URB_Mob_Radio-Pro
urwb channel 5Ghz 60
urwb role mobility

配置RF標籤

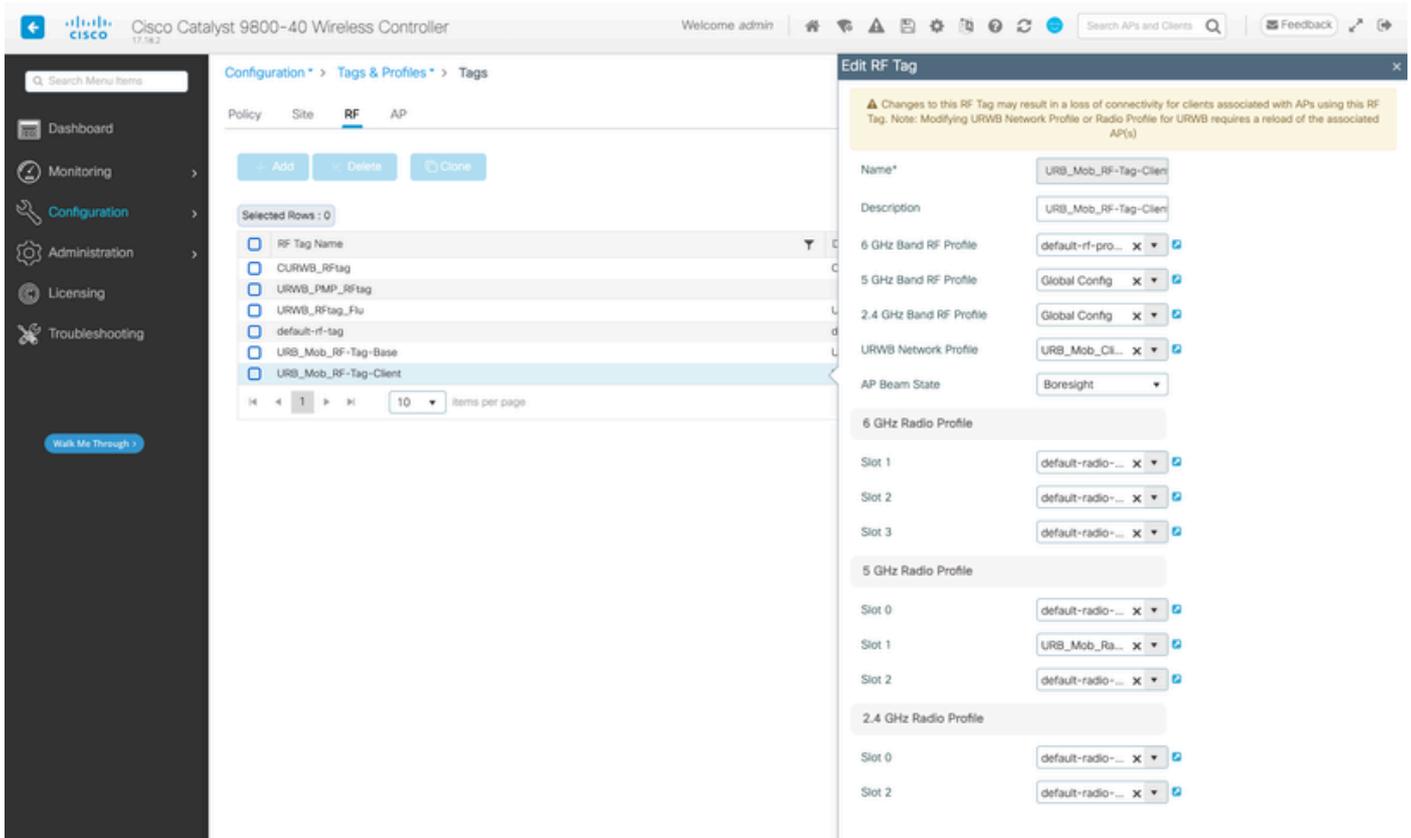
(Configuration -> Tags and Profiles -> Tags -> RF頁籤)

適用於行動基地的RF標籤



```
wireless tag rf URB_Mob_RF-Tag-Base  
description URB_Mob_RF-Tag-Base  
dot11 5ghz slot1 radio-profile URB_Mob_Radio-Pro  
urwb-profile URB_Mob_Infra_NW-Pro
```

適用於行動使用者端的RF標籤



```
wireless tag rf URB_Mob_RF-Tag-Client
description URB_Mob_RF-Tag-Client
dot11 5ghz slot1 radio-profile URB_Mob_Radio-Pro
urwb-profile URB_Mob_Client_NW-Pro
```

配置接入點

(配置 —> 無線 —> 接入點)

Configuration > Wireless > Access Points

All Access Points

Total APs: 6

AP Name	AP Model	Slots	Admin Status
AP2416.1BF6.0200_MC	IW9167EH-B	3	✓
AP2416.1BF6.0278_PTP_C	IW9167EH-B	3	✓
AP2416.1BF6.E2C8_MB_C	IW9167EH-B	3	✓
AP2416.1BF6.E308_MB	IW9167EH-B	3	✓
AP6871.61F2.C598_PTP_remote	C9136I-B	4	✓
APC4D6.6678.1B20	CW9166D1-A	3	✓

6 GHz Radios

5 GHz Radios

2.4 GHz Radios

Dual-Band Radios

Country

LSC Provision

AP Certificate Policy

Edit AP

General Interfaces High Availability Inventory URWB Geolocation ICap Advanced Support Bundle

General

AP Name* AP2416.1BF6.E2C8_MB

Location* default location

Base Radio MAC 24d7.9c05.1640

Ethernet MAC 2416.1bf6.e2c8

Admin Status ENABLED

AP Mode Local

Operation Status Registered

Fabric Status Disabled

CleanAir NSI Key

LED Settings

LED State ENABLED

Brightness Level 8

Flash Settings

Flash State DISABLED

Apply

Time Statistics

Up Time 0 days 1 hrs 15 mins 36 secs

Controller Association Latency 1 min 47 secs

Tags

Policy default-policy-tag

Site default-site-tag

RF URB_Mob_RF-Ta...

Write Tag Config to AP

Version

Primary Software Version 17.18.2.64

Predownloaded Status N/A

Predownloaded Version N/A

Next Retry Time N/A

Boot Version 1.1.2.4

IOS Version 17.18.2.64

Mini IOS Version 0.0.0.0

IP Config

CAPWAP Preferred Mode IPv4

DHCP IPv4 Address 14.2.210.109

Static IP (IPv4/IPv6)

ap 2416.1bf6.0200
 rf-tag URB_Mob_RF-Tag-Client
 ap 2416.1bf6.e2c8
 rf-tag URB_Mob_RF-Tag-Base
 ap 2416.1bf6.e308
 rf-tag URB_Mob_RF-Tag-Base

配置協調器

(配置 —> 無線 —> 接入點。->URWB)

Configuration > Wireless > Access Points

All Access Points

Total APs: 6

AP Name	AP Model	Slots	Admin Status
AP2416.1BF6.0200_MC	IW9167EH-B	3	✓
AP2416.1BF6.0278_PTP_C	IW9167EH-B	3	✓
AP2416.1BF6.E2C8_MB_C	IW9167EH-B	3	✓
AP2416.1BF6.E308_MB	IW9167EH-B	3	✓
AP6871.61F2.C598_PTP_remote	C9136I-B	4	✓
APC4D6.6678.1B20	CW9166D1-A	3	✓

Edit AP

General Interfaces High Availability Inventory URWB Geolocation ICap Advanced Support Bundle

URWB Coordinator [Config on WLC]

Coordinator

Wired-Only Coordinator

URWB Coordinator [Config on AP]

Coordinator Enabled

Wired-Only Coordinator Disabled

ap name

urwb mode coordinator

最終步驟

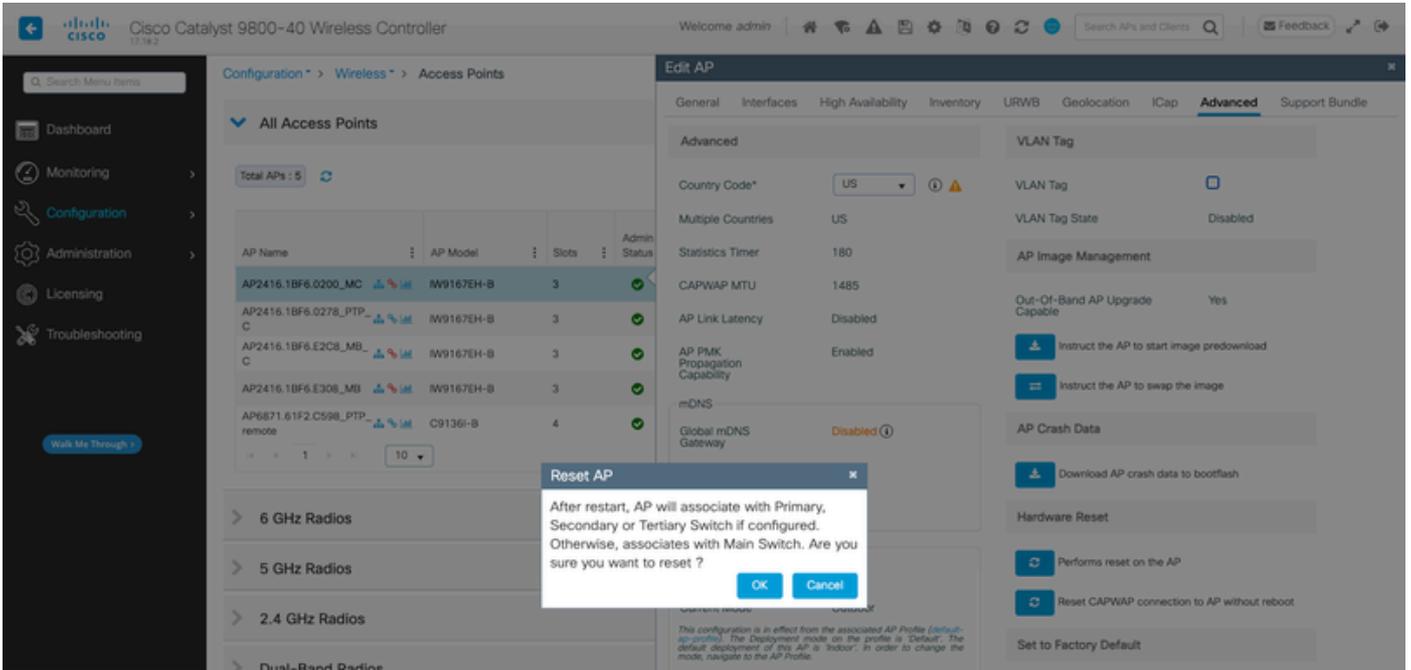
配置完所有設定後，儲存配置並應用更改。如果AP沒有自動重置，它仍可能需要重置以使更改生效。AP表指示AP是否需要重新載入。如果需要，可以從C9800重新載入。一旦接入點(AP)重新啟動並且無線電重新聯機，您就可以從「天線對齊」頁檢查RSSI，並從「URWB網路拓撲」頁監控即時連線。

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 titled 'All Access Points' and shows a table of 4 APs. The table columns include AP Name, AP Model, Slots, Admin Status, Up Time, WLC Association Uptime, IP Address, Base Radio MAC, Ethernet MAC, AP Mode, and Power Derate Capable. The APs listed are:

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	W9167EH-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	W9167EH-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	W9167EH-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

The screenshot shows the 'Edit AP' configuration page for AP2416.1BF6.E2C8_MB_C. The left sidebar is the same as in the previous screenshot. The main content area is titled 'Edit AP' and shows various configuration options. The 'Advanced' tab is selected, and the 'Performs reset on the AP' option is highlighted with a red box. The configuration options include:

- Country Code: US
- Multiple Countries: US
- Statistics Timer: 180
- CAPWAP MTU: 1485
- AP Link Latency: Disabled
- AP PMK Propagation Capability: Enabled
- mDNS: Disabled
- Global mDNS Gateway: Disabled
- mDNS: Disabled
- Services Learnt: 0
- Deployment Mode: Indoor
- Default Mode: Indoor
- Current Mode: Outdoor
- VLAN Tag: Disabled
- VLAN Tag State: Disabled
- AP Image Management: Yes
- Out-Of-Band AP Upgrade Capable: Yes
- AP Crash Data: Download AP crash data to bootflash
- Hardware Reset: Performs reset on the AP (highlighted), Reset CAPWAP connection to AP without reboot

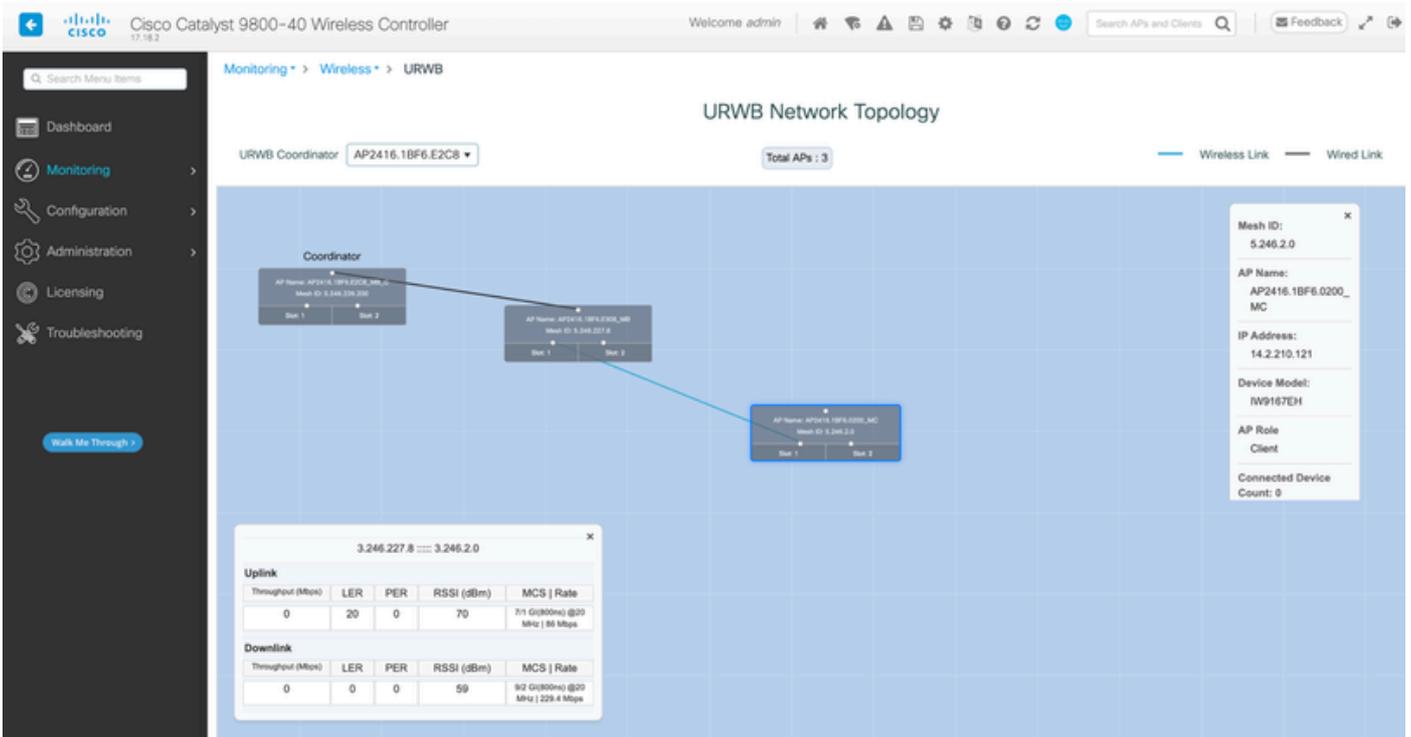


對CURWB網路進行故障排除和監控

監控URWB網路

(監控 —>無線 —> URWB)

URWB網路拓撲允許您檢查上行鏈路和下行鏈路的不同網路關鍵引數索引值，例如LER (鏈路錯誤率)、PER (資料包錯誤率)、RSSI (訊號強度)、吞吐量等。



物理問題

- 確保使用支援CURWB的天線，按照建議的准則正確連線到無線電，並且朝向正確的方向。
- 確認覆蓋範圍在整個跟蹤範圍內都足夠重疊。
- 保持無線電裝置的直接視線。

高通道利用率

- 通過戰略性的RF規劃減少干擾。
- 利用具有頻率掃描的多頻率部署實現無縫切換，每輛車需要兩個無線電。
- 確保無線電在相同高度上至少相隔10英尺，並且在同一無線電之間保持至少3英尺以避免來自附近裝置的干擾。

吞吐量問題

吞吐量問題可能由多個因素導致：

- 強訊號強度對於最佳吞吐量至關重要；較弱訊號會降低調制速率和吞吐量。目標訊號強度在-45 dBm和-70 dBm之間。
- 高通道利用率也會導致吞吐量降低。

延遲問題

延遲問題（特別是在敏感應用程式中）可能源於：

- 沿軌道訊號強度不足。
- 影響頻率效能的干擾。
- 無線電和交換機上需要服務品質(QoS)配置。
- 需要根據PLC配置進行驗證和微調的流動性設定。

WLC上的調試

URWB執行調試：

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

URWB配置調試：

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

URWB資料庫調試：

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

接入點上的CLI命令

```
Show urwb modeconfig
```

```
Show urwb mpls config
```

Show urwb dot11Radio <>配置

顯示Web網格路由狀態

顯示urwb引擎統計資訊

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。