

Configure and Onboard APs on Non-SDA EWC-Switch (C9800-SW)

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Introduction

This document describes the process to onboard and provision an Access Point (AP) with an Embedded Wireless Controller on a Catalyst 9000 (Catalyst 9K) switch (EWC-Switch) in a non-SDA deployments (there is no Cisco DNA Center in use).

Prerequisites

Requirements

You are required to execute these prerequisites:

- Install the Wireless Sub-Package on the Catalyst 9K switch that will act as the Wireless LAN Controller (WLC).
- Ensure the Loopback interface is configured so it will be configured as the Wireless Management Interface (WMI).
- Ensure the GUI access to the Catalyst 9K switch is enabled as configuration via the GUI is recommended.



Note: The EWC-Switch on non-SDA deployments is only supported in 17.3.X releases.

Components Used

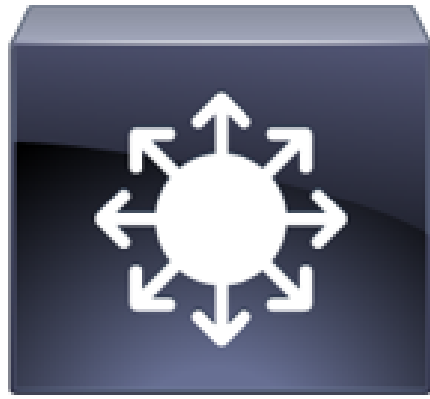
The information in this document is based on these software and hardware versions:

- C9300-24P switch, Cisco IOS® XE Version 17.3.4
- Wireless Sub-Package for Version 17.3.4
- C9120-AX AP

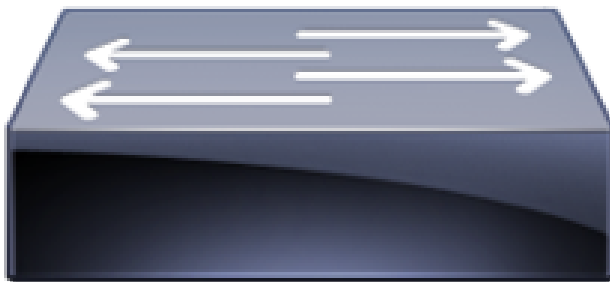
The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Configure

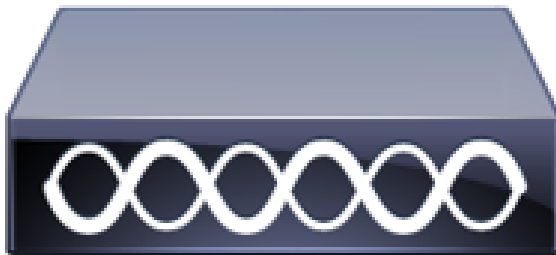
Network Diagram



C9300 Switch
EWC-Switch




Layer 2
Switch



APs are allowed to be directly connected to EWC-Switch, but it is not a requirement. You are recommended to use an access switch to plug in APs to allow for high availability (HA) failover in case the active EWC-Switch goes down.

Configurations

Step 1. Configure the country code for geographical locations where APs will be deployed. This is mandatory in order to enable APs to register and ensures compliance with regulatory domain guidelines for the country in which they are deployed. From the GUI, navigate to **Configuration > Wireless > Access Points** and click the **Country** tab. Choose all applicable **Country Code(s)** to match regulatory domains of APs.

 **Note:** In versions from 17.3.1 to 17.3.3, EWC-Switch GUI lists the country codes but does not apply any selections until one country code is added via the CLI as documented in Cisco bug ID [CSCvw20478](#). After one country code is configured, you can add more country codes via GUI.

Configuration > Wireless > Access Points

> All Access Points

> 5 GHz Radios

> 2.4 GHz Radios

> Dual-Band Radios

▼ Country

[Click here](#) for list of access point models and protocols supported per country and regulatory domain.

Apply

Selected Country MX, US

Regulatory Domain

802.11a/n/ac: [Indoor: -ABN, Outdoor: -ABN]

802.11b/g/n: [Indoor: -A, Outdoor: -ABN]

Search

	Country Code	Name
<input type="checkbox"/>	MX	Mexico
<input type="checkbox"/>	MO	Macau
<input type="checkbox"/>	MT	Malta
<input checked="" type="checkbox"/>	MX	Mexico
<input type="checkbox"/>	MY	Malaysia
<input type="checkbox"/>	NG	Nigeria
<input type="checkbox"/>	NL	Netherlands
<input type="checkbox"/>	NO	Norway

CLI configuration (17.3.1 to 17.3.3):

```
<#root>
```

```
9300-1#
```

```
configure terminal
```

```
9300-1(config)#
```

```
ap dot11 5ghz shutdown
```

Disabling the 802.11a network may strand mesh APs.
Are you sure you want to continue? (y/n)[y]:

y

```
9300-1(config)#
```

```
ap dot11 24ghz shutdown
```

Disabling the 802.11b network may strand mesh APs.
Are you sure you want to continue? (y/n)[y]:

y

```
9300-1(config)#
```

```
wireless country MX
```

```
9300-1(config)#
```

```
no ap dot11 5ghz shutdown
```

```
9300-1(config)#
```

```
no ap dot11 24ghz shutdown
```

Step 2. Enable wireless controller functionality and configure the VLAN that the APs will reside in. Navigate to **Configuration > Embedded Wireless Setup**, slide **Embedded Wireless Setup** to Enabled and under **Location Configuration**, click + **Add**.

The screenshot displays the Cisco Embedded Wireless Setup configuration interface. On the left is a dark sidebar with a search bar and navigation menu items: Dashboard, Monitoring, Configuration (highlighted in blue), Administration, Licensing, and Troubleshooting. At the bottom of the sidebar is a 'Walk Me Through >' button. The main content area is titled 'Configuration > Embedded Wireless Setup'. It features a toggle switch for 'Embedded Wireless Setup' currently set to 'DISABLED', with an 'Apply' button to its right. Below this is a section for 'Location Configuration' containing a '+ Add' button and the text 'No locations available'.

When Embedded Wireless Setup is enabled, these commands are pushed to the CLI. These CLIs enable lisp fabric on the Catalyst 9K switch so it will serve as control-plane/map server node, wireless controller with loopback as the WMI and WLC to control-plane mapping to allow the APs and the clients to be onboarded.

<#root>

```
9300-1(config)#
router lisp

9300-1(config-router-lisp)#
locator-table default

9300-1(config-router-lisp)#
locator-set rloc_ewlc

9300-1(config-router-lisp-locator-set)#
IPv4-interface Loopback0

9300-1(config-router-lisp-locator-set)#
auto-discover-rlocs

9300-1(config-router-lisp-locator-set)#
exit-locator-set

9300-1(config-router-lisp)#
locator-set WLC

9300-1(config-router-lisp-locator-set)#
<Loopback0 IP address>

9300-1(config-router-lisp-locator-set)#
exit-locator-set

9300-1(config-router-lisp)#
service ipv4

9300-1(config-lisp-srv-ipv4)#
encapsulation vxlan

9300-1(config-lisp-srv-ipv4)#
itr map-resolver <Loopback0 IP address>

9300-1(config-lisp-srv-ipv4)#
etr map-server <Loopback0 IP address> key <internal key>

9300-1(config-lisp-srv-ipv4)#
etr map-server <Loopback0 IP address> proxy-reply
```

9300-1(config-lisp-srv-ipv4)#

etr

9300-1(config-lisp-srv-ipv4)#

sgt

9300-1(config-lisp-srv-ipv4)#

no map-cache away-eids send-map-request

9300-1(config-lisp-srv-ipv4)#

proxy-etr

9300-1(config-lisp-srv-ipv4)#

proxy-itr <Loopback0 IP address>

9300-1(config-lisp-srv-ipv4)#

map-server

9300-1(config-lisp-srv-ipv4)#

map-resolver

9300-1(config-lisp-srv-ipv4)#

exit-service-ipv4

9300-1(config-router-lisp)#

service ethernet

9300-1(config-lisp-srv-eth)#

itr map-resolver <Loopback0 IP address>

9300-1(config-lisp-srv-eth)#

itr

9300-1(config-lisp-srv-eth)#

etr map-server <Loopback0 IP address> key <internal key>

9300-1(config-lisp-srv-eth)#

etr map-server <Loopback0 IP address> proxy-reply

9300-1(config-lisp-srv-eth)#

etr

```
9300-1(config-lisp-srv-eth)#
```

```
map-server
```

```
9300-1(config-lisp-srv-eth)#
```

```
map-resolver
```

```
9300-1(config-lisp-srv-eth)#
```

```
exit-service-ethernet
```

```
9300-1(config-router-lisp)#
```

```
ipv4 source-locator Loopback0
```

```
9300-1(config-router-lisp)#
```

```
map-server session passive-open WLC
```

```
9300-1(config-router-lisp)#
```

```
exit
```

```
9300-1(config)#
```

```
interface LISP0
```

```
9300-1(config-if)#
```

```
exit
```

```
9300-1(config)#
```

```
router lisp
```

```
9300-1(config-router-lisp)#
```

```
site site_uci
```

```
9300-1(config-router-lisp-site)#
```

```
description map-server configured from Wireless LAN Controller
```

```
9300-1(config-router-lisp-site)#
```

```
authentication-key <internal key>
```

```
9300-1(config-router-lisp-site)#
```

```
exit-site
```

```
9300-1(config-router-lisp)#
```



```
exit-router-lisp
```

```
9300-1(config)#
```

```
ip dhcp relay information option
```

```
9300-1(config)#
```

```
wireless fabric
```

```
9300-1(config)#
```

```
wireless management interface Loopback0
```

```
9300-1(config-mgmt-interface)#
```

```
exit
```

```
9300-1(config)#
```

```
wireless fabric control-plane default-control-plane
```

```
9300-1(config-wireless-cp)#
```

```
ip address <Loopback0 IP address> key 0 <internal key>
```

```
9300-1(config-wireless-cp)#
```

```
exit
```

Step 3. In the pop-up generated post Step 2, within the **General** tab, enter the **Location Name** and **AP Onboarding** details like VLAN and Subnet Mask. By default, the VLAN field is pre-populated with 2045. A different VLAN ID is allowed to be used but the VLAN ID must be between 2045 and 4094 and it must be independent from client traffic (no wired, or wireless clients are allowed to use this VLAN). Once the details are complete, click **Apply**

[Configuration](#) > Embedded Wireless Setup

Location Configuration

[← Back](#)

General | Wireless Networks | AP Provisioning

Location Name*	<input type="text" value="EWC-Location"/>	AP Onboarding	
Description	<input type="text" value="Enter Description"/>	VLAN*	<input type="text" value="2674"/>
Client Density	<input type="range" value="Typical"/>	IP Address*	<input type="text" value="172.16.80.1"/>
	Low Typical High	Subnet Mask*	<input type="text" value="255.255.255.0"/>
		DHCP Server*	<input type="text" value="172.16.80.1"/>

This creates the VLAN for the APs, an SVI for that AP VLAN (default gateway for the APs), AP location, Policy and RF tags, and L2 and L3 Virtual Network Identifiers (VNIDs). These are the commands seen in the CLI as a result of Step 3.

```
<#root>
9300-1(config)#
interface LISP0.4097

9300-1(config-subif)#
router lisp

9300-1(config-router-lisp)#
locator-set rloc_ewlc

9300-1(config-router-lisp-locator-set)#
exit-locator-set

9300-1(config-router-lisp)#
instance-id 4097

9300-1(config-lisp-inst)#
remote-rloc-probe on-route-change

9300-1(config-lisp-inst)#
dynamic-eid APONBOARDING_0_2674_4097_8188

9300-1(config-lisp-inst-dyn-eid)#
database-mapping 172.16.80.0/24 locator-set rloc_ewlc

9300-1(config-lisp-inst-dyn-eid)#
exit-dynamic-eid

9300-1(config-lisp-inst)#
service ipv4

9300-1(config-lisp-inst-srv-ipv4)#
eid-table default

9300-1(config-lisp-inst-srv-ipv4)#
map-cache 172.16.80.0/24 map-request

9300-1(config-lisp-inst-srv-ipv4)#
```

```
route-export site-registrations

9300-1(config-lisp-inst-srv-ipv4)#
distance site-registrations 250

9300-1(config-lisp-inst-srv-ipv4)#
map-cache site-registration

9300-1(config-lisp-inst-srv-ipv4)#
exit-service-ipv4

9300-1(config-lisp-inst)#
exit-instance-id

9300-1(config-router-lisp)#
instance-id 8188

9300-1(config-lisp-inst)#
remote-rloc-probe on-route-change

9300-1(config-lisp-inst)#
service ethernet

9300-1(config-lisp-inst-srv-eth)#
eid-table vlan 2674

9300-1(config-lisp-inst-srv-eth)#
database-mapping mac locator-set rloc_ewlc

9300-1(config-lisp-inst-srv-eth)#
exit-service-ethernet

9300-1(config-lisp-inst)#
exit-instance-id

9300-1(config-router-lisp)#
site site_uci

9300-1(config-router-lisp-site)#
eid-record instance-id 4097 172.16.80.0/24 accept-more-specifics

9300-1(config-router-lisp-site)#
```

```
eid-record instance-id 8188 any-mac

9300-1(config-router-lisp-site)#
exit-site

9300-1(config-router-lisp)#
exit

9300-1(config)#
vlan 2674

9300-1(config-vlan)#
name AP_VLAN2674

9300-1(config-vlan)#
exit

9300-1(config)#
interface Vlan2674

9300-1(config-if)#
description APONBOARDING_0_2674_4097_8188

9300-1(config-if)#
mac-address 0000.0C9F.FAD1

9300-1(config-if)#
ip address 172.16.80.1 255.255.255.0

9300-1(config-if)#
ip helper-address 172.16.80.1

9300-1(config-if)#
no ip redirects

9300-1(config-if)#
ip route-cache same-interface

9300-1(config-if)#
no lisp mobility liveness test
```

```
9300-1(config-if)#
```

```
ip directed-broadcast
```

```
9300-1(config-if)#
```

```
lisp mobility APONBOARDING_0_2674_4097_8188
```

```
9300-1(config-if)#
```

```
exit
```

```
9300-1(config)#
```

```
wireless fabric name APONBOARDING_0_2674_4097_8188 12-vnid 8188 13-vnid 4097 ip 172.16.80.0 255.255.255.0
```

Step 4. Configure the Catalyst 9K switch to also act as DHCP server for the AP VLAN and create corresponding DHCP pools. Navigate to **Administration > DHCP Pools** and click + **Add**. Set a pool name and network parameters, ensure that default gateway is set to the SVI IP address; otherwise the APs partially join the controller.

Create DHCP Pool ✕

Basic Advanced

DHCP Pool Name* (1-236 Characters)

IP Type

Network*

Subnet Mask*

Starting ip*

Ending ip*

Reserved Only DISABLED

Lease*

(0-365 days) (0-23 hours) (0-59 minutes)

Create DHCP Pool

Basic Advanced

Enable DNS Proxy

Default Router(s) +

DNS Server(s) +

IP Address	Remove
172.16.80.1	×

NetBios Name Server(s) +

Domain

IP Address	Remove
No items to display	

DHCP Options List

Cancel

CLI configuration:

```

<#root>
9300-1#
configure terminal

9300-1(config)#
ip dhcp excluded-address 172.16.80.0 172.16.80.9

9300-1(config)#
ip dhcp pool <DHCP pool name>

9300-1(dhcp-config)#
network 172.16.80.0 255.255.255.0

9300-1(dhcp-config)#
default-router 172.16.80.1

```

Step 5. Configure switchport in access mode and assign it to the previously defined VLAN.

```

<#root>

```

```
3850-1(config)#
```

```
interface <interface to AP>
```


```
3850-1(config-if)#
```

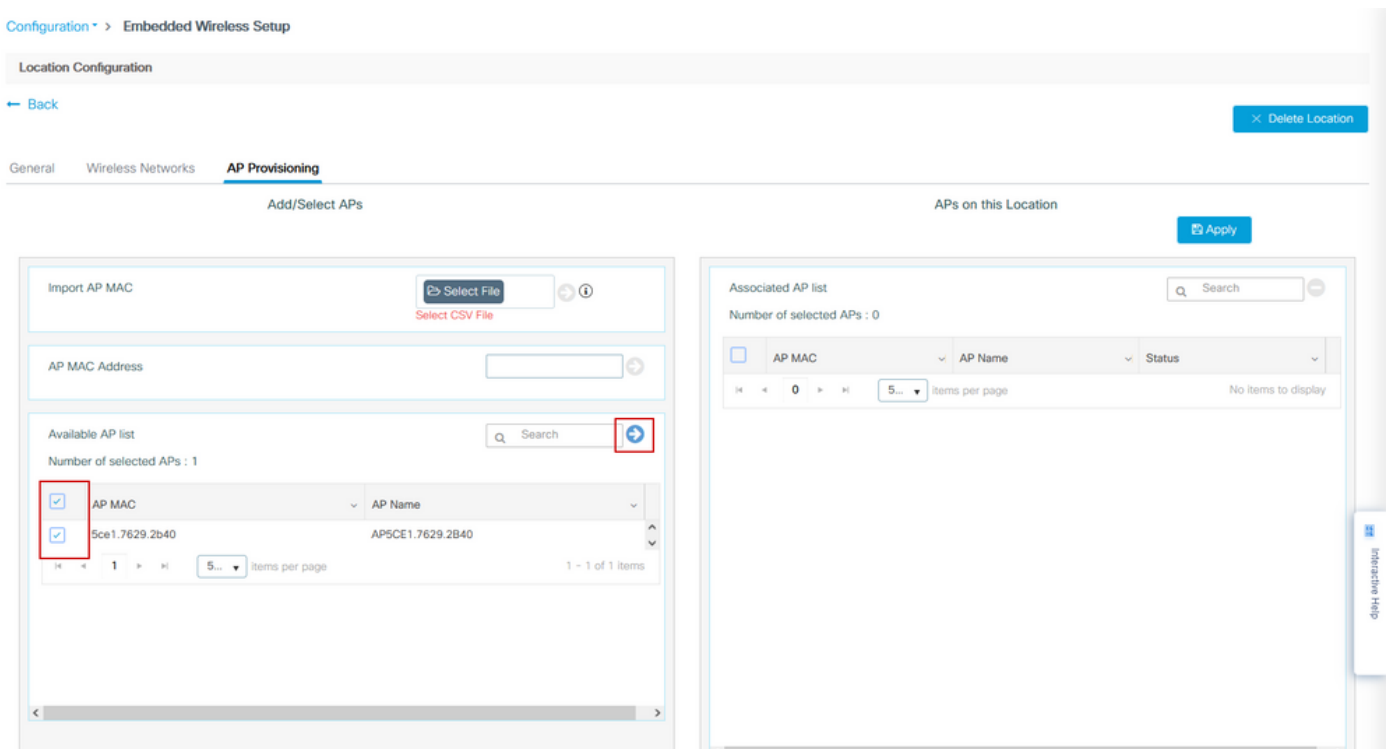
```
switchport mode access
```

```
3850-1(config-if)#
```

```
switchport access vlan <AP vlan ID>
```

Step 6. Navigate to **Configuration > Embedded Wireless Setup** and choose the site created in Step 3. Click the **AP Provisioning** tab and from the list of Available APs, choose the APs that need to be provisioned and click the blue arrow icon to change it to **Associated AP list**. Once all APs of interest have been assigned to the specific location, click **Apply**.

 **Caution:** The EWC-Switch allows for manual tag creation and assignment; however this is not a supported configuration and the only supported tag assignment is by Location Assignment. Only one location is supported on the EWC-Switch, so all of the APs must be in the same subnet and assigned to the same location.



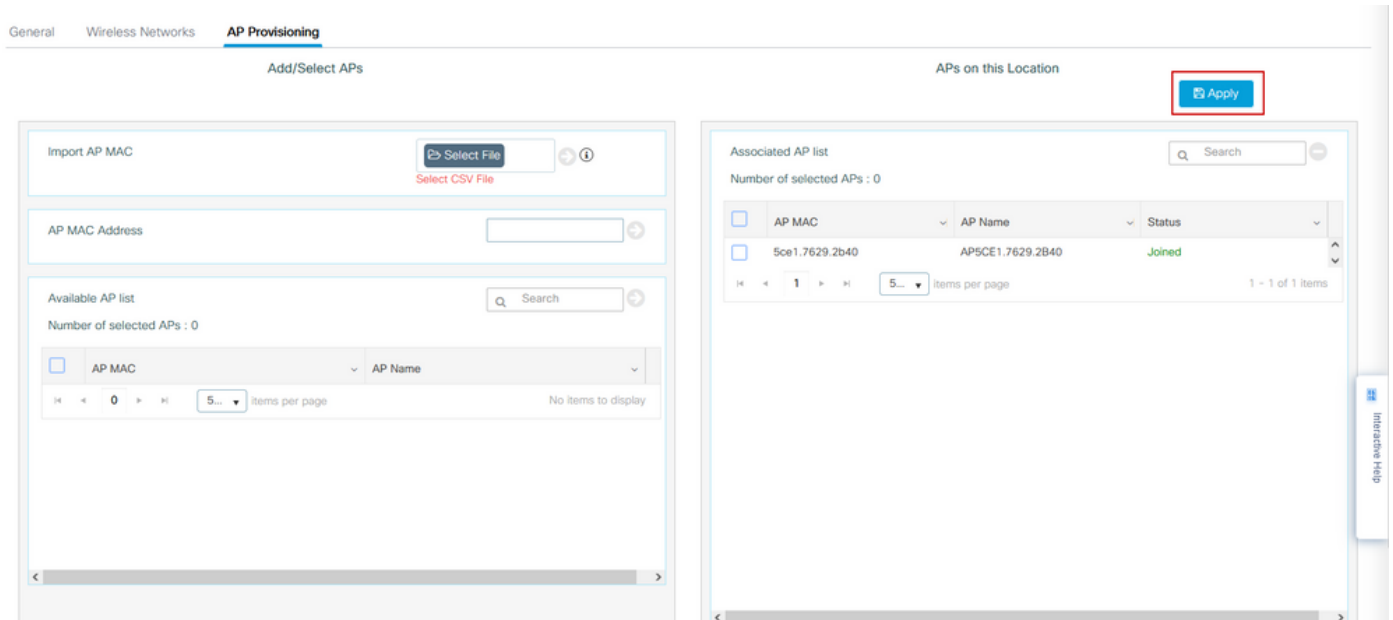
The screenshot displays the 'Embedded Wireless Setup' configuration page. The breadcrumb trail is 'Configuration > Embedded Wireless Setup'. The page is divided into two main sections: 'Add/Select APs' and 'APs on this Location'.

Add/Select APs:

- Includes an 'Import AP MAC' section with a 'Select File' button and a 'Select CSV File' link.
- Has an 'AP MAC Address' input field.
- Features an 'Available AP list' table with a search bar and a blue arrow icon (highlighted with a red box) to move items to the associated list.
- The table shows one available AP: AP MAC '5ce1.7629.2b40' and AP Name 'AP5CE1.7629.2B40'. Both are checked with blue boxes.

APs on this Location:

- Includes an 'Associated AP list' table with a search bar.
- The table is currently empty, showing 'Number of selected APs : 0' and 'No items to display'.
- An 'Apply' button is located at the top right of this section.



This step adds this configuration to the EWC-Switch:

```
<#root>
9300-1(config)#
ap location name EWC-Location

9300-1(config-ap-location)#
ap-eth-mac <AP mac address>

9300-1(config-ap-location)#
tag policy EWC-Location

9300-1(config-ap-location)#
tag rf EWC-Location
```

The **ap-eth-mac <AP mac address>** command repeats for every AP that is added to the location. A single site will support up to 500 APs.

Verify

Use this command to verify VLAN creation and status for both WMI and AP Onboard.

```
<#root>
9300-1#
show wireless fabric summary
```


Fabric Status : Enabled

Control-plane:

Name IP-address Key Status

default-control-plane 172.16.0.1 ciscoeca Up

Fabric VNID Mapping:

Name L2-VNID L3-VNID IP Address Subnet Control plane name

APONBOARDING_0_2674_4097_8188 8188 4097 172.16.80.0 255.255.255.0

Verify the AP registration status with these commands:

<#root>

9300-1#

show wireless stats ap join summary

Number of APs: 1

Base MAC Ethernet MAC AP Name IP Address Status Last Failure Phase Last Disconnect Reason

ac4a.569c.f560 5ce1.7629.2b40

AP5CE1.7629.2B40 172.16.80.10 Joined

Run Tag modified

9300-1#show fabric ap summary

Number of Fabric AP : 1

AP Name Slots AP Model Ethernet MAC Radio MAC Location Country IP Address State

AP5CE1.7629.2B40

2 9120AXI 5ce1.7629.2b40 ac4a.569c.f560 default location US

172.16.80.10 Registered

Use this command to verify VxLAN tunnel status with APs.

<#root>

9300-1#

show access-tunnel summary

Access Tunnels General Statistics:
Number of AccessTunnel Data Tunnels = 1

```
Name RLOC IP(Source) AP IP(Destination) VRF ID Source Port Destination Port
-----
Ac0 172.16.0.1 172.16.80.10 0 N/A 4789
```

```
Name IfId Uptime
-----
Ac0 0x00000069 0 days, 00:20:11
```

Verify AP tag assignment with this command. APs must all have the same tags and show **Location** under **Source**.

```
<#root>
9300-1#
show ap tag summary
```

Number of APs: 1

```
AP Name AP Mac Site Tag Name Policy Tag Name RF Tag Name Misconfigured Tag Source
-----
AP5CE1.7629.2B40
5ce1.7629.2b40 default-site-tag
EWC-Location EWC-Location
No
Location
```

 **Note:** In this example, 172.16.0.1 is the Loopback0 IP address (which is wireless management) and APs join to it. Since this is fabric in a box, all fabric components point to that as well.

Troubleshoot

Conditional Debugging and Radio Active Tracing

Enable conditional debugs and capture Radio Active (RA) trace to troubleshoot the join process, RA traces provide debug level traces for all processes that interact with the specified condition (AP MAC address in this case). In order to enable conditional debug, follow these steps.

Step 1. Ensure there are no debug conditions enabled.

```
<#root>
```

```
9300-1#
```

```
clear platform condition all
```

Step 2. Enable the debug condition for the AP MAC address that you want to monitor.

By default, monitor-time is 30 minutes (1800 seconds). You can increase the debugs to run for up to 2085978494 seconds.


```
<#root>
```


```
9300-1#
```

```
debug wireless mac <AP_RADIO_MAC> {monitor-time <seconds>}
```

```
9300-1#
```

```
debug wireless mac <AP_ETHERNET_MAC> {monitor-time <seconds>}
```

 **Note:** In order to debug multiple APs, run debug wireless mac command per each AP's radio and Ethernet MAC address. Only Ethernet MAC debug will show the DTLS transactions.

 **Note:** C9800 debugging operates in store and process model. That is, debugging is not displayed on the terminal session and all the logs are buffered internally in order to be viewed later.

Step 3. Bounce AP switchport or capwap reset AP from the AP CLI to capture the full trace.

Step 4. Stop the debugs if the issue is reproduced before the default or configured monitor time is up.

```
<#root>
```

```
9300-1#
```

```
no debug wireless mac <AP_RADIO_MAC>
```

```
9300-1#
```

```
no debug wireless mac <AP_ETHERNET_MAC>
```

Once the monitor-time has elapsed or the debug wireless has been manually stopped, the EWC-Switch generates a local file with the name:

```
ra_trace_MAC_aaaabbbbcccc_HHMMSS.XXX_timezone_DayWeek_Month_Day_year.log
```

Step 5. Collect the file of the MAC address activity. You have the option to copy the ra trace.log to an external server for offline parsing or display the output directly on the terminal session. Offline parsing is preferred due to the volume of tracelogs generated.

Check the name of the RA traces file.

```
<#root>
```

```
9300-1#
```

```
dir flash: | inc
```

```
ra_trace
```

Copy the file to an external server:

```
<#root>
```

```
9300-1#
```

```
copy flash:
```

```
ra_trace_MAC_<AP_RADIO_MAC>_HHMMSS.XXX_timezone_DayWeek_Month_Day_year.log
```

```
tftp://<a.b.c.d>/
```

```
ra-AP_RADIO_MAC.txt
```

```
9300-1#
```

```
copy flash:
```

```
ra_trace_MAC_<AP_ETHERNET_MAC>_HHMMSS.XXX_timezone_DayWeek_Month_Day_year.log
```

```
tftp://<a.b.c.d>/
```

```
ra-AP_ETHERNET_MAC.txt
```

In order to display the tracelogs on a terminal session:

```
<#root>
```

```
9300-1#
```

```
more flash:
```

```
ra_trace_MAC_<AP_RADIO_MAC>_HHMMSS.XXX_timezone_DayWeek_Month_Day_year.log
```

```
9300-1#
```

```
more flash:
```

```
ra_trace_MAC_<AP_ETHERNET_MAC>_HHMMSS.XXX_timezone_DayWeek_Month_Day_year.log
```

Step 6. If the root cause is not obvious, collect the internal logs which are a more verbose view of tracelogs. You do not need to debug the client again as the command provides debug logs that have been already collected and internally stored.

```
<#root>
```

```
9300-1#
```

```
show logging profile wireless internal filter <AP_RADIO_MAC> to-file flash:
```

```
ra-internal-<AP_RADIO_MAC>.txt
```

```
9300-1#
```

```
show logging profile wireless internal filter <AP_ETHERNET_MAC> to-file flash:
```

```
ra-internal-<AP_RADIO_MAC>.txt
```



Note: This command output returns traces for all logging levels for all processes and is quite voluminous. Contact the Technical Assistance Center (TAC) in order to help parse through these traces.

```
<#root>
```

```
9300-1#
```

```
copy flash:
```

```
ra-internal-<AP_RADIO_MAC>.txt
```

```
tftp://<a.b.c.d>/
```

```
ra-internal-<AP_RADIO_MAC>.txt
```

```
9300-1#
```

```
copy flash:
```

```
ra-internal-<AP_RADIO_MAC>.txt
```

```
tftp://<a.b.c.d>/
```

```
ra-internal-<AP_RADIO_MAC>.txt
```

In order to display the tracelogs on the terminal session:

```
<#root>
```

```
9300-1#
```

```
more flash:
```


```
ra-internal-<AP_RADIO_MAC>.txt
```

```
9300-1#
```

```
more flash:
```

```
ra-internal-<AP_ETHERNET_MAC>.txt
```

Step 7. Remove the debug conditions.

 **Note:** Ensure that you always remove the debug conditions after you troubleshoot the issue.

Example of a Successful AP Join

This is the output of a successful connection attempt from the RA trace perspective. Use the log samples to verify in which stage the AP gets stuck.

CAPWAP Discovery request and response:

```
<#root>
```

```
2021/09/30 17:49:13.823492 {wncmgrd_R0-0}{1}: [capwapac-discovery] [7353]: (note): MAC: ac4a.569c.f560
```

```
Discovery Request received
```

```
2021/09/30 17:49:13.823519 {wncmgrd_R0-0}{1}: [capwapac-discovery] [7353]: (note): MAC: ac4a.569c.f560
2021/09/30 17:49:13.823793 {wncmgrd_R0-0}{1}: [ewlc-infra-evq] [7353]: (debug): instance :0 port:12289M
2021/09/30 17:49:13.824314 {wncmgrd_R0-0}{1}: [capwapac-discovery] [7353]: (note): MAC: ac4a.569c.f560
2021/09/30 17:49:13.824414 {wncmgrd_R0-0}{1}: [capwapac-discovery] [7353]: (note): MAC: ac4a.569c.f560
```

```
Discovery Response sent
```

DTLS handshake for certificate validity check:

```
<#root>
```

```
2021/09/30 17:49:23.259157 {wncd_x_R0-0}{1}: [capwapac-smgr-srvr] [7770]: (note): MAC: ac4a.569c.f560
```

```
DTLS session create callback received.
```

```
2021/09/30 17:49:23.259393 {wncd_x_R0-0}{1}: [capwapac-smgr-sess] [7770]: (info): Session-IP: 172.16.80
2021/09/30 17:49:23.259406 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 22, ha
2021/09/30 17:49:23.259406 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (info):
```

```
DTLS client hello
```

```
2021/09/30 17:49:23.260931 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 22, ha
2021/09/30 17:49:23.260931 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (info):
```

```
DTLS client hello
```

```
2021/09/30 17:49:23.267234 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 22, ha
2021/09/30 17:49:23.267332 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 22, ha
2021/09/30 17:49:23.267891 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 22, ha
2021/09/30 17:49:23.270741 {wncd_x_R0-0}{1}: [ewlc-dtls-sessmgr] [7770]: (info): Remote Host: 172.16.80
```

```
Completed cert verification, status:CERT_VALIDATE_SUCCESS
```

```
2021/09/30 17:49:23.608757 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 22, ha
2021/09/30 17:49:23.608990 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 20, ch
2021/09/30 17:49:23.609255 {wncd_x_R0-0}{1}: [ewlc-dtls-sess] [7770]: (info): Remote Host: 172.16.80.10
2021/09/30 17:49:23.609348 {wncd_x_R0-0}{1}: [capwapac-smgr-sess] [7770]: (info): Session-IP: 172.16.80
2021/09/30 17:49:23.609361 {wncd_x_R0-0}{1}: [capwapac-smgr-srvr] [7770]: (info): Session-IP: 172.16.80
```

DTLS session has been established for AP

```
2021/09/30 17:49:23.650838 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 23, ap
```

CAPWAP join request and response:

<#root>

```
2021/09/30 17:49:23.650970 {wncd_x_R0-0}{1}: [capwapac-smgr-sess] [7770]: (info): Session-IP: 172.16.80
2021/09/30 17:49:23.650972 {wncd_x_R0-0}{1}: [capwapac-smgr-sess] [7770]: (note): MAC: ac4a.569c.f560
```

Received CAPWAP join request

```
2021/09/30 17:49:23.652901 {wncd_x_R0-0}{1}: [rrm-client] [7770]: (ERR): ac4a.569c.f560 Failed to overr
2021/09/30 17:49:23.653789 {wncd_x_R0-0}{1}: [rrm-client] [7770]: (ERR): ac4a.569c.f560 Failed to overr
2021/09/30 17:49:23.653959 {wncd_x_R0-0}{1}: [apmgr-capwap-join] [7770]: (info): ac4a.569c.f560 Retrie
2021/09/30 17:49:23.653967 {wncd_x_R0-0}{1}: [apmgr-db] [7770]: (info): ac4a.569c.f560 Operation state
2021/09/30 17:49:23.654039 {wncd_x_R0-0}{1}: [apmgr-capwap-join] [7770]: (note): MAC: ac4a.569c.f560
```

Successfully processed Join request

```
. AP name: AP5CE1.7629.2B40, Model: C9120AXI-B, radio slots: 2, rlan slots: 0, site tag name: default-s
policy tag name: EWC-Location, rf tag name: EWC-Location
```

```
2021/09/30 17:49:23.654112 {wncmgrd_R0-0}{1}: [ewlc-infra-evq] [7353]: (note): Msg type :mesg->msgtype
2021/09/30 17:49:23.654233 {wncd_x_R0-0}{1}: [capwapac-smgr-srvr] [7770]: (info): MAC: ac4a.569c.f560 J
2021/09/30 17:49:23.654311 {wncd_x_R0-0}{1}: [capwapac-smgr-srvr] [7770]: (note): MAC: ac4a.569c.f560
```

Join processing complete. AP in joined state

CAPWAP configuration:

<#root>

```
2021/09/30 17:49:23.947851 {wncd_x_R0-0}{1}: [apmgr-ap-global] [7770]: (info): ac4a.569c.f560 Lispagent
2021/09/30 17:49:23.948023 {wncd_x_R0-0}{1}: [capwapac-smgr-srvr] [7770]: (info): Session-IP: 172.16.80
```

Config status request was processed and Config status response was sent. AP in Configuration state.

```
2021/09/30 17:49:23.948157 {wncd_x_R0-0}{1}: [lisp-agent-db] [7770]: (ERR): Invalid source IP address t
2021/09/30 17:49:23.948344 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (note): Map request msg sent succ
2021/09/30 17:49:23.949993 {wncmgrd_R0-0}{1}: [hl-core] [7353]: (debug): Radio change on AP ac4a.569c.f
2021/09/30 17:49:23.950130 {wncmgrd_R0-0}{1}: [hl-core] [7353]: (debug): Radio change on AP ac4a.569c.f
2021/09/30 17:49:24.889682 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 23, ap
2021/09/30 17:49:24.889807 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 23, ap
2021/09/30 17:49:24.889992 {wncd_x_R0-0}{1}: [capwapac-smgr-sess] [7770]: (info): Session-IP: 172.16.80
```

Capwap message received, type: config_status_request

```
2021/09/30 17:49:24.890020 {wncd_x_R0-0}{1}: [capwapac-smgr-sess-fsm] [7770]: (info): Session-IP: 172.16.80.1
2021/09/30 17:49:24.890045 {wncd_x_R0-0}{1}: [capwapac-smgr-srvr] [7770]: (info): Session-IP: 172.16.80.1
2021/09/30 17:49:24.890048 {wncd_x_R0-0}{1}: [capwapac-smgr-sess] [7770]: (info): Session-IP: 172.16.80.1
2021/09/30 17:49:24.890134 {wncd_x_R0-0}{1}: [apmgr-msgelem] [7770]: (info): ac4a.569c.f560 AP domain name
2021/09/30 17:49:24.890135 {wncd_x_R0-0}{1}: [apmgr-msgelem] [7770]: (info): ac4a.569c.f560 AP IPv6 name
[...]
2021/09/30 17:49:24.890818 {wncd_x_R0-0}{1}: [capwapac-smgr-srvr] [7770]: (info): Session-IP: 172.16.80.1
```

Config status request was processed and Config status response was sent. AP in Configuration state

```
.
2021/09/30 17:49:24.892967 {wncmgrd_R0-0}{1}: [hl-core] [7353]: (debug): Radio change on AP ac4a.569c.f560
2021/09/30 17:49:24.892993 {wncmgrd_R0-0}{1}: [hl-core] [7353]: (debug): Radio change on AP ac4a.569c.f560
2021/09/30 17:49:24.964085 {wncd_x_R0-0}{1}: [ewlc-infra-evq] [7770]: (debug): DTLS record type: 23, ap
[...]
2021/09/30 17:49:24.964384 {wncd_x_R0-0}{1}: [ble-d] [7770]: (debug): BLE LTX DB: Creating AP ac4a.569c.f560
2021/09/30 17:49:24.964474 {wncd_x_R0-0}{1}: [ble-d] [7770]: (debug): BLE LTX DB:
```

Successfully created AP

```
ac4a.569c.f560
2021/09/30 17:49:24.964479 {wncd_x_R0-0}{1}: [ble-d] [7770]: (debug): BLE LTX DB: Setting capability
2021/09/30 17:49:24.964479 {wncd_x_R0-0}{1}: [ble-d] [7770]: (debug): BLE LTX DB: Updating AP ac4a.569c.f560
2021/09/30 17:49:24.964483 {wncd_x_R0-0}{1}: [ble-d] [7770]: (debug): BLE LTX DB:
```

Successfully updated AP a

```
c4a.569c.f560
[...]
2021/09/30 17:49:25.000954 {wncd_x_R0-0}{1}: [apmgr-capwap-config] [7770]: (info): ac4a.569c.f560
```

AP is in config ready state. Initial configuration will be pushed.

```
2021/09/30 17:49:25.000972 {wncd_x_R0-0}{1}: [apmgr-capwap-config] [7770]: (info): ac4a.569c.f560 Sending
2021/09/30 17:49:25.000975 {wncd_x_R0-0}{1}: [apmgr-capwap-config] [7770]: (info): Preparing FIPS configuration
2021/09/30 17:49:25.000978 {wncd_x_R0-0}{1}: [apmgr-capwap-config] [7770]: (info): Preparing WLANCC configuration
2021/09/30 17:49:25.001064 {wncd_x_R0-0}{1}: [apmgr-ap-global] [7770]: (info): ac4a.569c.f560 AP is in Local mode
2021/09/30 17:49:25.001064 {wncd_x_R0-0}{1}: [apmgr-ap-global] [7770]: (info): ac4a.569c.f560
```

Mode update on AP join : AP already in Local mode which matches site configuration

```
2021/09/30 17:49:25.001081 {wncd_x_R0-0}{1}: [apmgr-db] [7770]: (info): ac4a.569c.f560 Tag process ap w
```

If the AP is not in **Local** mode, then it reboots to apply a mode change. A log similar to this one is printed on EWC-Switch console:

<#root>

```
*Sep 29 20:54:07.769: %APMGR_TRACE_MESSAGE-4-WLC_CONFIG_CHECKER_WARNING: Switch 1 R0/0: wncd: config check failed
*Sep 29 20:54:07.769: %APMGR_TRACE_MESSAGE-3-WLC_EXEC_MSG: Switch 1 R0/0: wncd: % Error: AP: AP5CE1.762
```

will go for a reboot due to Mode change from Flexconnect to Local