

在Flex和網橋模式下為本地資料橋接配置網狀AP

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簡介

本文檔介紹如何在Flex和網橋模式下為本地客戶端資料橋接（繞過RAP）配置MAP。

必要條件

需求

思科建議您瞭解以下主題：

- Catalyst無線9800組態型號
- LAP配置
- 控制和提供無線接入點(CAPWAP)
- 思科交換機的配置

採用元件

此範例利用輕量型存取點（9124AP型號），其可設定為根存取點(RAP)或網狀存取點(MAP)，以與Catalyst 9800無線LAN控制器(WLC)無縫整合。

本文中的資訊係根據以下軟體和硬體版本：

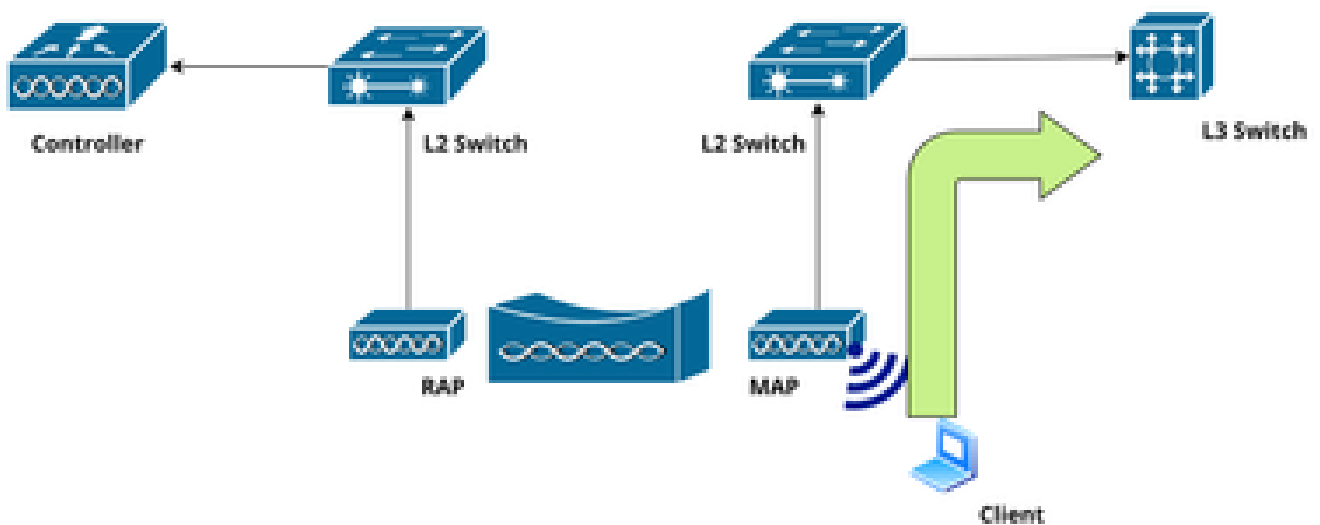
- C9800-L v17.12.5
- Cisco Catalyst 3850 交換器
- Cisco Catalyst 9124AX系列存取點

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。

設定

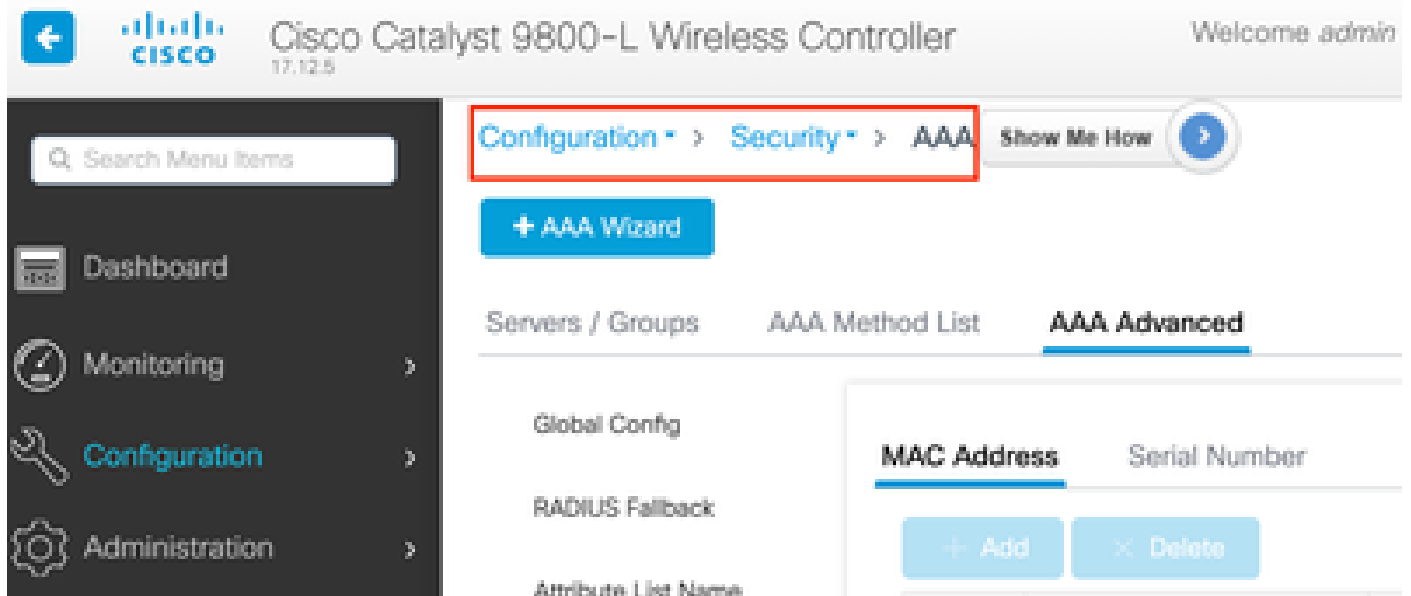
本節概述網狀無線接入點(MAP)的配置，這些無線接入點以網狀網+網橋模式運行，允許本地客戶端資料繞過根無線接入點(RAP)直接橋接到上行鏈路交換機。

網路圖表

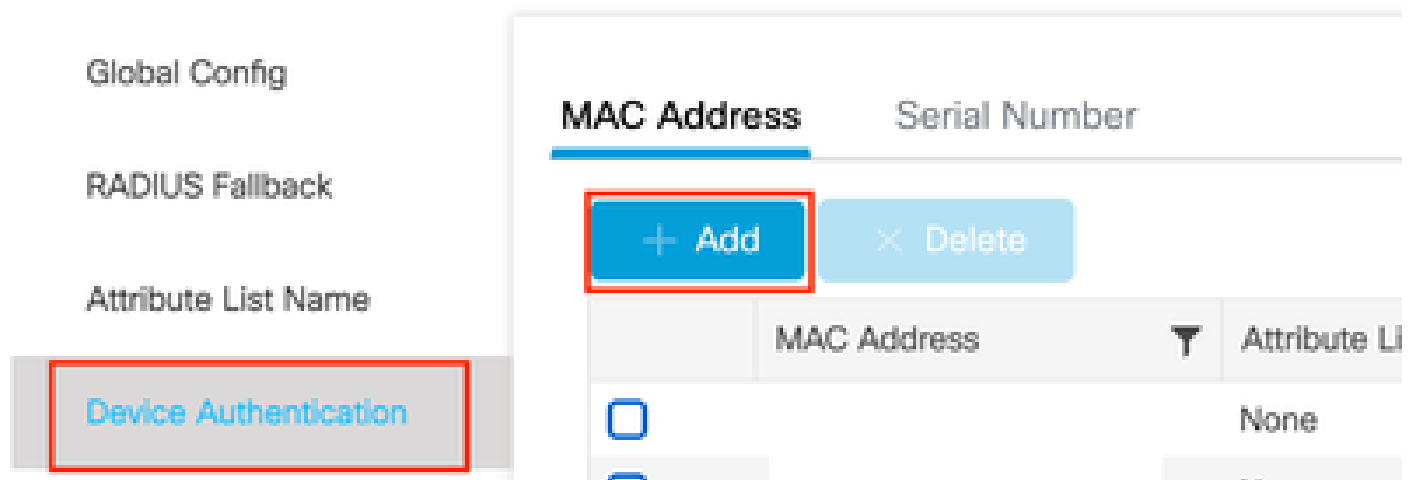


將接入點新增到控制器本地資料庫

第1步:導航到Configuration > Security > AAA > AAA Advanced。



步驟2. SelectDevice Authenticationand selectAdd。



步驟3.輸入AP的基本乙太網路MAC位址，以加入WLC。 將Attribute List名稱留空，然後選擇Apply to Device。

MAC Address* 3a5f1c8e729b

Attribute List Name None

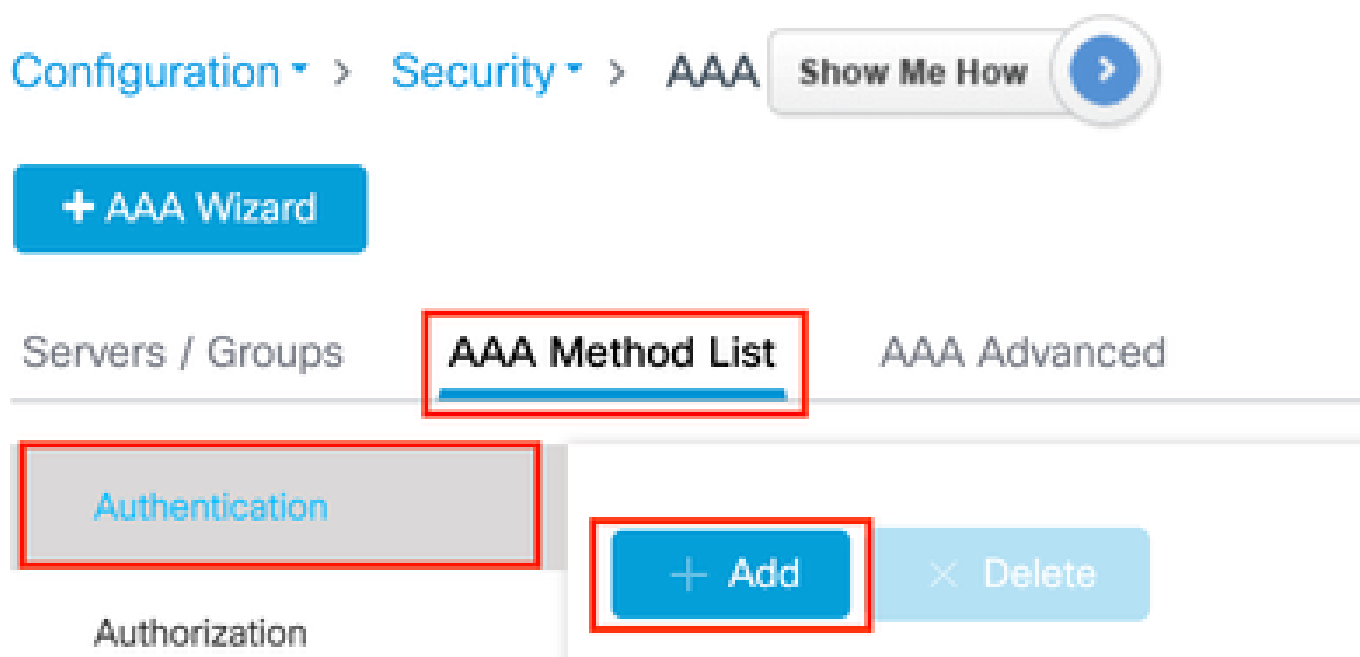
Description

WLAN Profile Name Select a value

Cancel **Apply to Device**

用於身份驗證的AAA方法清單

第1步：導航到Configuration > Security > AAA > AAA Method List >Authentication並選擇Add。



步驟 2:定義方法清單名稱。從Type*下拉選單中選擇dot1x，然後為Group Type選擇local。選擇Apply to Device儲存配置。

Method List Name*	MESH		
Type*	dot1x		
Group Type	local		
Available Server Groups	Assigned Server Groups		
radius ldap tacacs+ HTTSGROUP ISE_DD_Group ISE_HA Test	> < > <		~ ~ ~ ~

Cancel

Update & Apply to Device

用於授權的AAA方法清單

第1步：導航到Configuration > Security > AAA > AAA Method List > Authorization，然後選擇Add。

+ AAA Wizard

Servers / Groups

AAA Method List

AAA Advanced

Authentication

Authorization

Accounting

+ Add

× Delete

	Name	Type
	default	exec

步驟 2:定義方法清單名稱，從Type*下拉選單和local中選擇credential download for theGroup Type。按一下Apply to Device。

Method List Name*	MESH-Authorization
Type*	credential-downlo... ⓘ
Group Type	local ⓘ
Authenticated	☐
Available Server Groups	Assigned Server Groups
radius ldap tacacs+ HTTSGROUP ISE_DD_Group ISE_HA Test	➤ ⬅ ➡ ⬅ ⬅ ⬅ ⬅ ⬅

↶ Cancel

💾 Update & Apply to Device

網格剖面

第1步：導航至Configuration > Wireless > Mesh > Profiles並選擇Add。

Configuration ▾ > Wireless ▾ > Mesh

Global Config

Profiles

+ Add

× Delete

步驟 2:在「General」頁籤下，定義「網格」配置檔案的名稱和說明(可選)。

General

Advanced

Name*

MESH-Profile

Description

Enter Description

Range (Root AP to Mesh AP)

12000

Multicast Mode

In-Out ▼

IDS (Rogue/Signature Detection)

☐

第3步：在「高級」選項卡中，將Method欄位設定為EAP，然後從下拉選單中選擇先前建立的 Authorization和Authentication配置檔案。最後，啟用Ethernet Bridging覈取方塊，然後選擇Update and apply。

General

Advanced

Security

Method

EAP

Authentication Method

MESH

Authorization Method

MESH-Authorizati...

Ethernet Bridging

VLAN Transparent

☐

Ethernet Bridging

☒

AP加入配置檔案

步驟 1:導航到Configuration > Tag & Profiles > AP Join > Profile，然後點選Add。

Configuration > Tags & Profiles > AP Join

+ Add

× Delete

Clone

AP Join Profile Name

步驟 2:定義配置檔案名稱和說明（可選）。

General

Client

CAPWAP

AP

Management

S

Name*

Mesh-AP-Join

Description

Enter Description

Country Code

IN



Time Zone



Not Configured



Use-Controller



Delta from WLC

第3步：導航到AP頁籤，從Mesh Profile Name下拉選單中選擇Mesh Profile，為EAP Type設定EAP-FAST，為AP Authorization Type設定CAPWAP DTLS，然後點選Apply to Device。

Edit AP Join Profile

General

Client

CAPWAP

AP

Management

Security

ICap

QoS

Geolocation

General

Power Management

Hyperlocation

AP Statistics

Power Over Ethernet

Switch Flag

Power Injector State

Power Injector Type

Injector Switch MAC

AP EAP Auth Configuration

EAP Type

AP Authorization Type

Client Statistics Reporting Interval

5 GHz (sec)

2.4 GHz (sec)

Extended Module

Enable

Mesh

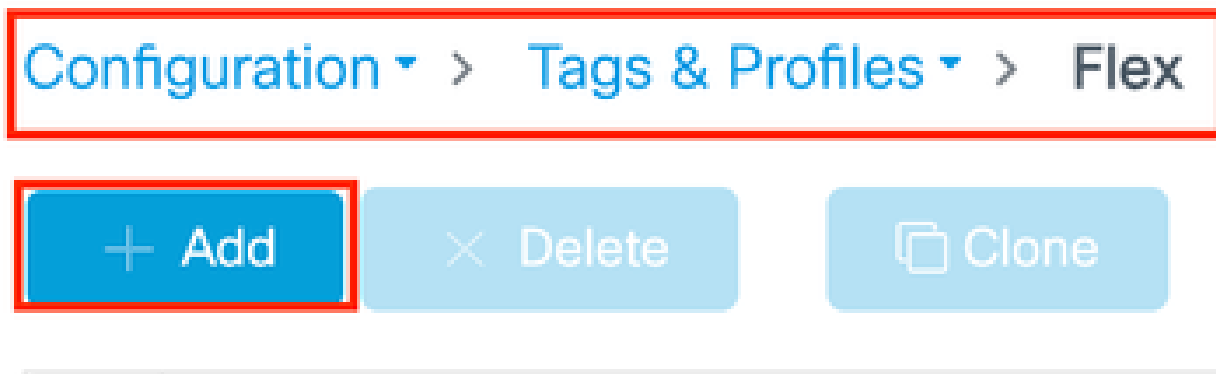
Profile Name

Cancel

Update & Apply to Device

Flex配置檔案

第1步：Configuration > Tags & Profiles > Flex，然後點選Add。



步驟 2:定義Flex配置文件的名稱。

General	Local Authentication	Policy ACL	VLAN	DNS Layer Security
Name*	Mesh-Flex		Fallback Radio Shut	
Description	Enter Description		Flex Resilient	

步驟 3:導覽至vlan索引標籤並設定VLAN名稱和VLAN ID以設定無線使用者端流量的本地橋接，然後按一下Save。

General	Local Authentication	Policy ACL	VLAN	DNS Layer Security								
+ Add - Delete <table border="1"> <thead> <tr> <th>VLAN Name</th> <th>ID</th> <th>Ingress ACL</th> <th>Egress ACL</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>10</td> <td></td> <td></td> </tr> </tbody> </table> No items to display					VLAN Name	ID	Ingress ACL	Egress ACL	0	10		
VLAN Name	ID	Ingress ACL	Egress ACL									
0	10											

VLAN Name*
Bridge-VLAN

VLAN ID*
100

ACL
☒ Unidirectional ☐ Bidirectional

Ingress ACL
Select ACL

Egress ACL
Select ACL

Save
Cancel

Cancel
Update & Apply to Device

策略配置檔案

步驟 1:導覽至Configuration > Tags & Profiles > Policy，然後按一下Add。

Configuration ▾ > Tags & Profiles ▾ > Policy

+ Add

× Delete

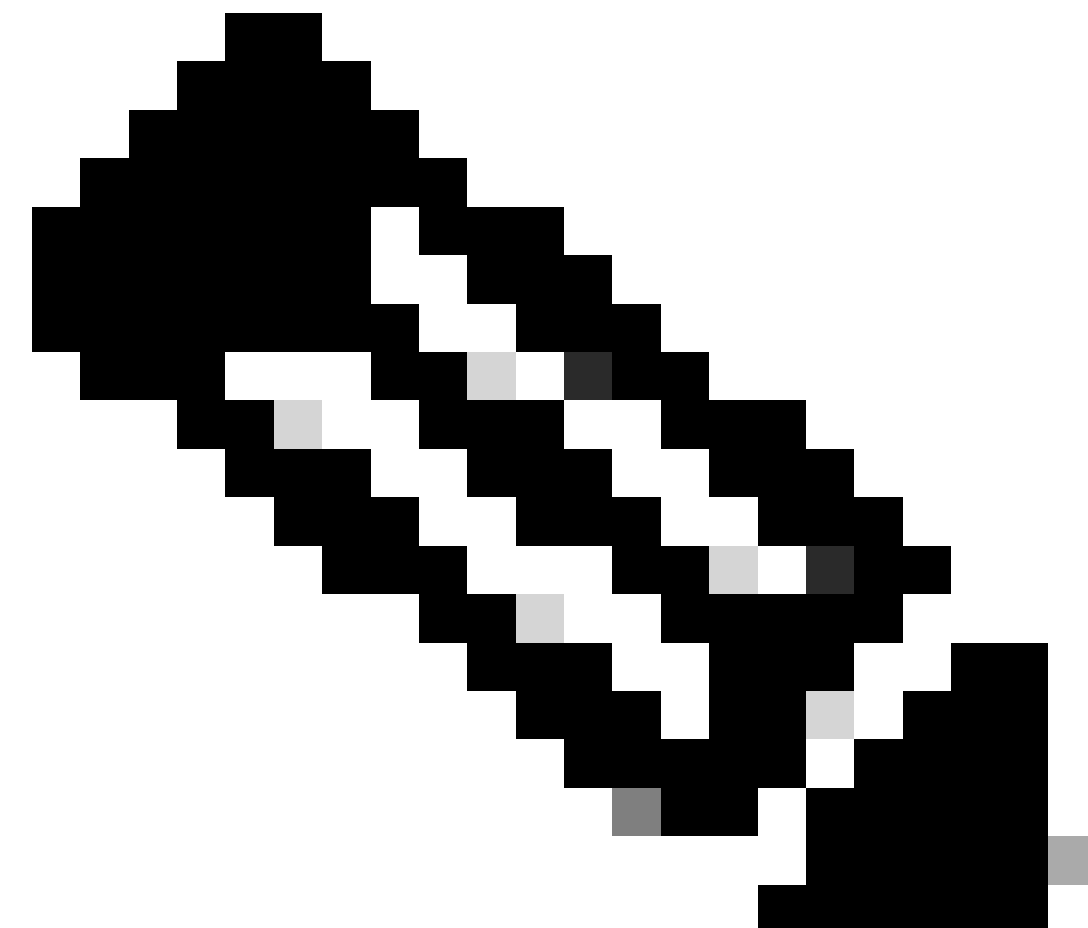
Clone

Admin
Status ▾

Associated
Policy Tags ⓘ ▾

Policy Profile Name

步驟 2:在General選項卡下，定義配置式名稱，將Status設為Enabled，然後DisableCentral Switching。



附註：要啟用客戶端流量的本地橋接，必須禁用集中交換。根據SSID配置，可以根據需要啟用或禁用其他選項。

General

Access Policies

QoS and AWC

Mobility

Advanced

Name*

Bridge-Policy

Description

Enter Description

Status

ENABLED

Passive Client

DISABLED

IP MAC Binding

ENABLED

Encrypted Traffic Analytics

DISABLED

CTS Policy

Inline Tagging

☐

SGACL Enforcement

☐

Default SGT

2-65519

WLAN Switching Policy

Central Switching

DISABLED

Central Authentication

ENABLED

Central DHCP

DISABLED

Flex NAT/PAT

DISABLED

Cancel

Update & Apply to Device

第3步：配置AP Flex Profile的VLAN頁籤下指定的VLAN，然後按一下Update & Apply。

General
Access Policies
QoS and AVC
Mobility
Advanced

RADIUS Profiling
☐

HTTP TLV Caching
☐

DHCP TLV Caching
☐

WLAN Local Profiling

Global State of Device Classification
Enabled ⓘ

Local Subscriber Policy Name
 ⓘ

VLAN

VLAN/VLAN Group
 ⓘ

Multicast VLAN

WLAN ACL

IPv4 ACL
 ⓘ

IPv6 ACL
 ⓘ

URL Filters
ⓘ

Pre Auth
 ⓘ

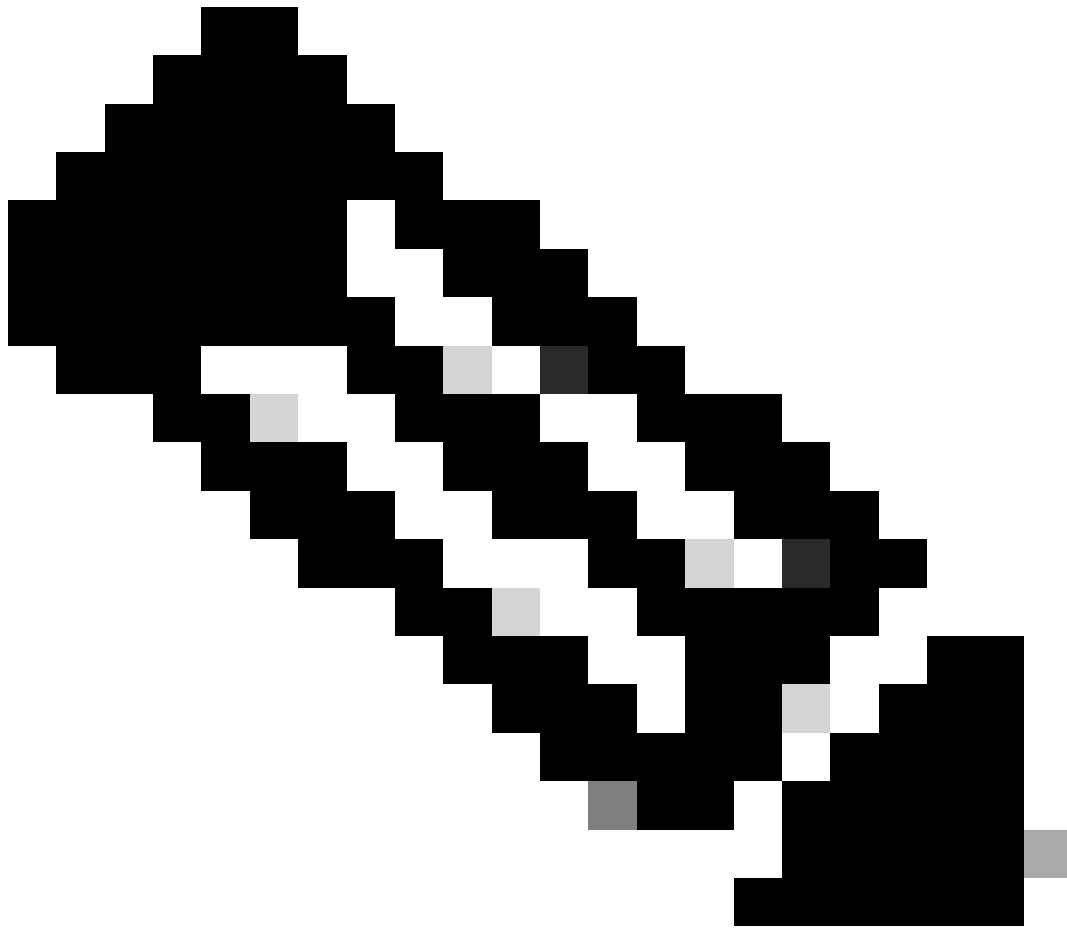
Post Auth
 ⓘ

WLAN標籤

步驟 1:導覽至Configuration > Tags & Profiles > WLANs，然後選擇Add。

步驟 2:在General索引標籤下，設定Profile name、SSID，並將狀態設為啟用。

步驟 3:選擇安全頁籤，啟用WAP+WPA2並配置預共王金鑰。



附註：SSID配置完全取決於您的要求。在本示例中，配置了一個基於PSK的SSID。

General

Security

Advanced

Add To Policy Tags

Profile Name*

Bridge

R

SSID*

Bridge-SSID

WLAN ID*

6

6

St

Status

ENABLED



Broadcast SSID

ENABLED



5

St

Add Policy Tag

Name*

Mesh-Policy-Tag

Description

Enter Description

WLAN-POLICY Maps: 0

+ Add

× Delete

WLAN Profile

Policy Profile

10

No items to display

Map WLAN and Policy

WLAN Profile*

Bridge

Policy Profile*

Bridge-Policy

×

✓

> WLAN-POLICY Maps: 0

Cancel

Apply to Device

網站標籤

步驟 1:導覽至Configuration > Tags & Profiles > Tags > Site，然後按一下Add。

Configuration ▾ > Tags & Profiles ▾ > Tags

Policy

Site

RF

AP

+ Add

× Delete

Clone

第2步：配置標籤名稱，禁用Enable Local Site選項，然後將AP加入配置檔案和Flex配置檔案相關聯。

Edit Site Tag

Name* Mesh-Site-Tag

Description Enter Description

AP Join Profile Mesh-AP-Join

Flex Profile Mesh-Flex

Fabric Control Plane Name

Enable Local Site ☐

Load* 0

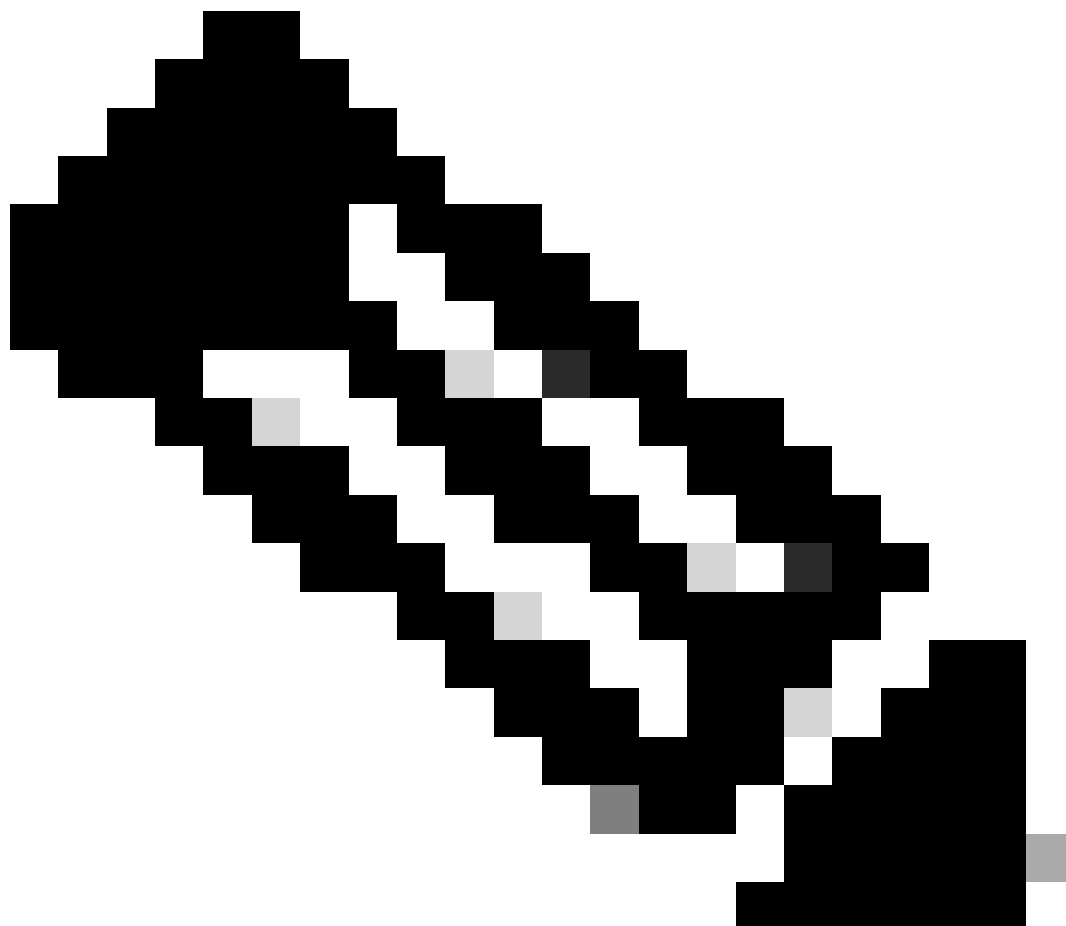
Cancel Update & Apply to Device

存取點的組態

此案例研究假設存取點(AP)首先以本機模式連線到無線LAN控制器(WLC)，然後轉換為Flex+Bridge模式。

步驟 1:導覽至Configuration > Wireless > Access Points，然後選擇AP。

步驟 2:將Site Tag和Policy Tag分配給接入點(AP)。



附註：存取點(AP)會重新啟動，並在Flex+Bridge模式下與控制器建立連線，且網狀標籤會可用。

General		Tags	
AP Name*	AP34B8.8314.A204	⚠ Changing Tags will cause the AP to momentarily lose association with the Controller. Writing Tag Config to AP is not allowed while changing Tags.	
Location*	default location		
Base Radio MAC	34b8.831d.05a0		
Ethernet MAC	34b8.8314.a204	Policy	Mesh-Policy-Tag ⓘ
Admin Status	ENABLED ☒	Site	Mesh-Site-Tag ⓘ

步驟 3:在「網格」(Mesh)頁籤下，選擇要根的角色

Edit AP

General

Interfaces

High Availability

Inventory

Geolocation

Mesh

Advanced

Support Bundle

General

Ethernet Port Configuration

Block Child

☐

Daisy Chaining

☐

Daisy Chaining strict-RAP

☐

Preferred Parent MAC

0000.0000.0000

Role

Root

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

Port

0

Mode

access

VLAN ID*

0

步驟 4:對指定用作網狀AP的接入點(AP)重複步驟1和2，使其在Flex+Bridge模式下聯機。導航到 Mesh頁籤並將角色配置為Mesh。

步驟 5:網狀無線接入點連線到埠0上的交換機，配置為中繼模式，並將AP VLAN設定為本地VLAN。確保允許的VLAN包括在Flex配置檔案中指定的客戶端VLAN。

步驟 6:按一下「Update and Apply」。

General

Interfaces

High Availability

Inventory

Geolocation

Mesh

Advanced

Support Bundle

General

Ethernet Port Configuration

Block Child

☐

Daisy Chaining

☐

Daisy Chaining strict-RAP

☐

Preferred Parent MAC

0000.0000.0000

Role

Mesh

Remove PSK

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

Port

0

Mode

trunk

Native VLAN ID*

2074

Allowed VLAN IDs

100

交換機埠配置

```
interface GigabitEthernet1/0/4
switchport trunk allowed vlan 100
switchport mode trunk
end
```

驗證

網狀AP與根AP關聯：

```
#show wireless mesh ap summary
AP Name AP Model BVI MAC BGN AP Role
-----
AP34B8.8314.A204 C9124AXI-ROW 34b8.8314.a204 Default Root AP
APC828.E536.D47C C9124AXI-ROW c828.e536.d47c Default Mesh AP
Number of Flex+Bridge APs : 2
Number of Flex+Bridge RAPs : 1
Number of Flex+Bridge MAPs : 1
```

```
#show wireless mesh ap tree
=====
AP Name [Hop Ctr,Link SNR,BG Name,Channel,Pref Parent,Chan Util,Clients]
=====
[Sector 1]
-----
AP34B8.8314.A204 [0, 0, Default, (36,40), 0000.0000.0000, 5%, 0]
|-APC828.E536.D47C [1, 68, Default, (36,40), 0000.0000.0000, 6%, 0]

Number of Bridge APs : 2
Number of RAPs : 1
Number of MAPs : 1
```

Mesh AP上的客戶端關聯：

```
#show flexconnect client
Flexconnect Clients:
mac radio vap aid state encr aaa-vlan aaa-ac1 aaa-ipv6-ac1 assoc auth switching key-method roam key-pro
52:95:C7:EE:B7:E5 0 0 1 FWD AES_CCM128 none none none Local Central Local Other regular No Yes No 0

#show controllers dot11Radio 0 client
mac radio vap aid state encr Maxrate Assoc Cap is_wgb_wired wgb_mac_addr
52:95:C7:EE:B7:E5 0 0 1 FWD AES_CCM128 MCS92SS HE HE false 00:00:00:00:00:00

#show flexconnect client aaa-override
Flexconnect Clients:
mac vlan qos ac1 ipv6-ac1 vlan-name avgdtlds avgrtdtlds bstdtlds bstrtdtlds avgdtus avgrtdtus bstdtus bstrt
52:95:C7:EE:B7:E5 none none none none Bridge-VLAN 0 0 0 0 0 0 0 0 0
```

來自網狀無線接入點(MAP)的流量直接橋接至上行鏈路交換機，繞過根無線接入點(RAP):

<#root>

DHCP:

May 30 04:25:21 APC828.E536.D47C kernel: [*05/30/2025 04:25:21.2883] [62081:607119] [APC828.E536.D47C]

[U:C] DHCP_REQUEST : TransId 0x3bcb0a7b

May 30 04:25:21 APC828.E536.D47C kernel: [*05/30/2025 04:25:21.2884] chatter: dhcp_req_local_sw_nonat: 1

May 30 04:25:21 APC828.E536.D47C kernel: [*05/30/2025 04:25:21.2885] [62081:607245] [APC828.E536.D47C]

[U:C] DHCP_REQUEST : TransId 0x3bcb0a7b

May 30 04:25:21 APC828.E536.D47C kernel: [*05/30/2025 04:25:21.2885] chatter: dhcp_reply_nonat: 17485791

May 30 04:25:21 APC828.E536.D47C kernel: [*05/30/2025 04:25:21.2943] [62081:613080] [APC828.E536.D47C]

[D:C] DHCP_ACK : TransId 0x3bcb0a7b

May 30 04:25:21 APC828.E536.D47C kernel: [*05/30/2025 04:25:21.2943] [62081:613123] [APC828.E536.D47C]

[D:W] DHCP_ACK : TransId 0x3bcb0a7b

ARP:

May 30 04:31:44 APC828.E536.D47C kernel: [*05/30/2025 04:31:44.0572] [62464:537183] [APC828.E536.D47C]

[U:W] ARP_QUERY : Sender 100.0.0.2 TargIp 100.0.0.1

May 30 04:31:44 APC828.E536.D47C kernel: [*05/30/2025 04:31:44.0572] [62464:537219] [APC828.E536.D47C]

[U:C] ARP_QUERY : Sender 100.0.0.2 TargIp 100.0.0.1

May 30 04:31:44 APC828.E536.D47C kernel: [*05/30/2025 04:31:44.0573] chatter: ethertype_cl1: 1748579504.

May 30 04:31:44 APC828.E536.D47C kernel: [*05/30/2025 04:31:44.0628] [62464:542842] [APC828.E536.D47C]

[D:C] ARP_REPLY : Sender 100.0.0.1 HwAddr c4:44:a0:a2:61:d1

May 30 04:31:44 APC828.E536.D47C kernel: [*05/30/2025 04:31:44.0629] chatter: fromdevs_arp_resp: arp rep

May 30 04:31:44 APC828.E536.D47C kernel: [*05/30/2025 04:31:44.0629] [62464:542971] [APC828.E536.D47C]

[D:C] ARP_REPLY : Sender 100.0.0.1 HwAddr c4:44:a0:a2:61:d1

May 30 04:31:44 APC828.E536.D47C kernel: [*05/30/2025 04:31:44.0630] [62464:543018] [APC828.E536.D47C]

[D:W] ARP_REPLY : Sender 100.0.0.1 HwAddr c4:44:a0:a2:61:d1

May 30 04:31:45 APC828.E536.D47C kernel: [*05/30/2025 04:31:45.4301] [62465:910100] [APC828.E536.D47C]

[D:A] ARP_REPLY : Sender 100.0.0.1 HwAddr c4:44:a0:a2:61:d1

ICMP:

May 30 04:32:09 APC828.E536.D47C kernel: [*05/30/2025 04:32:09.3059] [62489:785903] [APC828.E536.D47C]

[U:W] ICMP_ECHO : Id 39016 Seq 0

May 30 04:32:09 APC828.E536.D47C kernel: [*05/30/2025 04:32:09.3059] [62489:785938] [APC828.E536.D47C]

[U:C] ICMP_ECHO : Id 39016 Seq 0

May 30 04:32:09 APC828.E536.D47C kernel: [*05/30/2025 04:32:09.3104] [62489:790444] [APC828.E536.D47C]

[D:C] ICMP_ECHO_REPLY : Id 39016 Seq 0

May 30 04:32:09 APC828.E536.D47C kernel: [*05/30/2025 04:32:09.3105] [62489:790534] [APC828.E536.D47C]

[D:C] ICMP_ECHO_REPLY : Id 39016 Seq 0

May 30 04:32:09 APC828.E536.D47C kernel: [*05/30/2025 04:32:09.3105] [62489:790583] [APC828.E536.D47C]

[D:W] ICMP_ECHO_REPLY : Id 39016 Seq 0

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）。