Data sheet

HPE Aruba Networking 500R Series Remote Access Points

Key features

— Desktop form factor with support for Wi-Fi 6 (802.11ax) and 1.49 Gbps maximum real-world speed (HE80/HE20)

— Zero touch provisioning, optional USB LTE modem, and two wired ports make it easier to extend the workplace experience anywhere that has an internet or cellular connection

— Microbranch capabilities to extend the WAN to home offices, small offices, and even temporary locations with SD-WAN, cloud-based management, and SASE integration capabilities — without requiring an on-premises gateway

— Wired and wireless connections that include encryption and user authentication to protect the remote network

— Wi-Fi CERTIFIED with OFDMA support for enhanced multi-user efficiency

Product overview

HPE Aruba Networking 500R Series Remote Access Points enable IT teams to deliver cost-effective Wi-Fi 6 coverage in a compact desktop form factor to hundreds or even thousands of remote workers. With 1.49 Gbps maximum combined speed, these access points are well-suited for small branches and remote work. Two wired ports provide additional device support for work from home and an add-on LTE USB module delivers cellular backhaul capabilities.

Home office/small office use

IT teams are tasked with ensuring a secure and reliable experience for a highly distributed workforce that is accessing data center and cloud-based applications over consumer broadband and cellular connections that are outside IT's control and visibility. With HPE Aruba Networking 500R Series Remote Access Points, managed by HPE Aruba Networking Central, IT can remotely deploy and centrally manage secure network connectivity for hundreds or even thousands of remote workers or small office employees to deliver an in-office experience — without need for a gateway.

Remote workers can connect wireless clients (laptops, smartphones, tablets) as well as wired clients, such as VoIP phones, and access mission-critical applications reliably and securely. As backup, the access point can be used with an LTE dongle inserted into the USB port for uplink redundancy and business continuity.

With HPE Aruba Networking 500R Series Remote Access Points, IT benefits from a unified approach that enables staff to configure, troubleshoot, and optimize network performance across campus, branch, and remote work environments.

Built in SD-WAN intelligent route and tunnel orchestration and policy-based routing drive operational efficiencies and optimize network performance. Comprehensive WAN health dashboards assist in troubleshooting problems quickly and boosting user satisfaction.

Ease of deployment and maintenance

With HPE Aruba Networking Central, onboarding, configuring, and provisioning are simpler and require no manual CLI configuration or maintenance windows. Once the access point is plugged in, the device connects and receives its running configuration from the cloud using zero touch provisioning, which allows remote workers and small offices to onboard and configure wireless connectivity without any on-site IT support. To avoid downtime or loss of service caused by upgrades, HPE Aruba Networking Central offers Live Upgrade functionality to reduce maintenance windows and ensure continuous wireless operations. In addition, HPE Aruba Networking 500R Series Remote Access Points ship with a 12V adapter and localized plug and can be powered via DC or a standard USB-C source (15+ watts).

Simplified and flexible consumption

HPE Aruba Networking Central is required to manage HPE Aruba Networking 500R Series Remote Access Points and can be purchased on a per-device subscription. Licenses are available in 1-, 3-, 5-, 7-, and 10-year increments, making it easy for customers to align requirements for AIOps, security, and other desired management features. Foundation licenses provide all primary enterprise features and functionality; while advanced licenses include all foundational features plus enhanced AIOps, WAN Health dashboards, security, and other premium features to deliver an end-to-end solution for managing and optimizing enterprise networks. It is also integrated with HPE GreenLake, providing a consistent operating model and single platform for IT executives to view and manage their compute, storage, and networking infrastructure for unmatched efficiency and improved cost controls.

Key Wi-Fi features

Wi-Fi 6 CERTIFIED™

HPE Aruba Networking 500R Series Remote Access Points are fully Wi-Fi CERTIFIED to meet all the requirements for Wi-Fi 6 (802.11ax) for greater efficiency including OFDMA, MU-MIMO, and Target Wake Time to extend the battery life of devices.

RF optimization

ML-based radio frequency optimization known as AirMatch dynamically adjusts resources such as power to optimize coverage and eliminate coverage gaps.

Advanced cellular coexistence

Built-in filtering automatically minimizes the impact of interference from cellular networks, distributed antenna systems (DAS), and commercial small cell or femtocell equipment.

IoT ready

Using an optional external USB radio dongle, the HPE Aruba Networking 500R Series can use the 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 500R Series as an IoT platform, which eliminates the need for an overlay infrastructure and additional IT resources.

Key security features

Remote work increases the attack surface in an organization. With HPE Aruba Networking Central, HPE Aruba Networking 500R Series Remote Access Points are better protected using new, sophisticated security models such as zero trust and SASE. A fundamental concept of both zero trust and SASE security frameworks is identity-based access control that grants least-privilege access for a device or user, restricting them from accessing resources not required to complete their tasks.

AI Client Insights

ML-based classification of all clients via Client Insights uses deep packet inspection to provide additional context and behavioral information that help ensure devices are receiving proper policy enforcement and continuously monitor for rogue devices.

User and device authentication

Cloud-native Network Access Control (NAC) provided by HPE Aruba Networking Central further simplifies how IT controls network access while providing a frictionless experience for end users. Global policy automation and orchestration enables IT to define and maintain global policies at scale with ease, using UI-driven, intuitive workflows that automatically translate security intent into policy design and map user roles for employees, contractors, guests, and devices to their proper access privileges.

Intrusion detection

HPE Aruba Networking Central utilizes the Rogue AP Intrusion Detection Service (RAPIDS) to identify and resolve issues caused by rogue APs and clients. Wired and wireless data is automatically correlated to identify potential threats, strengthening network security and improving incident response processes by reducing false positives.

Web content filtering

Web Content Classification (WebCC) classifies websites by content category and rates them by reputation and risk score, enabling IT to block malicious sites to help prevent phishing, DDoS, botnets, and other common attacks.

WPA3 and Enhanced Open

As part of Wi-Fi 6 (802.11ax), WPA3 ensures stronger encryption and authentication while Enhanced Open offers protection for users connecting to open networks by automatically encrypting each session to protect user passwords and data on guest networks. In addition, 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.[1]

Trusted Platform Module (TPM)

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

Standards based technologies

HPE Aruba Networking 500R Series Remote Access Points also include the following standards-based technologies:

— Transmit Beamforming to increase signal reliability and range
— Passpoint Wi-Fi (Release 2) (Hotspot 2.0) for seamless cellular to Wi-Fi handover for guests
— Dynamic Frequency Selection (DFS) to optimize use of available RF spectrum
— Maximum Rate Combining (MRC) for improved receiver performance
— Cyclic Delay/Shift Diversity (CDD/CSD) to deliver greater downlink RF performance
— Space-Time Block Coding (STBC) to increase range and improve reception
— Low-Density Parity Check (LDPC) to provide high-efficiency error correction and improve throughput

Technical specifications

Hardware variants

— AP-503R: Remote access point platform (desk mount, wired + wireless access), integrated antennas

Wi-Fi radio specifications

— AP type: Indoor, dual-radio, 2.4 GHz and 5 GHz (dual concurrent) 802.11ax 2x2 MIMO
— 2.4 GHz radio: Two spatial stream Single User (SU) MIMO for up to 574Mbps wireless data rate with 2SS HE40 802.11ax client devices (287Mbps for HE20)
— 5 GHz radio: Two spatial stream Single User (SU) MIMO for up to 1.2 Gbps wireless data rate with 2SS HE80 802.11ax client devices
— Up to 256 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 bands and channels: Dependent on configured regulatory domain (country)
— Dynamic frequency selection (DFS) optimizes the use of available RF spectrum in the 5 GHz band
— 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 8 resource units
— Supported modulation types:
  • 802.11b: BPSK, QPSK, CCK
  • 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM and 256-QAM (proprietary extension)
  • 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM and 1024-QAM (proprietary extension)
  • 802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM and 1024-QAM
— 802.11n high-throughput (HT) support: HT20/40
— 802.11ac very high throughput (VHT) support: VHT20/40/80
— 802.11ax high efficiency (HE) support: HE20/40/80

[1] Requires HPE Aruba Networking ClearPass Policy Manager

- 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 300 (MCS0 to MCS15, HT20 to HT40), 400 with 256-QAM (proprietary extension)
  - 802.11ac: 6.5 to 867 (MCS0 to MCS9, NSS = 1 to 2, VHT20 to VHT80); 1,083 with 1024-QAM (MCS10 and MCS11, proprietary extension)
  - 802.11ax (2.4 GHz): 3.6 to 574 (MCS0 to MCS11, NSS = 1 to 2, HE20 to HE40)
  - 802.11ax (5 GHz): 3.6 to 1,201 (MCS0 to MCS11, NSS = 1 to 2, HE20 to HE80)
- 802.11n/ac 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):
  - Per radio (2.4 GHz / 5 GHz): +21 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

Wi-Fi antennas

- AP-503R: Integrated omni-directional antennas for 2x2 MIMO with peak antenna gain of 3.9dBi in 2.4 GHz and 5.1dBi in 5 GHz. Built-in antennas are optimized for horizontal desk mounted orientation of the access point.
  - Combining the patterns of each of the antennas of the MIMO radios, the peak gain of the combined, average pattern is 3.1dBi in 2.4 GHz and 3.9dBi in 5 GHz.

Other interfaces and features

- Uplink (E0): Ethernet wired network port (RJ-45)
  - Auto-sensing link speed (10/100/1000BASE-T) and MDI/MDIX
  - 802.3az Energy Efficient Ethernet (EEE)
- Downlink (E1-E2): Ethernet wired network ports (RJ-45)
  - Auto-sensing link speed (10/100/1000BASE-T) and MDI/MDIX
  - 802.3az Energy Efficient Ethernet (EEE)
  - DC power interfaces
  - Circular: 12Vdc (nominal, +/- 5%), accepts 2.1 mm/5.5 mm center-positive circular plug with 9.5 mm length
  - USB-C: 5Vdc (nominal, +/- 5%)
- USB 2.0 host interface (Type A connector)
  - Capable of sourcing up to 1A / 5W to an attached device
- Built-in Trusted Platform Module (TPM) for enhanced security and anti-counterfeiting
- Visual indicators (two multi-color LEDs): for System and Radio status
  - Tapping the access point housing will toggle the LED mode between off and normal
- Reset button: factory reset, LED mode control (normal/off)
- Serial console interface (proprietary, micro-B USB physical jack)
- Kensington security slot
- Automatic thermal shutdown and recovery function

Power sources and power consumption

- The access point can be powered using a compatible DC power source, connected to either one of the power interfaces (12V circular or 5V USB-C)
  - The access point ships with a compatible 12V/18W DC power adapter
- Maximum (worst-case) power consumption: 15.4W
  - This assumes that up to 5W is supplied to an attached USB device
  - Maximum (worst-case) power consumption without USB power sourcing is 10.0W
- Maximum (worst-case) power consumption in idle mode: 4.0W
- This assumes no power is supplied to an attached USB device or no device is attached

Mounting details

The access point is intended to be desk mounted; the integrated antennas are optimized for that. It is possible to wall mount the access point, but RF coverage and range will be compromised.

Mechanical specifications

- Dimensions/weight (AP-503R; unit):
  - 150 mm (W) x 150 mm (D) x 39 mm (H)
  - 320g
- Dimensions/weight (AP-503R; shipping):
  - 240 mm (W) x 170 mm (D) x 50 mm (H)
  - 600g

Environmental specifications

— Operating conditions
  • Temperature: 0°C to +40°C / +32°F to +104°F
  • Relative humidity: 5% to 95%
  • ETS 300 019 class 3.2 environments
  • AP is plenum rated for use in air-handling spaces
— Storage conditions
  • Temperature: –25°C to +55°C / +13°F to +131°F
  • Relative humidity: 10% to 100%
  • ETS 300 019 class 1.2 environments
— Transportation conditions
  • Temperature: –40°C to +70°C / –40°F to +158°F
  • Relative humidity: up to 95%
  • ETS 300 019 class 2.3 environments

Reliability

Mean Time Between Failure (MTBF): 620 khrs (71 yrs) at +25°C ambient 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 62368-1
— EN 60601-1-1, EN60601-1-2

For more country-specific regulatory information and approvals, please see your HPE Aruba Networking representative.

Regulatory model numbers

— AP-503R (all models): APINR503

Certifications

— Wi-Fi Alliance (WFA):
  • Wi-Fi CERTIFIED a, b, g, n, ac
  • Wi-Fi CERTIFIED 6
  • WPA, WPA2 and WPA3 — Enterprise with CNSA option, Personal (SAE), Enhanced Open (OWE)
  • WMM, WMM-PS, Wi-Fi Agile Multiband

Warranty

HPE Aruba Networking's hardware limited lifetime warranty.

Minimum operating system software version

HPE Aruba Networking Wireless Operating System 10.5.0.0

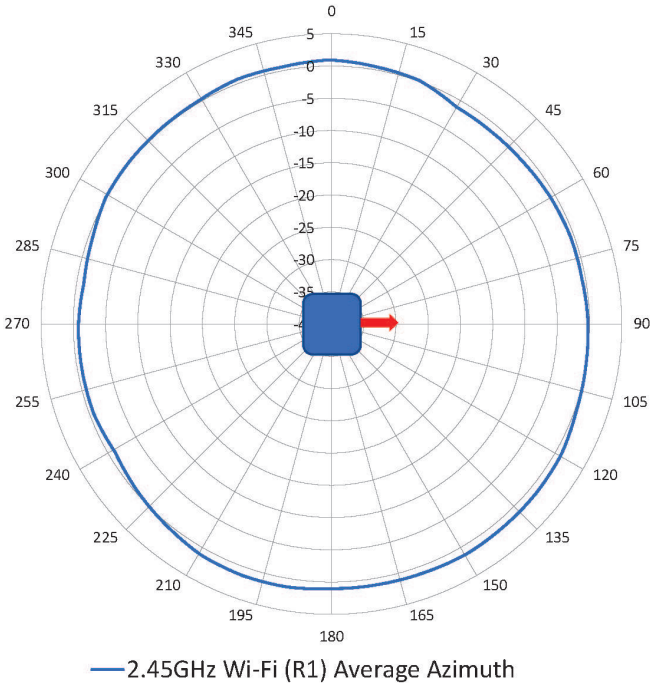
RF performance table

Band, rate	Maximum transmit power (dBm) per transmit chain	Receiver sensitivity (dBm) per receive chain
2.4 GHz, 802.11b		
1Mbps	18.0	–96.0
11Mbps	18.0	–87.0
2.4 GHz, 802.11g		
6Mbps	18.0	–92.0
54Mbps	16.0	–74.0
2.4 GHz, 802.11n HT20		
MCS0	18.0	–92.0
MCS7	16.0	–73.0
2.4 GHz, 802.11ax HE20		
MCS0	18.0	–92.0
MCS11	12.0	–61.0
5 GHz, 802.11a		
6Mbps	18.0	–93.0
54Mbps	16.0	–75.0
5 GHz, 802.11n HT20/HT40		
MCS0	18.0/18.0	–92.0/–89.0
MCS7	16.0/16.0	–73.0/–70.0
5 GHz, 802.11ac VHT20/VHT40/VHT80		
MCS0	18.0/18.0/18.0	–92.0/–89.0/–86.0
MCS9	14.0/14.0/14.0	–66.0/–63.0/–60.0
5 GHz, 802.11ax HE20/HE40/HE80		
MCS0	18.0/18.0/18.0	–92.0/–89.0/–86.0
MCS11	12.0/12.0/12.0	–62.0/–59.0/–56.0

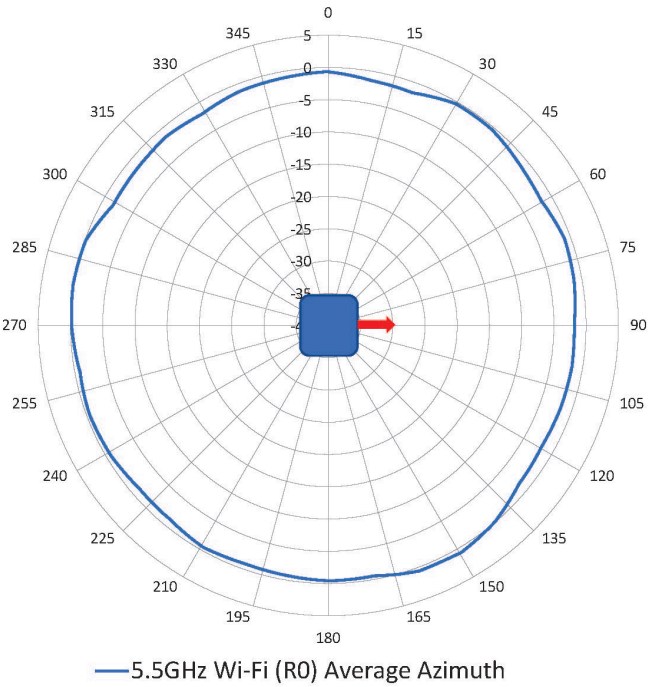
Antenna patterns

Horizontal planes (top view)

Showing azimuth 0° patterns (averaged patterns for all applicable antennas)



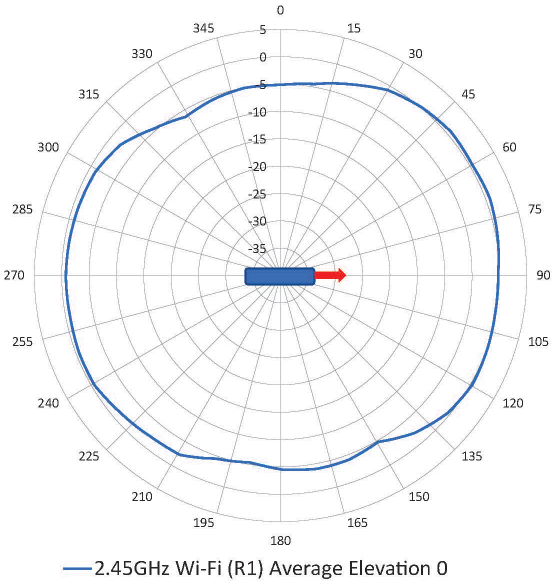
2.45 GHz Wi-Fi (antennas 1, 2)

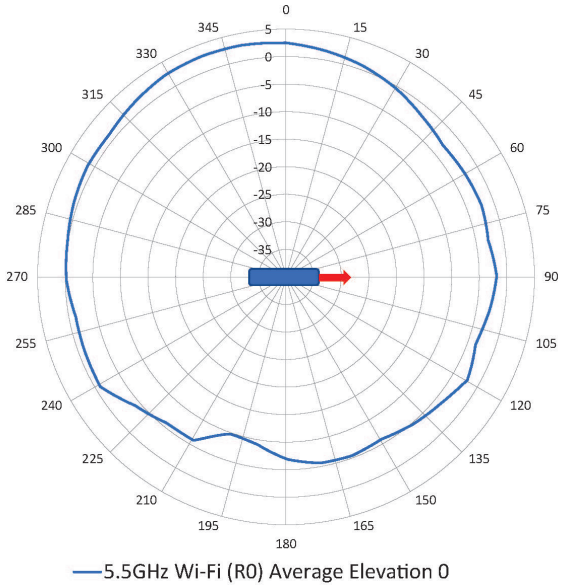


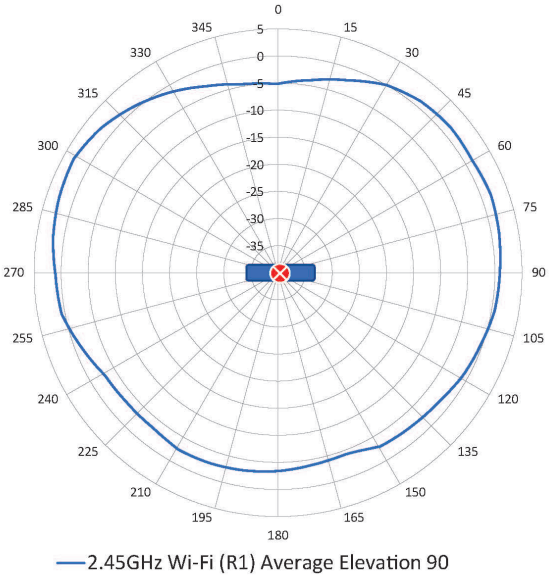
5.5 GHz Wi-Fi (antennas 1, 2)

Vertical (elevation) planes (side views)

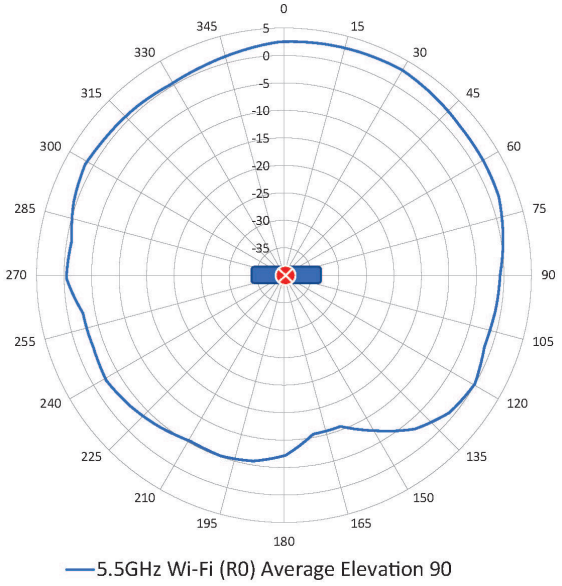
Showing side and front views with access point rotated 0° and 90° (averaged patterns for all applicable antennas)







2.45 GHz Wi-Fi (antennas 1, 2)



5.5 GHz Wi-Fi (antennas 1, 2)

Ordering information

Part number	Description
Internal antenna access points	
R8N01A	HPE Aruba Networking AP-503R-EG Dual Radio 2x2 Wi-Fi 6 1+2 Ethernet USB Remote Access Point
R8N02A	HPE Aruba Networking AP-503R-IL Dual Radio 2x2 Wi-Fi 6 1+2 Ethernet USB Remote Access Point
R8N03A	HPE Aruba Networking AP-503R-JP Dual Radio 2x2 Wi-Fi 6 1+2 Ethernet USB Remote Access Point
R8N04A	HPE Aruba Networking AP-503R-RW Dual Radio 2x2 Wi-Fi 6 1+2 Ethernet USB Remote Access Point
R8N05A	HPE Aruba Networking AP-503R-US Dual Radio 2x2 Wi-Fi 6 1+2 Ethernet USB Remote Access Point
S5D81A	HPE Aruba Networking AP-503R (ID) Dual Radio Tri Band 2x2 802.11ax Wi-Fi 6 Remote Access Point
For compatible accessories and spares, see the 500R Series Ordering Guide	

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