About the Access Point

Introduction to Cisco Catalyst Wireless 9166I Wi-Fi 6E Access Point

The Cisco Catalyst Wireless 9166I Wi-Fi 6E 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 (earlier 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 Catalyst Wireless 9166I Wi-Fi 6E Access Point Data Sheet, at:

Cisco Catalyst 9166 Series Access Points Data Sheet

Cisco Catalyst Wireless 9166I Wi-Fi 6E Access Point Features

The CW9166I AP is a tri-band Wi-Fi 6E enterprise indoor access point designed to work with the Cisco Catalyst 9800 Series Wireless Controller. The AP includes the following hardware and supporting features:

- Five radios:
  - A 4x4:4 5-GHz or 6-GHz XOR radio
  - A 4x4:4 5-GHz radio
  - A 4x4:4 2.4-GHz radio

- A tri-band scanning radio for Cisco CleanAir Pro
- A 2.4-GHz IoT (BLE) radio

- Environmental Sensors:
  - Ambient temperature sensor
  - Air quality sensor (Total Volatile Organic Compound [TVOC])
  - Relative humidity sensor

Note The environment sensors are configurable on Cisco Spaces platform.

For more information on how to configure the AP sensor in Cisco Spaces, see the AP as a Sensor section in the *Cisco Spaces: IoT Services Configuration Guide*.

- 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.
- The following hardware external interfaces:
  - 1x100/1000/2500/5000 Multigigabit Ethernet (RJ-45)
  - RS-232 Console Interface through RJ-45
  - Recovery push button (enables partial or full system configuration recovery)
  - USB 2.0 port, type-A connector
  - DC 54V power jack
  - One multicolor LED
- 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 (earlier 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, and 160-MHz-wide channels to combat performance problems arising from wireless interference.
- Flexibile Radio Assignment (FRA), switches the XOR radio between 5-GHz or 6-GHz dynamically depending on the client type and load on the AP.
- 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*.

AP Model Numbers and Regulatory Domains

AP Type	Product ID	Details
Access Point for indoor environments, with internal antennas	CW9166I-A CW9166I-B CW9166I-E CW9166I-F CW9166I-Q CW9166I-R CW9166I-Z CW9166I-ROW CW9166I-MR	Wi-Fi 6E AP, tri-band, 802.11ax with internal

Verify whether the AP model you have is approved for use in your country. 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. Not all regulatory domains have been approved. As and when they are approved, this compliance list is updated.

Note The *x* in the model numbers represents the regulatory domain.

Antennas and Radios

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

Internal Antennas

The Cisco Catalyst Wireless 9166I AP (CW9166I-x) 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 internal dual-band antennas with a dedicated 6-GHz radio and a 5-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

Operating Frequency and Effective Isotropic Radiated Power

Table 1: Cisco CW9166I AP Values for European Union (CE) Region

Radio	Frequency Bands	Maximum Total EIRP Power Level (dBm)
Wi-Fi	2400–2483.5 MHz	20 (4x4)
	5150–5250 MHz	23 (4x4)
	5250–5350 MHz	23 (4x4)
	5470–5725 MHz	30 (4x4)
	5945–6425 MHz	23 (4x4)
Bluetooth Low Energy (BLE)	2400–2483.5 MHz	9.31

Table 2: Cisco CW9166I AP Values for United Kingdom Region

Radio	Frequency Bands	Maximum Total EIRP Power Level (dBm)
Wi-Fi	2400–2483.5 MHz	20 (4x4)
	5150–5250 MHz	23 (4x4)
	5250–5350 MHz	23 (4x4)
	5470–5725 MHz	30 (4x4)
	5725–5850 MHz	23 (4x4)
	5925–6425 MHz	23.98 (4x4)
Bluetooth Low Energy (BLE)	2400–2483.5 MHz	9.31