# About the Access Point

## Introduction to Cisco Wireless 9178I Wi-Fi 7 Access Point

The Cisco Wireless 9178I Wi-Fi 7 Access Point is an enterprise-class tri-band (2.4 GHz, 5 GHz, 6 GHz) access point. The AP supports full interoperability with leading 802.11ax and 802.11ac clients and a hybrid deployment with other APs and controllers.

The AP hardware is supported on the following platforms:

- Cisco Catalyst Center (formerly known as Cisco DNA Center) on-premises

- Cisco Catalyst stack

- Meraki cloud-based stack

A full listing of the AP's features and specifications is provided in the Cisco Wireless 9178I Wi-Fi 7 Access Point Data Sheet, at:

Cisco Catalyst 9178 Series Access Points Data Sheet

## Cisco Wireless 9178I Wi-Fi 7 Access Point Features

The CW9178I AP is a tri-band Wi-Fi 7 enterprise indoor access point designed to work with the Cisco Catalyst 9800 Series Wireless Controller. The AP includes the following hardware and supporting features:

- Eight radios:

  - Quad Wi-Fi 7 (2/5/5/6) radios with integrated antennas

  - Built-in 2.4 GHz IoT Radio (Bluetooth 6.0+, Zigbee/Thread-ready)

  - GNSS radio

  - UWB radio

- Dedicated scan/AUX radio

- 802.11be (Wi-Fi 7) on all radios

- Quad radio, 16 spatial streams

- Integrated internal antennas that are omnidirectional in azimuth for the 2.4 GHz, 5 GHz, and 6 GHz bands.

- Scanning radio uses two 2.4 GHz, 5 GHz, and 6 GHz antennas.

- Multiuser Multiple-Input Multiple-Output (MU-MIMO) technology for uplink and downlink.

- Orthogonal Frequency Division Multiple Access-based (OFDMA-based) scheduling for both uplink and downlink.

- Inline Power capability.

- Auto-MDIX (automatically support either straight through or crossover cables)

- 802.3bt/4-pair PoE: All features enabled.

- Cisco fast retrain (NFR) is the default for the 9178I Ethernet PHY.

- EEE (Energy Efficient Ethernet) will be supported in hardware for port speeds of 100M, 1G, 2.5G, 5G, and 10G. A future software release would have to enable EEE, plus provide user configuration options.

- Ethernet cable requirements for 10 GbE: CAT6 for 55m / CAT6A 100m. Care should be also taken to use properly-rated Ethernet ports in RF isolation boxes.

- Built-in GPS for AFC

- The following hardware external interfaces:

    - Dual 10G Ethernet (100Mbps, 1Gbps, 2.5Gbps, 5Gbps, 10 Gbps)

    - Dual POE with redundancy

    - USB port

- Integrated Bluetooth Low Energy (BLE) radio to enable IoT use cases such as location tracking and wayfinding.

- Intelligent Capture probes the network and provides Cisco Catalyst Center (formerly known as Cisco DNA Center) with deep analysis.

- Spatial Reuse (also known as Basic Service Set [BSS] coloring) that allows APs and their clients to differentiate between multiple BSS, thus permitting more simultaneous transmissions.

- Power savings mode called Target Wake Time (TWT), which allows clients to stay asleep and wake up only at prescheduled (target) times to exchange data with the AP. This provides significant energy savings for battery-operated devices.

- Cisco Catalyst Center support to enable Cisco Spaces, Apple FastLane, and Cisco Identity Services Engine (ISE).

- Optimized AP Roaming to ensure that client devices associate with the AP in the coverage range that offers the fastest data rate available.

- Cisco CleanAir Pro technology supports 2.4 GHz, 5 GHz, and 6 GHz bands. CleanAir Pro delivers proactive, high-speed spectrum intelligence across 20, 40, and 80, 160, and 320 MHz-wide channels to combat performance problems arising from wireless interference.

- Cisco Software-Defined Access (SD-Access) deployment is supported.

- The AP supports lightweight deployments (using Catalyst 9800 Controllers). The AP also supports the following operating modes:

  - **Local mode:** This is the default mode for the AP. In this mode, the AP serves clients. The AP creates two CAPWAP tunnels to the controller, one for management and the other for data traffic. This is known as central switching because the data traffic is switched (bridged) from the AP to the controller where it is then routed.

  - **FlexConnect mode:** In FlexConnect mode, the data traffic is switched locally and is not sent to the controller. In this mode, the AP behaves like an autonomous AP, but is managed by the controller. Here, the AP can continue to function even if connection to the controller is lost.

  - **Monitor mode:** In this mode, specified Cisco APs can exclude themselves from handling data traffic between clients and the infrastructure. These APs act as dedicated sensors for location-based services (LBS), rogue AP detection, and intrusion detection system (IDS).When APs are in monitor mode, they actively monitor the airwaves and typically, do not serve clients.

  - **Sniffer mode:** In this mode, the AP starts sniffing the air on a given channel. It captures and forwards all the packets from the clients on that channel to a remote machine that runs AiroPeek NX or Wireshark (packet analyzers for IEEE 802.11 wireless LANs). This includes information on timestamp, signal strength, packet size, and so on.

  **Note** In the sniffer mode, the server to which the data is sent should be on the same VLAN as the wireless controller management VLAN. Otherwise, an error is displayed.

  - **Site Survey mode:** The AP GUI is enabled and is used for configuring the RF parameters for site survey investigation. For information, see the Access Points Survey Mode section in the *Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide*.

  - **SDA or fabric mode**

  - **WGB mode**

  - **Mesh mode**

# AP Model Numbers and Regulatory Domains

| AP Type | Product ID | Details |
| --- | --- | --- |
| Access Point for indoor environments, with internal antennas | CW9178I | Wi-Fi 7 AP, tri-band, 802.11be with internal antennas |

With the new Wi-Fi 7 APs, Cisco now has one AP portfolio that can be used either with the Meraki cloud native network or Catalyst on-premise controller-based deployments. With the introduction of the one AP portfolio, it is essential to have a single product ID (PID) at manufacturing, to simplify logistics or operations. This AP model is designed for global use under a single PID. To verify approval and to identify the regulatory domain that corresponds to a particular country, see https://www.cisco.com/c/dam/assets/prod/wireless/wireless-compliance-tool/index.html. Regulatory approvals are continually updated as they are obtained.

# Antennas and Radios

The following sections provide detailed information about the AP's antennas and radios.

## Internal Antennas

The Cisco Wireless 9178I AP (CW9178I) has the following list of internal antennas:

- Four internal dual-band antennas with a dedicated 2.4-GHz radio and a 5-GHz radio

- Four Wi-Fi serving antennas with a dedicated 5-GHz radio

- Four Wi-Fi serving antennas with a dedicated 6-GHz radio

- One internal single-band antenna with a dedicated 2.4-GHz IoT radio

- Two tri-band antennas with a dedicated 2.4 GHz, 5-GHz, and 6-GHz Aux radio

- One GNSS antenna

- UWB antenna

## Operating Frequency and Effective Isotropic Radiated Power

*Table 1: Cisco CW9178I AP Values for European Union (CE) Region*

| Evaluation Mode | Frequency Range | EIRP Power Limit |
| --- | --- | --- |
| | (MHz) | (dBm) |
| 2.4GHz WLAN | 2400-2483.5 | 20 |
| 5GHz WLAN B1 | 5150-5250 | 23 |
| 5GHz WLAN B2 | 5250-5350 | 23 |
| 5GHz WLAN B3 | 5470-5725 | 30 |
| 5GHz WLAN B4 (EN 300 440 V2.2.1) | 5725-5875 | 13.98 |
| 6GHz WLAN (Draft EN 303 687) | 5945~6425 | LPI：23 |
| Bluetooth | 2400-2483.5 | 9.96 |

| Evaluation Mode | Frequency Range | EIRP Power Limit |
| --- | --- | --- |
| | (MHz) | (dBm) |
| IEEE 802.15.4 (Zigbee) | 2400-2483.5 | 9.96 |
| UWB (EN 302 065-2) | 6000-8500 | 0 dBm/50MHz |

*Table 2: Cisco CW9178I Values for United Kingdom Region*

| Evaluation Mode | Frequency Range | EIRP Power Limit |
| --- | --- | --- |
| | (MHz) | (dBm) |
| 2.4GHz WLAN | 2400-2483.5 | 20 |
| 5GHz WLAN B1 | 5150-5250 | 23 |
| 5GHz WLAN B2 | 5250-5350 | 23 |
| 5GHz WLAN B3 | 5470-5725 | 30 |
| 5GHz WLAN B4 (IR 2030) | 5725-5850 | 23 |
| 6G WLAN (IR 2030) | 5925-6425 | LPI：23.98 |
| Bluetooth | 2400-2483.5 | 9.96 |
| IEEE 802.15.4 (Zigbee) | 2400-2483.5 | 9.96 |
| UWB (EN 302 065-2) | 6000-8500 | 0 dBm/50MHz |