Cisco Catalyst IW9167I Heavy Duty Access Point Software Configuration Guide, Cisco IOS XE Dublin 17.14.x

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Overview of the Access Point

Cisco Catalyst IW9167I Heavy Duty Access Point (hereafter referred to as *IW9167I*) is designed to make wireless deployments simple in outdoor and industrial environments. It is built with a cast-aluminum case that can handle water, dust, and extreme temperatures. It comes with a built-in antenna that enables high-throughput connectivity for high-density Wi-Fi clients.

The IW9167I supports Wi-Fi 6, and it comes with 6-GHz hardware support. That way organizations can deploy Wi-Fi 6E and get up to 1.2 GHz more spectrum to boost capacity and mitigate interference.

IW9167I is supported on Cisco Catalyst 9800 Series Wireless Controllers from IOS XE 17.12.1 Software Release. For more information about the configuration on 9800 WLC, see https://www.cisco.com/c/en/us/support/wireless/catalyst-9800-series-wireless-controllers/products-installation-and-configuration-guides-list.html.

The access point can operate as CAPWAP AP in the following modes:

- Local
- Flexconnect
- Sniffer
- Monitor
- Site survey

Related Documentation

To view all support information for the Cisco Catalyst IW9167I Heavy Duty Access Point, see https://www.cisco.com/c/en/us/support/wireless/catalyst-iw9167-series/series.html.

In addition to the documentation available on the support page, you will need to refer to the following guides:

- For information about IW9167I hardware, see *Cisco Catalyst IW9167I Heavy Duty Access Point Hardware Installation Guide*.
- A full listing of the AP's features and specifications is provided in Cisco Catalyst IW9167 Heavy Duty Series Data Sheet.
- For more information about the configuration on Cisco Catalyst 9800 Series Wireless Controllers, see https://www.cisco.com/c/en/us/support/wireless/catalyst-9800-series-wireless-controllers/products-installation-and-configuration-guides-list.html.
- For more information about Cisco IOS XE, see the relevant documents at:

  http://www.cisco.com/c/en/us/products/ios-nx-os-software/ios-xe/index.html

Configuring Indoor Deployment

In IOS XE Release 17.12, IW9167I supports indoor deployment for -E and -ROW(GB) domains.

Table 1: Domains and Countries Supporting Indoor Deployment

PID	Description
IW9167IH-E	EU domain
IW9167IH-ROW (GB)	ROW domain configured with the GB country code

The -E and -ROW(GB) domains support U-NII-2C (excludes channel 144). Indoor deployment involves U-NII-1 and U-NII-2A to channel list.

When indoor deployment is disabled, 5G radio supports channels 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140.

When indoor deployment is enabled, 5G radio supports channels 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140.

To enable indoor mode, use the **ap name** <*ap-name*> **indoor** command from the wireless controller. This command triggers an AP rebooting. After AP registers to the wireless controller after rebooting, you need to assign corresponding country code to the AP.

To disable indoor deployment, use the **ap name** <*ap-name*> **no indoor** command.

Note Channel list extends from U-NII-2c to U-NII-1, U-NII-2a, U-NII-2c (channel 144 is excluded).

To verify whether the indoor deployment is enabled or not, you can use the following show command from the wireless controller:

- When indoor mode is enabled, the show command provides the following output:

```
#show ap name <AP_Name> config general | inc Indoor
    AP Indoor Mode                                  : Enabled
```

- When indoor mode is disabled, the show command provides the following output:

```
#show ap name <AP_Name> config general | inc Indoor
    AP Indoor Mode                                  : Disabled
```

6 GHz Low Power Indoor AP Support for EU and United Kingdom

In IOS XE Release 17.12, IW9167I can work in Low Power Indoor (LPI) mode for EU and United Kingdom.

Note Only IW9167IH-E and IW9167IH-ROW (GB) can be configured as an indoor AP.

IW91767IH-E and IW9167IH-ROW(GB) in LPI mode support only the U-NII-5 sub channel lists (5925Mhz - 6425Mhz) in Wi-Fi 6E band shown in the output of the following command:

```
AP#show controllers dot11Radio 2 frequency
Configured Frequency: 6115Mhz Channel: 33 20MHz
Serving Frequency: 6115Mhz Channel: 33 20MHz
```

```
Allowed Frequency:
          5955MHz(  1)  5975MHz(  5)  5995MHz(  9)  6015MHz( 13)  6035MHz( 17)
6055MHz( 21)  6075MHz( 25)  6095MHz( 29)
          6115MHz( 33)  6135MHz( 37)  6155MHz( 41)  6175MHz( 45)  6195MHz( 49)
6215MHz( 53)  6235MHz( 57)  6255MHz( 61)
          6275MHz( 65)  6295MHz( 69)  6315MHz( 73)  6335MHz( 77)  6355MHz( 81)
6375MHz( 85)  6395MHz( 89)  6415MHz( 93)
```

For more information about Wi-Fi 6E band, see Wi-Fi 6E: The Next Great Chapter in Wi-Fi White Paper.

To enable IW9167I 6 GHz support from the wireless controller, follow these steps:

1. Make sure the access point PID is either IW9167IH-E or IW9167IH-ROW (GB).

```
#show ap summary
Number of APs: 2
CC = Country Code
RD = Regulatory Domain
AP NameSlots            AP Model          Ethernet MAC    Radio MAC         CC   RD  IP
Address     State   Location
-------------------------------------------------------------------------------------------------
APFC58.9A17.0F14 3 IW9167IH-E     fc58.9a17.0f14    fc58.9a17.11a0 DE   -E
192.168.57.102 Registered default location

APFC58.9A17.E640 3 IW9167IH-E     fc58.9a17.e640   fc58.9a17.ec00 DE   -E
192.168.57.101 Registered default location
```

2. Use the following command to configure the AP to indoor mode:

```
controller#ap name APFC58.9A17.0F14 indoor
```

This command triggers an AP rebooting. AP registers to the wireless controller after rebooting.

To verify whether the indoor deployment is enabled or not, use the following show command from the wireless controller:

```
#show ap name <AP_Name> config general | inc Indoor
                AP Indoor Mode : Enabled
```

The above command output shows that the indoor mode is enabled.

3. Use the following command to check if the 6 GHz radio is up:

```
controller#show ap dot11 6ghz summary
* global assignment

AP Name                          Mac Address     Slot    Admin State    Oper State    Width    Txpwr
      Channel                            Mode
-------------------------------------------------------------------------------------------------
APFC58.9A17.0F14                 fc58.9a17.11a0  2       Enabled        Up            20       1/8 (17 dBm)
    (33)                                LOCAL
```

To bring up 6 GHz radio, use the following command from controller:

```
controller#ap name APFC58.9A17.0F14 no dot11 6ghz slot 2 shutdown
```

To shut down 6 GHz radio, use the following command from controller:

```
controller#ap name APFC58.9A17.0F14 dot11 6ghz slot 2 shutdown
```

4. Use the following command to configure 6 GHz radio channel:

```
#ap name APFC58.9A17.0F94 dot11 6ghz slot 2 channel 33
```

5. Use the following command to configure 6 GHz radio channel width:

```
controller#ap name APFC58.9A17.0F94 dot11 6ghz slot 2 channel width 80
```

Use the following show command to check the configuration:

```
controller#show ap dot11 6ghz summary
* global assignment

AP Name                          Mac Address      Slot    Admin State    Oper State    Width    Txpwr
      Channel                             Mode
-------------------------------------------------------------------------------------------------------
APFC58.9A17.0F14                 fc58.9a17.11a0  2       Enabled        Up            80       1/8 (17 dBm)
    (33,37,41,45)                                LOCAL
```

For more configuration commands of Wi-Fi 6E band operation, see Configure and Verify Wi-Fi 6E Band Operations and Client Connectivity.

AFC Support for 6 GHz Standard Power Mode

The Cisco Catalyst IW9167I supports the Automated Frequency Coordination (AFC) 6 GHz Standard Power mode. A standard power AP joins the system. Before enabling standard power, the AP must get the available frequencies and the power in each frequency range from the AFC system.

The AFC system computes the available frequencies and maximum allowable power based on the information provided by the regulatory body (FCC for United States). The response is sent back to controller, which may assign a standard power channel to the AP based on the allowed channel list returned by the AFC system.

Standard Power AP coordinate through an AFC service. The AFC accesses information and, along with the AP's geographical location and antenna characteristics, creates a topographical propagation map modeling the AP's interference radius. This map allows you to assign maximum transmission power and coordinate/configure the channel settings to avoid interference.

The IW9167I is compatible with Self Identifiable Antenna (SIA) antennas for the 6 GHz band.

Note A power cycle is mandatory after the first installation of the SIA antenna.

Table 2: Radio 6 GHz power mode support

Deployment Mode	Low-power Indoor Support	Standard Power Support
Outdoor	Yes	Yes

The transmission power is limited to a maximum of 36 dB Effective Isotropic Radiated Power (EIRP), and APs must be coordinated through an AFC service. The APs are allowed to operate in the UNII-5 (5.925-6.425 GHz) and UNII-7 (6.525-7.125 GHz) in the U.S.

Table 3: 6 GHz Target Power

Conducter Per Path Power		Antenna Gain	Tx x Rx Chains	Max EIRP	Max EIRP (SP/AFC)
20-80Mhz	160Mhz				
10 dBm	10 dBm	5 dBi	4x4	21 dBm	36 dBm

Verifying AFC Status on AP

To verify the AFC request and response data on AP, run the **show rrm afc** command.

```
Device#show rrm afc
Location Type: 1
Deployment Type: 2
Height: 129
Uncertainty: 5
Height Type: 0
Request Status: 5
Request Status Timestamp: 2023-08-31T06:20:17Z
Request Id Sent: 5546388983266789933
Ellipse 1: longitude: -121.935066 latitude: 37.512830 major axis: 43 minor axis:
 9 orientation: 36.818100
AFC Response Request ID: 5546388983266789933
AFC Response Ruleset ID: US_47_CFR_PART_15_SUBPART_E
```

To verify the current operating power mode, run the **show controllers dot11Radio 2 | i Radio** command.

```
Device#show controllers dot11Radio 2 | i Radio
Dot11Radio2     Link encap:Ethernet  HWaddr 24:16:1B:F8:06:C0
Radio Info Summary:
Radio: 6.0GHz (SP)
```

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