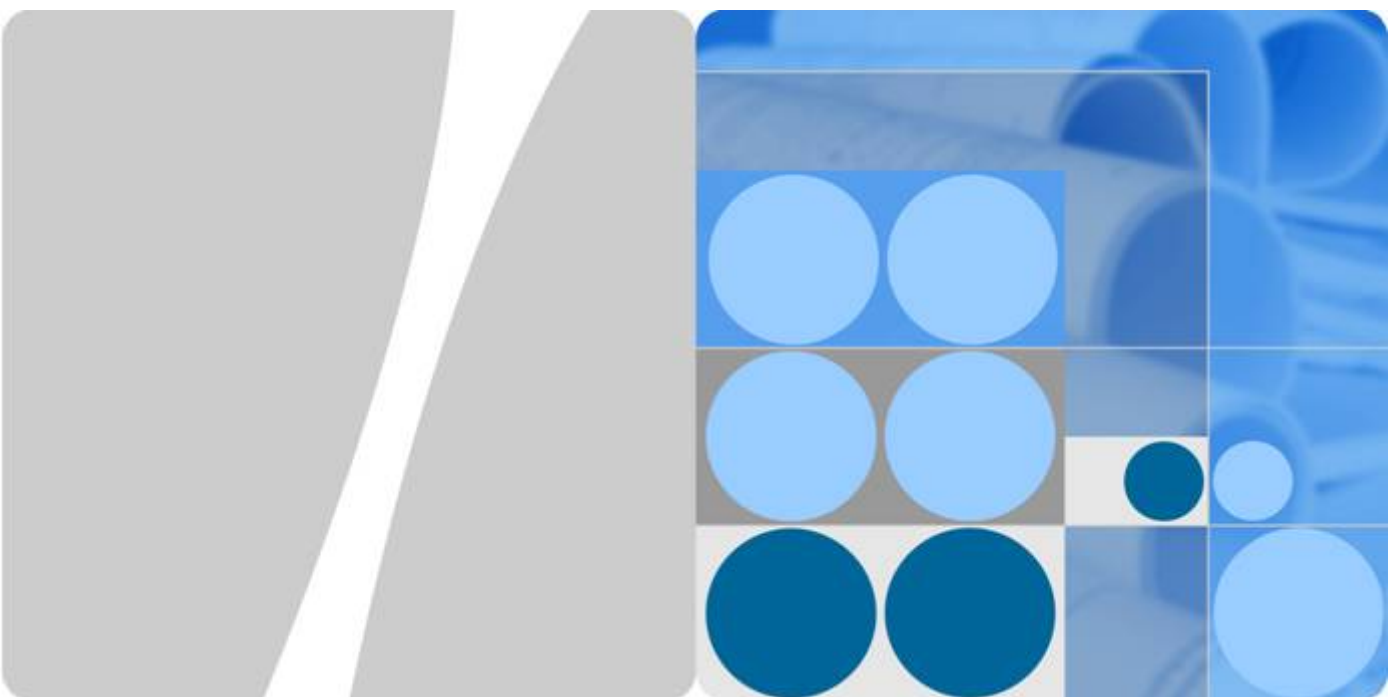




Huawei AP5130DN Access Points

Product Description

Issue **01**
Date **2013-12-30**

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Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: <http://enterprise.huawei.com>

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1 Product Positioning and Characteristics

About This Chapter

[1.1 Product Positioning](#)

[1.2 Product Characteristics](#)

1.1 Product Positioning

Table 1-1 Product positioning

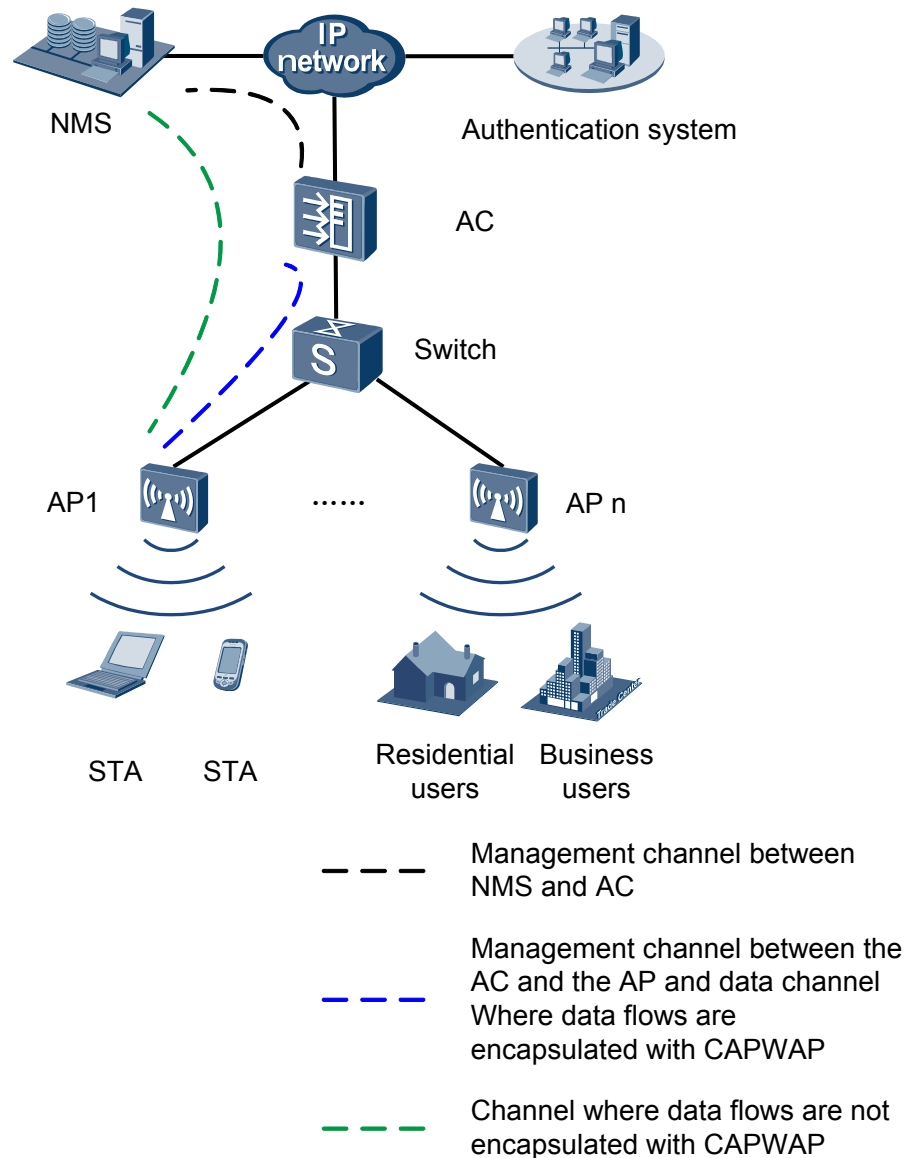
Product Model	Frequency Band	IEEE Standard Compliance	Positioning	Usage Scenario
AP5130DN	Dual band: ● 2.4 GHz ● 5 GHz The AP5130DN can provide services simultaneously on the 2.4 GHz and 5 GHz frequency bands to support more access users.	IEEE 802.11a/b/g/n/ac	The cost-effective AP5130DN supports 3 x 3 MIMO and provides comprehensive service support capabilities. It is deployed indoors and features high reliability, high security, simple network deployment, automatic AC discovery and configuration, and real-time management and maintenance. Huawei AP5130DN complies with IEEE 802.11ac and can provide gigabit access for wireless users. This high capacity greatly improves user experience on wireless networks.	The AP5130DN provides 802.11n/ac wireless access networks for places with simple building structure, small size, dense users, and high capacity demands, such as small and medium enterprises and branches. The AP5130DN can be flexibly deployed and work in both fit AP and bridge mode.

The AP5130DN can work as a Fat AP or Fit AP and switch flexibly between the two working modes based on the network plan.

When the wireless network scale is small, customers need to purchase only AP products and set the APs to work as Fat APs. As the network scale expands, tens of or hundreds of APs exist on the network. To simplify network management, customers are advised to purchase ACs to perform centralized management on the APs and set the APs to work as Fit APs.

Typical networking modes are as follows:

Figure 1-1 Fit AP networking (AP mode)



In this networking, the AP functions as a fit AP and provides only data forwarding functions. The AC is responsible for user access, AP go-online, AP management, authentication, routing, security, and QoS.

Figure 1-2 Fit AP networking (WDS mode: point-to-point)

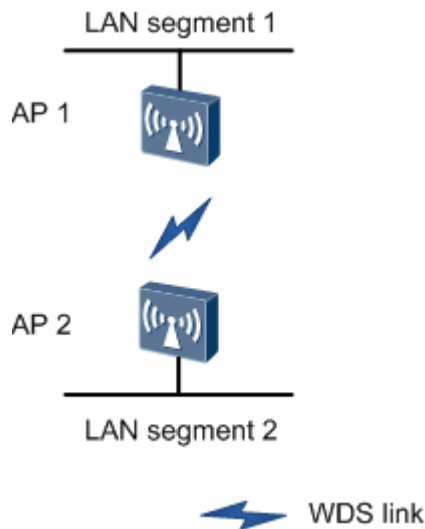
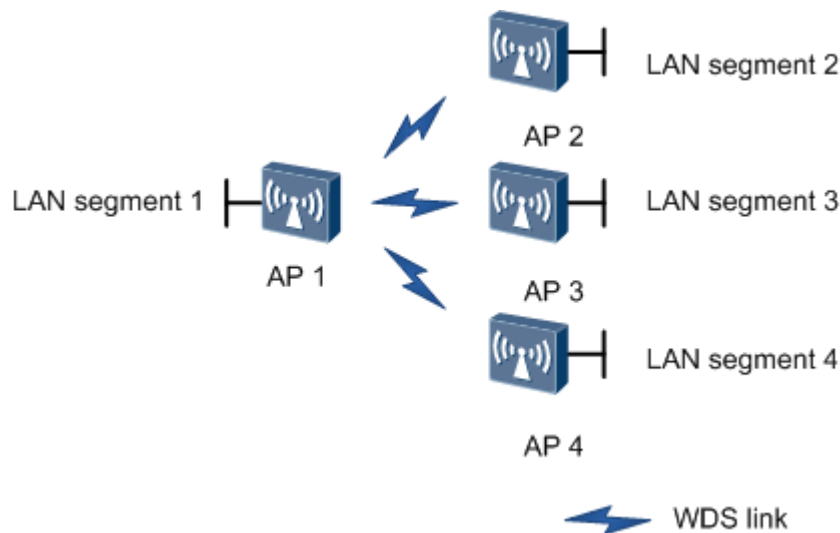
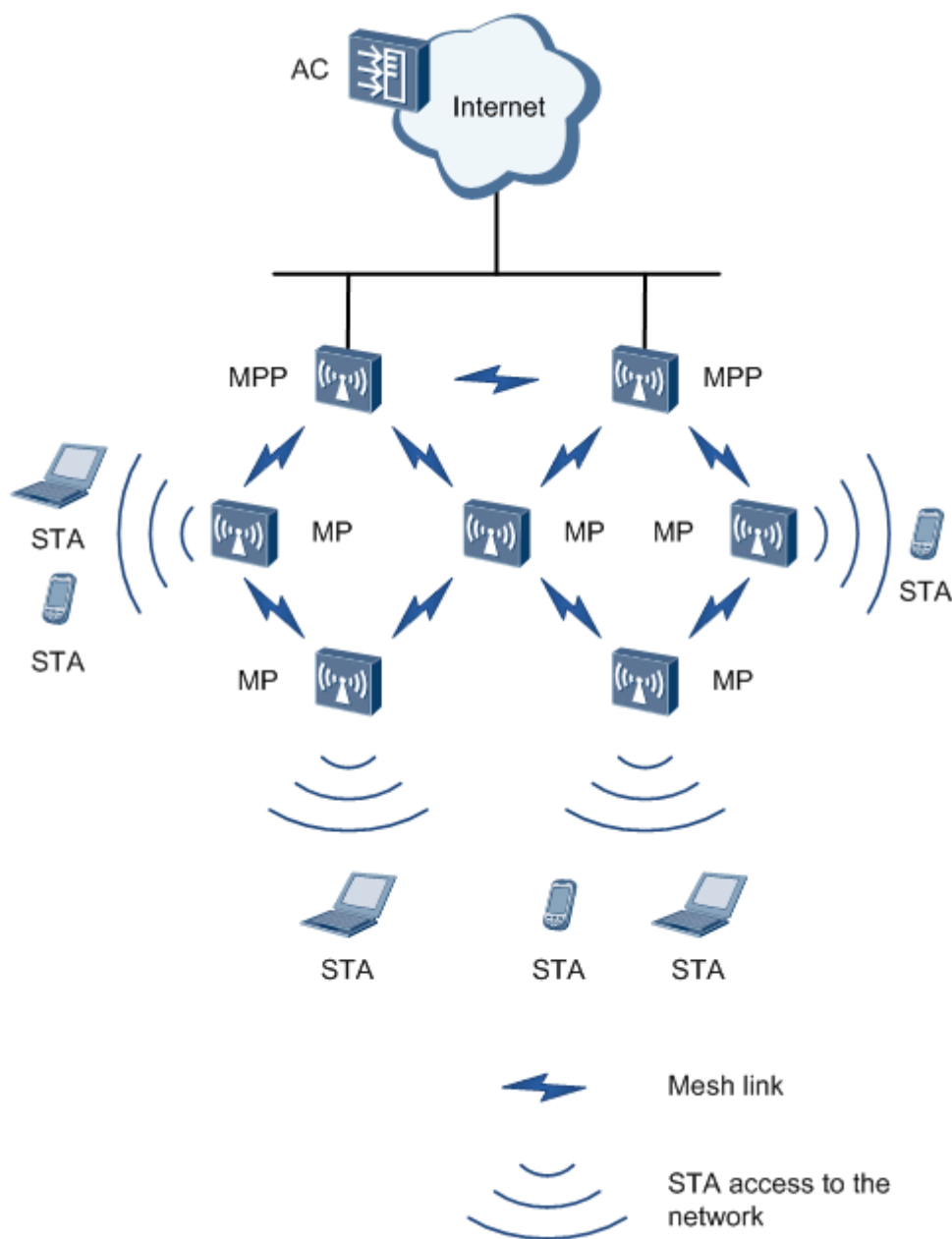


Figure 1-3 Fit AP networking (WDS mode: point-to-multipoint)



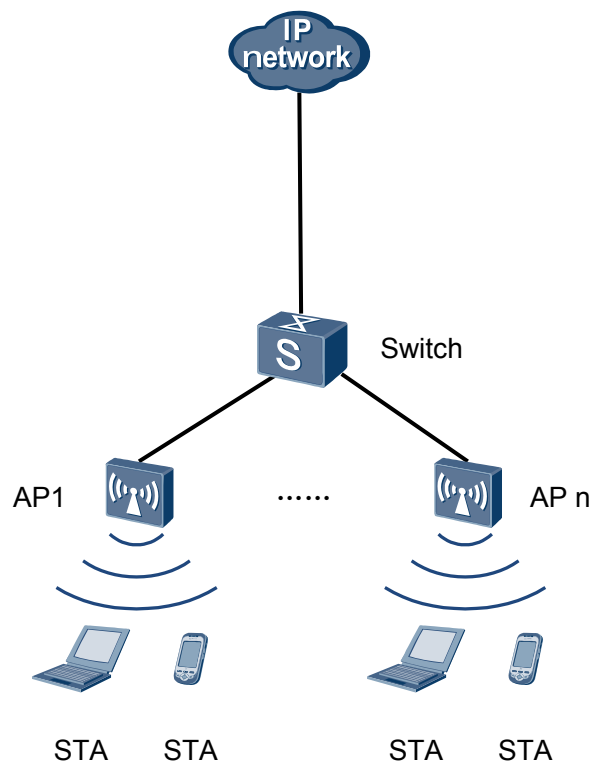
In this networking, the AP connects two or more independently wired or wireless LANs through wireless links to construct a network on which users can exchange data. In Wireless Distribution System (WDS) mode, the AP supports point-to-point (P2P) and point-to-multipoint (P2MP) networking modes. With 5 GHz and 2.4 GHz frequency bands, the AP can implement wireless bridging and access functions.

Figure 1-4 Fit AP mesh networking



On the preceding network, APs function as mesh points (MPs) and are fully-meshed to establish an auto-configured and self-healing wireless mesh network (WMN). APs with the gateway function can work as the mesh portal points (MPPs) through which the WMN can provide access to the Internet. Terminals connect to APs to access the WMN. The WMN uses dedicated mesh routing protocols to guarantee high transmission quality and is more applicable to scenarios that require high bandwidth and highly stable Internet connections.

Figure 1-5 Fat AP networking



On the preceding network, the device functions as a Fat AP to implement functions such as user access, authentication, data security, service forwarding, and QoS.

1.2 Product Characteristics

The AP5130DN has the following advantages on a WLAN.

Product Characteristics	Description
High-speed and reliable wireless access	● Compatibility with IEEE 802.11a/b/g/n/ac ● 3 x 3 MIMO and a maximum rate of 1.75 Gbit/s ● Link aggregation of dual Ethernet ports ● Supports Wi-Fi Multimedia (WMM) and priority mapping on the air interface and wired interface. ● Supports wired link integrity check. ● Supports load balancing. ● Supports roaming without service interruption in Fit AP mode. ● Supports AC dual-link backup in Fit AP mode. ● Supports 11n beamforming. ● Latest 802.11ac chip with higher performance and wider coverage ● Supports airtime scheduling which ensures fairness in channel occupation time for all users. NOTE This function is not supported in V200R003C00.
Comprehensive user access control capability	● Supports access control lists (ACLs) and implements user access control based on the user group policy. ● Provides fine-grained bandwidth management for each user. ● Supports user isolation policies. ● Supports unified authentication on the AC in Fit AP mode. ● Identifies the device type according to the organizationally unique identifier (OUI) in the MAC address, user agent (UA) information in an HTTP packet, and DHCP options in Fit AP mode. ● The RADIUS server delivers packet forwarding, security, and QoS policies according to the device type carried in the RADIUS authentication and accounting packets in Fit AP mode.
High network security	● Open system authentication ● WEP authentication/encryption ● WPA/WPA2-PSK authentication and encryption ● WPA/WPA2-802.1x authentication and encryption ● WAPI authentication and encryption ● Supports wireless intrusion detection system (WIDS), including rogue AP and STA detection, attack detection, STA/AP blacklist and whitelist.

Product Characteristics	Description
Flexible networking and environment adaptability	● Provides flexible networking capabilities and applies to various application scenarios. Mesh and WDS scenarios are supported only in Fit AP mode. ● Has strong environment adaptability. The AP can automatically select the transmission rates, channels, and transmit power to adapt to various radio environments and avoid interference in real time. ● Adjusts bandwidth allocation based on the user quantity and environment to improve user experience. ● Supports the MIMO antenna system, connects to the external dual-band antenna (2.4 GHz and 5 GHz), and flexibly adjusts antenna directions. ● Identifies interference sources such as baby monitors, Bluetooth devices, digital cordless phones (at 2.4 GHz frequency band only), wireless audio transmitters (at both the 2.4 GHz and 5 GHz frequency bands), wireless game controllers, and microwaves in Fit AP mode and works with eSight to locate interference sources and display spectrums.
Easy device management and maintenance	● Automatically goes online and loads the configuration, and supports plug-and-play (PnP) in Fit AP mode. ● Supports batch upgrade. ● Allows real-time monitoring on the network management system (NMS) to facilitate remote configuration and fast fault location. ● Supports the Link Layer Discovery Protocol (LLDP) to implement automatic link discovery and obtain the network topology.

2 Hardware Structure

About This Chapter

[2.1 AP5130DN](#)

2.1 AP5130DN

Appearance

Figure 2-1 shows AP5130DN appearance.

 NOTE

The actual device appearance may be different from the following device appearance, but these differences will not affect device functions.

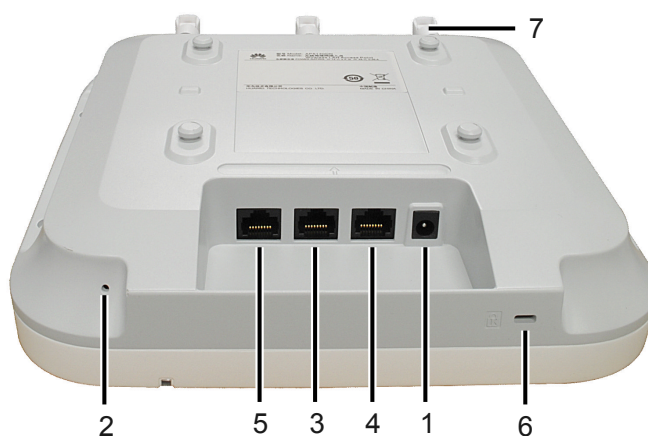
Figure 2-1 AP5030DN appearance



Port

The following figure shows ports on the AP5030DN.

Figure 2-2 AP5030DN ports



As shown in **Figure 2-2**, each port can be described as follows:

- 1. Input port for 12 V DC power supply
- 2. Default button: restores factory settings if you hold down the button more than 3 seconds.
- 3. GE1: 10/100/1000M port used to connect to the wired Ethernet.
- 4. GE0/PoE: 10/100/1000M port used to connect to the wired Ethernet. The port can connect to a PoE power supply to provide power for APs.
- 5. Console port: connects to the maintenance terminal for AP configuration and management.
- 6. Lock port: protects the AP against theft.
- 7. Dual-band antenna port

 NOTE

Different power adapters are delivered with the AP products according to standards in the countries or regions where the AP products are delivered. These countries and regions are identified by the barcode on an AP's nameplate, including:

- EU (Europe)
- UK (United Kingdom)
- CN (China)
- AU (Australia)
- US (United States)
- USA (the AP is sold only in the U.S)

LED Indicators

 NOTE

Indicator colors may vary slightly at different temperature.

Type	Color	Status	Description
Default status after power-on	Green	Steady on	The AP is just powered on and the software is not started yet.
Software startup status	Green	Steady on after blinking once	After the system is reset and starts uploading the software, the indicator blinks green once. Until the software is uploaded and started, the indicator remains steady green.
Running status	Green	Blinking once every 2s (0.5 Hz)	● The system is running properly, the Ethernet connection is normal, and STAs are associated with the AP. ● The system enters the Uboot CLI.
		Blinking once every 5s (0.2 Hz)	The system is running properly, the Ethernet connection is normal, and no STA is associated with the AP. The system is in low power consumption state.

Type	Color	Status	Description
Alarm	Green	Blinking once every 0.25s (4 Hz)	● The software is being upgraded. ● After the software is uploaded and started, the AP working in Fit AP mode requests to go online on the AC and maintains this state until it goes online successfully on the AC (before the CAPWAP link is established). ● The AP working in Fit AP mode fails to go online on the AC (the CAPWAP link disconnects).
Fault	Red	Steady on	A fault that affects services has occurred, such as a DRAM detection failure or system software loading failure. The fault cannot be automatically rectified and must be rectified manually.

3 Product Features

About This Chapter

- 3.1 WLAN Features
- 3.2 Network Features
- 3.3 QoS Features
- 3.4 Security Features
- 3.5 Maintenance Features
- 3.6 BYOD
- 3.7 Locating Service
- 3.8 Spectrum Analysis

3.1 WLAN Features

WLAN features supported by the AP are as follows:

- Compatibility with IEEE 802.11a/b/g/n/ac
- Maximum rate: 1.75 Gbit/s
- Maximum ratio combining (MRC)
- Maximum-likelihood detection (MLD)
- Data unit aggregation, including A-MPDU (Tx/Rx) and A-MSDU (Rx only)
- Supports 802.11 dynamic frequency selection (DFS).
- Short GI in 20 MHz, 40 MHz, and 80 MHz modes
- Priority mapping and packet scheduling based on a Wi-Fi Multimedia (WMM) profile to implement priority-based data processing and forwarding
- Automatic and manual rate adjustment (the rate is adjusted automatically by default)
- WLAN channel management and channel rate adjustment

 NOTE

For details about WLAN channel management, see the *Country Code & Channel Compliance Table*.

- Automatic channel scanning and interference avoidance
- Service set identifier (SSID) hiding
- Signal sustain technology (SST)
- Unscheduled automatic power save delivery (U-APSD)
- Control and Provisioning of Wireless Access Points (CAPWAP) in Fit AP mode
- Automatic login in Fit AP mode
- Wireless distribution system (WDS) in Fit AP mode
- Mesh networking in Fit AP mode
- Multi-user CAC

 NOTE

This function is not supported in V200R003C00.

3.2 Network Features

Network features supported by the AP are as follows:

- Compliance with IEEE 802.3u
- Auto-negotiation of the rate and duplex mode and automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)
- SSID-based VLAN assignment
- VLAN trunk on uplink Ethernet ports
- 4094 VLAN IDs (1-4094) and a maximum of 16 virtual APs (VAPs) for each radio
- AP control channel in tagged and untagged mode

- DHCP client, obtaining IP addresses through DHCP
- Tunnel data forwarding and direct data forwarding
- STA isolation in the same VLAN
- Access control lists (ACLs)
- Link Layer Discovery Protocol (LLDP)
- Uninterrupted service forwarding upon CAPWAP channel disconnection in Fit AP mode
- Unified authentication on the AC in Fit AP mode
- AC dual-link backup in Fit AP mode
- NAT

 NOTE

This function is not supported in V200R003C00.

- IPv6 in Fit AP mode

 NOTE

This function is not supported in V200R003C00.

3.3 QoS Features

QoS features supported by the AP are as follows:

- Priority mapping and packet scheduling based on a Wi-Fi Multimedia (WMM) profile to implement priority-based data processing and forwarding
- WMM parameter management for each radio
- WMM power saving
- Priority mapping for upstream packets and flow-based mapping for downstream packets
- Queue mapping and scheduling
- User-based bandwidth limiting
- Adaptive bandwidth management (the system dynamically adjusts bandwidth based on the number of users and radio environment to improve user experience)
- Airtime scheduling

 NOTE

This function is not supported in V200R003C00.

3.4 Security Features

Security features supported by the AP are as follows:

- Open system authentication
- WEP authentication/encryption
- WPA/WPA2-PSK authentication and encryption
- WPA/WPA2-802.1x authentication and encryption
- WPA-WPA2 hybrid authentication
- WAPI authentication and encryption

- Supports wireless intrusion detection system (WIDS), including rogue AP and STA detection, attack detection, STA/AP blacklist and whitelist.
- 802.1x authentication, MAC address authentication, and Portal authentication

3.5 Maintenance Features

Maintenance features supported by the AP are as follows:

- Unified management and maintenance on the AC in Fit AP mode
- Automatic login and configuration loading, and plug-and-play (PnP) in Fit AP mode
- WDS zero-configuration deployment in Fit AP mode
- Mesh network zero-configuration deployment in Fit AP mode
- Batch upgrade
- Local AP management through the serial interface or using Telnet
- Real-time configuration monitoring and fast fault location using the NMS
- System status alarm

3.6 BYOD

NOTE

The AP supports bring your own device (BYOD) only in Fit AP mode.

BYOD features supported by the AP are as follows:

- Identifies the device type according to the organizationally unique identifier (OUI) in the MAC address.
- Identifies the device type according to the user agent (UA) information in an HTTP packet.
- Identifies the device type according to DHCP options.
- The RADIUS server delivers packet forwarding, security, and QoS policies according to the device type carried in the RADIUS authentication and accounting packets.

3.7 Locating Service

NOTE

The AP supports the locating service only in Fit AP mode.

Locating service features supported by the AP are as follows:

- Locates tags manufactured by AeroScout or Ekahau.
- Locates Wi-Fi terminals.

3.8 Spectrum Analysis

NOTE

The AP supports spectrum analysis only in Fit AP mode.

Spectrum analysis features supported by the AP are as follows:

- Identifies interference sources such as baby monitors, Bluetooth devices, digital cordless phones (at 2.4 GHz frequency band only), wireless audio transmitters (at both the 2.4 GHz and 5 GHz frequency bands), wireless game controllers, and microwaves.
- Works with eSight to locate and perform spectrum analysis on interference sources.

4 Technical Specifications

About This Chapter

- [4.1 Basic Specifications](#)
- [4.2 Radio Specifications](#)
- [4.3 Standards Compliance](#)

4.1 Basic Specifications

Table 4-1 Basic specifications

Item		Description
Technical specifications	Dimensions (H x W x D)	53 mm x 220 mm x 220 mm
	Weight	1.0 kg
	System memory	● 256 MB DDR2 ● 32 MB flash memory
Power specifications	Power input	● DC 12 V $\pm$ 10% ● PoE power: -48 V DC (in compliance with IEEE 802.3af/at)
	Maximum power consumption	13 W NOTE The actual maximum power consumption depends on local laws and regulations.
Environment specifications	Operating temperature	-10°C to +50°C
	Storage temperature	-40°C to +70°C
	Operating humidity	5% to 95% (non-condensing)
	Waterproof grade	IP41
	Altitude	-60 m to 4000 m
	Atmospheric pressure	70 kPa to 106 kPa

4.2 Radio Specifications

Table 4-2 Radio specifications

Item	Description
Antenna type	Built-in antenna
Antenna gain	● 2.4G: 2.5dBi ● 5G: 4dBi

Item	Description		
Maximum number of concurrent users	● Fit AP mode: ≤ 256 ● Fat AP mode: ≤ 64		
Maximum transmit power for each radio	● 2.4 GHz: 20 dBm ● 5 GHz: 16 dBm NOTE The 2.4 GHz radio does not support the 40M bandwidth in FCC regions (including America). The actual transmit power depends on local laws and regulations. You can adjust the transmit power from the maximum transmit power to 1 dBm, with a step of 1 dB.		
Maximum number of non-overlapping channels	2.4 GHz 802.11b/g ● 20 MHz: 3 802.11n ● 20 MHz: 3 ● 40 MHz: 1	5 GHz ● 802.11a - 20 MHz: 5 ● 802.11n - 20 MHz: 5 - 40 MHz: 2 ● 802.11ac - 20MHz: 5 - 40MHz: 2 - 80MHz: 1	NOTE The table uses the number of non-overlapping channels supported by China as an example. The number of non-overlapping channels varies in different countries. For details, see the <i>Country Code & Channels compliance status</i> NOTICE If the AP is delivered to the USA, pay attention to the following on channel and frequency band usage. 1. The country code of the AP is fixed. 2. The frequency band ranging from 5.15 GHz to 5.25 GHz can only be used indoors. 3. High power radars working at frequencies in the range of 5.25 GHz to 5.35 GHz, 5.47 GHz to 5.6 GHz, and 5.65 GHz to 5.725 GHz can interfere with or even damage APs working at the same frequency. 4. APs cannot work at channels in frequencies ranging from 5.6 GHz to 5.65 GHz or their overlapping channels.
Channel rate supported	802.11b: 1, 2, 5.5, and 11 Mbit/s		
	802.11a/g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbit/s		
	802.11n: 6.5 to 450 Mbit/s		
	802.11ac: 6.5 to 1300Mbit/s		

Item	Description			
Receiver sensitivity	2.4 GHz 802.11b (CCK) ● -96 dBm @ 1 Mb/s ● -92 dBm @ 2 Mb/s ● -92 dBm @ 5.5 Mb/s ● -89 dBm @ 11 Mb/s	2.4 GHz 802.11g (non-HT20) ● -87 dBm @ 6 Mb/s ● -87 dBm @ 9 Mb/s ● -87 dBm @ 12 Mb/s ● -86 dBm @ 18 Mb/s ● -83 dBm @ 24 Mb/s ● -80 dBm @ 36 Mb/s ● -76 dBm @ 48 Mb/s ● -74 dBm @ 54 Mb/s	2.4 GHz 802.11n (HT20) ● -87 dBm @ MCS0 ● -87 dBm @ MCS1 ● -86 dBm @ MCS2 ● -83 dBm @ MCS3 ● -79 dBm @ MCS4 ● -76 dBm @ MCS5 ● -74 dBm @ MCS6 ● -71 dBm @ MCS7	2.4 GHz 802.11n(HT40) ● -84 dBm @ MCS0 ● -84 dBm @ MCS1 ● -83 dBm @ MCS2 ● -79 dBm @ MCS3 ● -76 dBm @ MCS4 ● -72 dBm @ MCS5 ● -70 dBm @ MCS6 ● -68 dBm @ MCS7
	5 GHz 802.11a (non-HT20) ● -90 dBm @ 6 Mb/s ● -89 dBm @ 9 Mb/s ● -88 dBm @ 12 Mb/s ● -85 dBm @ 18 Mb/s ● -82 dBm @ 24 Mb/s ● -79 dBm @ 36 Mb/s ● -74 dBm @ 48 Mb/s ● -73 dBm @ 54 Mb/s	5 GHz 802.11n (HT20) ● -89 dBm @ MCS0 ● -87 dBm @ MCS1 ● -85 dBm @ MCS2 ● -80 dBm @ MCS3 ● -77 dBm @ MCS4 ● -73 dBm @ MCS5 ● -71 dBm @ MCS6 ● -70 dBm @ MCS7	5 GHz 802.11n (HT40) ● -86 dBm @ MCS0 ● -84 dBm @ MCS1 ● -81 dBm @ MCS2 ● -78 dBm @ MCS3 ● -74 dBm @ MCS4 ● -70 dBm @ MCS5 ● -67 dBm @ MCS6 ● -66 dBm @ MCS7	-

Item	Description			
	5 GHz 802.11ac (VTH20) ● -88 dBm @ MCS0NSS1 ● -85 dBm @ MCS1NSS1 ● -83 dBm @ MCS2NSS1 ● -79 dBm @ MCS3NSS1 ● -76 dBm @ MCS4NSS1 ● -72 dBm @ MCS5NSS1 ● -71 dBm @ MCS6NSS1 ● -70 dBm @ MCS7NSS1 ● -65 dBm @ MCS8NSS1	5 GHz 802.11ac (VTH40) ● -85 dBm @ MCS0NSS1 ● -83 dBm @ MCS1NSS1 ● -78 dBm @ MCS2NSS1 ● -77 dBm @ MCS3NSS1 ● -73 dBm @ MCS4NSS1 ● -69 dBm @ MCS5NSS1 ● -68 dBm @ MCS6NSS1 ● -67 dBm @ MCS7NSS1 ● -66 dBm @ MCS8NSS1 ● -60 dBm @ MCS9NSS1	5 GHz 802.11ac (VTH80) ● -82 dBm @ MCS0NSS1 ● -79 dBm @ MCS1NSS1 ● -77 dBm @ MCS2NSS1 ● -74 dBm @ MCS3NSS1 ● -73 dBm @ MCS4NSS1 ● -66 dBm @ MCS5NSS1 ● -65 dBm @ MCS6NSS1 ● -64 dBm @ MCS7NSS1 ● -59 dBm @ MCS8NSS1 ● -57 dBm @ MCS9NSS1	-

4.3 Standards Compliance

Safety standards

- UL 60950-1
- CAN/CSA 22.2 No.60950-1
- IEC 60950-1
- EN 60950-1
- GB 4943

Radio standards

AP5010DN-AGN:

- ETSI EN 300 328
- ETSI EN 301 893
- FCC Part 15C: 15.247

- FCC Part 15C: 15.407
- RSS-210
- AS/NZS 4268

AP5010SN-GN:

- ETSI EN 300 328
- FCC Part 15C: 15.247
- RSS-210
- AS/NZS 4268

EMC standards

- EN 301 489-1
- EN 301 489-17
- ETSI EN 60601-1-2
- FCC Part 15
- ICES-003
- YD/T 1312.2-2004
- ITU k.20
- GB 9254
- GB 17625.1
- AS/NZS CIPSR22
- EN 55022
- EN 55024
- CISPR 22
- CISPR 24
- IEC61000-4-6
- IEC61000-4-2

IEEE standards

- IEEE 802.11a/b/g
- IEEE 802.11n
- IEEE 802.11ac
- IEEE 802.11h
- IEEE 802.11d
- IEEE 802.11e

Security standards

- 802.11i, Wi-Fi Protected Access 2 (WPA2), and WPA
- 802.1X
- Advanced Encryption Standards (AES) and Temporal Key Integrity Protocol (TKIP)

- EAP Type (s)

Environment standards

- ETSI 300 019-2-1
- ETSI 300 019-2-2
- ETSI 300 019-2-3
- ETSI 300 019-1-1
- ETSI 300 019-1-2
- ETSI 300 019-1-3

EMF

- CENELEC EN 62311
- CENELEC EN 50385
- OET65
- RSS-102
- FCC Part1&2
- FCC KDB

RoHS

- Directive 2002/95/EC & 2011/65/EU

Reach

- Regulation 1907/2006/EC

WEEE

- Directive 2002/96/EC & 2012/19/EU