使用Catalyst 9800 WLC排除CW917X Wifi7 AP加入问题

目录

简介

本文档介绍跨多个阶段排除WiFi7 AP加入故障的方法。

使用的组件

- 9800系列无线控制器
- Cisco IOS XE 17.18.03版本
- CW9172I

AP启动问题

当新的WiFi7 AP未盒装且无法正确引导时，首先检查LED状态和控制台启动日志。您可以参考特定AP型号的硬件安装指南，检查各种AP条件的LED状态：WiFi7 AP安装指南

- 根据AP数据表验证AP的最低功率要求（PoE类/瓦数）和预期的LED状态，以排除电源问题：Cisco Wireless 9172系列接入点数据表
- 如果电源足够，AP成功引导并将Meraki操作系统加载为其主/默认映像。
- 在Meraki模式下，AP在CDP中不可见，这是在AP收到IP地址之前的第一次；请使用LLDP在网络上发现它。

AP无法获取IP地址

如果AP无法获取IP地址，在AP控制台上，您可以看到处于0天离线迁移模式的AP:

在<Meraki>控制台提示符处运行offline-migration-info，以获取当前日志和迁移尝试的状态。

<#root>

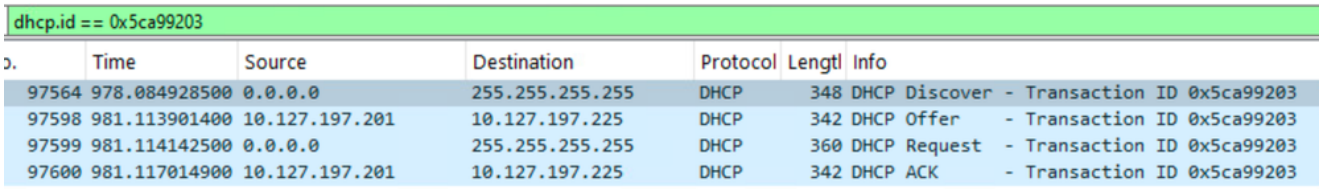
```
<Meraki>

offline-migration-info


| [2000-01-01 00:00:36.528] AP in day0 - offline migration
```

如果AP保持此状态：

- 验证上行链路交换机的交换机端口配置：它可以是接入模式，也可以是将AP管理VLAN设置为本地的中继模式。
- 收集AP上行链路交换机端口上的数据包捕获并检查DORA（发现、提供、请求、确认）流，以确认DHCP请求是否到达服务器，所提供内容是否返回。以下是AP与DHCP服务器之间成功进行DHCP事务的示例：



dhcp.id == 0x5ca99203

).	Time	Source	Destination	Protocol	Lengtl	Info
97564	978.084928500	0.0.0.0	255.255.255.255	DHCP	348	DHCP Discover - Transaction ID 0x5ca99203
97598	981.113901400	10.127.197.201	10.127.197.225	DHCP	342	DHCP Offer - Transaction ID 0x5ca99203
97599	981.114142500	0.0.0.0	255.255.255.255	DHCP	360	DHCP Request - Transaction ID 0x5ca99203
97600	981.117014900	10.127.197.201	10.127.197.225	DHCP	342	DHCP ACK - Transaction ID 0x5ca99203

AP上行链路捕获：AP和DHCP服务器之间的DHCP事务(DORA)成功

AP Catalyst模式转换故障

CW917x系列接入点(AP)与旧的Catalyst 9100系列AP采用不同的迁移机制。要将CW917x AP转换为Catalyst模式，该过程依赖于特定网络配置，包括DHCP选项、DNS设置和云可达性。

AP首先尝试使用DHCP选项43方法。如果没有配置值或IP无法访问，则返回DNS方法。以下是可能会中断此转换过程的常见问题。

快速离线迁移的问题

DHCP选项43(0xF3)迁移问题

- 选项43值无效：AP未收到有效的十六进制值(例如，未能以正确的子选项类型（如0xF3）开始)。

<#root>

```
<Meraki>

offline-migration-info


| [2000-01-01 00:00:36.528] AP in day0 - offline migration
| [2000-01-01 00:06:54.265] [init] start offline migration detection (v1.1)
| [2000-01-01 00:07:59.65 ] [fast-offline-migration-delay] forcing DHCPv6 INFORMATION REQUEST
| [2000-01-01 00:08:04.112] [fast-offline-migration][v4]

no fast offline migration by DHCP


| [2000-01-01 00:08:04.113] [fast-offline-migration][v6]

no fast offline migration by DHCP


| [2000-01-01 00:08:04.113] [fast-offline-migration] waiting for 420sec before taking any migration dec
```

- ICMP故障：AP首先尝试访问从DHCP服务器选项43(0xF3)收到的已解析IP。如果无法通过ICMP访问已解析IP，则AP无法切换到Catalyst模式。

<#root>

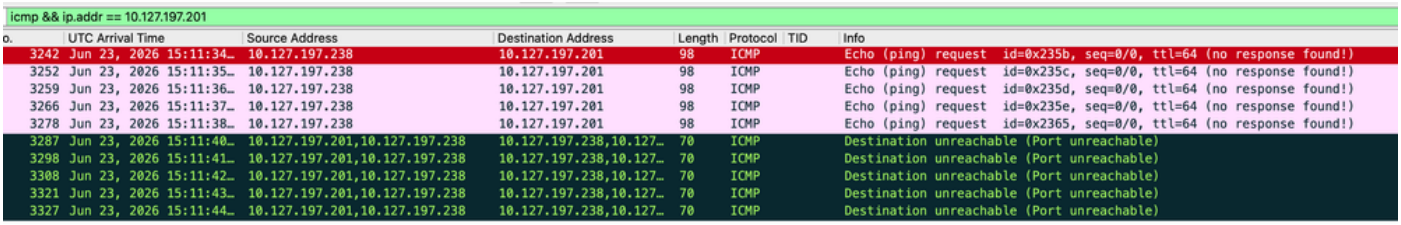
```
<Meraki> offline-migration-info
| [2000-01-01 00:00:48.388] AP in day0 - offline migration
| [2000-01-01 00:02:59.526] [init] start offline migration detection (v1.2)
| [2000-01-01 00:04:00.774] [fast-offline-migration-delay] forcing DHCPv6 INFORMATION REQUEST
| [2000-01-01 00:04:10.799] [fast-offline-migration]
```

[v4][icmp] DHCP: WLC 10.127.197.201 is unreachable >>

```
Here 10.127.197.201 is IP of Switch present in Network
| [2000-01-01 00:04:15.906] [fast-offline-migration]
```

[v4][capwap] DHCP: WLC 10.127.197.201 is down

```
| [2000-01-01 00:04:15.906] [fast-offline-migration][v4] no fast offline migration by DHCP
| [2000-01-01 00:04:15.906] [fast-offline-migration][v6] no fast offline migration by DHCP
```



AP上行链路捕获：无法通过ICMP访问已解析的IP

注意：

AP始终执行ICMP可达性测试，然后执行CAPWAP可达性。

当您的网络中没有WLC时，可以使用ICMP可达性机制。

如果接入点(AP)通过DHCP选项43(0xF3)获取无线局域网控制器(WLC)IP地址，且从AP到WLC IP的CAPWAP流量不可达，但可以通过ICMP到达WLC IP，则AP仍可以切换到Catalyst模式。

如果接入点(AP)通过DHCP选项43(0xF3)获取在不支持的版本中运行的无线局域网控制器(WLC)IP地址，但对WLC IP的ICMP可达性可用，则AP仍可以切换到Catalyst模式。但是，它无法加入WLC。

以下是具有ICMP可达性的成功迁移：

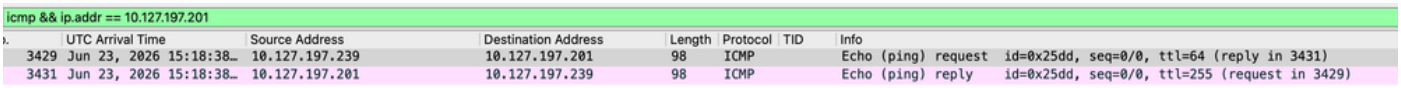
<#root>

```
<Meraki> offline-migration-info
| [2000-01-01 00:00:49.2 ] AP in day0 - offline migration
| [2000-01-01 00:03:00.367] [init] start offline migration detection (v1.2)
| [2000-01-01 00:04:03.34 ] [fast-offline-migration-delay] forcing DHCPv6 INFORMATION REQUEST
| [2000-01-01 00:04:08.56 ]
```

[fast-offline-migration][v4][icmp] DHCP: WLC 10.127.197.201 is reachable

```
| [2000-01-01 00:04:08.56 ]
```

[fast-offline-migration][DHCP][IPv4] migrate to Catalyst



AP上行链路捕获：通过ICMP可达性成功将AP快速迁移到Catalyst模式

- 不支持的WLC软件版本：响应WLC运行的软件版本低于Cisco IOS XE 17.15.1（或AP支持的最低版本），导致Catalyst模式交换机发生故障。
  <#root>

  ```
  <Meraki> offline-migration-info
  | [2000-01-01 00:00:36.600] AP in day0 - offline migration
  | [2000-01-01 00:02:49.984] [init] start offline migration detection (v1.1)
  | [2000-01-01 00:03:53.950] [fast-offline-migration-delay] forcing DHCPv6 INFORMATION REQUEST
  | [2000-01-01 00:04:03.966] [fast-offline-migration][v4][icmp] DHCP: WLC 10.127.197.196 is unreach
  | [2000-01-01 00:04:04.42 ]
  ```

  [fast-offline-migration][v4][capwap] DHCP: WLC 10.127.197.196 is unsupported - version 17.12.4.22

  ```
  | [2000-01-01 00:04:04.42 ] [fast-offline-migration][v4] no fast offline migration by DHCP
  | [2000-01-01 00:04:04.43 ] [fast-offline-migration][v6] no fast offline migration by DHCP
  | [2000-01-01 00:04:04.43 ] [fast-offline-migration][v4] missing DNS config (server and/or domain)
  | [2000-01-01 00:04:04.43 ] [fast-offline-migration][v6] missing DNS config (server and/or domain)
  | [2000-01-01 00:04:04.43 ] [fast-offline-migration] waiting for 420sec before taking any migratio
  ```

DNS迁移问题

如果接入点(AP)无法使用DHCP完成快速离线迁移，则会尝试使用DNS方法。最初，AP会验证它是否从DHCP服务器收到有效的域名（选项15）和DNS服务器IP地址（选项6）。使用此信息，AP尝试解析主机名cisco-automigrate.<domain>。如果此解析成功，则AP继续迁移到Catalyst模式。

- 缺少DHCP选项：AP无法从DHCP服务器接收有效的域名（DHCP选项15）或DNS服务器IP（DHCP选项6）。

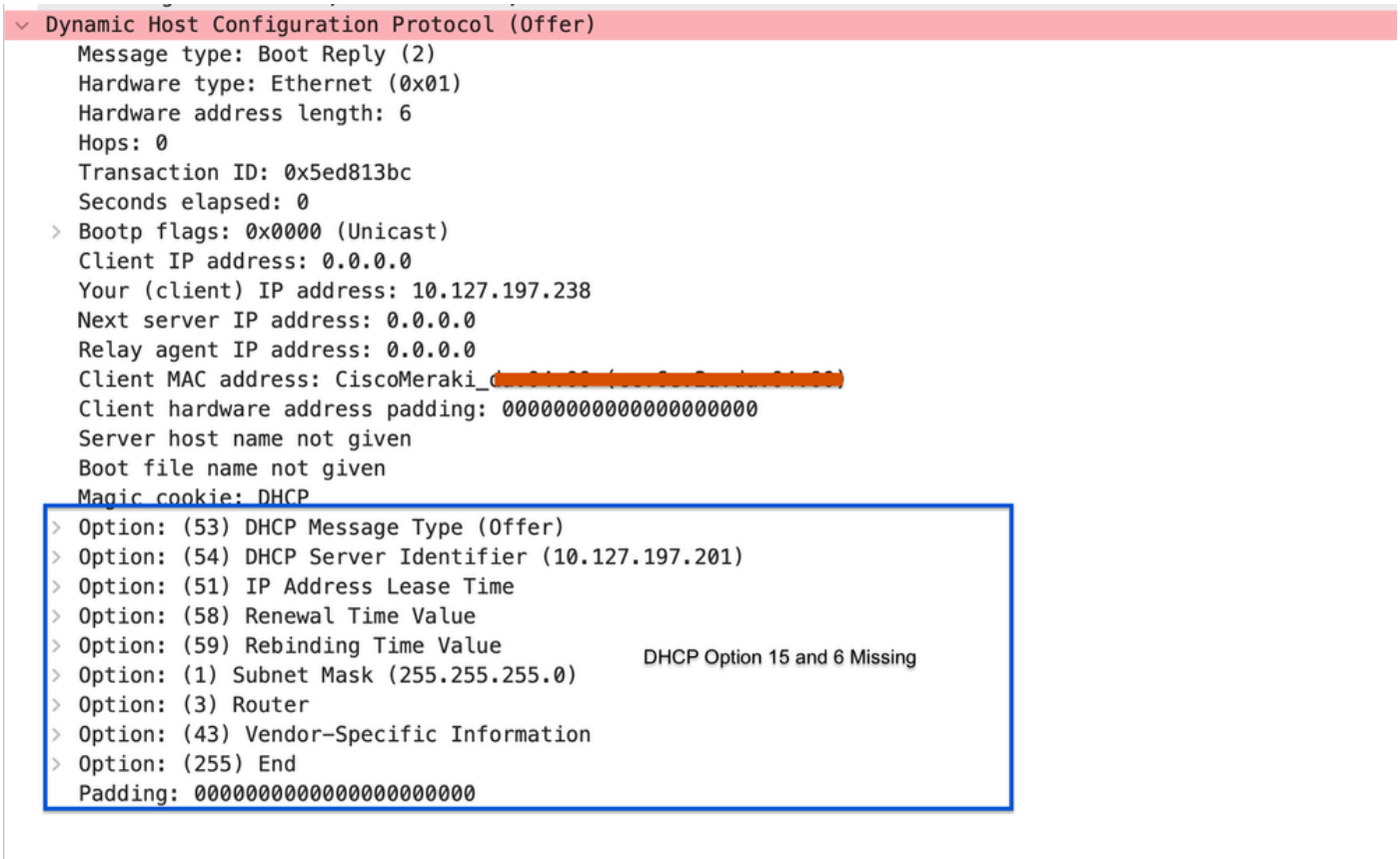
<#root>

```
<Meraki> offline-migration-info
| [2000-01-01 00:00:48.565] AP in day0 - offline migration
| [2000-01-01 00:02:59.840] [init] start offline migration detection (v1.2)
| [2026-06-24 11:11:58.392] [fast-offline-migration-delay] forcing DHCPv6 INFORMATION REQUEST
| [2026-06-24 11:12:03.438] [fast-offline-migration][v4] no fast offline migration by DHCP
| [2026-06-24 11:12:03.438] [fast-offline-migration][v6] no fast offline migration by DHCP
| [2026-06-24 11:12:03.529]
```

[fast-offline-migration][v4] missing DNS config (server and/or domain)

```
 >> DNS Option Missing in DHCP Response
| [2026-06-24 11:12:03.529]
```

[fast-offline-migration][v6] missing DNS config (server and/or domain)



AP上行链路捕获：DHCP响应中缺少DNS服务器和域名

- 解决故障：DNS服务器无法解析FQDN cisco-automigrate。<your-domain>。

<#root>

```
<Meraki> offline-migration-info
| [2000-01-01 00:00:48.565] AP in day0 - offline migration
| [2000-01-01 00:02:59.840] [init] start offline migration detection (v1.2)
| [2026-06-24 11:11:58.392] [fast-offline-migration-delay] forcing DHCPv6 INFORMATION REQUEST
| [2026-06-24 11:12:03.438] [fast-offline-migration][v4] no fast offline migration by DHCP
| [2026-06-24 11:12:03.438] [fast-offline-migration][v6] no fast offline migration by DHCP
| [2026-06-24 11:12:03.529]
```

[fast-offline-migration][v4] no fast offline migration by DNS

```
>> It received a DNS server and domain but unable to resolve the hostname
| [2026-06-24 11:12:03.529] [fast-offline-migration][v6] missing DNS config (server and/or domain)
| [2026-06-24 11:12:03.529] [fast-offline-migration] waiting for 420sec before taking any migration dec
```

```
Dynamic Host Configuration Protocol (Offer)
   Message type: Boot Reply (2)
   Hardware type: Ethernet (0x01)
   Hardware address length: 6
   Hops: 0
   Transaction ID: 0x3d491a56
   Seconds elapsed: 0
 > Bootp flags: 0x0000 (Unicast)
   Client IP address: 0.0.0.0
   Your (client) IP address: 10.127.197.217
   Next server IP address: 0.0.0.0
   Relay agent IP address: 0.0.0.0
   Client MAC address: CiscoMeraki_da:0[redacted]
   Client hardware address padding: 00000000000000000000
   Server host name not given
   Boot file name not given
   Magic cookie: DHCP
 > Option: (53) DHCP Message Type (Offer)
 > Option: (54) DHCP Server Identifier (10.127.197.201)
 > Option: (51) IP Address Lease Time
 > Option: (58) Renewal Time Value
 > Option: (59) Rebinding Time Value
 > Option: (1) Subnet Mask (255.255.255.0)
 > Option: (3) Router
 v Option: (15) Domain Name
      Length: 12
      Domain Name: [redacted]
 v Option: (6) Domain Name Server
      Length: 4
      Domain Name Server: [redacted]
 > Option: (255) End
```

AP上行链路捕获：DHCP响应中存在有效的DNS服务器和域名

UTC Arrival Time	Source Address	Destination Address	Length	Protocol	TID	Info
Jun 24, 2026 09:44:20…	10.127.197.217	DNS Server	90	DNS		Standard query 0x6120 A cisco-automigrate. domain-name
Jun 24, 2026 09:44:20…	DNS Server	10.127.197.217	163	DNS		Standard query response 0x6120 No such name A cisco-automigrate. domain-name

AP上行链路捕获：主机名解析失败

- 无法访问的已解析IP:AP成功解析了cisco-automigrate.<your-domain>，但无法通过ICMP访问生成的IP地址。

<#root>

```
<Meraki>

offline-migration-info


| [2000-01-01 00:01:58.622] [init] start offline migration detection
| [2000-01-01 00:03:05.252] [fast-offline-migration-delay] forcing DHCPv6 INFORMATION REQUEST
| [2000-01-01 00:04:05.156] [fast-offline-migration][v4] no fast offline migration by DHCP
| [2000-01-01 00:04:15.290] [fast-offline-migration][v6] no fast offline migration by DHCP
| [2000-01-01 00:04:20.271]

[fast-offline-migration][v4][icmp] DNS automigrate: WLC 10.27.XX.XX is not alive

>> No ICMP reachability to hostname resolved IP
```

脱机迁移问题

如果AP未能成功进行快速离线迁移，它将尝试连接到Meraki云以检查其是否已添加到Meraki网络，该过程大约持续7分钟。如果在此期间AP与Meraki云保持通信并添加到网络中，则可以切换到Meraki模式。

但是，如果AP在7分钟后仍无法到达Meraki云或未添加到网络，并且未配置静态IP地址，则它会通过DHCP更新其IP地址。在此阶段，AP进入离线迁移阶段。在离线迁移中，AP使用DHCP、DNS和第2层发现方法查找网络上的无线局域网控制器(WLC)详细信息，然后切换到Catalyst模式。离线迁移过程中可能会遇到各种问题

DHCP选项43迁移问题

- 在IP刷新后，AP会检查它是否收到带0xF1的DHCP选项43、收到有效的WLC IP、CAPWAP可达性和来自支持版本的响应，您可能会遇到以下错误：

```
<#root>

!! No valid WLC IP recievd on DHCP Option 43 0xF1 !!

| [2000-01-01 00:14:19.658][fast-offline-migration] waiting for 0min before taking any migration decisi
| [2000-01-01 00:15:07.101] [offline-migration] forcing DHCP renew
| [2000-01-01 00:15:07.102] [offline-migration] forcing DHCPv6 INFORMATION REQUEST
| [2000-01-01 00:15:12.150] [offline-migration] migration decision
| [2000-01-01 00:15:12.150]

[offline-migration][v4] no WLC IP in DHCP option 43 >> No valid WLC IPv4 received


| [2000-01-01 00:15:12.150] [offline-migration][v4] missing DNS config (server and/or domain)
| [2000-01-01 00:15:12.151]
```

[offline-migration][v6] no WLC IP in DHCP option 52 >> No valid WLC IPv4 received

```
| [2000-01-01 00:15:12.151] [offline-migration][v6] missing DNS config (server and/or domain)

!! No CAPWAP reachability to recieved IP !!
| [2000-01-01 00:10:50.713] [offline-migration] migration decision
| [2000-01-01 00:10:50.713] [offline-migration][v4] WLC IP present in DHCP option 43
| [2000-01-01 00:10:55.759]
```

[offline-migration][v4][capwap] DHCP: WLC 10.127.197.196 is down

```
!! WLC IP received on DHCP option is running on unsupported release !!

| [2000-01-01 00:39:44.529] [fast-offline-migration] waiting for 48sec before taking any migration deci
| [2000-01-01 00:40:35.585] [offline-migration] forcing DHCP renew
| [2000-01-01 00:40:35.586] [offline-migration] forcing DHCPv6 INFORMATION REQUEST
| [2000-01-01 00:40:41.592] [offline-migration] migration decision
| [2000-01-01 00:40:41.593] [offline-migration][v4] WLC IP present in DHCP option 43
| [2000-01-01 00:40:41.675]
```

[offline-migration][v4][capwap] DHCP: WLC 10.127.197.196 is unsupported - version 17.12.4.22

```
| [2000-01-01 00:40:41.675] [offline-migration][v4] missing DNS config (server and/or domain)
| [2000-01-01 00:40:41.675] [offline-migration][v6] no WLC IP in DHCP option 52
| [2000-01-01 00:40:41.675] [offline-migration][v6] missing DNS config (server and/or domain)
```

当使用DHCP选项进行离线迁移失败时，接入点(AP)尝试通过从DHCP应答中提取域名和DNS服务器信息来执行DNS选项。此过程可能导致以下错误：

DNS解析故障

<#root>

```
!! No valid DNS server or domain name received in DHCP reply !!

| [2000-01-01 00:14:19.658][fast-offline-migration] waiting for 0min before taking any migration decisi
| [2000-01-01 00:15:07.101] [offline-migration] forcing DHCP renew
| [2000-01-01 00:15:07.102] [offline-migration] forcing DHCPv6 INFORMATION REQUEST
| [2000-01-01 00:15:12.150] [offline-migration] migration decision
| [2000-01-01 00:15:12.150] [offline-migration][v4] no WLC IP in DHCP option 43
| [2000-01-01 00:15:12.150]
```

[offline-migration][v4] missing DNS config (server and/or domain)

```
| [2000-01-01 00:15:12.151] [offline-migration][v6] no WLC IP in DHCP option 52
| [2000-01-01 00:15:12.151]
```

[offline-migration][v6] missing DNS config (server and/or domain)

```
!! Unable to resolve the hostname
```

cisco-capwap-controller.

```
 !!
| [2026-06-24 11:19:12.395] [offline-migration] migration decision
| [2026-06-24 11:19:12.395] [offline-migration][v4] no WLC IP in DHCP option 43
| [2026-06-24 11:19:12.479]
```

[offline-migration][v4] no WLC IP resolved by DNS

```
| [2026-06-24 11:19:12.527] [offline-migration][v4] no PnP IP resolved by DNS

!! No CAPWAP reachability or unsupported version !!

| [2000-01-01 00:15:07.102] [offline-migration] forcing DHCPv6 INFORMATION REQUEST
| [2000-01-01 00:15:12.150] [offline-migration] migration decision
| [2000-01-01 00:15:12.150] [offline-migration][v4] no WLC IP in DHCP option 43
| [2000-01-01 00:15:12.150] [offline-migration][v4]
```

WLC IP resolved by DNS: 10.127.197.233

```
| [2000-01-01 00:15:12.151] [offline-migration][v4][capwap]
```

DNS: WLC 172.16.30.10 is not valid/ unsupported version 17.12.4.22

回退到第2层CAPWAP发现

如果DHCP和DNS方法都失败，AP将广播第2层CAPWAP发现请求。常见错误包括：

- 对广播CAPWAP发现无响应
  <#root>

```
| [2000-01-01 00:23:37.901] [offline-migration] forcing DHCPv6 INFORMATION REQUEST
| [2000-01-01 00:23:42.949] [offline-migration] migration decision
| [2000-01-01 00:23:42.949] [offline-migration][v4] no WLC IP in DHCP option 43
| [2000-01-01 00:23:42.949] [offline-migration][v4] missing DNS config (server and/or domain)
| [2000-01-01 00:23:42.950] [offline-migration][v6] no WLC IP in DHCP option 52
| [2000-01-01 00:23:42.950] [offline-migration][v6] missing DNS config (server and/or domain)
| [2000-01-01 00:23:48.22 ]
```

```
[offline-migration][v4][capwap-l2] 0 WLC(s) detected (unsupported)

| [2000-01-01 00:23:53.66 ]
[offline-migration][v6][capwap-l2] 0 WLC(s) detected (unsupported)

| [2000-01-01 00:23:53.66 ] [offline-migration] no migration & not claimed => restart detection
```

为此，请确保在无线控制器(WLC)上启用自动CAPWAP自注册，以接受单播和广播发现请求。注意：默认情况下，此设置处于禁用状态，并且它可以在第0天模式下拒绝来自全局使用AP的任何CAPWAP发现请求。请在默认AP加入配置文件中启用此设置。当AP最初加入控制器时，使用此配置文件

```
<#root>

CW9800(config)#
ap profile default-ap-profile

CW9800(config-ap-profile)#capwap-discovery onboarding ?
all        Configure automatic CAPWAP onboarding from Meraki based on both unicast and broadcast d
unicast    Configure automatic CAPWAP onboarding from Meraki based on unicast discovery request or
```

- 响应成功，但版本不受支持 — WLC响应未在17.15.02或更高版本上运行：

```
<#root>

| [2000-01-01 00:15:07.101] [offline-migration] forcing DHCP renew
| [2000-01-01 00:15:07.102] [offline-migration] forcing DHCPv6 INFORMATION REQUEST
| [2000-01-01 00:15:12.150] [offline-migration] migration decision
| [2000-01-01 00:15:12.150] [offline-migration][v4] no WLC IP in DHCP option 43
| [2000-01-01 00:15:12.150] [offline-migration][v4] missing DNS config (server and/or domain)
| [2000-01-01 00:15:12.151] [offline-migration][v6] no WLC IP in DHCP option 52
| [2000-01-01 00:15:12.151] [offline-migration][v6] missing DNS config (server and/or domain)
| [2000-01-01 00:15:17.193]

[offline-migration][v4][capwap-l2] 1 WLC(s) detected (unsupported)


| [2000-01-01 00:15:17.283]

[offline-migration][v4][capwap-l2] - unsupported - 10.127.197.196 - 17.12.4.22
```

AP无法完成加入阶段

AP成功转换为CATALYST模式后，将使用与其他Catalyst AP相同的加入过程连接到9800无线LAN控制器。问题可能出现在三个阶段：

- CAPWAP发现阶段
- DTLS隧道建立阶段
- 加入阶段

通过参考以下内容，应用相同的故障排除方法
[了解 Catalyst 9800 WLC 的 AP 加入过程.]

AP管制域解析故障

CW917x系列AP没有预定义的管制范围。无法通过控制器在CW917x系列AP上手动配置国家/地区代码。相反，AP使用多种方法自动确定国家/地区代码，如接近检测（RF和CDP/LLDP）、GPS/GNSS和WLC上的RAF文件。

各个版本上的国家/地区的AP支持

在对管制域进行故障排除之前，请确认您要在9800控制器版本上配置的国家/地区支持特定的CW917x系列AP型号。如果不支持国家/地区，则两个无线电保持关闭。

您可以验证特定AP型号的技术参考中的国家/地区到信道映射，以及接入点功能表中的WLC版本，并确认特定控制器版本是否提供特定国家/地区对CW917x系列AP的支持。
此外，您还可以查看文档，该文档概述了来自Cisco CW917x Wi-Fi 7接入点国家/地区代码和阶段的CW917x AP在每个国家/地区的监管阶段

一旦您确认WLC版本支持您所在国家/地区的CW917x系列接入点，请检查AP是否可以使用受支持的方法之一解析其管制域。如果AP无法解析管制域，您可以看到AP状态：

<#root>

```
WLC#

show ap summary


Number of APs: 2

CC = Country Code
RD = Regulatory Domain

AP Name      Slots       AP Model         Ethernet MAC        Radio MAC

CC    RD

    IP Address      State       Location
-------------------------------------------------------------------------------------------------------
```

```
LAB-9136       4       C9136I-ROW        aaaa.bbbb.cccc      aaaa.bbbb.cccc  IN    -RW  10.127.197.153
LAB-CW9172     3        CW9172H          aaaa.bbbb.cccc      aaaa.bbbb.cccc
```

--   -UN

```
  10.127.197.152  Registered   default location
```

<#root>

```
WLC#
```

show ap config general | in AP_NAME| Country

```
Cisco AP Name : AP_NAME
Regulatory Domain Allowed by Country : 802.11bg:-A^ 802.11a:-DN^ 802.11 6GHz:
AP Country Code
```

: - >> No Country Code resolved

使用接近度

全球模式下的Wi-Fi 7个AP可以从现有传统AP或连接到楼层相同WLC的Wi-Fi 7个AP或从发现为CDP/LLDP邻居的AP解析国家/地区代码。基于接近度的发现可以使用基于RF的检测或CDP/LLDP邻居检测。如果Wi-Fi 7 AP无法通过接近度发现相邻AP，则会看到错误：

<#root>

```
[*06/28/2026 15:24:36.7773]
```

Sending proximity_request payload

```
[*06/28/2026 15:24:36.7787]
```

SinglePID Proximity resolution: Country Code not available

```
[*06/28/2026 15:24:36.7795] SinglePID Regulatory Blob resolution: Country Code not available
[*06/28/2026 15:25:35.8011] Sending proximity_request payload
[*06/28/2026 15:25:35.8025] SinglePID Proximity resolution: Country Code not available
[*06/28/2026 15:25:35.8031] SinglePID Regulatory Blob resolution: Country Code not available
```

基于RF

要使用此方法，请将具有已解析国家/地区代码和Wi-Fi 7 AP管制域的AP放置在附近，以便它们可以交换邻居发现数据包。此AP必须连接到已解析其国家/地区代码的同一WLC。这些数据包使用2.4GHz无线电进行交换，因此请确保目标AP（您希望解析国家/地区代码的AP）上启用了2.4GHz无线电功能。

基于CDP/LLDP

当具有解析国家/地区代码的全功能AP和全球模式（无国家/地区代码）的Wi-Fi 7 AP连接到同一台交换机和同一WLC时，使用基于CDP/LLDP的发现机制。

要使用此方法，请确保：

- 两个AP连接到同一台交换机。
- 两个AP连接到同一个WLC。
- 一个AP具有已解析的国家/地区代码，并且正在积极为客户端提供服务。
- Wi-Fi 7 AP处于全球模式，需要国家/地区代码。

注意：从Cisco IOS XE版本17.15.4和17.18.1开始，支持基于CDP/LLDP的发现。请验证WLC是否正在运行这些受支持的版本之一或更高版本。

使用RAF文件

如果Proximity方法无法解析监管域，您可以从Meraki控制面板使用RAF（监管域授权文件）作为替代方法。任务:

1. 使用云AP声明Wi-Fi 7 AP并将其添加到您的网络。请注意，AP无需具备要添加的Meraki控制面板的网络连接。
2. 为声明该AP的网络中的AP配置所需的国家/地区代码。
3. 从控制器下载并上传管制域文件。文件必须包含AP序列号、MAC地址和国家/地区代码。

```
<#root>

!! Verify the data on RAF File !!
WLC#

show ap regulatory activation all
```

```
Regulatory Activation file Meta-data
-----------------------------------
Date Created : 06/30/2026 08:12:41
Created By : shchoube@cisco.com
Device count : 2
Organization Id : 1780642

AP MAC             Serial Number       Country code
-------------------------------------------------
 AP1_MAC            AP1_SN                    IN
 AP2_MAC            AP2_SN                    US
```

4. 当向同一控制器添加需要不同国家/地区代码的新AP时，请将其放在Meraki控制面板中的独立网络中。这样可以确保其各自国家/地区代码设置不会相互覆盖。

由于许可证问题，AP不兼容

一旦AP使用正确的国家/地区代码加入，如果未获得许可，它仍可以报告合规性问题。Wi-Fi 7个AP将进行合规性检查并需要思科无线(CW)许可证。相反，早期的非Wi-Fi 7 AP使用AIR许可证，不需要合规性检查。

<#root>

```
WLC#

show ap summary license


For AIR licenses, per AP tracking of license state is unavailable. Please use "show license summary" to
Policy allowed state means device is deemed compliant due to a policy downloaded from licensing authori

AP Name AP Model    AP MAC     License Type  License State   Non Compliance Reason
-------------------------------------------------------------------------------------------------------
AP1     CW9172H  xxxx.xxxx.xxxx   CW         Non Compliant     Never Licensed
AP2     CW9176I  xxxx.xxxx.xxxx   CW         Non Compliant     Never License

WLC#

show license summary


Account Information:
Smart Account: <none>
Virtual Account: <none>
License Usage:
License Entitlement Tag Count Status
-----------------------------------------------------------------------------
cisco-wireless-advan... (CNS_CW_A) 2 IN USE

!! Check the current level of license configured on WLc for WiFi7AP !!
```

```
WLC#

show version | in License Level


License Level: adventerprise
AIR License Level: AIR Network Essentials addon AIR DNA Essentials
Next reload AIR License Level: AIR Network Essentials addon AIR DNA Essentials
Cisco Wireless License Level: Cisco Wireless Advantage
Next reload Cisco Wireless License Level: Cisco Wireless Advantage
```

对于此问题，请确保在9800 WLC上配置了用于Wifi7 AP的正确许可级别。Wifi7 AP需要CW许可证：
1. Cisco Wireless Essentials
2.思科无线的优势

如果AP未获得许可，请通过在Catalyst 9800上配置和排除智能许可故障排除9800 WLC上的智能许可问题

日志收集

来自WLC的日志

- 启用term exec prompt timestamp，以便为所有命令提供时间参考。
- 显示命令：
  - show ap summary | i AP数量
  - sh log | i AP Event:
  - show ap uptime
  - show ap cdp neighbor
  - show wireless stats ap history
  - show wireless stats ap discovery
  - show wireless stats ap join summary
  - show wireless certification config
  - show wireless management trustpoint
  - show wireless dtls connections
  - show logging profile wireless start last X days filter mac <radio-or-ethernet-AP-mac>
  - show ap regulatory activation all
  - show ap config general
  - show tech-support wireless
- 无线电活动跟踪：
  - debug wireless AP_MAC {aaaa.bbbb.cccc } {monitor-time} {N seconds} !!设置时间允许我们启用最多24天的跟踪。
  - no debug wireless AP_MAC {aaa.bbbb.cccc} !!禁用调试

WLC使用Client_info生成调试跟踪文件，命令检查生成的调试跟踪文件dir bootflash: | i debug !!

警告：条件调试启用调试级别日志记录，从而增加生成的日志量。持续运行条件调试会缩短可以回溯查看的日志的时间范围。因此，建议在故障排除会话结束时始终禁用调试。

- 要禁用所有调试，请运行以下命令：

  # clear platform condition all !!

  # undebug all !!

  通过GUI:

  步骤1.导航到故障排除>放射性跟踪。

  步骤2.单击Add并输入AP MAC Address

  步骤3.准备好开始放射性示踪后，单击开始。启动后，调试日志记录会写入磁盘，记录与跟踪的MAC地址相关的任何控制平面处理。
  步骤4.重现要排除故障的问题时，单击Stop。
  步骤5.对于已调试的每个MAC地址，您可以通过点击Generate来生成log file，该文件整理与该MAC地址相关的所有日志。
  第6步：选择想要经过整理的日志文件回溯多长时间，然后点击应用到设备。
  步骤7.现在可以通过点击文件名旁边的小图标来下载文件。此文件存在于控制器的引导闪存驱动器中，也可以通过CLI从盒中复制。

- 通过AP IP地址ACL过滤的嵌入式数据包捕获：

!!创建ACL配!!

ip access-list extended CAP-FILTER

permit ip host <AP_IP> any

permit ip any host <AP_IP>

!!配置数据包捕获!!

monitor capture MYCAP interface Po1 both

monitor capture MYCAP buffer circular size 100

monitor capture MYCAP access-list CAP-FILTER monitor capture MYCAP match any/ipv4/ipv6.MAC !!
monitor capture MYCAP start !!
!! 重现
monitor capture MYCAP stop
monitor capture MYCAP export flash:|tftp:|http:.../filename.pcap

AP 的日志

Meraki模式下的AP

- offline-migration-info，获取当前日志和迁移尝试的状态。

Catalyst模式下的AP

- show tech !!收集 show tech 输出以获取 AP 的所有配置详细信息和无线电统计信息。
- show dtls connection !!查看 DTLS 的证书、端口和密码、版本
- 终端监控和logging console if SSH访问，启用控制台日志记录和日志显示
- 基本调试
  - debug capwap client event
  - debug capwap client error
  - debug dtls client error
  - debug dtls client event
- 高级调试
  - debug capwap client keepalive
  - debug capwap client pmtu
  - debug capwap client payload
  - debug capwap client details

来自无线接入点连接的上行链路交换机的日志

- AP连接的端口上的嵌入式数据包捕获
  - monitor capture mycap interface <AP_Connected_Port> both

- monitor capture mycap match any
- monitor capture buffer size 50
- monitor capture mycap file location flash:mycap.pcap
- monitor capture mycap start/stop
- show monitor capture file flash:mycap.pcap

- 交换端口分析器（SPAN捕获）
  - monitor session 1 source interface <AP_Connected_Port>
  - monitor session 1 destination interface x/x/x encapsulation replicate >>>>> — 运行wireshark时与PC连接的端口。

注意：如果使用第三方交换机，请收集上行链路交换机端口上的端口SPAN或等效数据包捕获。

相关信息

- 思科无线CW917x系列接入点部署指南

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