

HPE Aruba Networking 530 Series campus access points

Very high Wi-Fi 6 (802.11ax) performance with dual radios



Key features

- Up to 2.97 Gbps combined peak data rate
- WPA3 and Enhanced Open security
- Built-in technology that resolves sticky client issues or Wi-Fi 6 and Wi-Fi 5 devices
- OFDMA and MU-MIMO for enhanced multi-user efficiency
- IoT-ready Bluetooth 5 and Zigbee support
- Embedded ranging technology for accurate indoor location measurements

HPE Aruba Networking Wi-Fi 6 access points provide high-performance connectivity for any organization experiencing growing numbers of IoT and mobility requirements. With a combined peak data rate of up to 2.97 Gbps, the 530 Series deliver the speed and reliability needed for any enterprise.

Incredible efficiency

The HPE Aruba Networking 530 Series APs are also designed to optimize user experience by maximizing Wi-Fi efficiency and dramatically reducing airtime contention between clients.

Features include Orthogonal frequency-division multiple access (OFDMA), bi-directional multi-user MIMO and cellular optimization. With up to 4 spatial streams (4SS) and 160 MHz channel bandwidth, the 530 Series provides groundbreaking wireless capabilities for any enterprise.

Read the Multi-User [802.11ax white paper](#) for further information.

Advantages of OFDMA

This capability allows APs to handle multiple Wi-Fi 6 capable clients on each channel simultaneously, regardless of device or traffic type. Channel and utilization is optimized by handling each transaction via smaller sub-carriers or resource units (RUs), which means that clients are sharing a channel and not competing for airtime and bandwidth.

The following table highlights the number of available resource units per Wi-Fi Channel used:

HPE Aruba Networking Air Slice™ for extended application assurance

Number of concurrent clients per channel per radio*

Prior Wi-Fi generations	1 at a time
Wi-Fi 6 in 20 MHz	Up to 9 at a time
Wi-Fi 6 in 40 MHz	Up to 18 at a time
Wi-Fi 6 in 80 MHz	Up to 37 at a time

Initially, APs in controller-less mode (Instant) can provide SLA-grade performance by allocating radio resources, such as time, frequency, and spatial streams, to specific traffic types. By combining HPE Aruba Networking’s Policy Enforcement Firewall (PEF) and Layer 7 deep packet inspection (DPI) to identify user roles and applications, the APs will dynamically allocate the bandwidth needed. Non-Wi-Fi 6 clients can also benefit.

Air Slice™ for APs uses HPE Aruba Networking Central for management. Controller-based APs will be supported in a future software release.

Bi-directional Multi-user MIMO (MU-MIMO)

Similar to downlink MU-MIMO in Wi-Fi 5 (802.11ac Wave 2), the 530 Series can simultaneously connect clients use downlink—and now—uplink spatial streams. The added benefit is the ability to multiply the number of clients that can now send traffic, thus optimizing client-to-AP spatial stream diversity.

Wi-Fi 6 and MU-MIMO aware client optimization

HPE Aruba Networking’s patented AI-powered ClientMatch technology eliminates sticky client issues by placing Wi-Fi 6 capable devices on the best available AP. Session metrics are used to steer mobile devices to the best AP based on available bandwidth, types of applications being used and traffic type—even as users roam.

HPE Aruba Networking Advanced Cellular Coexistence (ACC)

This feature uses built-in filtering to automatically minimize the impact of interference from cellular networks, distributed antenna systems (DAS), and commercial small cell or femtocell equipment.

Intelligent Power Monitoring (IPM)

HPE Aruba Networking APs continuously monitor and report hardware energy consumption. They can also be configured to enable or disable capabilities based on available PoE power—ideal when wired switches have exhausted their power budget.

IOT platform capabilities

Like all HPE Aruba Networking Wi-Fi 6 APs, the 530 Series includes an integrated Bluetooth 5 and 802.15.4 radio (for Zigbee support) to simplify deploying and managing IoT-based location services, asset tracking services, security solutions and IoT sensors. This allows organizations to leverage the 530 Series as an IoT platform, which eliminates the need for an overlay infrastructure and additional IT resources.

Target Wake Time (TWT)

Ideal for IoTs that communicate infrequently, TWT establishes a schedule for when clients need to communicate with an AP. This helps improve client power savings and reduces airtime contention with other clients.

Foundation for accurate indoor location

HPE Aruba Networking APs act as a foundation for accurate indoor location so that location-aware services can be deployed at scale. Using embedded GPS receivers, Wi-Fi 6E APs are able to self-locate and work with Wi-Fi 6 APs to establish reference points that can be used to accurately determine indoor client location.

Because they use universal latitude and longitude coordinates, there is no need for custom map development or to create separate applications for indoor and outdoor environments.

Secure infrastructure

The HPE Aruba Networking 530 Series includes components of HPE Aruba Networking’s 360 Secure Fabric to help protect user authentication and wireless traffic. Select capabilities include:

*Client density varies based on configured network settings.



WPA3 and Enhanced Open

Support for stronger encryption and authentication is provided via the latest version of WPA for enterprise protected networks.

Enhanced Open offers seamless new protection for users connecting to open networks where each session is automatically encrypted to protect user passwords and data on guest networks.

WPA2-MPSK

MPSK enables simpler passkey management for WPA2 devices—should the Wi-Fi password on one device or device type change, no additional changes are needed for other devices. Requires HPE Aruba Networking NAC.

VPN tunnels

In Remote AP (RAP) and IAP-VPN deployments, the HPE Aruba Networking 530 Series can be used to establish a secure SSL/IPSec VPN tunnel to a Mobility Controller that is acting as a VPN concentrator.

Trusted Platform Module (TPM)

For enhanced device assurance, all HPE Aruba Networking APs have an installed TPM for secure storage of credentials and keys, and boot code.

Simple and secure access

To simplify policy enforcement, the HPE Aruba Networking 530 Series uses our Policy Enforcement Firewall (PEF) feature to encapsulate all traffic from the AP to the Mobility Controller (or Gateway) for end-to-end encryption and inspection. Policies are applied based on user role, device type, applications, and location. This reduces the manual configuration of SSIDs, VLANs and ACLs. PEF also serves as the underlying technology for HPE Aruba Networking [Dynamic Segmentation](#).

High-density connectivity

Like the higher-end 550 Series AP, each 530 Series AP provides connectivity for a maximum of 1024 associated clients per radio (2048 in total). In real-world scenarios, the maximum recommended client density is dependent on environmental conditions.

Flexible operation and management

A unique feature of HPE Aruba Networking APs is the ability to operate in either controllerless (Instant) or controller-based mode.

Controllerless (instant) mode

In controllerless mode, one AP serves as a virtual controller for the entire network. Learn more about Instant mode in this [technology brief](#).

Mobility controller mode

For optimized network performance, roaming and security, APs tunnel all traffic to a mobility controller for centrally managed traffic forwarding and segmentation, data encryption, and policy enforcement. Learn more in the [HPE Aruba Networking Operating System data sheet](#).

Management options

Available management solutions include HPE Aruba Networking Central (cloud-managed) or HPE Aruba Networking [Legacy] Management Software—a multi-vendor on-premises management solution.

For large installations across multiple sites, APs can be factory-shipped and can be activated with Zero Touch Provisioning through Central or [Legacy] Management Software. This reduces deployment time, centralizes configuration, and helps manage inventory.

Additional Wi-Fi features

Each AP also includes the following standards-based technologies:

Transmit Beamforming (TxBF)

Increased signal reliability and range

Passpoint Wi-Fi (Release 2) (Hotspot 2.0)

Seamless cellular-to-Wi-Fi carryover for guests

Dynamic Frequency Selection (DFS)

Optimized use of available RF spectrum

Maximum Ratio Combining (MRC)

Improved receiver performance

Cyclic Delay/Shift Diversity (CDD/CSD)

Greater downlink RF performance

Space-Time Block Coding

Increased range and improved reception

Low-Density Parity Check (LDPC)

High-efficiency error correction for increased throughput

Specifications**Hardware variants**

- AP-534: External antenna models
- AP-535: Internal antenna models

Wi-Fi radio specifications

- AP type: Indoor, dual radio, 5G Hz and 2.4 GHz 802.11ax 4x4 MIMO
- 5 GHz radio: Four spatial stream HE80 (or 2SS HE160) MIMO for up to 2.4 Gbps wireless data rate



- 2.4 GHz radio: Four spatial stream HE40 (HE20) MIMO for up to 1,147Mbps (574Mbps) wireless data rate
 - Both downlink and uplink MU-MIMO in 5 GHz, downlink only in 2.4 GHz
 - Support for up to 1,024 associated client devices per radio, and up to 16 BSSIDs per radio
 - Supported frequency bands (country-specific restrictions apply):
 - 2.400 to 2.4835 GHz ISM
 - 5.150 to 5.250 GHz U-NII-1
 - 5.250 to 5.350 GHz U-NII-2A
 - 5.470 to 5.725 GHz U-NII-2C
 - 5.725 to 5.850 GHz U-NII-3/ISM
 - 5.850 to 5.895 GHz U-NII-4
 - Available channels: Dependent on configured regulatory domain
 - Dynamic Frequency Selection (DFS) optimizes the use of available RF spectrum
 - Including Zero-Wait DFS (ZWDIFS) to accelerate channel changes
 - Supported radio technologies:
 - 802.11b: Direct-Sequence Spread-Spectrum (DSSS)
 - 802.11a/g/n/ac: Orthogonal frequency-division multiplexing (OFDM)
 - 802.11ax: Orthogonal frequency-division multiple access (OFDMA) with up to 37 resource units (for an 80MHz channel)
 - Supported modulation types:
 - 802.11b: BPSK, QPSK, CCK
 - 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM (proprietary extension)
 - 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM (proprietary extension)
 - 802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM
 - 802.11n high-throughput (HT) support: HT20/40
 - 802.11ac very high throughput (VHT) support: VHT20/40/80/160
 - 802.11ax high efficiency (HE) support: HE20/40/80/160
 - Supported data rates (Mbps):
 - 802.11b: 1, 2, 5.5, 11
 - 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
 - 802.11n: 6.5 to 600 (MCS0 to MCS31, HT20 to HT40), 800 with 256-QAM
 - 802.11ac: 6.5 to 1,733 (MCS0 to MCS9, NSS = 1 to 4, VHT20 to VHT160), 2,166 with 1024-QAM
 - 802.11ax (2.4GHz): 3.6 to 1,147 (MCS0 to MCS11, NSS = 1 to 4, HE20 to HE40)
 - 802.11ax (5GHz): 3.6 to 2,402 (MCS0 to MCS11, NSS = 1 to 4, HE20 to HE160)
 - 802.11n/ac/ax packet aggregation: A-MPDU, A-MSDU
 - Transmit power: Configurable in increments of 0.5 dBm
 - Maximum (aggregate, conducted total) transmit power (limited by local regulatory requirements)
 - 2.4 GHz band: +24 dBm (18dBm per chain)
 - 5 GHz band: +24 dBm (18 dBm per chain)
 - Note: conducted transmit power levels exclude antenna gain. For total (EIRP) transmit power, add antenna gain.
 - Advanced Cellular Coexistence (ACC) minimizes the impact of interference from cellular networks
 - Maximum Ratio Combining (MRC) for improved receiver performance
 - Cyclic Delay/Shift Diversity (CDD/CSD) for improved downlink RF performance
 - Space-Time Block Coding (STBC) for increased range and improved reception
 - Low-Density Parity Check (LDPC) for high-efficiency error correction and increased throughput
 - Transmit Beam-Forming (TxBF) for increased signal reliability and range
 - 802.11ax Target Wait Time (TWT) to support low-power client devices
 - 802.11mc Fine Timing Measurement (FTM) for precision distance ranging
- Wi-Fi antennas**
- AP-534: Four (female) RP-SMA connectors for external dual band antennas (A0 through A3, corresponding with radio chains 0 through 3). Worst-case internal loss between radio interface and external antenna connectors (due to diplexing circuitry): 0.8 dB in 2.4 GHz and 1.3 dB in 5 GHz
 - AP-535: Four integrated dual-band downtilt omni-directional antennas for 4x4 MIMO with peak antenna gain of 3.5 dBi in 2.4 GHz and 5.4 dBi in 5 GHz. Built-in antennas are optimized for horizontal



ceiling mounted orientation of the AP. The downtilt angle for maximum gain is roughly 30 degrees

- A mix of horizontally and vertically polarized antenna elements is used
- Combining the patterns of each of the antennas of the MIMO radios, the peak gain of the combined, average pattern is 1.9 dBi in 2.4 GHz and 3.5 dBi in 5 GHz.

Other interfaces

- E0, E1: HPE SmartRate port (RJ-45, maximum negotiated speed 5 Gbps)
 - Auto-sensing link speed (100/1000/2500/5000BASE-T) and MDI/ MDX
 - 2.5 Gbps and 5 Gbps speeds comply with NBase-T and 802.3bz specifications
 - PoE-PD: 48Vdc (nominal) 802.3at/bt PoE (class 4 or higher)
 - 802.3az Energy Efficient Ethernet (EEE)
- Link Aggregation (LACP) support between both network ports for redundancy and increased capacity
- PoE power can be drawn from either port (single source, or set to prioritize) or both ports simultaneously (set to combine) When set to prioritize, the AP draws power from E0 and may failover to E1.
- DC power interface: 48Vdc (nominal, +/-5%), accepts 1.35mm/3.5mm center-positive circular plug with 9.5mm length
- USB 2.0 host interface (Type A connector)
 - Capable of sourcing up to 1A/5W to an attached device
- Bluetooth 5.0 Low Energy (BLE5.0) and Zigbee (802.15.4) radio (2.4 GHz)
 - BLE: up to 8 dBm transmit power (class 1) and -95 dBm receive sensitivity
 - Zigbee: up to 8 dBm transmit power and 99 dBm receive sensitivity
 - Integrated vertically polarized omnidirectional antenna with roughly 30 degrees downtilt and peak gain of 3.1 dBi (AP-535) or 5.0dBi (AP-534)
- Visual indicators (two multi-color LEDs): for System and Radio status
- Reset button: factory reset, LED mode control (normal/off)
- Serial console interface (proprietary, micro-B USB physical jack)
- Kensington security slot

Power sources and power consumption

- The AP supports direct DC power and Power over Ethernet (PoE; on port E0 and/or E1)
- When PoE power is supplied to both Ethernet ports, the AP can be configured to combine or prioritize power sources
- When both DC and PoE power sources are available, DC power takes priority over PoE
- Power sources are sold separately; see the ordering Information section below for details
- When powered by DC, 802.3bt (class 5) PoE or 2x 802.3at (class 4) PoE, the AP will operate without restrictions
- When powered by 1x 802.3at (class 4) POE and with the IPM feature disabled, the AP will disable the USB port and disable the other Ethernet port. No other restrictions will be applied in this case (IPM disabled).
- In the same situation but with IPM enabled, the AP will start up in fully unrestricted mode, but may dynamically apply restrictions depending on the POE budget and actual power.
- When using IPM, the actual restrictions that are applied by the feature and the order in which they're applied is configurable.
- Operating the AP with an 802.3af (class 3 or lower) PoE source is not supported
- Maximum (worst-case) power consumption:
 - DC powered: 23.3W
 - PoE powered (802.3bt or dual 802.3at): 26.4W
 - PoE powered (802.3at, IPM disabled): 23.3W
 - All numbers above are without an external USB device connected. When sourcing the full 5W power budget to such a device, the incremental (worst-case) power consumption for the AP is up to 5.7W (PoE powered) or 5.5W (DC powered)
- Maximum (worst-case) power consumption in idle mode: 13.3W (PoE) or 14.3W (DC)
- Maximum (worst-case) power consumption in deep-sleep mode: 3.8W (PoE) or 3.6W (DC)

Mounting details

A mounting bracket has been pre-installed on the back of the AP. This bracket is used to secure the AP to any of the mount kits (sold separately); see the ordering Information section below for details.

Mechanical specifications

- Dimensions/weight (AP-535; unit, excluding mount bracket):
 - 240mm (W) x 240mm (D) x 57mm (H)/9.4" (W) x 9.4" (D) x 2.2" (H)
 - 1,270g/44.8oz



- Dimensions/weight (AP-535; shipping):
 - 285mm (W) x 300mm (D) x 105mm (H)/11.2" (W) x 11.9" (D) x 4.1" (H)
 - 1,930g/68.1oz

Environmental specifications

- Operating conditions
 - Temperature: 0C to +50C/+32F to +122F
 - Humidity: 5% to 93% non-condensing
 - AP is plenum rated for use in air-handling spaces
 - ETS 300 019 class 3.2 environments
- Storage and transportation conditions
 - Temperature: -40C to +70C/-40F to +158F
 - Humidity: 5% to 93% non-condensing
 - ETS 300 019 classes 1.2 and 2.3 environments

Reliability

Mean Time Between Failure (MTBF): 995,000hrs (114yrs) at +25C operating temperature.

Regulatory compliance

- FCC/ISED
 - CE Marked
 - RED Directive 2014/53/EU
 - EMC Directive 2014/30/EU
 - Low Voltage Directive 2014/35/EU
 - UL/IEC/EN 62638-1
 - EN 60601-1-1, EN60601-1-2
 - Railway Certs (AP-535 Only):
 - EN 50155:2017—Railway Applications
 - EN 50121-1:2017—Railway EMC
 - EN 50121-3-2—Railway EMC
 - EN 50121-4:2016—Railway Immunity
 - IEC 61373 ed2:2008—Railway Shock and Vibration
- For more country-specific regulatory information and approvals, please see your [HPE Aruba Networking representative](#).

Regulatory model numbers

- AP-534: APIN0534
- AP-535: APIN0535

Certifications

- UL2043 plenum rating
- Wi-Fi Alliance:
 - Wi-Fi CERTIFIED a, b, g, n, ac
 - Wi-Fi CERTIFIED 6 (ax)

- WPA, WPA2 and WPA3—Enterprise with CNSA option, Personal (SAE), Enhanced Open (OWE)
- WMM, WMM-PS, W-Fi Agile Multiband
- Passpoint (release 2)
- Wi-Fi CERTIFIED Location™

- Bluetooth SIG

Warranty

[HPE Aruba Networking's hardware limited lifetime warranty.](#)

Minimum operating system software versions

- HPE Aruba Networking Operating System and HPE Aruba Networking InstantOS 8.5.0.0 (with some restrictions). For unrestricted operation, use 8.6.0.0 or later.
- HPE Aruba Networking Operating System 10.0.0.0



RF performance table

Band rate	Maximum transmit power (dBm) per transmit chain	Receiver sensitivity (dBm) per receive chain
2.4 GHz, 802.11b		
1 Mbps	18	-96
11 Mbps	18	-88
2.4 GHz, 802.11g		
6 Mbps	18	-93
54 Mbps	17	-75
2.4 GHz, 802.11n HT20		
MCS0	18	-93
MCS7	16	-75
2.4 GHz, 802.11n HE20		
MCS0	18	-92
MCS11	14	-62
5 GHz, 802.11a		
6 Mbps	18	-93
54 Mbps	17	-75
5 GHz, 802.11n HT20		
MCS0	18	-93
MCS7	16	-73
5 GHz, 802.11n HT40		
MCS0	18	-90
MCS7	16	-70
5 GHz, 802.11ac VHT20		
MCS0	18	-93
MCS9	16	-68
5 GHz, 802.11ac VHT40		
MCS0	18	-90
MCS9	16	-65



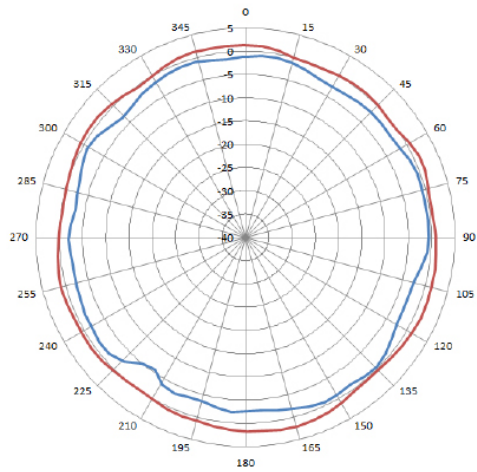
Band rate	Maximum transmit power (dBm) per transmit chain	Receiver sensitivity (dBm) per receive chain
5 GHz, 802.11ac VHT80		
MCS0	18	-87
MCS9	16	-62
5 GHz, 802.11ac VHT160		
MCS0	18	-84
MCS9	16	-59
5 GHz, 802.11ax HE20		
MCS0	18	-90
MCS11	14	-60
5 GHz, 802.11ax HE40		
MCS0	18	-87
MCS11	14	-57
5 GHz, 802.11ax HE80		
MCS0	18	-84
MCS11	14	-54
5 GHz, 802.11ax HE160		
MCS0	18	-81
MCS11	13	-51



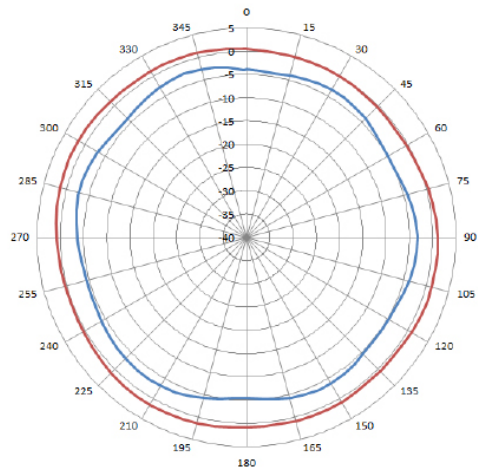
Antenna patterns

Horizontal planes (top view)

Showing azimuth (0 degrees) and 30 degrees downtilt patterns (averaged patterns for all applicable antennas)



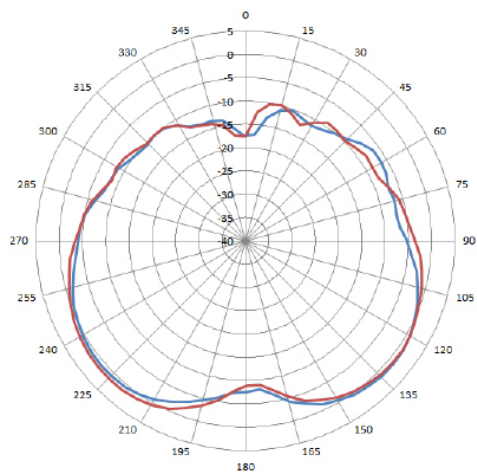
2.45GHz Wi-Fi (antennas 0, 1, 2, 3)



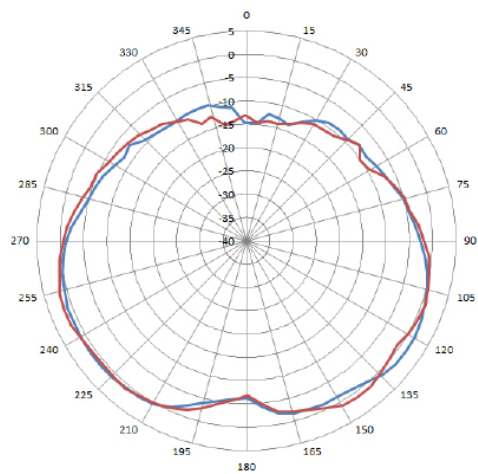
5.5GHz Wi-Fi (antennas 0, 1, 2, 3)

Vertical (elevation) planes (side view, AP facing down)

Showing side view with AP rotated 0 and 90 degrees (averaged patterns for all applicable antennas)



2.45GHz Wi-Fi (antennas 0, 1, 2, 3)



5.5GHz Wi-Fi (antennas 0, 1, 2, 3)



Ordering information

Part number	Description
530 Series campus access points	
JZ328A	HPE Aruba Networking AP-534 (EG) Dual Radio 4x4:4 802.11ax External Antennas Unified Campus AP
JZ329A	HPE Aruba Networking AP-534 (IL) Dual Radio 4x4:4 802.11ax External Antennas Unified Campus AP
JZ330A	HPE Aruba Networking AP-534 (JP) Dual Radio 4x4:4 802.11ax External Antennas Unified Campus AP
JZ331A	HPE Aruba Networking AP-534 (RW) Dual Radio 4x4:4 802.11ax External Antennas Unified Campus AP
JZ332A	HPE Aruba Networking AP-534 (US) Dual Radio 4x4:4 802.11ax External Antennas Unified Campus AP
JZ333A	HPE Aruba Networking AP-535 (EG) Dual Radio 4x4:4 802.11ax Internal Antennas Unified Campus AP
JZ334A	HPE Aruba Networking AP-535 (IL) Dual Radio 4x4:4 802.11ax Internal Antennas Unified Campus AP
JZ335A	HPE Aruba Networking AP-535 (JP) Dual Radio 4x4:4 802.11ax Internal Antennas Unified Campus AP
JZ336A	HPE Aruba Networking AP-535 (RW) Dual Radio 4x4:4 802.11ax Internal Antennas Unified Campus AP
JZ337A	HPE Aruba Networking AP-535 (US) Dual Radio 4x4:4 802.11ax Internal Antennas Unified Campus AP
JZ338A	HPE Aruba Networking AP-534 (EG) TAA Dual Radio 4x4:4 802.11ax External Antennas Unified Campus AP
JZ339A	HPE Aruba Networking AP-534 (IL) TAA Dual Radio 4x4:4 802.11ax External Antennas Unified Campus AP
JZ340A	HPE Aruba Networking AP-534 (JP) TAA Dual Radio 4x4:4 802.11ax External Antennas Unified Campus AP
JZ341A	HPE Aruba Networking AP-534 (RW) TAA Dual Radio 4x4:4 802.11ax External Antennas Unified Campus AP
JZ342A	HPE Aruba Networking AP-534 (US) TAA Dual Radio 4x4:4 802.11ax External Antennas Unified Campus AP
JZ343A	HPE Aruba Networking AP-535 (EG) TAA Dual Radio 4x4:4 802.11ax Internal Antennas Unified Campus AP
JZ344A	HPE Aruba Networking AP-535 (IL) TAA Dual Radio 4x4:4 802.11ax Internal Antennas Unified Campus AP
JZ345A	HPE Aruba Networking AP-535 (JP) TAA Dual Radio 4x4:4 802.11ax Internal Antennas Unified Campus AP
JZ346A	HPE Aruba Networking AP-535 (RW) TAA Dual Radio 4x4:4 802.11ax Internal Antennas Unified Campus AP
JZ347A	HPE Aruba Networking AP-535 (US) TAA Dual Radio 4x4:4 802.11ax Internal Antennas Unified Campus AP

For more ordering information and compatible accessories, please refer to the [ordering guide](#).

**Make the right purchase decision.
Contact our presales specialists.**

