

AP-N515 Access Point Datasheet

5375Mbps 4x4 MU-MIMO Dual Radios Gigabit Wi-Fi 6 Indoor Access Point



Overview

AP-N515 is an 802.11ax-compliant enhanced wireless access point, which provides your business with next-level coverage, ease of installation, and management. It supports 4x4 MU-MIMO, and can simultaneously deliver services on the 2.4 GHz and 5 GHz, achieving a rate of up to 5375 Mbps. With built-in smart antennas that enable signals to follow Stations (STAs), providing better coverage. In addition, this AP can be mounted on the wall or the ceiling, the AP is ideal for indoor environments such as large campuses, conference centers, or other densely populated scenarios.

Benefits

- Dual Radios 5375 Mbps: 2.4 GHz (2x2), 5 GHz (4x4)
- OFDMA and MU-MIMO Support
- Support Seamless Roaming with WLAN Controller
- Managed via WLAN Controller or Simply Operate Alone
- WPA3 and Enhanced Open Security
- Ceiling-Mount and Wall-Mount Model
- Up to 160MHz Bandwidth
- Powered by 802.3af/at/bt (PoE injector sold separately)

Product Characteristics

Multi-service Port Design

The AP-N515 supports a maximum wired negotiation rate of 2.5G throughout. In addition, one adaptive Ethernet electrical port provides high-speed wired access of up to 1G, enabling high-speed transmission conversion between wireless and wired. One 2.5G SFP port, adapted to different customer site wired network link patterns, supports SFP optical port to undertake data transmission.

Wi-Fi 6 Technology

- **1024-QAM High-speed Access**

The AP-N515 adopts the dual-radio design and complies with the next-generation Wi-Fi standard 802.11ax. When the two radios are both enabled, the AP can provide a maximum wireless access rate of 5.375 Gbps, bringing high-speed access experience.

- **OFDMA High-density User Access**

The AP supports OFDMA of 802.11ax, which divides the WLAN channel into a plurality of narrower subchannels, with each user occupying one or more subchannels. By scheduling multiple users to receive and send packets concurrently via the AP, user competition and back-off can be reduced, thereby reducing network latency and improving network efficiency.

In a high-density deployment and access environment, the average rate per STA can be raised to four times that of 802.11ac.

- **Bi-Directional MU-MIMO**

Compared with the previous Wi-Fi 5 (802.11ac) with only downlink MU-MIMO support, Wi-Fi 6 supports both uplink and downlink MU-MIMO (multi-user, multiple-input and multiple-output). Therefore, the AP can connect clients simultaneously, significantly improving the wireless performance and experience.

- **BSS Color Space Multiplexing**

The AP-N515 supports spatial reuse with the Basic Service Set (BSS) color in 802.11ax. This feature color-codes BSSs of different WLANs with different BSS colors and further classifies BSSs into internal BSSs (BSSs of the device) and external BSSs. Different packet receiving and transmission thresholds are configured for BSSs on this AP. When this AP judges that a received packet is from an external BSS based on the BSS color and the signal strength is lower than the packet receiving threshold for external BSSs, the AP ignores this packet. Packets from internal BSSs are not affected.

This technology implements channel reuse in high-density scenarios and greatly eases frequency interference in actual network deployment.

- **Green with the Lower Power Consumption per Unit of Performance**

A large number of new energy-saving technologies have been applied to the AP-N515, including single-antenna standby technology, dynamic MIMO power-saving technology, enhanced automatic power-saving transmission technology, and packet-by-packet power control technology, which, combined with the high-performance power supply design, make the AP-N515 provide high-speed wireless access while easily saving energy and power.

- **Industry-leading Local Forwarding Technology**

The AP integrates intelligent local forwarding technology and breaks through the bottleneck in the traffic of AC. The AC can be used to pre-configure the data forwarding mode for the AP. Then, this AP determines whether data needs to be forwarded by the AC based on the SSID name or user VLAN, or be sent to a wired network for data exchange. With the local forwarding technology, the AP classifies data that is sensitive to delay and requires highly real-time transmission, and forwards it through a wired network. In this way, the traffic pressure of the AC is greatly relieved and the AP better adapts to high-traffic transmission on 802.11ax networks.

- **Abundant QoS Policies**

The AP supports abundant QoS policies. It provides WLAN/AP/STA-based bandwidth limitation and supports Wi-Fi Multimedia (WMM) that defines priorities for different service data. The AP authentically implements timely and quantitative transmission of audio and video, and guarantees smooth application of multimedia services. The multicast-to-unicast technology supported by the AP-N515 solves the video lagging problem caused by packet loss or long delay in Video on Demand (VoD) and other multicast applications on wireless networks, and enhances the experience in the use of multicast video services on wireless networks.

Comprehensive Security Protection

- **Secure User Access**

The AP Supports Web, 802.1x, MAC address, local authentication, and other user access authentication methods. In addition, complying with the standard network access control, it offers a set of control policies in terms of user access, authorization, equipment compliance check, network behavior monitoring, network attack prevention, etc. All these control features guarantee high network security for authenticated users.

- **Comprehensive Wireless Security Protection**

AP-N515 has a series of wireless security protection functions such as WIDS (wireless intrusion detection), RF interference positioning, rogue AP countermeasures, anti-ARP spoofing, DHCP security protection, etc. to build a safe and reliable wireless network for users fundamentally.

Hybrid Management

- **Flexible Management Options**

The AP-N515 supports flexible switching between the fat mode and fit mode. In fit mode, the AP can be used after installation with zero configuration. The sound remote management greatly improves the operation, administration, maintenance (OAM) efficiency for wireless networks.

- **Web Management Interface**

The AP-N515 provides a Web management interface for AC and AP, easy to handle wireless configuration, and operates the wireless network as a whole. The Web interface of AC can manage AP and manage the users connected under AP, limiting users' speed and restricting users from connecting to the network and other behaviors. Hence, it is convenient for operation and maintenance personnel to plan to operate the wireless.

Small Branch Office All-in-One

The AP-N515 can provide wireless access service for office areas and act as a VPN gateway in a small branch office scenario, realizing All-in-One of AP + VPN gateway, simplifying network deployment and saving construction costs for users.

- **PPPoE**

The AP-N515 supports the PPPoE client function, which can access the Internet through PPPoE so that the branch office area does not need to set up a separate gateway to access the Internet.

- **NAT**

The AP-N515 supports the NAT function to provide NAT address translation between LAN and the branch office's Internet.

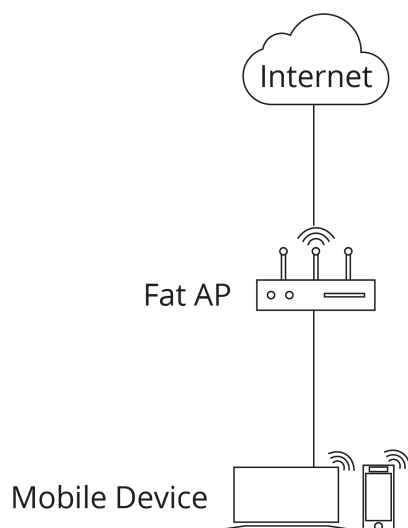
- **IPsec VPN**

The AP-N515 supports IPsec VPN, enabling IPsec VPN tunnels to be established between branch office areas and office headquarters, enabling LAN interconnection between headquarters and all branch office areas.

Typical Networking

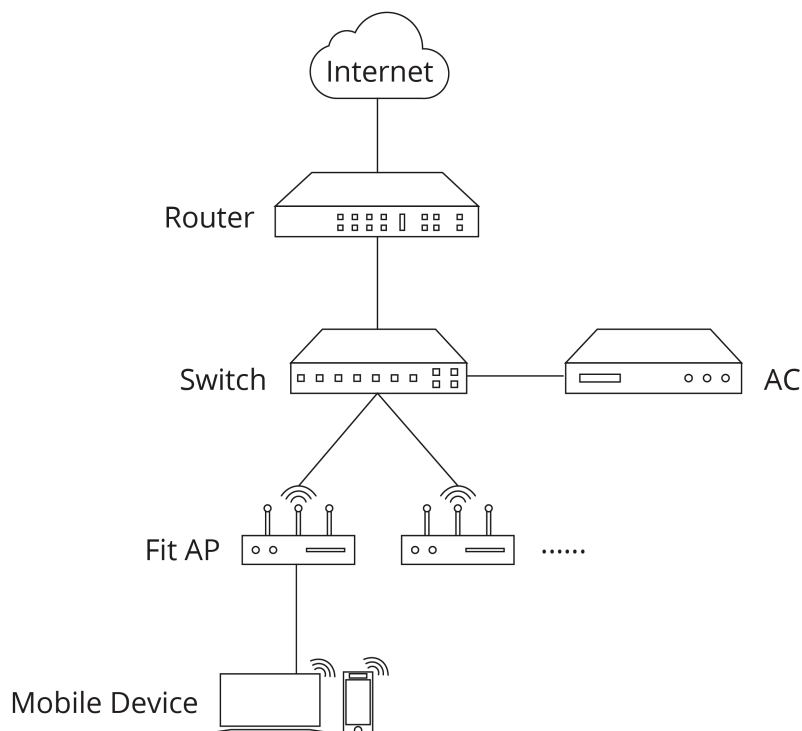
FAT AP

In the below networking, the AP-N515 works as a fat AP to complete user access, authentication, data security, service forwarding, and QoS.



FIT AP

In the below networking, the AP-N515 works as a fit AP to bearer bridge forwarding function, and the functions of user access, AP online, authentication, routing, AP management, security protocol, and QoS are completed by the AC.



Technical Specification

Wi-Fi 6 access point comes with advanced hardware architecture design. Here's a look at the details.

Hardware Specifications

Hardware Specifications	AP-N515
802.11n	Six spatial streams - Radio 1 – 2.4 GHz: 2x2 MIMO, two spatial streams - Radio 2 – 5 GHz: 4x4 MIMO, four spatial streams Channels: - Radio 1 – 2.4 GHz: 20 MHz and 40 MHz - Radio 2 – 5 GHz: 20 MHz and 40 MHz Combined peak data rate: 900 Mbps - Radio 1 – 2.4 GHz: 6.5 Mbps to 300 Mbps (MCS0 to MCS15) - Radio 2 – 5 GHz: 6.5 Mbps to 600 Mbps (MCS0 to MCS31) Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM Packet aggregation: - Aggregate MAC Protocol Data Unit (A-MPDU) - Aggregate MAC Service Data Unit (A-MSDU) Dynamic Frequency Selection (DFS) Cyclic Delay/Shift Diversity (CDD/CSD) Maximum Ratio Combining (MRC) Space-Time Block Coding (STBC) Low-Density Parity Check (LDPC) Transmit beam-forming (TxBF)
802.11ac	Four spatial streams - Radio 2 – 5 GHz: 4x4 MIMO, four spatial streams Channels: - Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz Combined peak data rate: 3.467 Gbps - Radio 2 – 5 GHz: 6.5 Mbps to 3.467 Gbps (MCS0 to MCS9) Radio technologies: Orthogonal Frequency-Division Multiplexing (OFDM) Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM Packet aggregation: - Aggregate MAC Protocol Data Unit (A-MPDU) - Aggregate MAC Service Data Unit (A-MSDU) Dynamic Frequency Selection (DFS) Cyclic Delay/Shift Diversity (CDD/CSD) Maximum Ratio Combining (MRC) Space-Time Block Coding (STBC) Low-Density Parity Check (LDPC) Transmit beam-forming (TxBF)
802.11ax	Six spatial streams - Radio 1 – 2.4 GHz: 2x2 uplink/downlink MU-MIMO, two spatial streams - Radio 2 – 5 GHz: 4x4 uplink/downlink MU-MIMO, four spatial streams Channels: - Radio 1 – 2.4 GHz: 20 MHz and 40 MHz - Radio 2 – 5 GHz: 20 MHz, 40 MHz, 80 MHz, and 160 MHz Combined peak data rate: 5.378 Gbps: WPA3 - Radio 1 – 2.4 GHz: 8.6 Mbps to 0.574 Gbps (MCS0 to MCS11) - Radio 2 – 5 GHz: 8.6 Mbps to 4.804 Gbps (MCS0 to MCS11) Radio technologies: uplink/downlink Orthogonal Frequency-Division Multiple Access (OFDMA)

	Modulation types: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM Packet aggregation: - Aggregate MAC Protocol Data Unit (A-MPDU) - Aggregate MAC Service Data Unit (A-MSDU) Dynamic Frequency Selection (DFS) Cyclic Delay/Shift Diversity (CDD/CSD) Maximum Ratio Combining (MRC) Space-Time Block Coding (STBC) Low-Density Parity Check (LDPC) Transmit beam-forming (TxBF)
Antenna	Wi-Fi 2.4 GHz: two built-in omnidirectional antennas, the max. antenna gain is 5.9 dBi. 5 GHz: two built-in omnidirectional antennas, the max. antenna gain is 6.2 dBi. Bluetooth One integrated vertically polarized omnidirectional antenna, the max. antenna gain is 4.6 dBi.
Port	1 x 100/1000/2500/5000Base-T RJ45 Ethernet port with auto-negotiation 1 x 5GE combo SFP port, compatibility with 1GE and 2.5GE, and multiplexing with 1 x 100/1000/2500/5000Base-T RJ45 Ethernet port 1 x 10/100/1000Base-T RJ45 Ethernet port with auto-negotiation 1 x RJ45 console port (serial console port) 1 x USB 3.0 (Type-A connector) 1 x Bluetooth 5.1
Status LED	1 x multi-color system status LED - AP power-on status - Software initialization status and upgrade status - Uplink service interface status - Wireless user online status - CAPWAP tunnel timeout - Specific AP locating
Button	1 x Reset button - Press the button for shorter than 2 seconds. Then the device restarts. - Press the button for longer than 5 seconds. Then the device restores to factory settings.
Dimensions (H x W x D)	8.98"×8.98"×2.00"(230×230×51mm)
Mounting	Wall/Ceiling-mount (a mounting bracket is delivered with the main unit)
Lock option	Kensington lock and securing latch
Input power supply	The AP supports the following two power supply modes: 54 V DC/1.1 A power input over DC connector: The DC connector accepts 2.1 mm/5.5 mm center-positive circular plug. A DC power supply needs to be purchased independently. - PoE input over LAN 1: The power source equipment (PSE) complies with IEEE 802.3af/at/bt standard (PoE/PoE+/PoE++). Note: If both DC power and PoE are available, DC power is preferred.
Power consumption	- DC power: 40 W, 2.4 GHz radio 2x2, 5 GHz radio 4x4, LAN 2 for PoE supply, and USB port enabled 802.3bt (PoE++): 40 W, 2.4 GHz radio 2x2, 5 GHz radio 4x4, LAN 2 for PoE supply, and USB port enabled 802.3at (PoE+): 22 W, 2.4 GHz radio 2x2, 5 GHz radio 4x4, LAN 2 and USB port that fail to provide power for external devices (PoE out disabled of LAN 2 and USB port disabled) 802.3af (PoE): 12.95 W, 2.4 GHz radio 1x1, 5 GHz radio 1x1, LAN 2 and USB port that fail to provide power for external devices (PoE out disabled of LAN 2 and USB port disabled) - Idle mode: 10.3 W

External power supply	When powered by 802.3bt (PoE++), the AP can supply power to an external device. - The USB port can source 1 A/5 W power to an attached device. - The LAN 2 port can source 48 V/12.95 W power to an IoT unit.
Environment	Storage temperature: -40°C to +70°C (-40°F to +158°F) Storage humidity: 5% RH to 95% RH (non-condensing) Operating temperature: -10°C to +50°C (14°F to 122°F) Operating humidity: 5% RH to 95% RH (non-condensing) At an altitude between 3,000 m (9,842.52 ft.) and 5,000 m (16,404.20 ft.), every time the altitude increases by 166 m (546.81 ft.), the maximum temperature decreases by 1°C (1.8°F).
Mean Time Between Failure (MTBF)	200,000 hours (22 years) at the operating temperature of 25°C (77°F)
System memory	512 MB DRAM, 128 MB flash
Transmit power	2.4 GHz - Max. transmit power: 27 dBm (500 mW) - Minimum transmit power: 7 dBm (5.01 mW) 5 GHz - Max. transmit power: 30 dBm (1000 mW) - Minimum transmit power: 9 dBm (7.94 mW) Note: - Adjusting the transmit power by percentage (recommended) and in 1dBm increments. - The transmit power is limited by local regulatory requirements.

The following table lists the radio frequency performance of Wi-Fi including different frequency bands, protocols, and data rates. It is country-specific, and FS reserves the right of interpretation.

Radio Frequency Performance		AP-N515	
Frequency Band and Protocol	Data Rate	Max. Transmit Power per Transmit Chain	Max. Receive Sensitivity per Receive Chain
2.4 GHz, 802.11b	1 Mbps	24 dBm	-96 dBm
	2 Mbps	24 dBm	-95 dBm
	5.5 Mbps	23 dBm	-93 dBm
	11 Mbps	22 dBm	-89 dBm
2.4 GHz 802.11g	6 Mbps	24 dBm	-91 dBm
	24 Mbps	23 dBm	-85 dBm
	36 Mbps	23 dBm	-80 dBm
	54 Mbps	21 dBm	-74 dBm

2.4 GHz, 802.11n (HT20)	MCS0	24 dBm	−90 dBm
	MCS7	20 dBm	−70 dBm
2.4 GHz, 802.11n (HT40)	MCS0	24 dBm	−90 dBm
	MCS7	20 dBm	−70 dBm
2.4 GHz, 802.11ax (HE20)	MCS0	24 dBm	−90 dBm
	MCS11	16 dBm	−62 dBm
2.4 GHz, 802.11ax (HE40)	MCS0	24 dBm	−88 dBm
	MCS11	16 dBm	−60 dBm
5 GHz, 802.11a	6 Mbps	24 dBm	−91 dBm
	24 Mbps	23 dBm	−85 dBm
	36 Mbps	23 dBm	−80 dBm
	54 Mbps	21 dBm	−74 dBm
5 GHz, 802.11n (HT20)	MCS0	24 dBm	−90 dBm
	MCS7	20 dBm	−68 dBm
5 GHz, 802.11n (HT40)	MCS0	24 dBm	−88 dBm
	MCS7	20 dBm	−68 dBm
5 GHz, 802.11ac (VHT20)	MCS0	24 dBm	−90 dBm
	MCS9	18 dBm	−68 dBm
5 GHz, 802.11ac (VHT40)	MCS0	24 dBm	−88 dBm
	MCS9	18 dBm	−63 dBm
5 GHz, 802.11ac (VHT80)	MCS0	24 dBm	−85 dBm
	MCS9	18 dBm	−60 dBm
5 GHz, 802.11ax (HE20)	MCS0	24 dBm	−90 dBm
	MCS11	16 dBm	−60 dBm

5 GHz, 802.11ax (HE40)	MCS0	24 dBm	–86 dBm
	MCS11	16 dBm	–56 dBm
5 GHz, 802.11ax (HE80)	MCS0	23 dBm	–83 dBm
	MCS11	16 dBm	–53 dBm
5 GHz, 802.11ax (HE160)	MCS0	23 dBm	–81 dBm
	MCS11	16 dBm	–51 dBm

Software Specifications

Hardware Specifications	AP-N515
WLAN	
Max. number of associated STAs	1,024 (up to 512 STAs per radio)
Max. number of BSSIDs	32 (up to 16 BSSIDs per radio)
Max. number of WLAN IDs	16
STA management	SSID hiding Band steering Each SSID can be configured with the authentication mode, encryption mechanism, and VLAN attributes independently. Remote Intelligent Perception Technology (RIPT) Intelligent STA identification technology Intelligent load balancing based on the STA quantity or traffic Rate set settings
STA limiting	SSID-based STA limiting Radio-based STA limiting
Bandwidth limiting	STA/SSID/AP-based rate limiting
CAPWAP	IPv4/IPv6 CAPWAP Layer 2 and Layer 3 topology between an AP and an AC An AP can automatically discover the accessible AC. An AP can be automatically upgraded through the AC. An AP can automatically download the configuration file from the AC. CAPWAP through NAT MTU setting and fragmentation over CAPWAP tunnels Encryption over CAPWAP data channels Encryption over CAPWAP control channels
Data forwarding	Centralized and local forwarding
Wireless roaming	Layer 2 and Layer 3 roaming
Wireless locating	MU and TAG device locating

Security and Authentication

Authentication and encryption	Remote Authentication Dial-In User Service (RADIUS)
	PSK and web authentication
	QR code-based guest authentication, and MAC address bypass (MAB) authentication
	Data encryption: WEP (64/128 bits), WPA (TKIP), WPA-PSK, WPA2 (AES), WPA3-Enterprise, WPA3-Individual
Data frame filtering	Allowlist, static blocklist, and dynamic blocklist
WIDS	Wireless Intrusion Detection System(WIDS)
	Wireless Intrusion Protection System(WIPS)
	User isolation
	Rogue AP detection and containment
Dynamic Policy	IP standard ACL, MAC extended ACL, IP extended ACL, and expert-level ACL
	IPv6 ACL
	Time range-based ACL
	ACL based on a Layer 2 interface
	ACL based on a Layer 3 interface
	Ingress ACL based on a wireless interface
	Dynamic ACL assignment based on 802.1X authentication (used with the AC) CoA/DM
CPP	CPU Protect Policy (CPP)
NFPP	Network Foundation Protection Policy (NFPP)

Routing and Switching

MAC	Static and filtered MAC addresses
	MAC address table size: 2,048
	Max. number of static MAC addresses: 2,048
	Max. number of filtered MAC addresses: 2,048
Ethernet	Jumbo frame length: 1,518
	Full-duplex and half-duplex modes of interfaces
	IEEE802.1p and IEEE802.1Q
	Optical module information display, alarms about faults, and diagnosis parameter measurement (QSFP+/SFP+/SFP)
VLAN	Interface-based VLAN assignment
	Max. number of SVIs: 200
	Max. number of VLANs: 4,094
	VLAN ID range: 1–4,094
ARP	ARP entry aging, gratuitous ARP learning, and proxy ARP
	Max. number of ARP entries: 2,048
	ARP check
IPv4 services	Static and DHCP-assigned IPv4 addresses
	Max. number of IPv4 addresses configured on each Layer 3 interface: 200
	NAT, FTP ALG and DNS ALG

IPv6 services	IPv6 addressing, Neighbor Discovery (ND), ICMPv6, IPv6 ping IPv6 DHCP client Max. number of IPv6 addresses configured on each Layer 3 interface: 400
IP routing	IPv4/IPv6 static route Max. number of static IPv4 routes: 1,024 Max. number of static IPv6 routes: 1,000
Multicast	Multicast-to-unicast conversion
VPN	PPPoE client IPsec VPN

Network Management and Monitoring

Network management	NTP server and NTP client SNTP client SNMPv1/v2c/v3 Fault detection and alarm Information statistics and logging
Network management platform	Web management (Eweb)
User access management	Console, Telnet, SSH, FTP client, FTP server, and TFTP client
Switchover among Fat, Fit, and cloud modes	When the AP works in Fit mode, it can be switched to Fat mode through an AC. When the AP works in Fat mode, it can be switched to Fit mode through the console port or Telnet mode. When the AP works in cloud mode, it can be managed through FS Airware.

Value-added Software

The following value-added software functions can be achieved with the FS Airware.

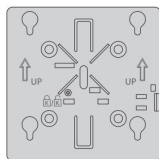
Value-added Software	AP-N515
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Intelligent O&M

Experience	Network operation analysis, such as device stability and signal coverage Measuring users' network experience based on indicators such as the latency, packet loss, signal strength, and channel utilization, and visualizing results of the network experience Statistics on the number of online and offline failures of STAs associated with different APs, average signal strength, and other parameters VIP monitoring and alarm, and custom alarm thresholds STA global experience map and experience coverage evaluation based on the time range STA access protocol replay and fine-grained STA fault diagnosis Note: To support the preceding functions, ensure that the AP works in Fit mode.
Network optimization	Network performance optimization, including one-click network optimization and scenariobased optimization Client steering to cope with roaming stickiness, and experience indicator comparison Client steering to cope with remote association, and experience indicator comparison One-click diagnosis – analyzing problems and providing suggestions

Big data	Baseline analysis – recording the configuration, version, and other changes, and tracking network KPI changes Time capsule – analyzing the device version and configuration change history
Regional analysis	Batch generation of building floor information – uploading floor plans, and dragging and dropping AP positions
One-click report	One-click health report – generating a report on the overall operation of a network
Security radar	Unauthorized Wi-Fi signal location, presentation by category, and containment
Cloud Management	
Management and maintenance	Uniformly connecting, managing, and maintaining APs, ACs, and other devices, batch device configuration and upgrade, and other functions Deployment through Zero Touch Provisioning (ZTP) – creating configuration templates and automatically applying configured templates One-click discovery of the wired and wireless network topology and topology generation
Cloud Authentication	
Authentication mode	Fixed account authentication, one-click authentication, Facebook authentication, Instagram authentication, voucher authentication, and other authentication modes Authentication implemented in the cloud, without the need to deploy the local authentication server
Customized portal	Customized Portal authentication page for mobile phones and PCs
Platform Capabilities	
Big data capabilities	Mainstream persistence solutions based on Hadoop, MongoDB, and MySQL, providing distributed storage capabilities Spark-based big data computing capabilities Data warehouse building based on Hive, and data model conversion, integration, and other functions
Hierarchy and decentralization	Authorizing different applications for different users to meet service needs of different departments Granting operation permissions to administrators in different scenarios
System management	Account operation, authorization configuration, email configuration, configuration backup, exception alarms, and other system management functions

Accessories



Mounting Bracket x1



Screw x4



Screw Anchor x4



Anti-theft Key x1

Ordering Information

ID	Description
108705	2400 Mbps 2x2 MU-MIMO Dual Radios Gigabit Access Point
149657	2400 Mbps 2x2 MU-MIMO Dual Radios Gigabit Outdoor Access Point
149658	2400 Mbps 2x2 MU-MIMO Dual Radios Gigabit Outdoor Access Point
149656	3000 Mbps 2x2 MU-MIMO Dual Radios Gigabit Access Point
115391	3267 Mbps 2x2 MU-MIMO Three Radios Gigabit Access Point
141375	Wireless LAN Controller with 64 AP License
108708	Wireless LAN Controller with 224 AP License
149659	Wireless LAN Controller with 1152 AP License