

DATA SHEET

ARUBA 530 SERIES CAMPUS ACCESS POINTS

802.11ax performance for high-density mobile and IoT deployments

With the increasing number of mobile and IoT devices reliant on wireless access, networks must be capable of accommodating growing capacity needs and a diverse mixture of device types, applications and services.

The Aruba 530 Series campus access points with 802.11ax technology are designed to deliver high performance access for mobile and IoT devices in environments where device density is high. The 530 Series uses 802.11ax features to simultaneously serve multiple clients and prioritize different types of traffic, which increases the data rates for both individual applications, devices and the overall network.

The 530 Series includes support for all mandatory and several optional 802.11ax features, which include up- and downlink OFDMA* with up to 37 resource units, up- and downlink multi-user MIMO (MU-MIMO)*, 4x4 MIMO with up to four spatial streams in both the 5GHz and 2.4GHz bands, channel bandwidths up to 160MHz (in 5GHz; 40MHz in 2.4GHz), and 1024-QAM modulation.

The 530 Series supports maximum data rates of 2.4Gbps in the 5GHz band and 1,150Mbps in the 2.4GHz band (for an aggregate peak data rate of 3.55Gbps). Each AP supports up to 1024 associated client devices per radio*, making the high-end 802.11ax 530 Series APs ideal for high density environments, such as higher education, K12, retail branches, hotels and digital workplaces.

In addition to 802.11ax standards, the 530 Series supports unique features like Aruba ClientMatch radio management and additional radios for location services and IoT applications. With a higher capacity of 4x versus what is delivered by 802.11ac APs, as well as a universal IoT connectivity, the 530 Series delivers an unsurpassed user experience for today's all-wireless digital environments.



KEY FEATURES

- AI-powered features for wireless RF and client connectivity optimization
- Dual-radio (dual 4x4 MIMO) 802.11ax AP with up-and downlink OFDMA* and Multi-User MIMO (MU-MIMO)*
- Supports all mandatory and several optional 802.11ax features, and up to the full 37 OFDMA Resource Units (RUs)
- Maximum data rates of 2.4Gbps in the 5GHz band and 1,150Mbps in the 2.4GHz band (for an aggregate peak data rate of 3.55Gbps)
- Up to 1,024 associated client devices per radio*
- Ideal for high-density environments, such as higher education, K12, retail branches, hotels and digital workplaces
- Cost effective and easy to manager universal IoT connectivity that includes Bluetooth 5 and Zigbee* radios for location and IoT use-cases
- Aruba Intelligent Power Monitoring (IPM) which allows the APs to operate if there is not enough PoE power
- State of the art security with WPA3 and Enhanced open

802.11 AX PERFORMANCE ENHANCEMENTS

To better support growing client density, the 530 Series uses two key new features within 802.11ax that enhance multi-user connectivity and efficiency. The first is Orthogonal Frequency Division Multiple Access (OFDMA)* and the other is multi-user – multiple input multiple output (MU-MIMO)*.

- **Multi-user transmission with downlink and uplink**

OFDMA — OFDMA increases user data rates and also reduces latency, especially for large numbers of devices with short frames or low data-rate requirements, such as voice and IOT devices. By providing multi-user capabilities, a channel can be divided in the frequency domain, and multiple transmissions can be carried simultaneously. OFDMA is particularly effective in raising network efficiency and capacity where there are many devices, short frames, or low data-rate streams.

- **Multiuser transmission with downlink and uplink**

multi-user MIMO — MU-MIMO is another multi-user capability, originally introduced in 802.11ac. This improves network capacity by allowing multiple devices to transmit simultaneously

In addition to the standard 802.11ax capabilities, with the optional tri-radio operating mode, the 5GHz radio is split up into two independent 4x4 MIMO radios with up to four spatial streams each. This enables even higher numbers of simultaneously connected client devices.

To optimize endpoint connections Aruba's ClientMatch technology will automatically detect and classify mobile devices with common characteristics, group these devices, and match them with the best AP's and radios to enhance the performance of the network. For example, all 802.11ax capable devices will be grouped onto available 11ax AP and radios, so that the performance benefits of Orthogonal Frequency Division Multiple Access (OFDMA) are maximized. This delivers increased network performance and a boost in network capacity.

ArubaOS 8 runs at the core of the 530 Series APs to

deliver always-on networking via features like LiveUpgrade, Controller Clustering and seamless fail-over. Our ArubaOS 8 software also includes AirMatch, which delivers AI-powered technology to automatically optimize the performance of a wireless network by tuning the radio frequencies (RF) of the access points.

INTELLIGENT POWER CONSUMPTION

As higher performance 802.11ax access points will handle a greater number of devices and traffic, they will drive the need for more power consumption. To offset these demands, Aruba NetInsight includes a feature called GreenAP which allows the 530 Series access points to draw less power when it's not being used, such as evenings when the buildings are empty.

Aruba Intelligent Power Monitoring (IPM) allows for the 550 Series to operate even when your existing switches do not support enough PoE power. This enables IT to gradually upgrade their switching infrastructure by allowing the APs to operate even if 802.3bt is not supported in the existing switches. This feature also enables the AP to continuously monitor and report its actual power consumption and optionally make autonomous decisions to disable certain capabilities based on the amount of power needed to boot and operate.

Another unique Aruba feature in the 530 Series AP is Smart PoE. This allows for both Ethernet ports on the AP to draw power from existing switch infrastructure. Smart PoE can be used in this manner or one of the Ethernet ports can be connected to a separate switch for PoE redundancy.

IOT AND LOCATION READY

The 802.11ax technology also provides unique benefits for IoT devices. These features range from dedicated channels in OFDMA to support the simultaneous transmission of low latency IoT connections, to power saving options using Target Wake Time (TWT) for battery life savings.

In addition, the 530 Series support integrated Bluetooth 5 and Zigbee* radios, as well as a USB port for maximum flexibility, which provides secure and reliable connectivity for IOT devices and for implementing location services.

Additional Features:

- Two HPE SmartRate uplink Ethernet ports
 - Supports up to 5Gbps with NBase-T and IEEE 802.3bz Ethernet compatibility
 - Backwards compatibility with 100/1000Base-T
- Smart POE feature that supports either combining or prioritizing of POE power from both ports
- Built-in Bluetooth 5 and Zigbee* radios
 - Enables a wide range of IOT use-cases including asset tracking and mobile engagement

- Advanced Cellular Coexistence (ACC)
 - Minimizes interference from 3G/4G cellular networks, distributed antenna systems and commercial small cell/femtocell equipment
- Quality of service for unified communications applications
 - Supports priority handling and policy enforcement for unified communication apps, including Skype for Business with encrypted video conferencing, voice, chat and desktop sharing
- Aruba AppRF technology leverages deep packet inspection to classify and block, prioritize, or limit bandwidth for thousands of applications in a range of categories
- Best-in-class RF Management
 - Built-in AirMatch technology manages the 2.4GHz and 5GHz radio bands and actively optimizes the RF environment which includes channel width, channel selection and transmit power
 - Adaptive Radio Management (ARM) technology provides airtime fairness and ensures that APs stay clear of all sources of RF interference to deliver reliable, high-performance WLANs
- Spectrum analysis
 - Capable of part-time or dedicated air monitoring, the spectrum analyzer remotely scans the 2.4GHz and 5GHz radio bands to identify sources of RF interference from 20MHz through 160MHz operation
- Aruba Core Security
 - Device assurance: Use of Trusted Platform Module (TPM) for secure storage of credentials and keys as well as secure boot
 - Integrated wireless intrusion protection offers threat protection and mitigation, and eliminates the need for separate RF sensors and security appliances
 - IP reputation and security services identify, classify, and block malicious files, URLs and IPs, providing comprehensive protection against advanced online threats
 - SecureJack-capable for secure tunneling of wired Ethernet traffic
- Intelligent Power Monitoring (IPM)
 - Enables the AP to continuously monitor and report its actual power consumption and optionally make autonomous decisions to disable certain capabilities based on the amount of power available to the unit
 - Software configurable to disable capabilities in specified order of priority.
 - The IPM feature applies when the unit is powered by a POE source

- Energy efficiency with Green AP feature (requires Aruba NetInsight)
 - The 530 Series Access Points support a unique deep-sleep mode to deliver significant power and cost savings.
- Network management flexibility
 - Aruba AirWave for on-prem management and Aruba Central for cloud management

DEPLOYMENT OPTIONS

The Aruba 530 Series APs offer a choice of deployment and operating modes to meet your unique management and deployment requirements:

- Controller-based mode – When deployed in conjunction with an Aruba Mobility Controller, Aruba 530 Series APs offer centralized configuration, data encryption, policy enforcement and network services, as well as distributed and centralized traffic forwarding.
- Controller-less (Instant) mode – The controller function is virtualized in a cluster of APs while in Instant mode. As the network grows and/or requirements change, Instant deployments can easily migrate to controller-based mode.
- Remote AP (RAP) mode for branch deployments.
- Air monitor (AM) for wireless IDS, rogue detection and containment.
- Spectrum analyzer (SA), dedicated or hybrid, for identifying sources of RF interference
- Secure enterprise mesh portal or point to point*.

For large installations across multiple sites, the Aruba Activate service significantly reduces deployment time by automating device provisioning, firmware upgrades, and inventory management. With Aruba Activate, the APs can be factory-shipped to any site and configure themselves when powered up.

SPECIFICATIONS

Hardware variants

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

Wi-Fi radio specifications

- AP type: Indoor, dual radio, 5GHz and 2.4GHz 802.11ax 4x4 MIMO
- 5GHz radio: Four spatial stream Single User (SU) MIMO for up to 2.4Gbps wireless data rate with individual 4SS HE80 (or 2SS HE160) 802.11ax client devices, or with four 1SS or two 2SS HE80 802.11ax MU-MIMO capable client devices simultaneously

- 2.4GHz radio: Four spatial stream Single User (SU) MIMO for up to 1,150Mbps wireless data rate with individual 4SS HE40 802.11ax client devices or with two 2SS HE40 802.11ax MU-MIMO capable client devices simultaneously
 - Support for up to 1,024 associated client devices per radio* (typical recommended limit for active clients is 200), and up to 16 BSSIDs per radio
 - Supported frequency bands (country-specific restrictions apply):
 - 2.400 to 2.4835GHz
 - 5.150 to 5.250GHz
 - 5.250 to 5.350GHz
 - 5.470 to 5.725GHz
 - 5.725 to 5.850GHz
 - Available channels: Dependent on configured regulatory domain
 - Dynamic frequency selection (DFS) optimizes the use of available RF spectrum
 - 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 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*
- 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): 0.8dB in 2.4GHz and 1.3dB in 5GHz.
 - AP-535: Four integrated dual-band downtilt omnidirectional antennas for 4x4 MIMO with peak antenna gain of 3.5dBi in 2.4GHz and 5.4dBi in 5GHz. 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 1.9dBi in 2.4GHz and 3.5dBi in 5GHz.
- Other interfaces**
- E0, E1: HPE SmartRate port (RJ-45, maximum negotiated speed 5Gbps)
 - Auto-sensing link speed (100/1000/2500/5000BASE-T) and MDI/MDX
 - 2.5Gbps and 5Gbps speeds comply with NBase-T and 802.3bz specifications

- POE-PD: 48Vdc (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
- 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
 - BLE: up to 8dBm transmit power (class 1) and -95dBm receive sensitivity
 - Zigbee: up to 8dBm transmit power and 99dBm receive sensitivity
 - Integrated vertically polarized omnidirectional antenna with roughly 30 degrees downtilt and peak gain of 3.1dBi (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. In the same configuration but with IPM enabled, the AP will start up in unrestricted mode, but may dynamically apply restrictions depending on the POE budget and actual power. The feature restrictions and order can be programmed.

- 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 2.1" (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