Overview

Shape the Future of QuickSpecs – Your Input Matters

HPE Aruba Networking 650 Series Campus Access Points

Flagship offering with the performance to meet growing enterprise needs with Wi-Fi 6E

By leveraging the 6 GHz band, HPE Aruba Networking 650 Series Campus APs delivers peak performance and far greater capacity than previous generations of Wi-Fi. With up to 1200 MHz of new channels, capacity is nearly tripled – so you can meet growing demand due to bandwidth-hungry video, increasing numbers of client and IoT devices and growth in cloud. Unique to HPE Aruba Networking, the HPE Aruba Networking 650 Series includes ultra tri-band filtering to minimize channel interference and dual configurable 5 Gbps ethernet ports to eliminate coverage gaps, provide greater resiliency, and deliver fast, secure connectivity.

HPE Aruba Networking 650 Series Campus Access Points

Overview

Key Features

- Comprehensive tri-band coverage across 2.4GHz, 5GHz, and 6GHz to deliver 7.8 Gbps maximum aggregate data rate
- 4x4 MIMO radios to deliver peak performance and increased capacity using MU-MIMO and OFDMA (uplink and downlink for both)
- Up to seven 160MHz channels in 6GHz support low-latency, bandwidth-hungry applications like high-definition video and augmented reality/virtual reality applications
- Unique ultra tri-band filtering enables 5GHz and 6GHz to operate without restrictions or interference
- High availability with configurable 5 Gbps dual Ethernet ports for hitless failover of ethernet and power
- Built-in GPS receivers and intelligent software enable access points to self-locate and act as reference points for accurate indoor location measurements

Standard Features

More Capacity and Wider Channels

The HPE Aruba Networking 650 Series APs are designed to take advantage of the 6GHz band, which translates into far greater speeds, wider channels for multi-gigabit traffic, and less interference. It delivers 7.8 Gbps maximum aggregate data rates tri-radio, 4x4:4 MIMO in all three bands (7.8 Gbps aggregate peak).

Band	Channel Bandwidth	Peak Data Rate
6GHz	160MHz	4.8Gbps
5GHz	80MHz	2.4Gbps
2.4GHz	20MHz	574Mbps
Total		**7.8Gbps**

Advantages of 6GHz

Wi-Fi 6E provides up to 1200MHz in the 6GHz band for higher throughput and improved application performance.

With up to seven 160 MHz channels, Wi-Fi 6E can better support low-latency, bandwidth-hungry applications such as high-definition video and artificial reality / virtual reality applications. Only Wi-Fi 6E capable devices can use the 6 GHz band so there is no interference or slowdowns due to legacy devices.

Device class support

For operation in the 6 GHz band, the 650 series access points are part of the low power indoor (LPI) device class. This fixed indoor-only class uses lower power levels and does not require an Automated Frequency Coordination service (AFC) to manage incumbent outdoor services which is required for standard class access points.

The connectorized models will typically operate as standard power access points but may also be allowed to operate as low power indoor devices in some countries.

Less Interference

650 series access points include HPE Aruba Networking ultra tri-band filtering, which enables enterprises to take advantage of the entire 5 GHz and 6 GHz bands without experiencing interference while operating on any channel in either band concurrently. or islands. Since there is only 50 MHz between 5 GHz and the 6 GHz, without advanced filtering, enterprises would likely experience problems between the bands and would therefore be limited in the number of channels available. By applying advanced filtering capabilities, enterprises can make full use of available spectrum without creating coverage gaps.

Business Continuity

The 650 series access points provide high availability with two HPE Smart Rate Ethernet ports for hitless failover for both data and power. Configurable to 1, 2.5, or 5 Gbps, these dual ports provide business continuity for mission-critical applications.

Global Readiness

While the need for more Wi-Fi capacity is recognized across the globe, countries are approaching 6 GHz differently. The 650 series access points are set up to automatically update regulatory rules once 6E regulations have been approved and certified.

Extend The Benefits of Wi-Fi 6

The 650 series access points are based on the 802.11ax standard, which means that all its efficiency and security enhancements are also available on the 6 GHz band. Wi-Fi 6 features such as orthogonal frequency division multiple access (OFDMA), BSS coloring, Enhanced Open, and Wi-Fi Protected Access 3 (WPA3) are fully supported on the HPE Aruba Networking Wi-Fi 6E access points as well.

Advantages of OFDMA

This capability allows HPE Aruba Networking access points to handle multiple 802.11ax capable customers on each channel simultaneously, regardless of device or traffic type. Channel utilization is optimized by handling each transaction through smaller subcarriers or resource units (RUs), which means that customers are sharing a channel and not competing for airtime and bandwidth.

The 650 series access points supports up to 37 resource units, the maximum as defined in the standard for an 80 MHz channel.

Standard Features

Advantages of MU-MIMO

MU-MIMO can be used to increase the capacity and aggregate performance by relying on spatial multiplexing to communicate with up to four customer devices simultaneously. The 650 series access points supports 4x4 MU-MIMO in both uplink and downlink directions.

Wi-Fi Optimization

Customer optimization

HPE Aruba Networking patented AI-powered ClientMatch technology helps eliminate sticky customer issues by steering a customer to the access point where it receives the best radio signal.

HPE Aruba Networking ClientMatch steers traffic from the noisy 2.4 GHz band to the preferred 5 GHz or 6 GHz band depending on customer capabilities. HPE Aruba Networking ClientMatch also dynamically steers traffic to load balance access points to improve the user experience.

Automated Wi-Fi Radio Frequency Management

To optimize the user experience and provide greater stability, HPE Aruba Networking AirMatch allows organization to automate network optimization using machine learning. HPE Aruba Networking AirMatch provides dynamic bandwidth adjustments to support changing device density, enhanced roaming using an even distribution of effective isotropic radiated power (EIRP) to radios, and real-time channel assignments to mitigate cochannel interference.

Reduce interference

Unique to HPE Aruba Networking, Advanced Cellular Coexistence (ACC) 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)

For better insights into energy consumption, HPE Aruba Networking access points continuously monitor and report hardware energy usage. Unlike other vendor's access points, HPE Aruba Networking access points can also be configured to enable or disable capabilities based on available Power over Ethernet (PoE) power — ideal when wired switches have exhausted their power budget. Enterprises can deploy Wi-Fi 6E access points and update switching and power later if needed based on their actual usage. Other power options include adding a power injector or using Smart PoE to combine power from two cables.

Self-Locating Access Points

Indoor location shouldn't require guesswork or costly overlay technologies. HPE Aruba Networking Wi-Fi 6 and 6E access points help organizations leverage their wireless investment to deliver indoor location — everywhere.

The 650 series campus access points include built-in GPS receivers and intelligent software to allow them automatically locate themselves accurately within the universal framework of latitude and longitude. As part of HPE Aruba Networking indoor location solution, they serve as reference points for customer devices using fine time measurements and other location technologies.

HPE Aruba Networking Wi-Fi 6 and 6E access points support Open Locate, an emerging standard that allows access points to share their location over the air and through cloud-based application programming interfaces (APIs), enabling mobile devices to locate themselves and applications to support network analytics.

Access points as an IoT platform

The 650 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. There is also a USB-port extension to provide IoT connectivity to a wider range of devices. These IoT capabilities allow organizations to leverage the HPE Aruba Networking access points as an IoT platform, which helps eliminate the need for an overlay infrastructure and additional IT resources and can accelerate IoT initiatives.

In addition, Target Wake Time (TWT) establishes a schedule when customers need to communicate with an access point. This helps improve customer power savings and reduces airtime contention with other customers, which is ideal for IoT

Standard Features

HPE Aruba Networking Secure Infrastructure

The HPE Aruba Networking 650 Series includes build-security capabilities such as:

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. This capability requires ClearPass Policy Manager.

Simple and Secure Access

To improve security and ease of management, IT can centrally configure and automatically enforce role-based policies that define proper access privileges for employees, guests, contractors, and other user groups — no matter where users connect on wired and WLANs.

Dynamic Segmentation helps eliminate the time consuming and error-prone task of managing complex and static VLANs, ACLs, and subnets by dynamically assigning policies and keeping traffic secure and separated.

Seamless Handoffs to Cellular

Built on the technical foundations of Passpoint® and Wi-Fi Calling, Air Pass creates a roaming network across the HPE Aruba Networking enterprise customer footprint, extending cellular coverage and enhancing the visitor and subscriber experience to deliver a great experience for your guests while reducing costs and management overhead for DAS.

Flexible Operation and Management

Our unified access points can operate as stand-alone access points or with a gateway for greater scalability, security, and manageability.

Access points can be deployed using Zero Touch Provisioning — without on-site technical expertise — for ease of implementation in branch offices and for remote work.

HPE Aruba Networking access points can be managed using cloud-based or on-premises solutions for any campus, branch, or remote work environment. HPE Aruba Networking Central provides a single pane of glass for overseeing every aspect of wired and wireless LANs, WANs, and VPNs. AI-powered analytics, end-to-end orchestration and automation, and advanced security features are built natively into the solution.

Summary

HPE Aruba Networking 650 Series Access Points are designed to take advantage of the 6 GHz band using three 4x4 MIMO radios for comprehensive tri-band coverage to meet the growing demands of Wi-Fi due to increased use of video, growth in customer and IoT devices, and expanded use of cloud. With a maximum combined 7.8 Gbps data rate for higher throughput and faster use, the 650 series raises the bar in terms of capacity, wider channels, hitless failover, and less interference between the 5 GHz and 6 GHz bands.

Configuration Information

BTO Models

Rule #	Description	SKU
Notes:	Add Mount Kit, Antenna(s)	
	AP 654 External Antenna Access Points	
1, 6	HPE Aruba Networking AP-654 (RW) Tri Radio 4x4 Wi-Fi 6E External Antennas Campus AP	S1G53A
2, 6	HPE Aruba Networking AP-654 (US) Tri Radio 4x4 Wi-Fi 6E External Antennas Campus AP	S1G54A
	AP 654 External Antenna Access Points - TAA Models	
1, 6	HPE Aruba Networking AP-654 (RWF1) Tri Radio 4x4 Wi-Fi 6E External Antennas TAA Campus AP	S1G55A
2, 6	HPE Aruba Networking AP-654 (USF1) Tri Radio 4x4 Wi-Fi 6E External Antennas TAA Campus AP	S1G56A
Notes:	Add Mount Kit	
	655 Internal Antenna Access Points	
3	HPE Aruba Networking AP-655 (EG) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas Campus AP	R7J35A
4	HPE Aruba Networking AP-655 (IL) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas Campus AP	R7J36A
5	HPE Aruba Networking AP-655 (JP) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas Campus AP	R7J37A
1	HPE Aruba Networking AP-655 (RW) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas Campus AP	R7J38A
2	HPE Aruba Networking AP-655 (US) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas Campus AP	R7J39A
7	HPE Aruba Networking AP-655 (ID) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas Campus AP	S5E08A
	655 Internal Antenna Access Points - TAA Models	
3	HPE Aruba Networking AP-655 (EG) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas TAA Campus AP	R7J40A
4	HPE Aruba Networking AP-655 (IL) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas TAA Campus AP	R7J41A
5	HPE Aruba Networking AP-655 (JP) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas TAA Campus AP	R7J42A
1	HPE Aruba Networking AP-655 (RW) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas TAA Campus AP	R7J43A
2	HPE Aruba Networking AP-655 (US) Tri Radio 4x4 802.11ax Wi-Fi 6E Internal Antennas TAA Campus AP	R7J44A

Configuration Rules

Rule #	Description
1	Available everywhere except US, Israel, Egypt, Indonesia and Japan. Partners must have an SOT (Cross border agreement).
2	Available in US only. Partners must have an SOT (Cross border agreement).
3	Available in Egpyt only. Partners must have an SOT (Cross border agreement).
4	Available in Israel only. Partners must have an SOT (Cross border agreement).
5	Available in Japan only. Partners must have an SOT (Cross border agreement).
6	Regulatory Considerations for AP-654 The AP-654 will only be offered in countries where there's an existing or clear and defined path to allow operation of 6GHz radios with external connectorized antennas, either as a Low-Power Indoor (LPI) or Standard Power (SP) product. Please contact your Aruba representative to confirm (existing or planned) availability for the country where the AP will be deployed. Also, 6GHz support on AP-634 will only be enabled in AOS/Instant 8.12 and AOS 10.7.
7	Available in Indonesia only. Partners must have an SOT (Cross border agreement).
Notes:	OCA Only Model Selection Form - HPE Aruba Networking > Access Points > Indoor Campus: 650 Series Campus AP

Configuration Information

Mount Accessories

AP Mount Kits

For 650, Series Std (Min 0 // max 99) User Selection (min 0 // max 99)

Rule #	Description	SKU
	HPE Aruba Networking AP-MNT-A Campus AP Type A Suspended Ceiling Rail Flat 9/16 Mount Bracket Kit	R3J15A
*	HPE Aruba Networking AP-MNT-MP10-A Campus AP 10-Pack 9/16 Flat Ceiling Rail Mount Bracket Kit	JZ370A
	HPE Aruba Networking AP-MNT-B Campus AP Type B Suspended Ceiling Rail Flat 15/16 Mount Bracket Kit	R3J16A
*	HPE Aruba Networking AP-MNT-MP10-B Campus AP 10-Pack 15/16 Flat Ceiling Rail Mount Bracket Kit	Q9G69A
*	HPE Aruba Networking AP-MNT-MP10-B1 Campus AP 10-Pack 15/16 Adj Flat Ceiling Rail Mount Bracket Kit	R6T34A
	HPE Aruba Networking AP-MNT-C Campus AP Type C Suspended Ceiling Rail 9/16 Profile Mnt Bracket Kit	R3J17A
*	HPE Aruba Networking AP-MNT-MP10-C Campus AP 10-Pack Profile 9/16 Ceiling Rail Mount Bracket Kit	Q9G70A
	HPE Aruba Networking AP-MNT-D Campus AP Type D Solid Surface Mount Bracket Kit	R3J18A
*	HPE Aruba Networking AP-MNT-MP10-D Campus AP 10-Pack Solid Surface Mount Bracket Kit	Q9G71A
	HPE Aruba Networking AP-MNT-E Campus AP Type E Wall-Box Mount Bracket Kit	R3J19A
*	HPE Aruba Networking AP-MNT-MP10-E Campus AP 10-Pack Wall-box Mount Bracket Kit	R1C72A
	HPE Aruba Networking AP-MNT-U Campus Access Point Type U Universal Mount Bracket Kit	S4K79A
*	HPE Aruba Networking AP-MNT-MP10-U Campus AP Universal 10-pack Mount Bracket Kit	S0J40A
*	HPE Aruba Networking AP-MNT-MP10-X Campus AP 10-Pack Mount Adapter Kit	R3T20A

Configuration Rules

Rule #	Description
Notes:	– *OCA Display
	– Kit contains mounts for 10 access points
	– Access Points do not include a Mount. Qty 1 Mount kits should be selected.

Antennas

For AP-654 Std (Min 0 // max 1) User Selection (min 0 // max 1)

1	HPE Aruba Networking AP-ANT-311 Direct-Mount RP-SMA Tri-Band 1x1 Omni Dipole Antenna	S1F79A
1	HPE Aruba Networking AP-ANT-312 Direct-Mount RP-SMA Tri-Band 1x1 Low-Profile Omni Dipole Antenna	S1F80A
1	HPE Aruba Networking AP-ANT-313 Cabled RP-SMA Tri-Band 1x1 Omni Dipole Antenna	S1F81A
2	HPE Aruba Networking AP-ANT-340 Cabled RP-SMA Tri-Band 4x4 Downtilt Omni Ceiling Antenna	S1F82A
2	HPE Aruba Networking AP-ANT-345 Cabled RP-SMA Tri-Band 4x4 Medium Gain Directional Panel Antenna	S1F83A
2	HPE Aruba Networking AP-ANT-348 Cabled RP-SMA Tri-Band 4x4 High Gain Directional Panel Antenna	S1F84A

Configuration Rules

Rule #	Description
1	Must select Qty 0, 4 or Qty 8
2	Must select Qty 0, 2 or Qty 4
Notes:	AP-ANT-311, and AP-ANT-312 are usually direct connect to the chassis AP-ANT-345, AP-ANT-348 ship with hardware for flush mount to a flat surface AP-654 has two sets of 4x RPSMA female connectors, with 2.4GHz and 5GHz on one set and 6GHz on the other. All antennas are tri-band to avoid confusion.

Configuration Information

Antenna Mount Kits

For AP-654 Series Std (Min 0 // max 2) User Selection (min 0 // max 2)

	HPE Aruba Networking AP-ANT-MNT-U Universal AZ/EL Adjustable Antenna Pole Wall Mount Kit	S1J09A
Notes:	Only compatible with S1F83A, S1F84A	

Power Options

Power Options

For 650 Series Std (Min 0 // max 1) User Selection (min 0 // max 1)

Rule #	Description	SKU
	HPE Aruba Networking AP-POE-BTSR 1-Port Smart Rate 802.3bt 60W Midspan Injector	R1C73A
	HPE Aruba Networking AP-POE-BT10 1-port 10G 60W Midspan 802.3bt PoE Injector	S3J26A
	HPE Aruba Networking AP-AC2-12B 12V/48W AC/DC Desktop Style Power Adapter with 2.1/5.5mm Connector	R3K00A

Configuration Rules

Rule #	Description
Notes:	– If this Power Supply is selected, bring in (Min 1 // Max 1) Localized power cord based on the HPE Aruba Networking Localization Menu
	– Most devices are PoE powered from switch so these are optional

Accessories

Snap-on Covers

For 650, Series Std (Min 0 // max 99) User Selection (min 0 // max 99)

Rule #	Description	SKU
	HPE Aruba Networking AP-655-CVR-20 20-pack White Non-glossy Snap-on Covers	R7J45A
Notes:	OCA Blue	
	Kit contains 20 optional snap-on covers	

Other Accessories

For 650, Series Std (Min 0 // max 99) User Selection (min 0 // max 99)

Rule #	Description	SKU
	HPE Aruba Networking AP-CBL-EXT10 10-pack CAT6A Ethernet Extension Cables	R8L34A
	10-pack Extension Cables	
	HPE Aruba Networking AP-CBL-SERU Micro-USB TTL3.3V to USB2.0 AP Console Adapter Cable	JY728A
	AP-CBL-SERU Micro-USB TTL3.3V to USB2.0 AP Console Adapter Cable	
	HPE Aruba Networking AP-MOD-SERU Micro-USB TTL3.3V to RJ45 RS232 AP Console Adapter Module	R6Q99A
	HPE Aruba Networking USB LTE Modem for Access Points and Gateways	R8F34A
	HPE Aruba Networking USB Extender Cable Kit	R8G76A

Software

Central

Cloud Services / Access Point Foundation Subscriptions

2, 8	HPE Aruba Networking Central AP Foundation 1-year Subscription E-STU	Q9Y58AAE
2, 8	HPE Aruba Networking Central AP Foundation 3 year Subscription E-STU	Q9Y59AAE
2, 8	HPE Aruba Networking Central AP Foundation 5 year Subscription E-STU	Q9Y60AAE
2, 8	HPE Aruba Networking Central AP Foundation 7 year Subscription E-STU	Q9Y61AAE
2, 8	HPE Aruba Networking Central AP Foundation 10 year Subscription E-STU	Q9Y62AAE

Cloud Services / Access Point Advanced Subscriptions

2, 8	HPE Aruba Networking Central AP Advanced 1 year Subscription E-STU	Q9Y63AAE
2, 8	HPE Aruba Networking Central AP Advanced 3 year Subscription E-STU	Q9Y64AAE
2, 8	HPE Aruba Networking Central AP Advanced 5 year Subscription E-STU	Q9Y65AAE
2, 8	HPE Aruba Networking Central AP Advanced 7 year Subscription E-STU	Q9Y66AAE
2, 8	HPE Aruba Networking Central AP Advanced 10 year Subscription E-STU	Q9Y67AAE

Configuration Information

	On-Prem Services / Access Point Foundation Subscriptions	
3, 8	HPE Aruba Networking Central on Prem AP Foundation 1 year Subscription E-STU	R6U63AAE
3, 8	HPE Aruba Networking Central on Prem AP Foundation 3 year Subscription E-STU	R6U64AAE
3, 8	HPE Aruba Networking Central on Prem AP Foundation 5 year Subscription E-STU	R6U65AAE
3, 8	HPE Aruba Networking Central on Prem AP Foundation 7 year Subscription E-STU	R6U66AAE
3, 8	HPE Aruba Networking Central on Prem AP Foundation 10 year Subscription E-STU	R6U67AAE
	Configuration Rules	
Rule #	**Description**	**SKU**
2	Add the Central Cloud Skus to the HPE Aruba Networking Catalog as Standalone: HPE Aruba Networking > Network Management > Central > Cloud Services	
3	Add the Central On-Prem Skus to the HPE Aruba Networking Catalog as Standalone: HPE Aruba Networking > Network Management > Central > On-Prem Services	
6	Add the Central FedRAMP Service Skus to the HPE Aruba Networking Catalog as Standalone: HPE Aruba Networking > Network Management > Central > FedRAMP	
8	For OCA: When configuring the following AP 10-Pack, selection condition for this Subscription should be 0(default) or 10	
	HPE Aruba Networking AP-503 (RW) 10-Pack Dual Radio 2x2:2 Wi-Fi 6 Campus Access Point	S1E83A
	HPE Aruba Networking AP-503 (US) 10-Pack Dual Radio 2x2:2 Wi-Fi 6 Campus Access Point	S1E84A

As-a-Service

	Cloud Services / Access Point Foundation Subscriptions	
7	HPE Aruba Networking Central AP Foundation 1 year Subscription SaaS	Q9Y58AAS
7	HPE Aruba Networking Central AP Foundation 3 year Subscription SaaS	Q9Y59AAS
7	HPE Aruba Networking Central AP Foundation 5 year Subscription SaaS	Q9Y60AAS
7	HPE Aruba Networking Central AP Foundation 7 year Subscription SaaS	Q9Y61AAS
7	HPE Aruba Networking Central AP Foundation 10 year Subscription SaaS	Q9Y62AAS
	Cloud Services / Access Point Advanced Subscriptions	
7	HPE Aruba Networking Central AP Advanced 1 year Subscription SaaS	Q9Y63AAS
7	HPE Aruba Networking Central AP Advanced 3 year Subscription SaaS	Q9Y64AAS
7	HPE Aruba Networking Central AP Advanced 5 year Subscription SaaS	Q9Y65AAS
7	HPE Aruba Networking Central AP Advanced 7 year Subscription SaaS	Q9Y66AAS
7	HPE Aruba Networking Central AP Advanced 10 year Subscription SaaS	Q9Y67AAS
	Configuration Rules	
Rule#	**Description**	**SKU**
7	For IRIS reference only. No action required for OCX and Clic	

Technical Specifications

Hardware Variants

- AP-654: External antenna models
- AP-655: Internal antenna models.

Wi-Fi Radio Specifications

- AP type: Indoor, dual radio, 2.4GHz, 5GHz and 5GHz (concurrent) 802.11ax 4x4 MIMO.
- 2.4GHz radio: Two spatial stream Single User (SU) MIMO for up to 1,147Mbps wireless data rate with 4SS HE40 802.11ax client devices, or multiple 2SS or 1SS MU-MIMO capable HE40 802.11ax devices.
- 5GHz radio: Two spatial stream Single User (SU) MIMO for up to 2.4Gbps wireless data rate with 4SS HE80 802.11ax client devices, or multiple 2SS or 1SS MU-MIMO capable HE40 802.11ax devices.
- 6GHz radio: Two spatial stream Single User (SU) MIMO for up to 4.8Gbps wireless data rate with 4SS HE160 802.11ax client devices, or multiple 2SS or 1SS MU-MIMO capable HE40 802.11ax devices.
- Up to 1,024 associated client devices per radio, and up to 16 BSSIDs per radio (limited to 4 for the 6GHz radio).
- Supported frequency bands (country-specific restrictions apply): 2.400 to 2.4835GHz ISM
  - 5.150 to 5.250GHz U-NII-1
  - 5.250 to 5.350GHz U-NII-2
  - 5.470 to 5.725GHz U-NII-2E
  - 5.725 to 5.850GHz U-NII-3/ISM
  - 5.850 to 5.895GHz U-NII-4
  - 5.925 to 6.425GHz U-NII-5
  - 6.425 to 6.525GHz U-NII-6
  - 6.525 to 6.875GHz U-NII-7
  - 6.875 to 7.125GHz U-NII-8
- Available bands and channels: Dependent on configured regulatory domain (country).
- Dynamic frequency selection (DFS) optimizes the use of available RF spectrum in the 5GHz band.
  - Including zero wait DFS (ZWDFS) 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: OFDMA with up to 37 resource units (for an 80 MHz channel)
- Supported modulation types: 802.11b: BPSK, QPSK, CCK
  - 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: HE20/40/80/160
- 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 (proprietary extension)
  - 802.11ac: 6.5 to 1,733 (MCS0 to MCS9, NSS = 1 to 4, VHT20 to VHT80); 2,167 with 1024-QAM (MCS10 and MCS11, proprietary extension)
  - 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 HE80)
  - 802.11ax (6GHz): 3.6 to 4,804 (MCS0 to MCS11, NSS = 1 to 4, HE20 to HE160); 5,764 with 4096-QAM (MCS12 and MCS13, proprietary extension)

Technical Specifications

- 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/band (2.4GHz / 5GHz / 6GHz): +24 dBm (18dBm per chain)
    Notes: conducted transmit power levels exclude antenna gain. For total (EIRP) transmit power, add antenna gain.
- ACC helps minimize the impact of interference from cellular networks
- Ultra tri-band (UTB) enables ultimate flexibility in 5 GHz and 6 GHz channel selection without performance degradation
- 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 beamforming (TxBF) for increased signal reliability and range
- 802.11ax TWT to support low power customer devices
- 802.11mc fine timing measurement (FTM) for precision distance ranging Wi-Fi antennas
- AP-654: Two sets of four (female) RP-SMA connectors for external antennas (A0 through A3 corresponding with radio chains 0 through 3 for the 2.4 GHz and 5 GHz radios, and B0 through B3 corresponding with radio chains 0 through 3 for the 6 GHz radio). Worst-case internal loss between radio interface and external antenna connectors: 1.0 dB in 2.4 GHz, 1.0 dB in 5 GHz and 1.0 dB in 6 GHz
- AP-655: Integrated downtilt omnidirectional antennas for 4x4 MIMO with peak antenna gain of 4.8 dBi in 2.4 GHz, 5.3 dBi in 5 GHz, and 5.4 dBi in 6 GHz. Built-in antennas are optimized for horizontal ceiling mounted orientation of the access point. The downtilt angle for maximum gain is roughly 30° to 40°
  - Combining the patterns of each of the antennas of the MIMO radios, the peak gain of the combined, average pattern is 3.3 dBi in 2.4 GHz, 2.9 dBi in 5 GHz, and 4.0 dBi in 6 GHz

Other Interfaces

- E0, E1: Two Ethernet wired network ports (RJ-45)
  - Auto-sensing link speed (100/1000/2500/5000BASE-T) and MDI/MDIX
  - 2.5 Gbps and 5 Gbps speeds comply with NBase-T and 802.3bz specifications
  - POE-PD: 48 Vdc (nominal) 802.3af/at/bt PoE (class 3 or higher)
  - 802.3az Energy Efficient Ethernet (EEE)
  - Link aggregation (LACP) support between both network ports for redundancy and increased capacity
- DC power interface: 12 Vdc (nominal, +/5%), accepts 2.1 mm / 5.5 mm center- positive circular plug with 9.5 mm length
- USB 2.0 host interface (Type A connector) Capable of sourcing up to 1A / 5W to an attached device
- Bluetooth Low Energy (BLE5.0) and Zigbee (802.15.4) radio
  - BLE: up to 6 dBm transmit power and
  - 101 dBm receive sensitivity (125 kbps)
  - Zigbee: up to 6 dBm transmit power and –99 dBm receive sensitivity (250 kbps)
  - Integrated omnidirectional antenna with roughly 30° to 40° downtilt and peak gain of 3.6 dBi
- GNSS L1 (1575.42 MHz) receiver supporting GPS, Galileo, GLONASS, and BeiDou signal
  - Receive sensitivity: –162 dBm (tracking)
  - Integrated omnidirectional antenna with roughly 30° to 40° downtilt and peak gain of 3.1 dBi
- Advanced IoT Coexistence (AIC) allows concurrent operation of multiple radios in the 2.4 GHz band
- Built-in Trusted Platform Module (TPM) for enhanced security and anticounterfeiting
- Visual indictors (four multi-color LEDs): For system (1x) and radio (3x) status
- 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

Technical Specifications

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 (SmartPOE feature), to increase the power budget available to the AP or support hitless failover between sources.
- In the failover case, either port can be configured as the active power source
- When both DC and POE power sources are available, DC power takes priority over POE
- Power sources are sold separately; see the HPE Aruba Networking 650 Series Ordering Guide for details
- When powered by DC, 802.3bt (class 5) POE or dual (combined) 802.3at (class 4) POE, the AP will operate without restrictions.
- When powered by a single 802.3at (class 4) POE source or if such a source is the primary one in a failover scenario, and with IPM disabled, the AP will disable the USB port and TBD.
- Operating the AP with an 802.3af (class 3 or lower) POE source is not supported.
- With IPM enabled, the AP will start up in unrestricted mode but may dynamically apply restrictions depending on the available power budget and actual consumption. The feature restrictions and order in which these get applied are configurable.
- Maximum (worst-case) power consumption (without / with a USB device attached):
  - DC powered: 36.0W/42.5W
  - PoE powered: 40.3W/46.5W
  - This assumes that up to 5W is supplied to the attached USB device
- Maximum (worst-case) power consumption in idle mode: 14.3W/20.2W (DC) or 16.9W/22.7W (PoE)
- Maximum (worst-case) power consumption in deep-sleep mode: 2.4W (DC) or 4.0W (PoE)

Using IPM to avoid platform restrictions

Operating the 650 series access point from a single 802.3at source requires some restrictions, but the IPM feature allows doing that in a flexible way.
The following configurations (with IPM enabled) are some examples of how the access point can remain within the 802.3at budget without any additional restrictions:

- No power drawn from USB, transmit power on all radios limited to 18 dBm EIRP or less
- No power drawn from USB, single Ethernet, transmit power on all radios limited to 21 dBm EIRP or less
- No power drawn from USB, single Ethernet, any one radio disabled

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).

Mechanical Specifications

- Dimensions/weight (AP-655; unit without mount bracket):
  - 260mm (W) x 260mm (D) x 60mm (H)
  - 1,800g
- Dimensions/weight (AP-655; shipping):
  - 285mm (W) x 285mm (D) x 95mm (H)
  - 2,300g

Environmental Specifications

- Operating conditions
  - Temperature: 0C to +50C / +32F to +122F
  - Relative humidity: 5% to 95%
  - ETS 300 019 class 3.2 environments
  - Access point is plenum rated for use in air-handling spaces
- Storage conditions
  - Temperature: -25C to +55C / +13F to +131F

Technical Specifications

  - Relative humidity: 10% to 100%
  - ETS 300 019 class 1.2 environments
- Transportation conditions
  - Temperature: -40C to +70C / -40F to +158F
  - Relative humidity: up to 95%
  - ETS 300 019 class 2.3 environments

Reliability

Mean Time Between Failure (MTBF): 544khrs (62years) at +25°C 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 60950
- 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-654 (all models): APIN0654
- AP-655 (all models): APIN0655

Regulatory Considerations for AP-654

The AP-654 will only be offered in countries where there's an existing or clear and defined path to allow operation of 6 GHz radios with external connectorized antennas, either as a low power indoor (LPI) or standard power (SP) product. Contact your HPE Aruba Networking representative to confirm (existing or planned) availability for the country where the access point will be deployed.

SP product class operation of the AP-634 (that is, most countries where the platform is supported) is only supported on HPE Aruba Networking Wireless Operating System software release AOS-10.7.0.0 and later deployments and HPE Aruba Networking Wireless Operating System software release AOS-8.12.0.0 and later deployments that include a HPE Aruba Networking Virtual Mobility Conductor. SP operation is not supported on InstantOS deployments or 8.x ArubaOS deployments without a HPE Aruba Networking Virtual Mobility Conductor.

Certifications

- UL2043 plenum rating
- Wi-Fi Alliance (WFA):
  - Wi-Fi CERTIFIED a, b, g, n, ac
  - Wi-Fi CERTIFIED 6E (ax, 6GHz)
  - WPA, WPA2 and WPA3 – Enterprise with CNSA option, Personal (SAE), Enhanced Open (OWE)
  - WMM, WMM-PS, Wi-Fi Vantage, W-Fi Agile Multiband
- Bluetooth SIG
- Ethernet Alliance (POE, PD device, class 6)

Warranty

HPE Aruba Networking's hardware limited lifetime warranty.

Technical Specifications

Minimum Operating System Software Versions

- AP-654 (excluding 6GHz support):
  - HPE Aruba Networking Wireless Operating System and HPE Aruba Networking InstantOS 8.11.2.0, HPE Aruba Networking Wireless Operating System 10.6.0.0
- AP-654 (including 6GHz support):
  - HPE Aruba Networking Wireless Operating System and HPE Aruba Networking InstantOS 8.12.0.0, HPE Aruba Networking Wireless Operating System 10.7.0.01
- AP-655:
  - HPE Aruba Networking Wireless Operating System and HPE Aruba Networking InstantOS 8.10.0.1, HPE Aruba Networking Wireless Operating System 10.4.0.0

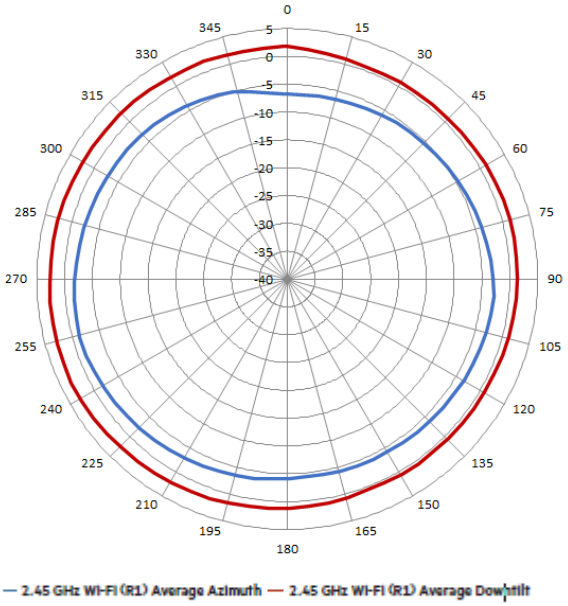
RF Performance Table		
Band, rate	**Maximum transmit power (dBm) per transmit chain**	**Receiver sensitivity (dBm) per receive chain**
2.4GHz, 802.11b		
1Mbps	18.0	-96.0
11Mbps	18.0	-88.0
2.4GHz, 802.11g		
6Mbps	18.0	-92.0
54Mbps	18.0	-74.0
2.4GHz, 802.11n HT20		
MCS0	18.0	-91.0
MCS7	16.0	-73.5
2.4GHz, 802.11ax HE20		
MCS0	18.0	-91.0
MCS11	14.0	-61.0
5GHz, 802.11a		
6Mbps	18.0	-88.0
54Mbps	16.0	-71.5
5GHz, 802.11n HT20 / HT40		
MCS0	18.0 / 18.0	-88.0 / -85.0
MCS7	15.0 / 15.0	-70.0 / -67.0
5GHz, 802.11ac VHT20 / VHT40 / VHT80		
MCS0	18.0 / 18.0 / 18.0	-88.5 / -85.5 / -82.5
MCS9	14.0 / 14.0 / 14.0	-64.5 / -61.5 / -58.5
5GHz, 802.11ax HE20 / HE40 / HE80		
MCS0	18.0 / 18.0 / 18.0	-88.5 / -85.5 / -82.5
MCS11	14.0 / 14.0 / 14.0	-59.0 / -56.0 / -53.0
6GHz, 802.11ax HE20 / HE40 / HE80 / HE160		
MCS0	18.0 / 18.0 / 18.0 / 18.0	-90.0 / -87.0 / -84.0 / -81.0
MCS11	14.0 / 14.0 / 14.0 / 14.0	-63.5 / -60.5 / -57.5 / -54.5
MCS13	12.0 / 12.0 / 12.0 / 12.0	-56.0 / -53.0 / -50.0 / -47.0

Technical Specifications

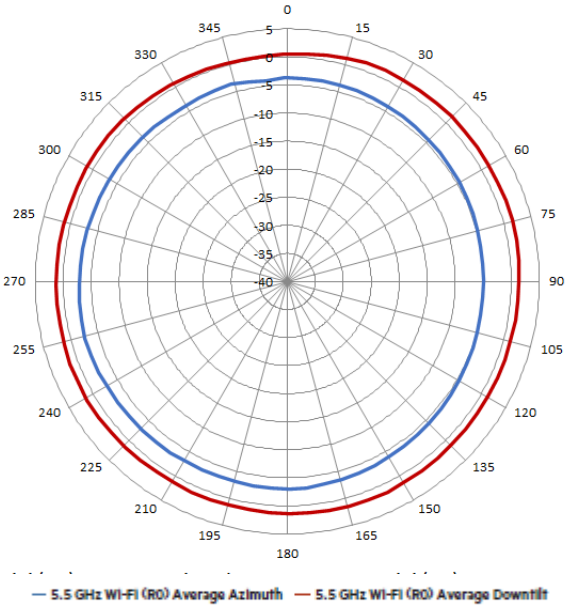
Antenna Patterns AP-655

Horizontal Planes (Top View)

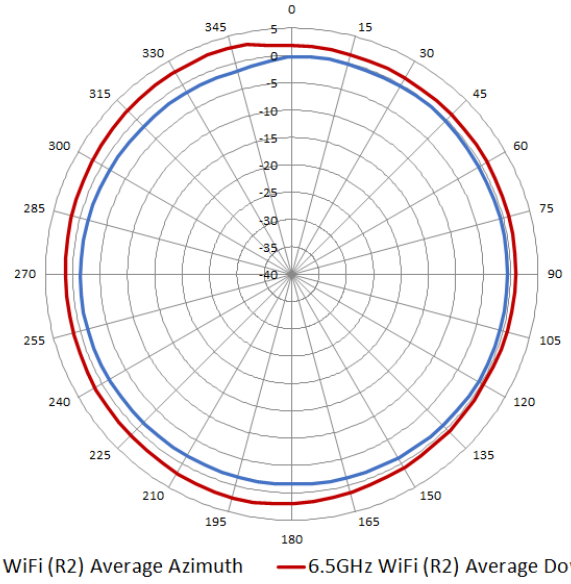
Showing azimuth (0°) and 30° downtilt patterns (averaged patterns for all applicable antennas)



2.45 GHz Wi-Fi antenna patterns (horizontal)



5.5 GHz Wi-Fi antenna patterns (horizontal)



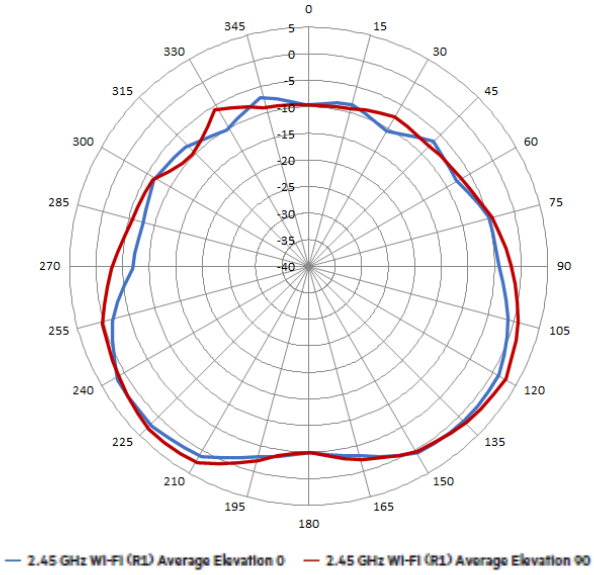
6.5 GHz Wi-Fi antenna patterns (horizontal)

Technical Specifications

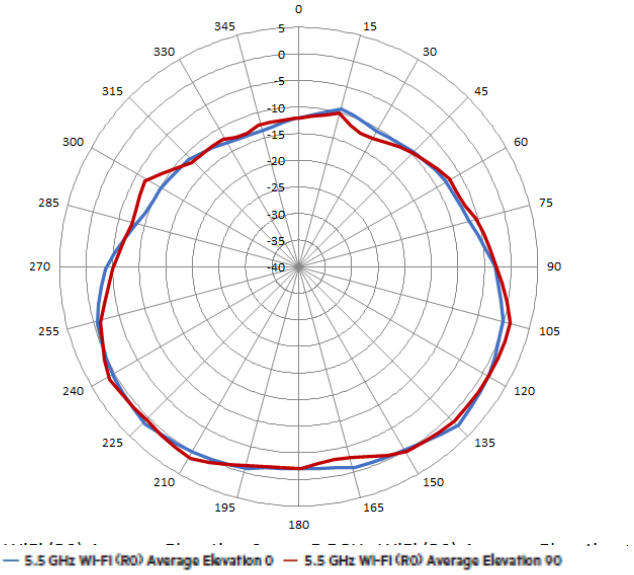
Antenna Patterns AP-655

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

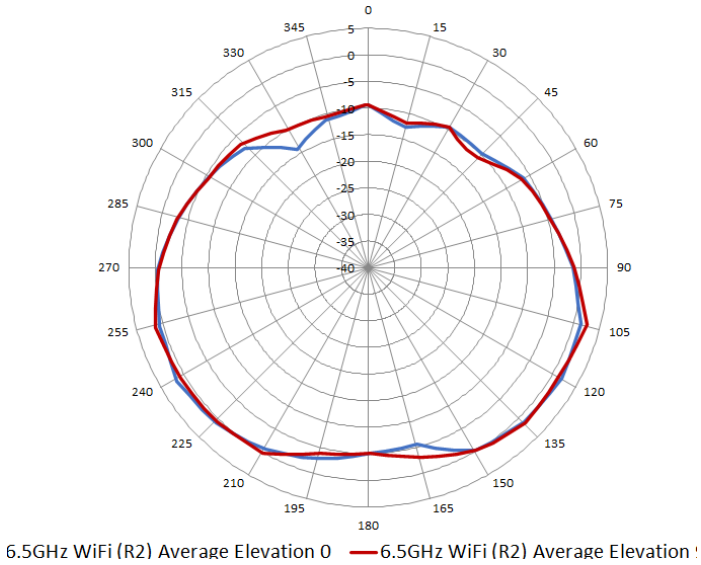
Showing side view with AP rotated 0° and 90° (averaged patterns for all applicable antennas)



2.45 GHz Wi-Fi antennas patterns (vertical)



5.5 GHz Wi-Fi antenna patterns (vertical)



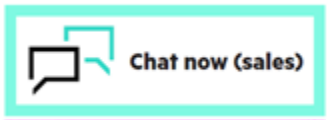
6.5 GHz Wi-Fi antennas patterns (vertical)

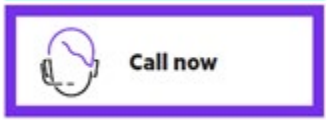
Summary of Changes

Date	Version History	Action	Description of Change
28-Jul-2025	**Version 11**	Changed	Update survey link.
07-Apr-2025	**Version 10**	Changed	Overview, Standard Features, Configuration Information, and Technical Specifications sections were updated.
16-Dec-2024	**Version 9**	Changed	Overview and Configuration Information sections were updated
19-Aug-2024	**Version 8**	Changed	Configuration Information section was updated
01-Jul-2024	**Version 7**	Changed	Configuration Information section was updated
04-Dec-2023	**Version 6**	Changed	Series name was updated.
05-Sep-2023	**Version 5**	Changed	Standard Features and Configuration Information sections were updated
07-Aug-2023	**Version 4**	Changed	Configuration Information section was updated
01-May-2023	**Version 3**	Changed	Configuration Information section was updated, new SKU was added.
05-Jul-2022	**Version 2**	Changed	Configuration Information section was updated, new SKUs were added.
07-Feb-2022	**Version 1**	New	New QuickSpecs

Copyright

Make the right purchase decision.
Contact our presales specialists.





Shape the Future of QuickSpecs – Your Input Matters

Hewlett Packard Enterprise

To learn more, visit: **http://www.hpe.com/networking**

a50004266enw - 16870 - Worldwide - V11 - 28-July-2025