

在帶有C9124存取點的嵌入式無線控制器上配置帶有乙太網橋接的點對點網狀鏈路

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簡介

本文檔介紹如何在具有C9124存取點的嵌入式無線控制器(eWC)上配置帶有乙太網橋接的P2P網狀鏈路。

必要條件

需求

思科建議您瞭解以下主題：

- 思科無線 LAN 控制器 (WLC) 9800.
- Cisco Catalyst存取點(AP)。
- Catalyst存取點上的嵌入式無線控制器。
- 網狀技術。

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- EWC IOS® XE 17.12.2。
- 2個AP C9124。
- 2個電源插頭AIR-PWRINJ-60RGD1。
- 2台交換機；
- 2檯筆記型電腦；
- 1個AP C9115。

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。

背景資訊

乙太網路橋接

網狀網路解決方案是Cisco統一無線網路解決方案的一部分，可讓兩個或多個Cisco網狀無線存取點（以下稱為Mesh存取點）透過一個或多個無線跳相互通訊，以加入多個LAN或擴展WiFi覆蓋。

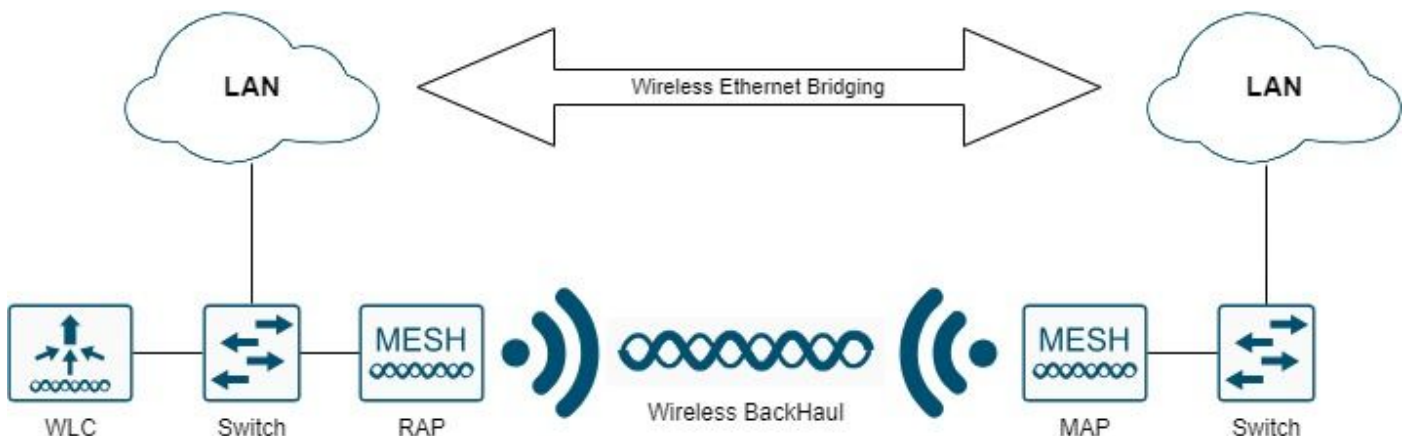
透過網狀網路解決方案中部署的任何思科無線區域網控制器配置、監控和操作思科網狀無線存取點。

支援的網狀網路解決方案部署屬於以下三種常見型別之一：

- 點對點部署
- 點對多點部署
- 網狀部署

本文檔重點介紹如何在同一個裝置上配置點對點網狀部署和乙太網橋接。

在點對點網狀部署中，網狀無線存取點向無線客戶端提供無線接入和回傳，並且可以同時支援一個LAN和終端到遠端乙太網裝置或另一個乙太網LAN之間的橋接。



有關每種部署型別的詳細資訊，請參閱[Cisco Catalyst 9800系列無線控制器的網狀部署指南](#)。

Cisco Catalyst 9124系列室外網狀AP是一種無線裝置，專為無線客戶端訪問和點對點橋接、點對多點橋接以及點對多點網狀無線連線而設計。

室外存取點是一個獨立單元，可以安裝在牆壁或懸垂、屋頂柱杆或路燈柱上。

您可以以下列網狀網角色之一操作C9124：

- 屋頂存取點(RAP)
- 網狀存取點(MAP)

RAP與思科無線LAN控制器之間採用有線連線。它們使用回傳無線介面與附近的MAP通訊。RAP是任何橋接或網狀網路的父節點，將網橋或網狀網路連線到有線網路，因此任何橋接或網狀網路段只能有一個RAP。

MAP沒有到思科無線區域網控制器的有線連線。它們可以是完全無線的，並支援與其他MAP或RAP通訊的客戶端，或者可用於連線外圍裝置或有線網路。

Catalyst存取點上的嵌入式無線控制器

Catalyst存取點上的思科嵌入式無線控制器(EWC)是整合到Cisco Catalyst 9100存取點的基於軟體的控制器。

在Cisco EWC網路中，運行無線控制器功能的存取點(AP)被指定為活動AP。

由此活動AP管理的其它存取點稱為從屬AP。

活動的EWC具有兩個角色：

- 作為無線LAN控制器(WLC)起作用 and 運行，用於管理和控制從屬AP。從屬AP作為輕量存取點運行，為客戶端提供服務。
- 充當為客戶端提供服務的存取點。

要瞭解有關AP上的EWC的產品概述，請訪問[Catalyst存取點上的思科嵌入式無線控制器資料表](#)。

要瞭解如何在網路上部署EWC，請訪問[Catalyst存取點上的思科嵌入式無線控制器\(EWC\)白皮書](#)。

本文檔重點介紹C9124作為EWC，並假設EWC模式中已存在AP 9124。

設定

網路圖表


此網路中的所有裝置都位於192.168.100.0/24子網內，但位於VLAN 101且子網為192.168.101.0/25的筆記型電腦除外。

EWC AP (WLC)的管理介面未標籤，並且交換機埠上的本地VLAN設定為VLAN 100。

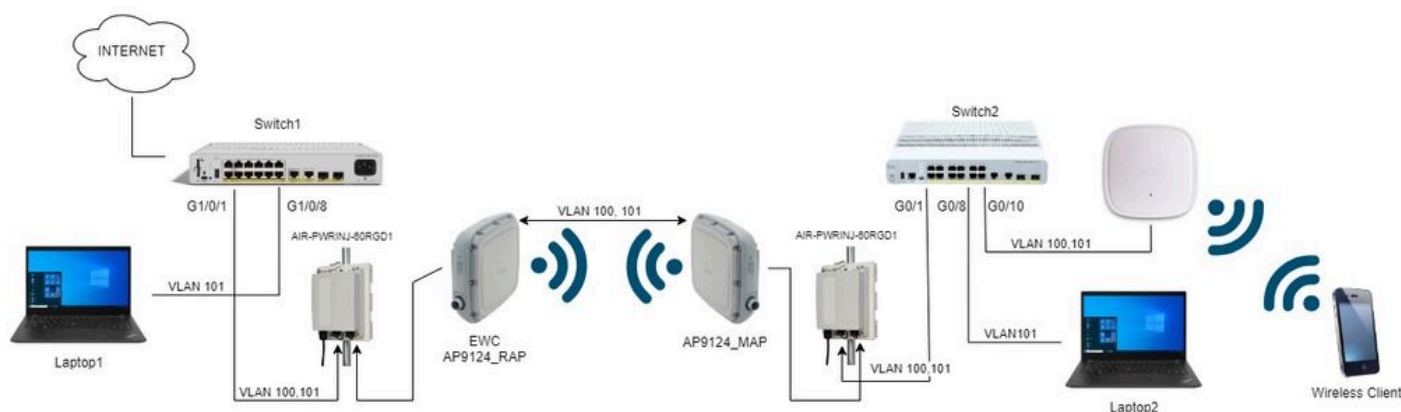
AP AP9124_RAP具有eWC和根存取點(RAP)的角色，而AP9124_MAP則具有Mesh存取點(MAP)的角色。

在本實驗中，MAP後面還放置了AP C9115，用於顯示我們可以讓AP透過網狀鏈路加入WLC。

此表包含網路中所有裝置的IP地址：

 注意：標籤管理介面可能會導致AP加入內部WLC進程時出現問題。如果您決定標籤管理介面，請確保相應地配置有線基礎設施部分。

| 裝置 | IP 位址 |
|---------------------|---|
| 預設閘道 | VLAN 100上的靜態：192.168.100.1 |
| 膝上型電腦1 | VLAN 101上的DHCP |
| 膝上型電腦2 | VLAN 101上的DHCP |
| Switch1 (DHCP伺服器) | VLAN 100 SVI：VLAN 100上的靜態 ：192.168.100.1 (DHCP伺服器) |
| Switch1 (DHCP伺服器) | VLAN 101 SVI：VLAN 101上的靜態 ：192.168.101.1 (DHCP伺服器) |
| 交換機2 | VLAN 100 SVI：VLAN 100上的DHCP |
| 交換機2 | VLAN 101 SVI：VLAN 101上的DHCP |
| 9124EWC | VLAN 100上的靜態：192.168.100.40 |
| AP9124_RAP | VLAN 100上的DHCP |
| AP9124_MAP | VLAN 100上的DHCP |
| AP9115 | VLAN 100上的DHCP |



網路圖表

註：C9124 AP使用AIR-PWRINJ-60RGD1供電，並符合[Cisco Catalyst 9124AX系列戶外存取點硬體安裝指南](#)中的準則。

組態

本文檔假定已經有一個運行EWC的AP 9124，其初始部署按照[Catalyst存取點\(EWC\)上的思科嵌入式無線控制器](#)完成。

有關轉換過程的其他提示和技巧，請檢視[將Catalyst 9100存取點轉換為嵌入式無線控制器](#)文檔。

交換機配置

以下是交換機的相關配置。

連線AP的交換機埠處於中繼模式，本徵VLAN設定為100，允許VLAN 101。

在安裝AP期間，您需要將MAP配置為MAP，因此您需要使AP透過乙太網加入eWC。在這裡，我們

使用Switch1埠G1/0/2執行MAP。安裝後，MAP將移動到Switch2。

連線筆記型電腦的交換機埠被配置為VLAN 101的接入埠。

交換機1：

```
ip dhcp excluded-address 192.168.101.1 192.168.101.10
ip dhcp excluded-address 192.168.100.1 192.168.100.10
!
ip dhcp pool AP_VLAN100
network 192.168.100.0 255.255.255.0
default-router 192.168.100.1
dns-server 192.168.1.254
!
ip dhcp pool VLAN101
network 192.168.101.0 255.255.255.0
default-router 192.168.101.1
dns-server 192.168.1.254
!
interface GigabitEthernet1/0/1
description AP9124_RAP (EWC)
switchport trunk native vlan 100
switchport trunk allowed vlan 100,101
switchport mode trunk
end
interface GigabitEthernet1/0/2
description AP9124_MAP_Staging
switchport trunk native vlan 100
switchport trunk allowed vlan 100,101
switchport mode trunk
end
interface GigabitEthernet1/0/8
description laptop1
switchport access vlan 101
switchport mode access
spanning-tree portfast edge
end
```

交換機2：

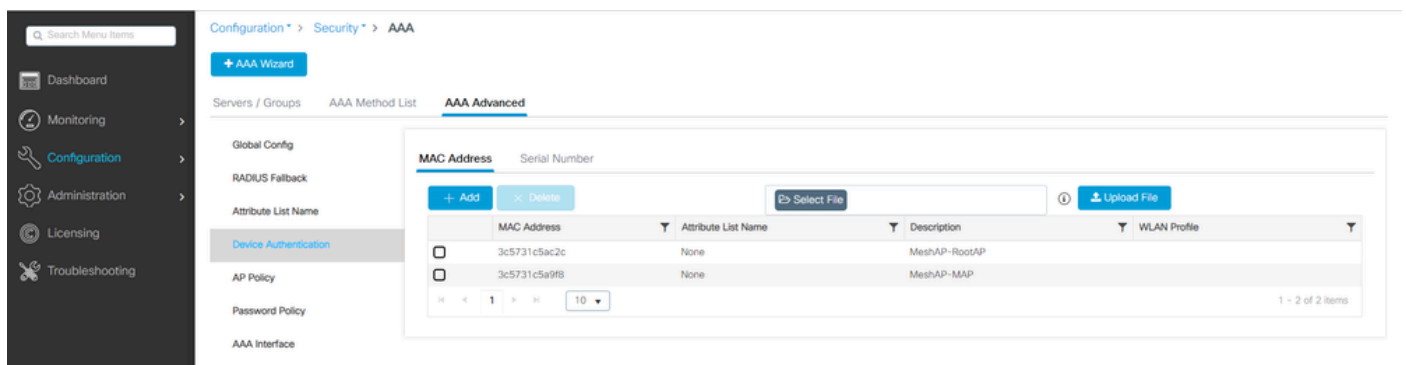
```
interface GigabitEthernet0/1
description AP9124_MAP
switchport trunk native vlan 100
switchport trunk allowed vlan 100,101
switchport mode trunk
end
interface GigabitEthernet0/8
description laptop2
switchport access vlan 101
switchport mode access
spanning-tree portfast edge
end
interface GigabitEthernet0/1
description AP9115
```

```
switchport trunk native vlan 100
switchport trunk allowed vlan 100,101
switchport mode trunk
end
```

EWC和RAP配置

配置EWC AP的第0天後，嵌入式AP需要加入自身。

1. 將根AP和網格AP的乙太網MAC地址增加到裝置身份驗證。轉至Configuration > Security > AAA > AAA Advanced > Device Authentication，然後按一下Add按鈕：



裝置身份驗證中的MAC地址

CLI命令：

```
9124EWC(config)#username 3c5731c5ac2c mac description MeshAP-RootAP
9124EWC(config)#username 3c5731c5a9f8 mac description MeshAP-MAP
```

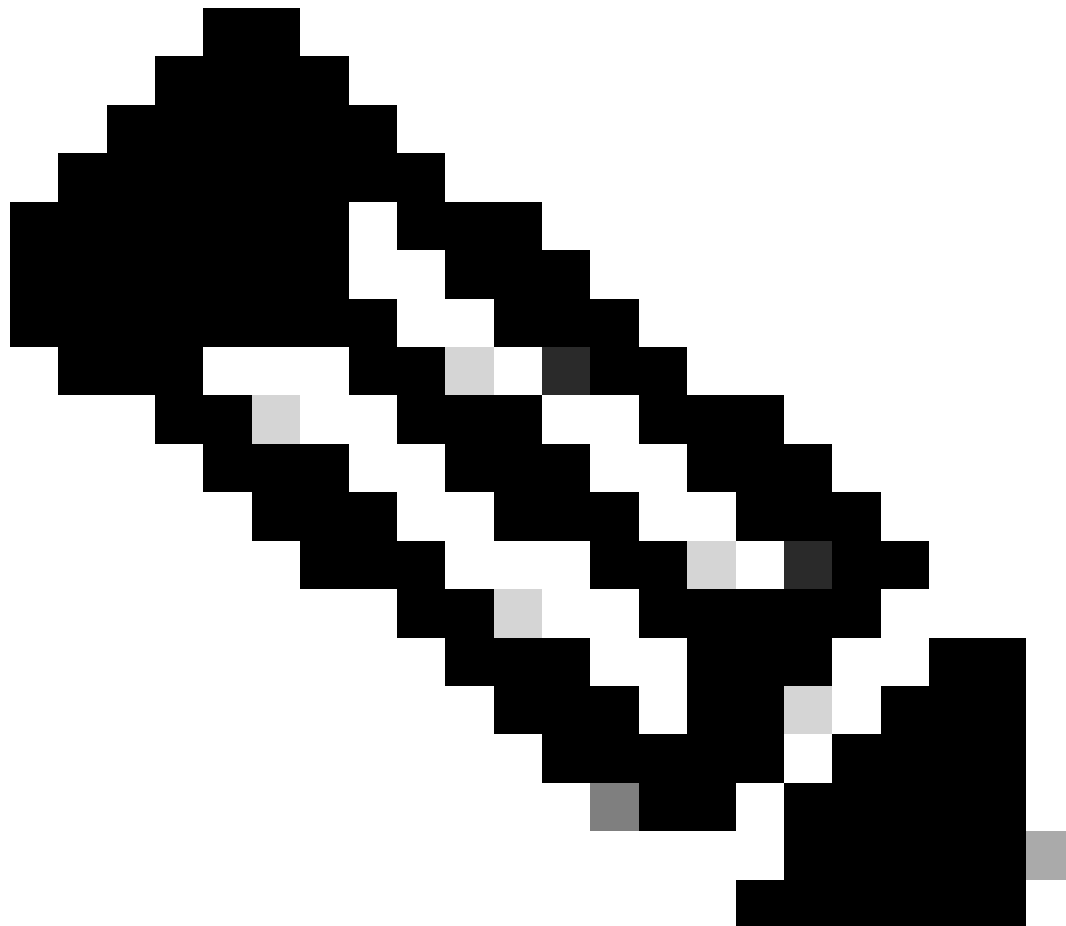
從AP CLI運行「show controllers wired 0」命令可確認乙太網MAC地址。來自根AP的示例：

```
AP3C57.31C5.AC2C#show controllers wired 0
wired0 Link encap:Ethernet HWaddr 3C:57:31:C5:AC:2C
```

使用命令wireless ewc-ap ap shell username x可以完成基礎AP shell的訪問，如下所示：

```
9124EWC#wireless ewc-ap ap shell username admin
[...]
admin@192.168.255.253's password:
AP3C57.31C5.AC2C>en
Password:
AP3C57.31C5.AC2C#
```

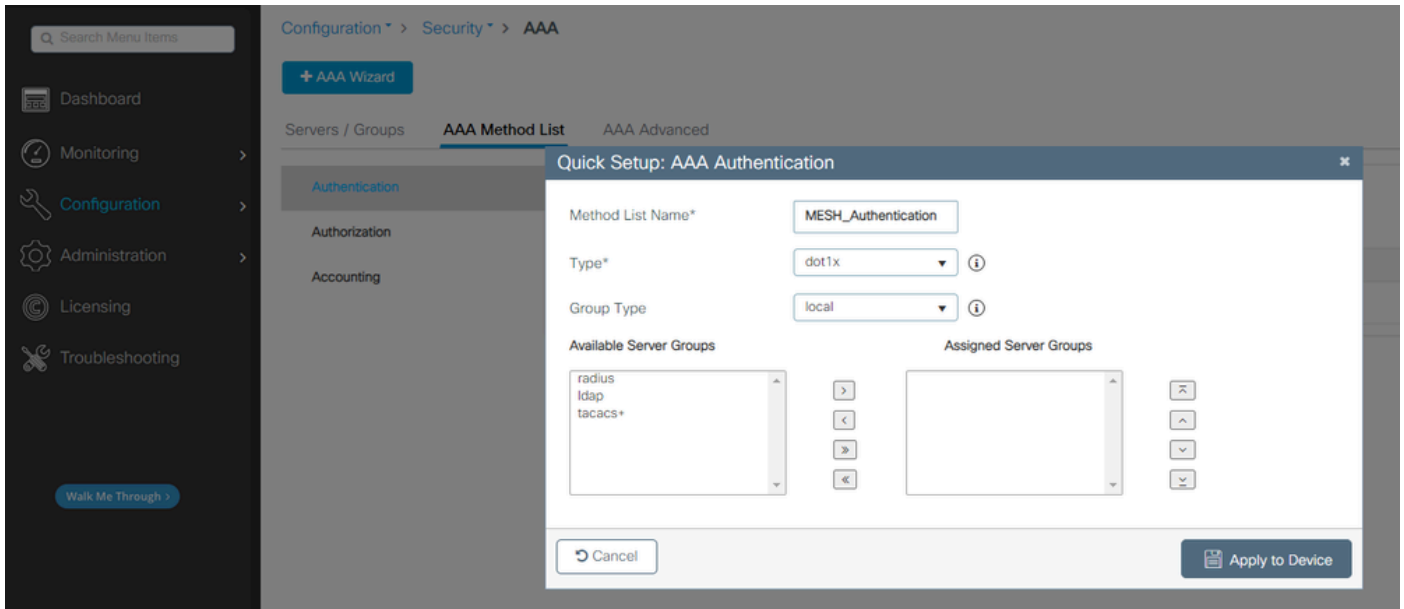
```
AP3C57.31C5.AC2C#logout
Connection to 192.168.255.253 closed.
9124EWC#
```



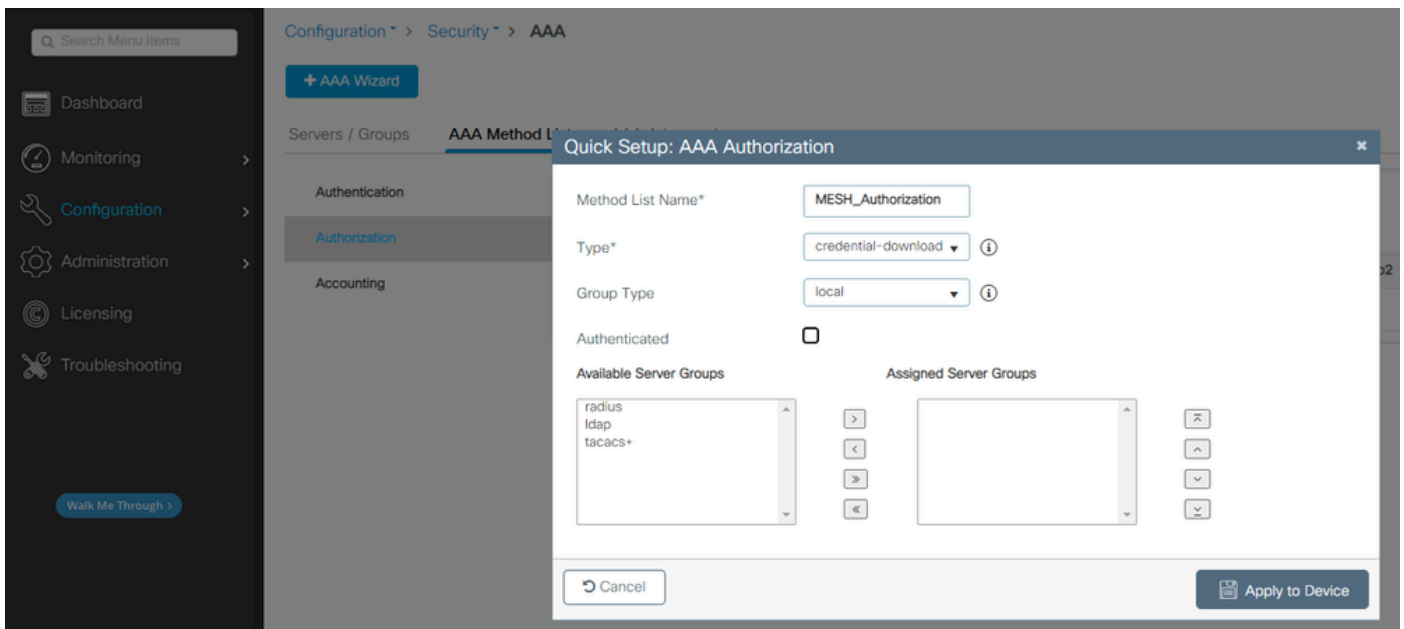
附註：此命令等同於先前可在 Mobility Express 控制器中使用的 `apciscoshell`。

如果未在AP配置檔案中指定AP管理使用者名稱和口令，請使用預設使用者名稱Cisco和口令Cisco。

2. 增加身份驗證和授權方法：



驗證方法清單



授權方法清單

CLI命令：

```
9124EWC(config)#aaa authentication dot1x MESH_Authentication local
9124EWC(config)#aaa authorization credential-download MESH_Authorization local
```

3. 轉至Configuration > Wireless > Mesh。由於本文檔中的設定需要乙太網橋接，請啟用Ethernet Bridging Allow BPDUs：

Configuration > Wireless > Mesh

Global Config Profiles

General

Ethernet Bridging Allow BPDU

Subset Channel Sync

Backhaul

Extended UNII B Domain Channels

RRM

Auto-DCA

Security

PSK Provisioning

Default PSK

Alarm Apply

Max Hop Count

Recommended Max Children for MAP

Recommended Max Children for RAP

Parent Change Count

Low Link SNR (dB)

High Link SNR (dB)

Association Count

乙太網橋接允許BPDU

CLI命令：

```
9124EWC(config)#wireless mesh ethernet-bridging allow-bdpu
```



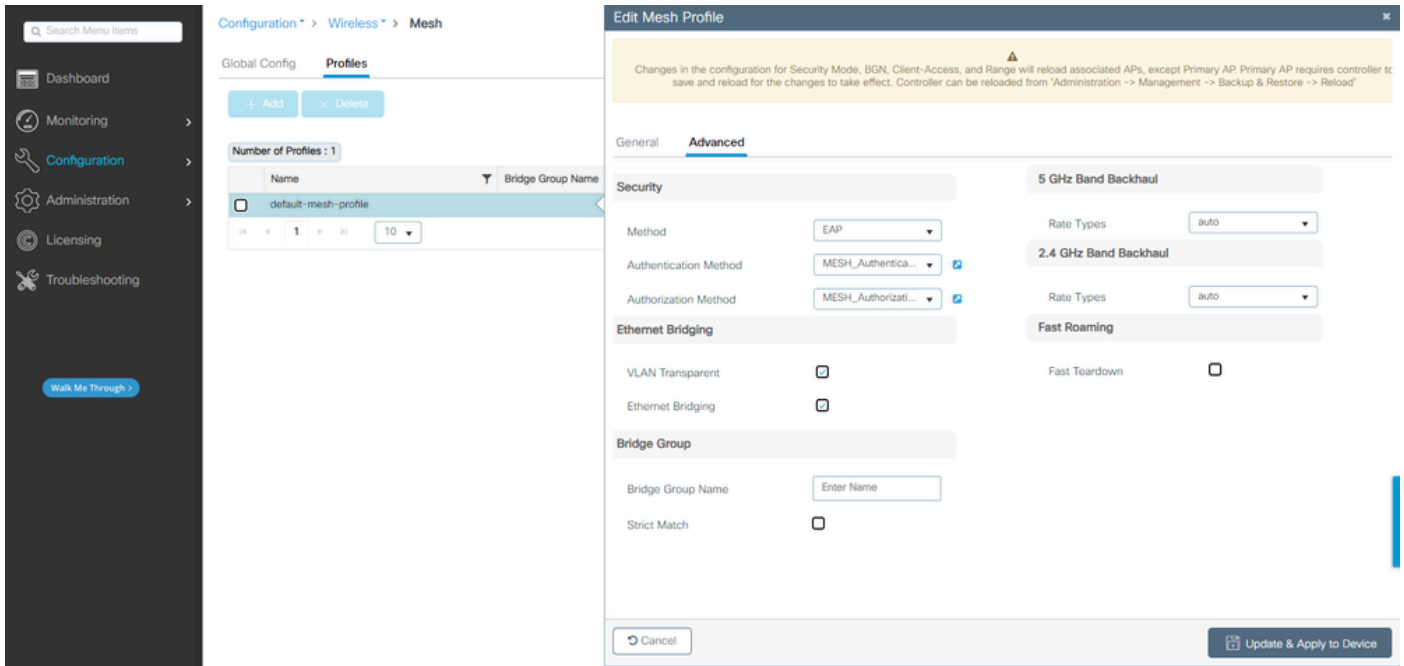
注意：預設情況下，網狀AP不會透過網狀鏈路轉發BPDU。

如果您在2個站點之間沒有任何冗餘鏈路，則不需要此鏈路。

如果有冗餘鏈路，則需要允許BPDU。如果不這樣做，您就有可能在網路中建立STP環路。

4. 配置default-mesh-profile，在其中選擇先前配置的AAA身份驗證和授權方法。按一下並編輯預設網格配置檔案。

轉到高級頁籤並選擇身份驗證和授權方法。啟用選項Ethernet Bridging。



編輯預設網格配置檔案

CLI命令：

```

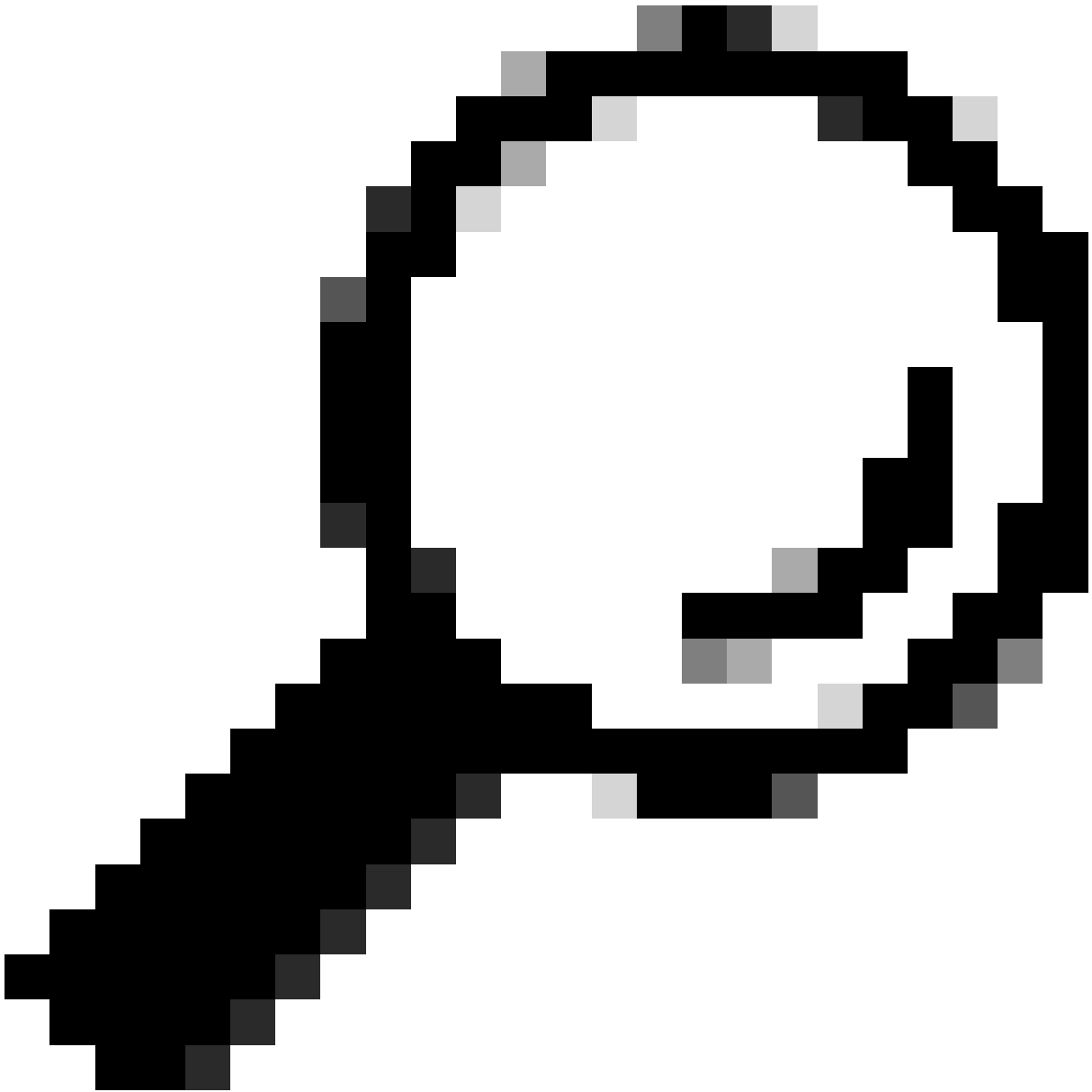
9124EWC(config)#wireless profile mesh default-mesh-profile
9124EWC(config-wireless-mesh-profile)#description "default mesh profile"
9124EWC(config-wireless-mesh-profile)#ethernet-bridging
9124EWC(config-wireless-mesh-profile)#ethernet-vlan-transparent
9124EWC(config-wireless-mesh-profile)#method authentication MESH_Authentication
9124EWC(config-wireless-mesh-profile)#method authorization MESH_Authorization

```

選項VLAN Transparent的特殊標註：

此功能確定網狀無線存取點如何處理乙太網橋接流量的VLAN標籤：

- 如果啟用了VLAN透明模式，則不會處理VLAN標籤，並且會將資料包橋接為未標籤的資料包。
 - 啟用VLAN透明時，不需要設定乙太網路連線埠。乙太網路連線埠會傳遞已標籤及未標籤的架構，而不會解譯架構。
- 如果VLAN透明模式已停用，則所有資料包將根據埠上的VLAN配置（中繼、訪問或正常模式）進行處理。
 - 如果乙太網埠設定為中繼模式，則必須配置乙太網VLAN標籤。



提示：要使用AP VLAN標籤，必須取消選中VLAN Transparent覈取方塊。

如果不使用VLAN標籤，則表示RAP和MAP位於中繼埠上配置的本地VLAN上。在這種情況下，如果希望MAP後面的其他裝置位於本地VLAN（此處VLAN 100）上，則需要啟用VLAN透明。

5. 內部AP加入EWC，您可以使用「show ap summary」命令驗證AP加入狀態：

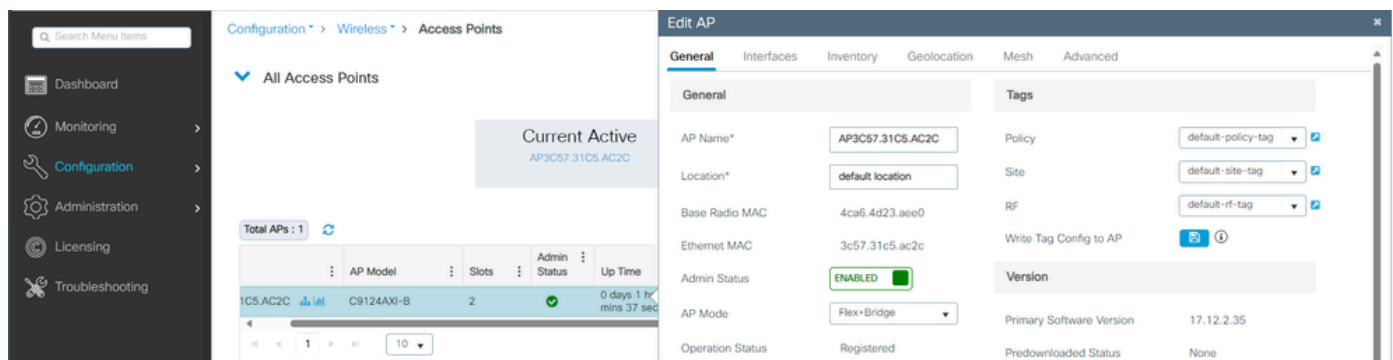
```
9124EWC#show ap summary
Number of APs: 1

CC = Country Code
RD = Regulatory Domain

AP Name           Slots AP Model      Ethernet MAC  Radio MAC  CC  RD  IP Address           State      Location
-----
AP3C57.31C5.AC2C  2    C9124AXI-B        3c57.31c5.ac2c 4ca6.4d23.aee0 US  -8  192.168.100.11      Registered default location
```

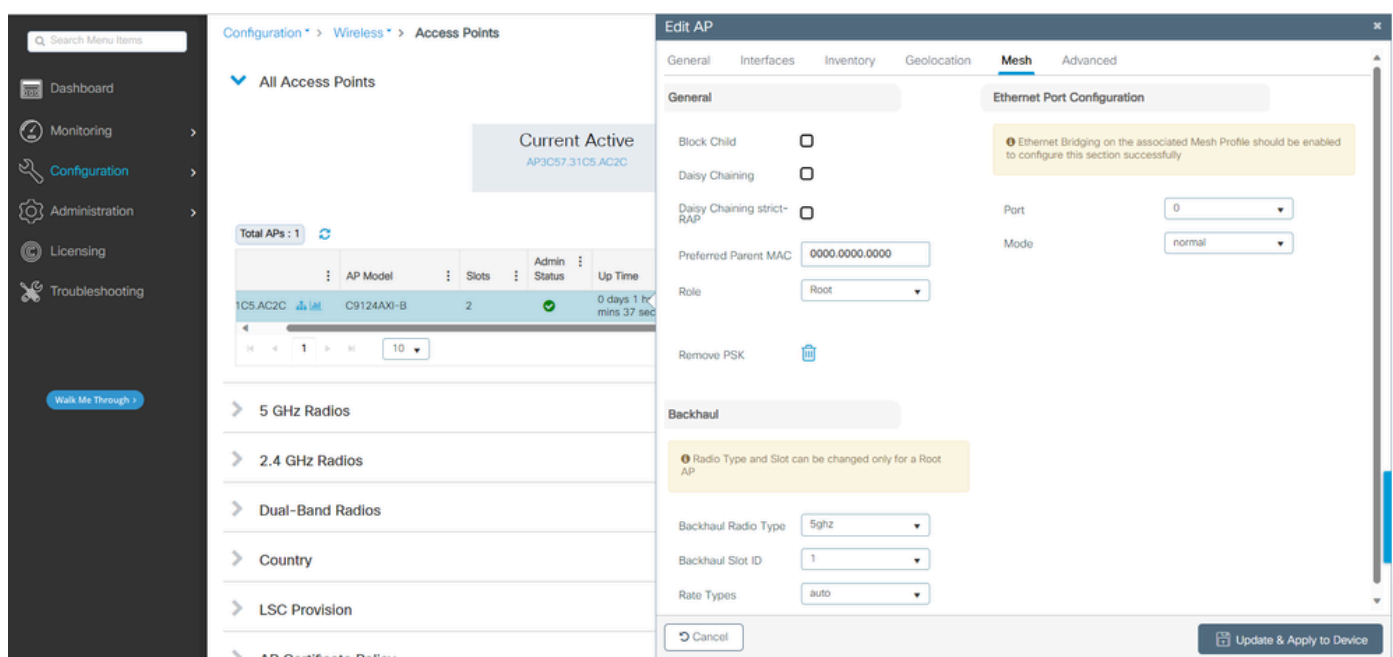
show ap summary

您還可以看到AP透過GUI加入，其中AP顯示為Flex+Bridge模式。為方便起見，您可以立即更改AP的名稱。在此設定中，使用名稱AP9124_RAP：



AP一般詳細資料

您可以編輯地理位置，然後在Mesh頁籤中，確保將其Role配置為根 AP，並且乙太網埠配置設定為trunk，並配置相應的VLAN ID：



網狀角色根目錄

Edit AP
✕

General
Interfaces
Inventory
Geolocation
Mesh
Advanced

General

Block Child

Daisy Chaining

Daisy Chaining strict-RAP

Preferred Parent MAC

Role

Remove PSK

Ethernet Port Configuration

ⓘ Ethernet Bridging on the associated Mesh Profile should be enabled to configure this section successfully

Port

Mode

Native VLAN ID*

Allowed VLAN IDs

Backhaul

ⓘ Radio Type and Slot can be changed only for a Root AP

Backhaul Radio Type

Backhaul Slot ID

Rate Types

↶ Cancel

Update & Apply to Device

乙太網埠配置

配置對映

現在是加入9124 MAP的時候了。

- 將MAP AP連線到Switch1進行暫存。AP加入EWC並在AP清單中顯示。將其名稱更改為類似於AP9124_MAP的名稱，然後在Mesh頁籤中將其配置為Mesh Role。按一下Update & Apply to Device：

The screenshot displays a network management interface with two main panes. The left pane, titled 'Configuration > Wireless > Access Points', shows a list of 'All Access Points'. A 'Current Active' status is shown for AP3C57.31C5.AC2C. Below this is a table of APs:

| AP Name | AP Model | Slots | Admin Status |
|------------|------------|-------|--------------|
| AP9124_MAP | C9124AXI-B | 2 | ✓ |
| AP9124_RAP | C9124AXI-B | 2 | ✓ |

The right pane, titled 'Edit AP', shows configuration options for the 'Mesh' profile. The 'Ethernet Port Configuration' section includes a warning: 'Ethernet Bridging on the associated Mesh Profile should be enabled to configure this section successfully'. The configuration includes:

- Port: 0
- Mode: trunk
- Native VLAN ID*: 100
- Allowed VLAN IDs: 101

The 'Backhaul' section includes:

- Backhaul Radio Type: 5ghz
- Backhaul Slot ID: 1
- Rate Types: auto

Buttons for 'Cancel' and 'Update & Apply to Device' are visible at the bottom of the right pane.

MAP配置

2. 從Switch1斷開AP連線，並根據網路圖連線到Switch2。MAP透過無線介面透過RAP加入EWC。



註：由於AP透過饋電器供電，AP不會關閉，並且由於設定是在受控環境中，因此交換機2在物理上關閉，因此我們只需將電纜從一台交換機移至另一台交換機即可。

您可以將控制檯電纜連線到AP並透過控制檯檢視結果。以下是一些重要訊息。

注意：從版本17.12.1,802.11AX AP的預設控制檯波特率從9600 bps更改為115200 bps。

MAP失去與EWC的連線：

AP9124_MAP#

```
[*01/11/2024 14:08:23.0214] chatter: Device wired0 notify state change link DOWN
[*01/11/2024 14:08:28.1474] Re-Tx Count=1, Max Re-Tx Value=5, SendSeqNum=83, M
[*01/11/2024 14:08:28.1474]
[*01/11/2024 14:08:31.1485] Re-Tx Count=2, Max Re-Tx Value=5, SendSeqNum=83, M
[*01/11/2024 14:08:31.1486]
[*01/11/2024 14:08:33.4214] chatter: Device wired0 notify state change link UP
[*01/11/2024 14:08:34.1495] Re-Tx Count=3, Max Re-Tx Value=5, SendSeqNum=83, M
[*01/11/2024 14:08:34.1495]
[*01/11/2024 14:08:37.1505] Re-Tx Count=4, Max Re-Tx Value=5, SendSeqNum=84, M
[*01/11/2024 14:08:37.1505]
[*01/11/2024 14:08:40.1515] Re-Tx Count=5, Max Re-Tx Value=5, SendSeqNum=84, M
[*01/11/2024 14:08:40.1515]
[*01/11/2024 14:08:43.1524] Max retransmission count exceeded, going back to D
```

```
[...]  
[*01/11/2024 14:08:48.1537] CRIT-MeshWiredAdj[0][3C:57:31:C5:A9:F8]: Blocklist  
[*01/11/2024 14:08:48.1538] CRIT-MeshWiredAdj[0][3C:57:31:C5:A9:F8]: Remove as  
[*01/11/2024 14:08:48.1539] CRIT-MeshLink: Link Down Block Root port Mac: 3C:5  
[*01/11/2024 14:08:48.1542] CRIT-MeshWiredBackhaul[0]: Remove as uplink
```

MAP透過無線進入發現模式，並透過第36頻道的無線電回傳找到RAP，找到EWC並加入其中：

```
[*01/11/2024 14:08:51.3893] CRIT-MeshRadioBackhaul[1]: Set as uplink  
[*01/11/2024 14:08:51.3894] CRIT-MeshAwppAdj[1][4C:A6:4D:23:AE:F1]: Set as Par  
[*01/11/2024 14:08:51.3915] wlan: [0:I:CMN_MLME] mlme_ext_vap_down: VAP (mon0)  
[*01/11/2024 14:08:51.3926] wlan: [0:I:CMN_MLME] mlme_ext_vap_down: VAP (apbh  
[*01/11/2024 14:08:51.4045] wlan: [0:I:CMN_MLME] mlme_ext_vap_up: VAP (apbhr0)  
[*01/11/2024 14:08:51.4053] wlan: [0:I:CMN_MLME] mlme_ext_vap_up: VAP (mon0)  
[*01/11/2024 14:08:53.3898] CRIT-MeshLink: Set Root port Mac: 4C:A6:4D:23:AE:F  
[*01/11/2024 14:08:53.3904] Mesh Reconfiguring DHCP.  
[*01/11/2024 14:08:53.8680] DOT11_UPLINK_EV: wgb_uplink_set_port_authorized: c  
[*01/11/2024 14:08:53.9232] CRIT-MeshSecurity: Mesh Security successful auther  
[...]  
[*01/11/2024 14:09:48.4388] Discovery Response from 192.168.100.40  
[*01/11/2024 14:09:59.0000] Started wait dtls timer (60 sec)  
[*01/11/2024 14:09:59.0106]  
[*01/11/2024 14:09:59.0106] CAPWAP State: DTLS Setup  
[*01/11/2024 14:09:59.0987] dtls_verify_server_cert: Controller certificate ve  
[*01/11/2024 14:09:59.8466]  
[*01/11/2024 14:09:59.8466] CAPWAP State: Join  
[*01/11/2024 14:09:59.8769] Sending Join request to 192.168.100.40 through po  
[*01/11/2024 14:10:04.7842] Sending Join request to 192.168.100.40 through po  
[*01/11/2024 14:10:04.7953] Join Response from 192.168.100.40, packet size 139  
[...]  
[*01/11/2024 14:10:06.6919] CAPWAP State: Run  
[*01/11/2024 14:10:06.8506] AP has joined controller 9124EWC  
[*01/11/2024 14:10:06.8848] Flexconnect Switching to Connected Mode!  
[...]
```

MAP現在透過RAP加入EWC。

現在，AP C9115可以獲取VLAN 100上的IP地址，然後加入EWC：



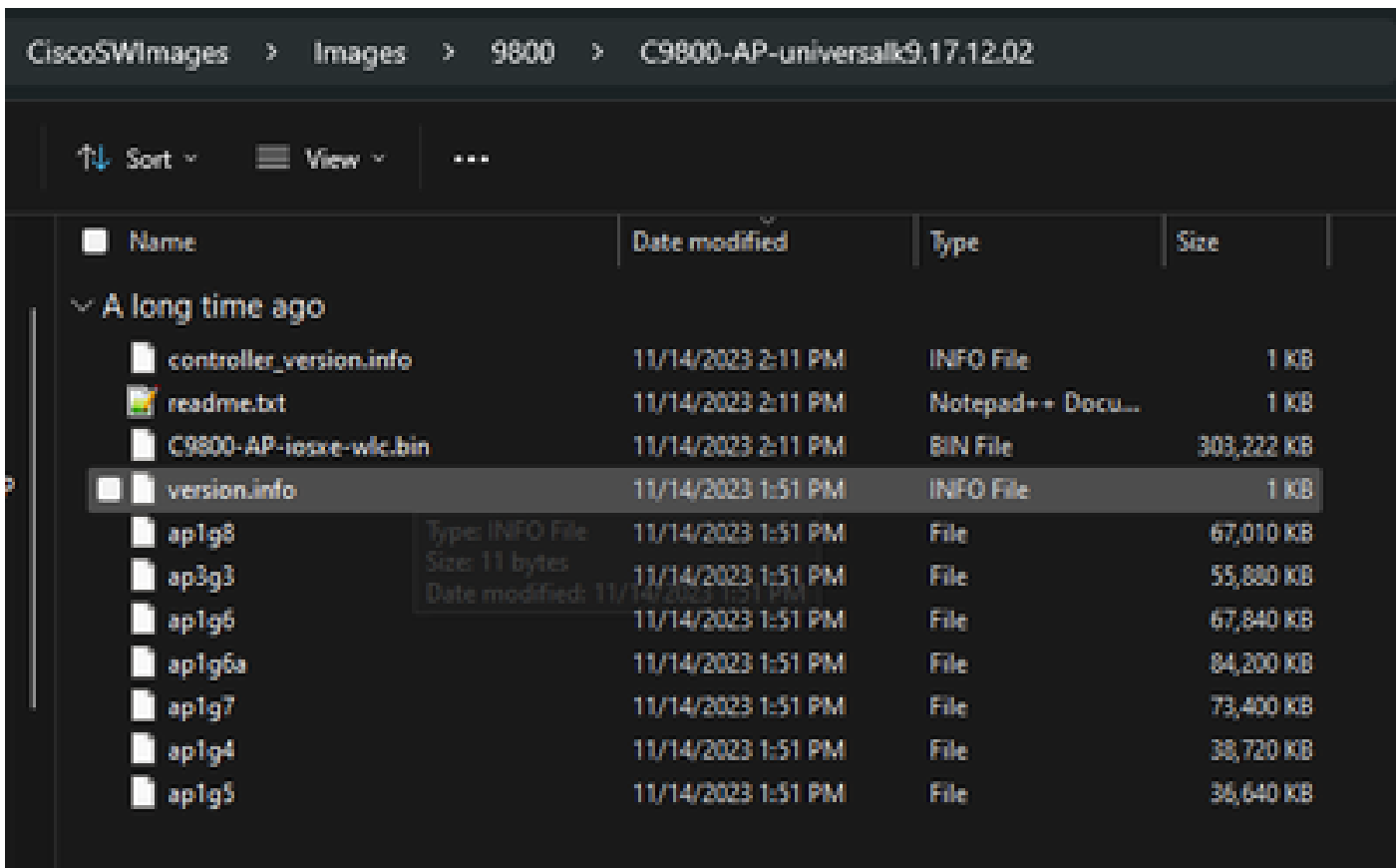
警告：請記住，VLAN 100是交換機埠中繼本地VLAN。為了讓流量從VLAN 100上的AP到達VLAN 100上的WLC，網狀鏈路必須啟用VLAN Transparent。此操作在「網狀配置檔案
乙太網橋接」部分完成。

```
[*01/19/2024 11:40:55.0710] ethernet_port wired0, ip 192.168.100.14, netmask 255.255.255.255
[*01/19/2024 11:40:58.2070]
[*01/19/2024 11:40:58.2070] CAPWAP State: Init
[*01/19/2024 11:40:58.2150]
[*01/19/2024 11:40:58.2150] CAPWAP State: Discovery
[*01/19/2024 11:40:58.2400] Discovery Request sent to 192.168.100.40, discover
[*01/19/2024 11:40:58.2530] Discovery Request sent to 255.255.255.255, discover
[*01/19/2024 11:40:58.2600]
[*01/19/2024 11:40:58.2600] CAPWAP State: Discovery
[*01/19/2024 11:40:58.2670] Discovery Response from 192.168.100.40
[*01/19/2024 11:40:58.2670] Found Configured MWAR '9124EWC' (respIdx 1).
[*01/19/2024 15:13:56.0000] Started wait dtls timer (60 sec)
[*01/19/2024 15:13:56.0070]
[*01/19/2024 15:13:56.0070] CAPWAP State: DTLS Setup
[...]
```

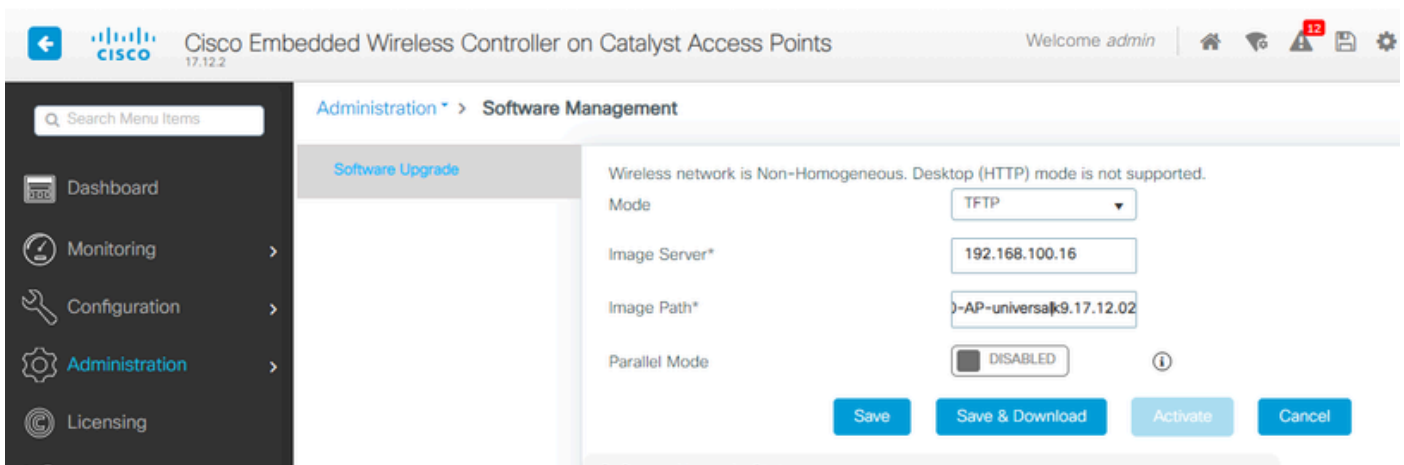
```
[*01/19/2024 15:13:56.1660] dtls_verify_server_cert: Controller certificate ve
[*01/19/2024 15:13:56.9000] sudi99_request_check_and_load: Use HARSA SUDI cert
[*01/19/2024 15:13:57.2980]
[*01/19/2024 15:13:57.2980] CAPWAP State: Join
[*01/19/2024 15:13:57.3170] shared_setenv PART_BOOTCNT 0 &> /dev/null
[*01/19/2024 15:13:57.8620] Sending Join request to 192.168.100.40 through po
[*01/19/2024 15:14:02.8070] Sending Join request to 192.168.100.40 through po
[*01/19/2024 15:14:02.8200] Join Response from 192.168.100.40, packet size 139
[*01/19/2024 15:14:02.8200] AC accepted previous sent request with result code
[*01/19/2024 15:14:03.3700] Received wlcType 2, timer 30
[*01/19/2024 15:14:03.4440]
[*01/19/2024 15:14:03.4440] CAPWAP State: Image Data
[*01/19/2024 15:14:03.4440] AP image version 17.12.2.35 backup 17.9.4.27, Cont
[*01/19/2024 15:14:03.4440] Version is the same, do not need update.
[*01/19/2024 15:14:03.4880] status 'upgrade.sh: Script called with args:[NO_UP
[*01/19/2024 15:14:03.5330] do NO_UPGRADE, part2 is active part
[*01/19/2024 15:14:03.5520]
[*01/19/2024 15:14:03.5520] CAPWAP State: Configure
[*01/19/2024 15:14:03.5600] Telnet is not supported by AP, should not encode t
[*01/19/2024 15:14:03.6880] Radio [1] Administrative state DISABLED change to
[*01/19/2024 15:14:03.6890] Radio [0] Administrative state DISABLED change to
[*01/19/2024 15:14:03.8670]
[*01/19/2024 15:14:03.8670] CAPWAP State: Run
[*01/19/2024 15:14:03.9290] AP has joined controller 9124EWC
[*01/19/2024 15:14:03.9310] Flexconnect Switching to Connected Mode!
```

由於這是EWC AP，因此它只包含與其自身型號對應的AP映像（此處的C9124運行ap1g6a）。當您加入不同的AP型號時，就會有一個非同質網路。

在這些情況下，如果AP的版本不同，則需要下載相同的版本，因此請確保您具有有效的TFTP/SFTP伺服器 and 位置，並且在EWC > Administration > Software Management中配置了AP映像：



TFTP伺服器及AP映像資料夾

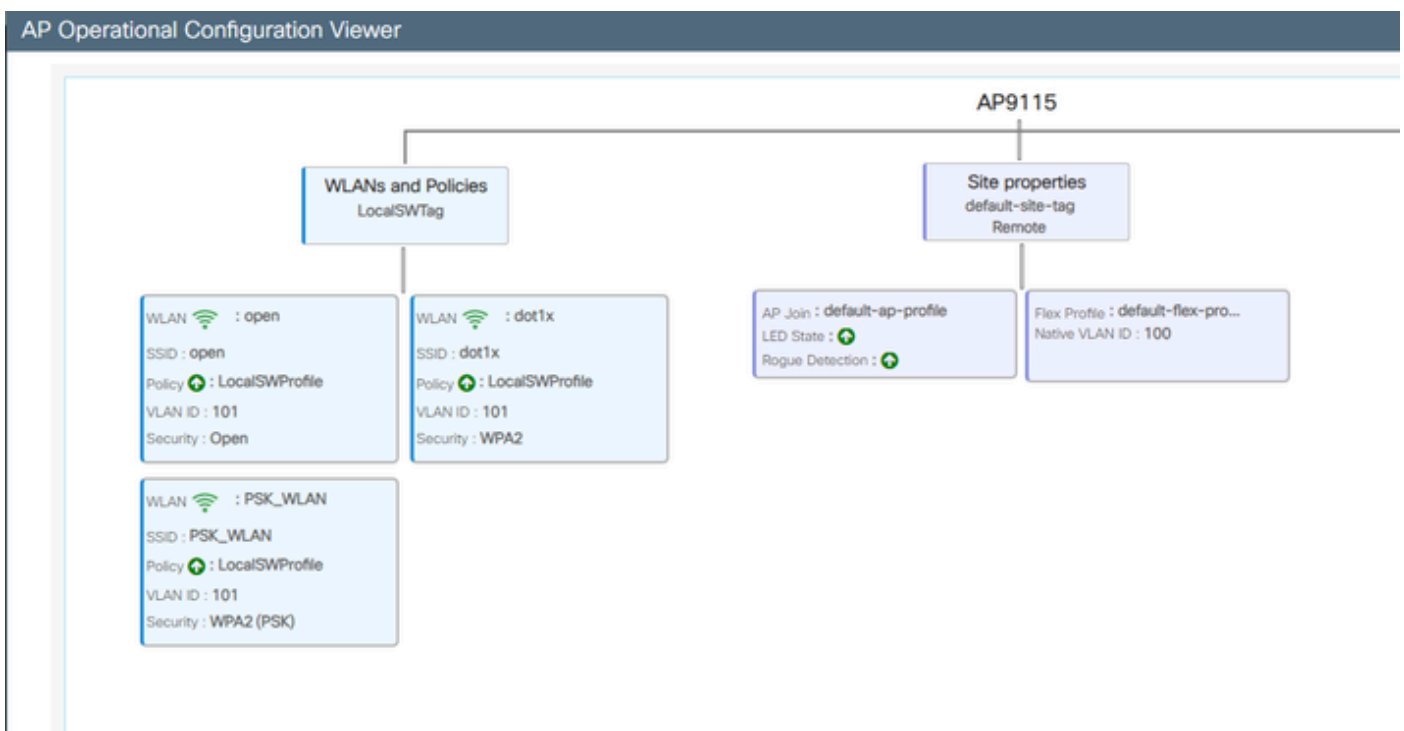


AP映像

AP顯示在AP清單中，您可以分配策略標籤：

The screenshot shows the Cisco Embedded Wireless Controller interface. On the left is a navigation sidebar with options like Dashboard, Monitoring, Configuration, Administration, Licensing, and Troubleshooting. The main content area is titled 'Configuration > Wireless > Access Points' and shows a table of 'All Access Points'. The table lists AP Name, AP Model, Slots, Admin Status, and Up Time. AP9115 is highlighted. To the right, the 'Edit AP' configuration page for AP9115 is visible, showing fields for AP Name, Location, Base Radio MAC, Ethernet MAC, Admin Status (ENABLED), AP Mode (Flex), Operation Status (Registered), Fabric Status (Disabled), CleanAir (NSI Key), and LED Settings (ENABLED). There are also sections for Tags and Version information.

包含9115詳細資訊的AP清單



AP操作檢視

驗證

如果使用 `show wireless mesh ap tree` 命令，則可以透過GUI看到網狀樹，CLI的輸出也會顯示出來。在GUI上，轉到 `Monitoring > Wireless > Mesh`：

Monitoring > Wireless > Mesh

AP Convergence

Global Stats

| | | | |
|----------------------|---|----------------------------|---|
| Number of Bridge APs | 0 | Number of Flex+Bridge APs | 2 |
| Number of RAPs | 0 | Number of Flex+Bridge RAPs | 1 |
| Number of MAPs | 0 | Number of Flex+Bridge MAPs | 1 |

Tree

```

AP Name [Hop Ctr,Link SNR,BG Name,Channel,Pref Parent,Chan Util,Clients]
-----
[Sector 1]
-----
AP9124_RAP [0, 0, Default, (36), 0000.0000.0000, 3%, 0]
|-AP9124_MAP [1, 73, Default, (36), 0000.0000.0000, 3%, 0]
Number of Bridge APs : 2
Number of RAPs : 1
Number of MAPs : 1
(*) Wait for 3 minutes to update or Ethernet Connected Mesh AP.
(**) Not in this Controller

```

網狀AP樹

在RAP和MAP上，您可以使用命令「show mesh backhaul」驗證網狀回程：

```

AP9124_RAP#show mesh backhaul
Wired Backhaul: 0 [3C:57:31:C5:AC:2C]
idx Cost Uplink InterfaceType
0 16 TRUE WIRED
Mesh Wired Adjacency Info
Flags: Parent(P), Child(C), Reachable(R), CapwapUp(W), BlockListed(B) Authenticated(A)
Address Cost RawCost BlistCount Flags: P C R W B A Reject reason
3C:57:31:C5:AC:2C 16 16 0 T/F: T F T T F T Filtered

-----

Wired Backhaul: 1 [3C:57:31:C5:AC:2C]
idx Cost Uplink InterfaceType
1 Invalid FALSE WIRED
Mesh Wired Adjacency Info
Flags: Parent(P), Child(C), Reachable(R), CapwapUp(W), BlockListed(B) Authenticated(A)
Address Cost RawCost BlistCount Flags: P C R W B A Reject reason
3C:57:31:C5:AC:2C 16 16 0 T/F: F F F F F F Filtered

-----

Radio Backhaul: 0 [4C:A6:4D:23:AE:F1]
idx State Role RadioState Cost Uplink Downlink Access ShutDown ChildrenAllowed BlockChildState InterfaceType
2 INITIAL ACCESS UP Invalid FALSE FALSE TRUE FALSE FALSE ALLOWED RADIO

No Radio Adjacency Exists

-----

Radio Backhaul: 1 [4C:A6:4D:23:AE:F1]
idx State Role RadioState Cost Uplink Downlink Access ShutDown ChildrenAllowed BlockChildState InterfaceType
3 MAINT DOWNLINK UP Invalid FALSE TRUE FALSE FALSE TRUE ALLOWED RADIO
Mesh AMPP Radio adjacency info
Flags: Parent(P), Child(C), Neighbor(N), Reachable(R), CapwapUp(W),
BlockListed(B), Authenticated(A), HTC capable(H), VHTCapable(V)
OldParent(O), BGScan(S)
Address Cost RawCost LinkCost ReportedCost Snr BCount Ch Width Bgn Flags: P O C N R W B A H V S Reject reason
4C:A6:4D:23:9D:51 Invalid Invalid 0 0 76 0 36 20 MHz - (T/F): F F T F T F F T T T F -

```

RAP show mesh backhaul


```

AP9124_MAP#show mesh backhaul
Wired Backhaul: 0 [3C:57:31:C5:A9:F8]
idx Cost Uplink InterfaceType
0 Invalid FALSE WIRED
Mesh Wired Adjacency Info
Flags: Parent(P), Child(C), Reachable(R), CapwapUp(W), BlockListed(B) Authenticated(A)
Address Cost RawCost BlistCount Flags: P C R W B A Reject reason
3C:57:31:C5:A9:F8 16 16 32 T/F: F F T F T T Blocklisted: GW UNREACHABLE

-----

Wired Backhaul: 1 [3C:57:31:C5:A9:F8]
idx Cost Uplink InterfaceType
1 Invalid FALSE WIRED
Mesh Wired Adjacency Info
Flags: Parent(P), Child(C), Reachable(R), CapwapUp(W), BlockListed(B) Authenticated(A)
Address Cost RawCost BlistCount Flags: P C R W B A Reject reason
3C:57:31:C5:A9:F8 16 16 0 T/F: F F F F F F Filtered

-----

Radio Backhaul: 0 [4C:A6:4D:23:9D:51]
idx State Role RadioState Cost Uplink Downlink Access ShutDown ChildrenAllowed BlockChildState InterfaceType
2 INITIAL ACCESS UP Invalid FALSE FALSE TRUE FALSE FALSE ALLOWED RADIO

No Radio Adjacency Exists

-----

Radio Backhaul: 1 [4C:A6:4D:23:9D:51]
Hops to Root: 1
idx State Role RadioState Cost Uplink Downlink Access ShutDown ChildrenAllowed BlockChildState InterfaceType
3 MAINT UPLINK UP 217 TRUE TRUE FALSE FALSE TRUE ALLOWED RADIO
Mesh AWPP Radio adjacency info
Flags: Parent(P), Child(C), Neighbor(N), Reachable(R), CapwapUp(W),
BlockListed(B), Authenticated(A), HTC capable(H), VHTCapable(V)
OldParent(O), BGScan(S)
Address Cost RawCost LinkCost ReportedCost Snr BCount Ch Width Bgn Flags: P O C N R W B A H V S Reject reason
4C:A6:4D:23:AE:F1 217 272 256 16 70 0 36 20 MHz - (T/F): T F F T T T F T T T F -

-----

AP9124_MAP#

```

MAP show mesh backhaul

您可以在AP端驗證網狀VLAN中繼配置：

```

AP9124_RAP#show mesh ethernet vlan config static
Static (Stored) ethernet VLAN Configuration

```

```

Ethernet Interface: 0
Interface Mode: TRUNK
Native Vlan: 100
Allowed Vlan: 101,

```

```

Ethernet Interface: 1
Interface Mode: ACCESS
Native Vlan: 0
Allowed Vlan:

```

Ethernet Interface: 2
Interface Mode: ACCESS
Native Vlan: 0
Allowed Vlan:

連線到Switch2的膝上型電腦收到來自VLAN 101的IP地址：

```
C:\Users\luke>ipconfig

Windows IP Configuration

Ethernet adapter usb_xhci:

    Connection-specific DNS Suffix . : 
    IPv4 Address. . . . . : 192.168.101.12
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.101.1
```

放置在Switch1上的Laptop1收到來自VLAN 101的IP：

Ethernet adapter Ethernet 6_White:

```
Connection-specific DNS Suffix . : 
Link-local IPv6 Address . . . . . : fe80::d1d6:f607:ff02:4217%18
IPv4 Address. . . . . : 192.168.101.13
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.101.1
```

```
C:\Users\tantunes>ping 192.168.101.12 -i 192.168.101.13
```

```
Pinging 192.168.101.12 with 32 bytes of data:
Reply from 192.168.101.12: bytes=32 time=5ms TTL=128
Reply from 192.168.101.12: bytes=32 time=5ms TTL=128
Reply from 192.168.101.12: bytes=32 time=7ms TTL=128
Reply from 192.168.101.12: bytes=32 time=5ms TTL=128
```

```
Ping statistics for 192.168.101.12:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 5ms, Maximum = 7ms, Average = 5ms
```



注意：請注意，要在Windows裝置之間測試ICMP，您需要在系統防火牆上允許ICMP。預設情況下，Windows裝置在系統防火牆中阻止ICMP。

另一個檢驗乙太網橋接的簡單測試是在兩台交換機上為VLAN 101配置SVI，並將Switch2 SVI設定為DHCP。用於VLAN 101的Switch2 SVI從VLAN 101獲取IP，您可以對Switch 1 VLAN 101 SVI執行VLAN 101連線檢查：

```
<#root>
```

```
Switch2#show ip int br
Interface IP-Address OK? Method Status Protocol
Vlan1 unassigned YES NVRAM up down
Vlan100 192.168.100.61 YES DHCP up up
```

```
Vlan101 192.168.101.11 YES DHCP up up
```

```
GigabitEthernet0/1 unassigned YES unset up up
```

```
[...]
Switch2#
Switch2#ping 192.168.101.1 source 192.168.101.11
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.101.1, timeout is 2 seconds:
Packet sent with a source address of 192.168.101.11
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 3/4/7 ms
Switch2#
```

```
<#root>
```

```
Switch1#sh ip int br
Interface IP-Address OK? Method Status Protocol
Vlan1 192.168.1.11 YES NVRAM up up
Vlan100 192.168.100.1 YES NVRAM up up
```

```
Vlan101 192.168.101.1 YES NVRAM up up
```

```
GigabitEthernet1/0/1 unassigned YES unset up up
```

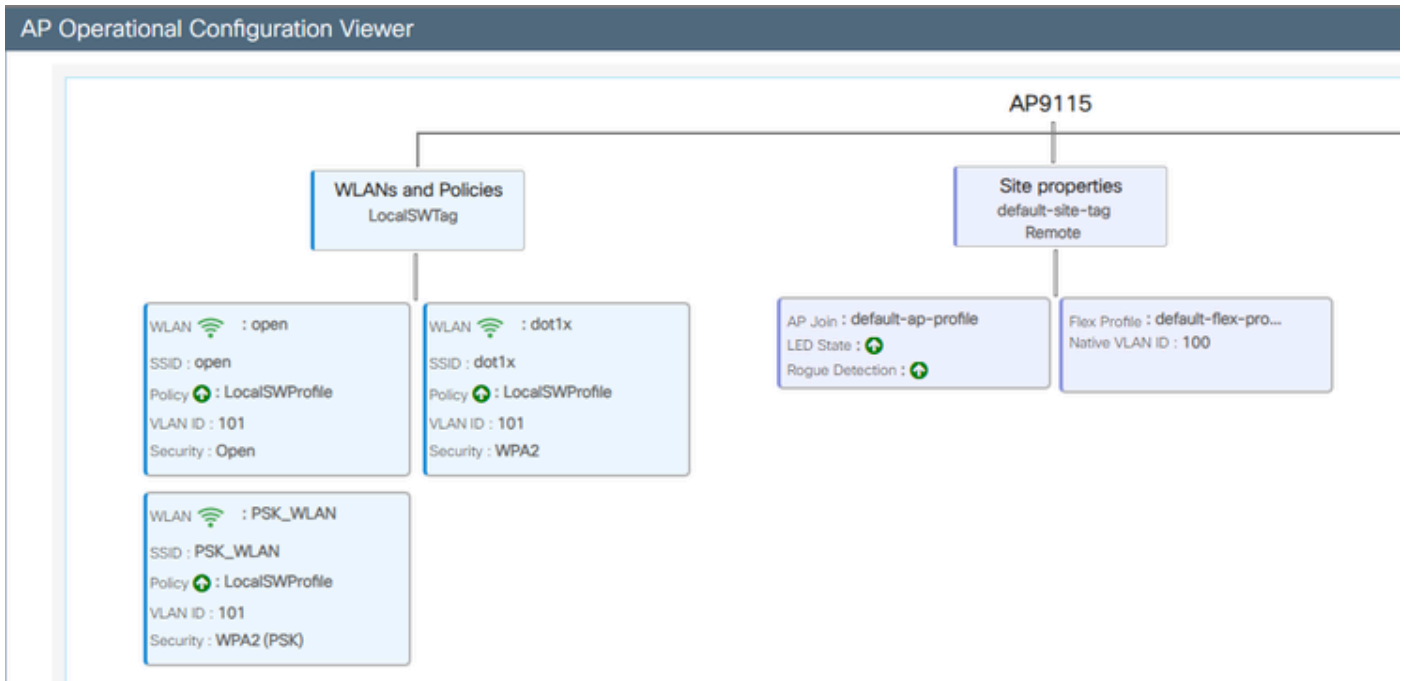
```
[...]
Switch1#ping 192.168.101.11 source 192.168.101.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.101.11, timeout is 2 seconds:
Packet sent with a source address of 192.168.101.1
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/6/8 ms
Switch1#
```

本地模式AP C9115也已加入EWC :

| AP Name | AP Model | Slots | Admin Status | Up Time | IP Address | Base Radio MAC | Ethernet MAC | AP Mode |
|------------|------------|-------|--------------|------------------------------|----------------|----------------|----------------|-------------|
| AP9115 | C9115AXE-B | 2 | ✓ | 0 days 0 hrs 35 mins 30 secs | 192.168.100.14 | 1cd1.e079.66e0 | 84f1.47b3.2cdc | Flex |
| AP9124_MAP | C9124AXI-B | 2 | ✓ | 0 days 0 hrs 52 mins 59 secs | 192.168.100.12 | 4ca6.4d23.9d40 | 3c57.31c5.a9f8 | Flex+Bridge |
| AP9124_RAP | C9124AXI-B | 2 | ✓ | 0 days 2 hrs 46 mins 57 secs | 192.168.100.11 | 4ca6.4d23.aee0 | 3c57.31c5.ac2c | Flex+Bridge |

AP 9115已加入EWC

建立了3個對映到策略配置檔案的WLAN (開放、PSK和dot1x) , 其中VLAN 101在訪問策略中定義 :



AP9115操作配置

無線客戶端可以連線到WLAN：

| Client MAC Address | IPv4 Address | IPv6 Address | AP Name | Slot ID | SSID | WLAN ID | Client Type | State |
|--------------------|----------------|----------------------|---------|---------|----------|---------|-------------|-------|
| 9294-808a-e572 | 192.168.101.14 | fe80::9294-808a-e572 | AP9115 | 1 | open | 4 | WLAN | Run |
| wc0a-3434-216c | 192.168.101.15 | fe80::wc0a-3434-216c | AP9115 | 1 | PSK_WLAN | 5 | WLAN | Run |

疑難排解

本節提供了有用的命令以及一些提示、技巧和建議。

有用的命令

在RAP/MAP上：

```
AP9124_RAP#show mesh
  adjacency          MESH Adjacency
  backhaul           MESH backhaul
  bgscan             MESH Background Scanning
  channel            MESH channels
  client-debug-filter MESH client debugging filter set
  config             MESH config parameter
  convergence        MESH convergence info
  dfs                MESH dfs information
  dhcp              Flex-mesh Internal DHCP Server
  ethernet           show mesh ethernet bridging
  forwarding         MESH Forwarding
  history            MESH history of events
  least-congested-scan Mesh least congested channel scan
  linktest          MESH linktest stats
  nat               Flex-mesh NAT/PAT
  res               MESH RES info
  security           MESH Security Show
  stats             MESH stats
  status            MESH status
  stp               MESH daisychain STP info
  timers            MESH Adjacency timers
```

顯示網格

```
AP9124_RAP#debug mesh
adjacency      MESH adjacency debugs
ap-link        MESH link debugs
bg-scan        Mesh background scanning debugs
channel        MESH channel debugs
clear          RESET all MESH debugs
client         Debug mesh clients
convergence    MESH convergence debugs
dhcp           MESH Internal DHCP debugs
dump-pkts      Dump mesh packets
events         MESH events
filter         MESH debug filter
forward-mcast  Mesh forwarding mcast debugs
forward-table  Mesh forwarding table debugs
history        MESH history of events
level          Enable different mesh debug levels
linktest       Mesh linktest debugs
nat            Mesh NAT debugs
path-control   MESH path-control debugs
port-control   MESH port-control debugs
security       MESH security debugs
stp            MESH daisychain STP debugs
wpa_suplicant Mesh WPA_SUPPLICANT debugs
wstp           MESH WSTP debugs
```

RAP/MAP調試網狀選項

在WLC上：

```

9124ENC#show wireless mesh ?
airtime-fairness    Shows Mesh AP Airtime Fairness information
ap                  Shows mesh AP related information
cac                 Shows Mesh AP cac related information
config              Show mesh configurations
convergence         Show mesh convergence details.
ethernet            Show wireless mesh ethernet
neighbor            Show neighbors of all connected mesh Aps
persistent-ssid-broadcast Shows Mesh AP persistent ssid broadcast
information
rrm                 Show wireless mesh rrm information

```

顯示無線網狀網

要在WLC上調試，最佳起點是使用RadioActive跟蹤和MAP/RAP的MAC地址。

示例1：RAP從MAP接收鄰接關係並成功進行身份驗證

<#root>

```

AP9124_RAP#show debug
mesh:

```

```

adjacent packet debugging is enabled

```

```

event debugging is enabled

```

```

mesh linktest debug debugging is enabled

```

```

Jan 16 14:47:01 AP9124_RAP kernel: [*01/16/2024 14:47:01.9559] EVENT-MeshRadio
Jan 16 14:47:01 AP9124_RAP kernel: [*01/16/2024 14:47:01.9559] EVENT-MeshAwppA
Jan 16 14:47:01 AP9124_RAP kernel: [*01/16/2024 14:47:01.9560] EVENT-MeshAwppA
Jan 16 14:47:01 AP9124_RAP kernel: [*01/16/2024 14:47:01.9570] CLSM[4C:A6:4D:2
Jan 16 14:47:04 AP9124_RAP kernel: [*01/16/2024 14:47:04.9588] EVENT-MeshRadio
Jan 16 14:47:04 AP9124_RAP kernel: [*01/16/2024 14:47:04.9592] EVENT-MeshLink
Jan 16 14:47:04 AP9124_RAP kernel: [*01/16/2024 14:47:04.9600] EVENT-MeshSecur
Jan 16 14:47:05 AP9124_RAP kernel: [*01/16/2024 14:47:05.1008] EVENT-MeshSecur
Jan 16 14:47:05 AP9124_RAP kernel: [*01/16/2024 14:47:05.1011] EVENT-MeshSecur
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.1172] EVENT-MeshSecur
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.1173] EVENT-MeshSecur
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.1173] EVENT-MeshSecur
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2033] EVENT-MeshSecur
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2139] EVENT-MeshSecur
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2139] EVENT-MeshSecur
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2143] EVENT-MeshSecur

Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2143] EVENT-MeshSecur

Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2143] EVENT-MeshLink:

Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2143] EVENT-MeshLink:

```



```

Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2144] EVENT-MeshLink
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2146] EVENT-MeshAwppA
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2147] EVENT-MeshAwppA
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2151] EVENT-MeshAwppA
Jan 16 14:47:06 AP9124_RAP kernel: [*01/16/2024 14:47:06.2151] EVENT-MeshAwppA
Jan 16 14:47:19 AP9124_RAP kernel: [*01/16/2024 14:47:19.3576] EVENT-MeshRadio
Jan 16 14:47:19 AP9124_RAP kernel: [*01/16/2024 14:47:19.3577] EVENT-MeshRadio
Jan 16 14:47:19 AP9124_RAP kernel: [*01/16/2024 14:47:19.3577] EVENT-MeshRadio

```

示例2：MAP Mac地址未增加到WLC或未正確增加

<#root>

```

Jan 16 14:52:13 AP9124_RAP kernel: [*01/16/2024 14:52:13.6402] INFO-MeshRadio
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7407] INFO-MeshRadio
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7408] EVENT-MeshRadio
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7409] INFO-MeshRadio
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7411] EVENT-MeshLink
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7419] EVENT-MeshSecur
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7583] EVENT-MeshSecur
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7586] EVENT-MeshSecur
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7586] EVENT-MeshSecur
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7620] INFO-MeshRadio
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7620] INFO-MeshRadio
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7621] INFO-MeshAwppAc
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7621] 0x3c 0x57 0x31
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7621] INFO-MeshAwppAc
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7621] INFO-MeshAwppAc
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7621] INFO-MeshAwppAc
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7621] INFO-MeshAwppAc
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7622] 0xff 0xff 0xff
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7622] INFO-MeshAwppAc
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7622] INFO-MeshAwppAc
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7622] 0xaa 0xff 0x00
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7622] INFO-MeshAwppAc
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7623] INFO-MeshAwppAc
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7623] 0xaa 0xff 0xaa
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7623] INFO-MeshRadio
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7636] EVENT-MeshRadio
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7637] INFO-MeshRadio
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7642] EVENT-MeshLink
Jan 16 14:52:15 AP9124_RAP kernel: [*01/16/2024 14:52:15.7642] EVENT-MeshSecur

```

示例3：RAP丢失對映

<#root>

```
Jan 16 14:48:58 AP9124_RAP kernel: [*01/16/2024 14:48:58.9929] INFO-MeshRadio
Jan 16 14:48:59 AP9124_RAP kernel: [*01/16/2024 14:48:59.2889] INFO-MeshAwppAc
Jan 16 14:48:59 AP9124_RAP kernel: [*01/16/2024 14:48:59.7894] INFO-MeshAwppAc
Jan 16 14:48:59 AP9124_RAP kernel: [*01/16/2024 14:48:59.9931] INFO-MeshRadio
Jan 16 14:48:59 AP9124_RAP kernel: [*01/16/2024 14:48:59.9932] INFO-MeshRadio
Jan 16 14:49:00 AP9124_RAP kernel: [*01/16/2024 14:49:00.2891] INFO-MeshAwppAc
Jan 16 14:49:00 AP9124_RAP kernel: [*01/16/2024 14:49:00.7891] INFO-MeshAwppAc
Jan 16 14:49:00 AP9124_RAP kernel: [*01/16/2024 14:49:00.9937] INFO-MeshRadio
Jan 16 14:49:00 AP9124_RAP kernel: [*01/16/2024 14:49:00.9938] INFO-MeshRadio
Jan 16 14:49:01 AP9124_RAP kernel: [*01/16/2024 14:49:01.2891] INFO-MeshAwppAc

Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5480] EVENT-MeshAwppAc

Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5481] EVENT-MeshRadio
Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5481] EVENT-MeshRadio

Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5488] EVENT-MeshRadio

Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5489] INFO-MeshRadio
Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5501] EVENT-MeshRadio

Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5501] EVENT-MeshAdj[1

Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5502] EVENT-MeshRadio
Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5511] EVENT-MeshLink
Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5512] EVENT-MeshSecur
Jan 16 14:49:25 AP9124_RAP kernel: [*01/16/2024 14:49:25.5513] EVENT-MeshLink
```

提示、技巧和建議

- 透過線上將MAP和RAP升級到相同的映象版本，我們避免了透過空中下載映象（在「髒」RF環境中可能會出現問題）。
- 強烈建議先在受控環境中測試設定，然後再將其部署到現場。
- 如果測試乙太網橋接，在每一端使用Windows筆記型電腦進行橋接，請注意，要在Windows裝置之間測試ICMP，需要在系統防火牆上允許ICMP。預設情況下，Windows裝置在系統防火牆中阻止ICMP。
- 如果使用帶有外部天線的AP，請務必參閱部署指南，檢查哪些天線相容，以及應該插入哪個埠。
- 為了透過網狀鏈路橋接來自不同VLAN的流量，需要停用VLAN透明功能。
- 考慮在AP本地設定系統日誌伺服器，因為它可以提供除錯資訊，否則只能透過控制檯連線使用。

參考資料

[Catalyst存取點上的思科嵌入式無線控制器資料表](#)

[Catalyst存取點上的思科嵌入式無線控制器\(EWC\)白皮書](#)

[在移動性Express AP上配置帶有乙太網橋接的點對點網狀鏈路](#)

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）。