

# AP43 ACCESS POINT SERIES

## AI-Driven 802.11ax, Bluetooth® LE, and IoT Combine for Automated, High-Performance Wireless Networking

### JUNIPER AI-DRIVEN NETWORK

Juniper brings true innovation to the wireless space with the world's first AI-driven wireless LAN (WLAN).

The Juniper AI-Driven Enterprise makes Wi-Fi predictable, reliable, and measurable, offering unprecedented visibility into the user experience through the use of unique service-level expectation (SLE) metrics. Proactive, AI-driven automation and self-healing replace time-consuming manual tasks, lowering Wi-Fi operational costs and saving substantial time and money.

Juniper also brings enterprise-grade Wi-Fi, Bluetooth Low Energy (LE), and IoT together so businesses can increase the value of their wireless networks through personalized location services, such as wayfinding, proximity notifications, and asset location. With Juniper's patented virtual BLE (vBLE) technology, no battery beacons or manual calibration are required.

All operations are managed using the open and programmable microservices-based Juniper Mist™ cloud architecture. The system delivers maximum network scalability and performance while also bringing DevOps agility to WLANs and location services.

### THE JUNIPER MIST CLOUD ARCHITECTURE

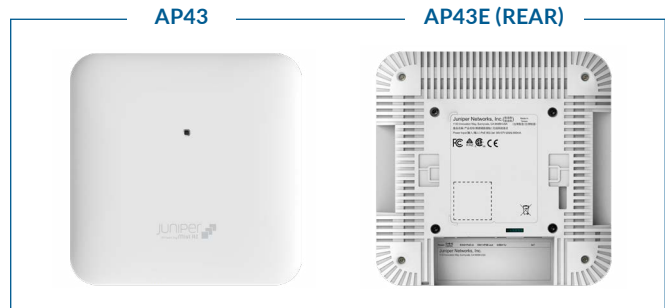
Our cloud-native, AI-driven microservices architecture delivers unparalleled agility, scale, and resiliency to your network. Its lowers OpEx and delivers unprecedented insights into network performance, behaviors, traffic patterns, and potential trouble spots by using data science to analyze large amounts of rich metadata collected by Juniper Access Points.

### JUNIPER ACCESS POINT FAMILY

The Juniper enterprise-grade access point family consists of:

- AP43, AP12, AP32, AP33, and AP63 Series, which support 802.11ax (Wi-Fi 6), Bluetooth LE, and IoT
- AP21, AP41, and AP61 Series which support 802.11ac Wave 2, Bluetooth LE, and IoT
- BT11, which supports Bluetooth LE

These access points are all built on a real-time microservices platform and are managed by the Juniper Mist cloud.



The table below compares the supported major functions of the Juniper Wi-Fi 6 access points to help in selecting the most appropriate model(s).

	AP43	AP63	AP33	AP32	AP12
<b>Deployment</b>	Indoor	Outdoor	Indoor	Indoor	Indoor Wall Plate
<b>Wi-Fi Standard</b>	802.11ax (Wi-Fi 6) 4x4 : 4SS	802.11ax (Wi-Fi 6) 4x4 : 4SS	802.11ax (Wi-Fi 6) 5GHz: 4x4 : 4SS 2.4GHz: 2x2 :2SS	802.11ax (Wi-Fi 6) 5GHz: 4x4 : 4SS 2.4GHz: 2x2 : 2SS	802.11ax (Wi-Fi 6) 2x2 : 2SS
<b>Wi-Fi Tri-Radio</b>	✓	✓	✓	✓	✓
<b>Antenna Options</b>	Internal/ External	Internal/ External	Internal	Internal/ External	Internal
<b>Virtual BLE</b>	✓	✓	✓	—	—
<b>IoT Interface</b>	✓	—	—	—	—
<b>IoT Sensors</b>	Humidity, Pressure, Temperature	—	—	—	—
<b>Warranty</b>	Limited Lifetime	One Year	Limited Lifetime	Limited Lifetime	Limited Lifetime

### SERVICES AVAILABLE FOR THE JUNIPER AP43

#### WI-FI CLOUD SERVICES

##### Juniper Mist Wi-Fi Assurance



- For IT and NOC Teams
- Predictable and Measurable Wi-Fi
  - Service-Level Expectations (SLEs) Support
  - WxLAN Policy Fabric for Role-Based Access
  - Customizable Guest Wi-Fi Portal
  - Radio Resource Management (RRM) Driven by AI

##### Marvis Virtual Assistant



- For IT Helpdesk Teams
- AI-Powered Virtual Network Assistant
  - Natural Language Processing Interface
  - Anomaly Detection
  - Client SLE Visibility and Enforcement
  - Data Science-Driven Root-Cause Analysis

#### BLUETOOTH LE CLOUD SERVICES

##### Juniper Mist Mobile Engagement



- For Digital Experience Teams
- Accurate (1-3m) Turn-by-Turn Navigation
  - Sensor Fusion with Dead Reckoning
  - Unsupervised Machine Learning
  - Virtual Beacons with Custom Notifications
  - Mobile SDK for iOS and Android

##### Juniper Mist Asset Visibility



- For Process & Resource Improvement Teams
- Identification of Assets by Name and Location Visibility
  - Zonal/Room Accuracy for Third-Party Tags
  - Historical Analytics for Asset Tags
  - Telemetry for Asset Tags (temperature, motion, and other data)
  - APIs for Viewing Assets and Analytics

#### ANALYTICS CLOUD SERVICES

##### Juniper Mist Premium Analytics



- For Network Teams
- Baseline Analytics Features Come Included with Wi-Fi Assurance, Mobile Engagement, and Asset Visibility Subscriptions
  - End-to-End Network Visibility
  - Orchestrated Networking and Application Performance Queries
  - Simplified Network Transparency

For Business Teams

- Baseline Analytics Features Come Included with Wi-Fi Assurance, Mobile Engagement, and Asset Visibility Subscriptions
- Customer Segmentation and Reporting Based on Visitor Telemetry
- Customized\* Dwell and Third-Party Reporting for Traffic and Trend Analysis
- Correlation of Customer-Guest Traffic and Trend Analysis

\*Juniper Mist Premium Analytics service subscription is needed

**ACCESS POINT FEATURES**

**High-Performance Wi-Fi**

The AP43 Series comprises tri-radio 4x4 802.11ax access points with maximum data rates of 2,400 Mbps in the 5GHz band and 1,148 Mbps in the 2.4GHz band. The third radio functions as a network, location, and security sensor, a synthetic test client radio, as well as a spectrum monitor.

With 802.11ax Orthogonal Frequency Division Multiple Access (OFDMA), Multi-User Multiple Input Multiple Output (MU-MIMO), and BSS Coloring technologies, the AP43 Series offers performance at unprecedented levels to support new bandwidth-hungry applications and soaring device densities.

**AI for AX**

With the new features that 802.11ax (Wi-Fi 6) introduces to boost performance and efficiency, configuring and operating an access point has grown far more complex. Juniper automates and optimizes these features with AI for AX capabilities to optimize BSS Coloring, improve data transmission scheduling within OFDMA and MU-MIMO, and assign clients to the best radio to boost the overall performance of the network.

**Greater Spectral Efficiency**

OFDMA improves spectral efficiency so that an increasing density of devices can be supported on the network. Density has become an issue with the rapid growth of IoT devices, which often utilize smaller data packets than mobile devices and hence increase the burden and contention on the network. Additionally, BSS Coloring improves the coexistence of overlapping BSSs and allows spatial reuse within a given channel by reducing packet collisions.

**Automatic RF Optimization**

Radio Resource Management automates dynamic channel and power assignment, taking Wi-Fi and external sources of interference into account with a dedicated sensor radio. The AI engine continuously monitors coverage and capacity SLE metrics to learn and optimize the RF environment. A learning algorithm uses hysteresis on a 24-hour window to conduct a sitewide rebalancing for optimal channel and power assignment.

**Unprecedented Insight and Action**

A dedicated, dual-band third radio collects data for Juniper’s patent-pending Proactive Analytics and Correlation Engine (PACE), which uses machine learning to analyze user experiences, correlate problems, and automatically detect their root causes. These metrics are used to monitor SLEs and provide proactive recommendations to ensure problems don’t occur (or are fixed as quickly as possible when they do). This radio also functions as a synthetic test client to proactively detect and mitigate network anomalies.

**Improved Battery Efficiency for IoT Devices**

By incorporating the 802.11ax target wake time (TWT) capability and Bluetooth 5.0, AP43 access points help extend the battery life of IoT devices, particularly as additional ones join the network.

**Dynamic Debugging**

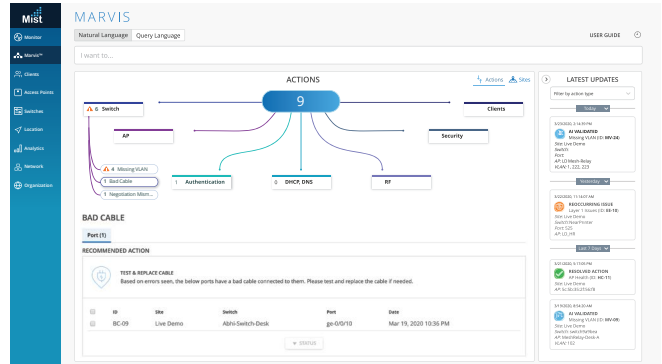
Constantly monitor services running on the AP43 and send alerts whenever a service behaves abnormally. Dynamic debugging relieves IT of having to worry about an AP going offline or any services running on it becoming unavailable.

**Dynamic Packet Capture**

The Juniper Mist platform automatically captures packets and streams them to the cloud when major issues are detected. This saves IT time and effort and eliminates the need for truck rolls with sniffers to reproduce and capture data for troubleshooting.

**Marvis Virtual Network Assistant**

Marvis is a natural language processing (NLP)-based assistant with a Conversational Interface to understand user intent and goals, simplifying troubleshooting and the collection of network insights. It uses AI and data science to proactively identify issues, determine the root causes and scope of impact, and gain insights into your network and user experiences. It eliminates the need to manually hunt through endless dashboards and CLI commands.



**Effortless, Cloud-Based Setup and Updates**

The AP43 automatically connects to the Juniper Mist cloud, downloads its configuration, and joins the appropriate network. Firmware updates are retrieved and installed automatically, ensuring that the network is always up to date with new features, bug fixes, and security updates.

**Integrated IoT Sensors and Interface Port**

Juniper has integrated pressure, temperature and humidity sensors into the access point to enable new applications and increase environmental context. This can be leveraged to get better visibility into your deployments and further improve location context.

Juniper also continues its industry innovation with its unique IoT port that has analog and digital interfaces to directly connect IoT devices that lack network interfaces and thus allow customers to leverage our complete APIs to interact and integrate these things into their business applications and workflows.

**Premium Analytics**

Our Wireless Assurance, User Engagement, and Asset Visibility services include a base analytics capability for analyzing up to 30 days of data, which enables you to simplify the process of extracting network insights across your enterprise. If you require dynamic insights like motion paths\* and other third-party\* data and would like the option of customized reports, the Juniper Mist Premium Analytics service is available as an additional subscription.

**High-Accuracy Indoor Location**

The AP43 has a 16-element virtual Bluetooth LE (vBLE) antenna array controlled from the Juniper Mist cloud. Passive antennas enhance the power of a single transmitter and produce directional beams (or can be combined to act as an omnidirectional radio) to accurately detect distance and location with 1-3 meter accuracy. With Juniper’s patented vBLE technology, you can deploy an unlimited number of virtual beacons in your physical environment with no need to install battery-powered physical BLE beacons. Support for Bluetooth 5.0 boosts IoT device range and battery life.



\*Juniper Mist Premium Analytics service subscription is needed

SPECIFICATIONS	
Wi-Fi Standard	802.11ax (Wi-Fi 6), including support for OFDMA, 1024-QAM, MU-MIMO, Target Wake Time (TWT), Spatial Frequency Reuse (BSS Coloring). Backwards compatibility with 802.11a/b/g/n/ac
Combined Highest Supported Data Rates	Dual-Band: 3.5 Gbps Dual 5GHz (internal antenna model): 4.8Gbps
2.4GHz	4x4 : 4 802.11ax up to 1,148 Mbps data rate
5GHz	4x4 : 4 802.11ax up to 2,400 Mbps data rate
MIMO Operation	Four spatial stream SU-MIMO for up to 2,400 Mbps wireless data rate to individual 4x4 HE80 Four spatial stream MU-MIMO for up to 2,400 Mbps wireless data rate to up to four MU-MIMO capable client devices simultaneously
Dedicated Third Radio	2.4GHz and 5GHz, dual-band WIDS/WIPS, spectrum analysis, synthetic client and location analytics radio
Internal Antennas (AP43)	Four 2.4GHz omnidirectional antennas with 4 dBi peak gain Four 5GHz omnidirectional antennas with 6 dBi peak gain
Bluetooth 5.0	vBLE 16-element Directional Antenna Array + Omni Bluetooth Antenna
Beam Forming	Transmit Beamforming and Maximal Ratio Combining
Power Options	802.3at PoE, 802.3bt PoE, 12V/3A DC power supply
Power Adaptor	100-240VAC, 50-60 Hz, input. 12V/3A DC output
Dimensions	222 x 222 x 53 mm (8.74 x 8.74 x 2.09 in)
Weight	1.39 kg (3.06 lbs) excluding mount and accessories
Shipping Box	Size (L x W x H): 279 x 298 x 76 mm (11.0 x 11.8 x 3.0 in) Weight: 2.18 kg (4.2 lbs)
Operating Temperature	Internal antenna: 0° to 40° C External antenna: -20° to 50° C
Operating Humidity	10% to 90% maximum relative humidity, non-condensing
Operating Altitude	3,048m (10,000 ft)

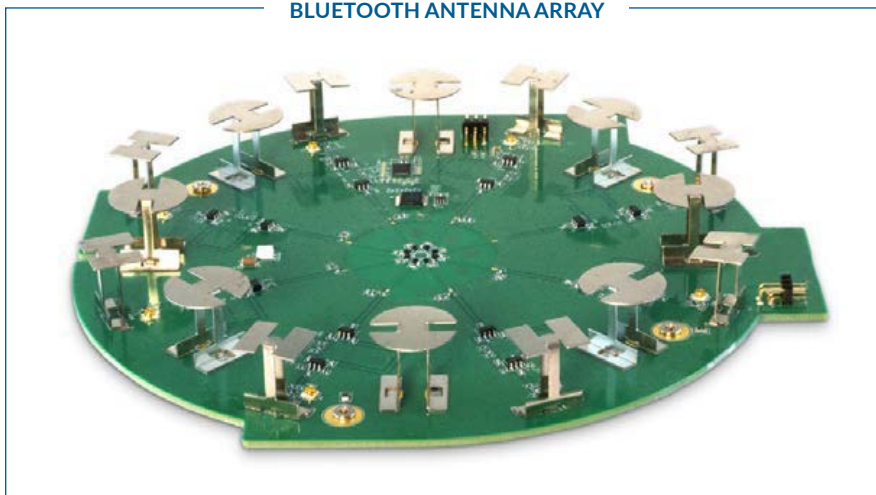
ORDERING INFORMATION	
US/FCC Domain	AP43-US (Internal Antenna) AP43E-US (External Antenna)
Rest of the World	AP43-WW (Internal Antenna) AP43E-WW (External Antenna)

I/O AND INDICATORS	
IoT Sensors	Humidity Pressure Temperature
IoT Port	8-pin interface for digital I/O and analog input (0 to +5V)
USB	USB 2.0 support interface
12VDC	Input for optional DC power supply
Eth0	100/1000Base-T, 2.5GBase-T (802.3bz); RJ45; PoE PD
Eth1	10/100/1000Base-T; RJ45; optional PoE PSE mode (requires 802.3bt on Eth0)
External Antennas (AP43E)	Six RP-SMA Male connectors (four dual-band for client radios; two dual-band for third radio)
Reset	Reset to the factory default settings
Indicators	One multicolor status LED

MOUNTING BRACKETS	
APBR-U*	Universal Bracket
APBR-T58	3/8" Threaded Rod
APBR-M16	16mm Threaded Rod (M16-2)
APBR-ADP-CR9	9/16" T-Rail
APBR-ADP-RT15	15/16" T-Rail
APBR-ADP-WS15	1 1/2" T-Rail
APBR-ADP-T12	1/2" Threaded Rod

\*The AP package includes one Universal Bracket. APBR-U is available separately as an accessory.

### BLUETOOTH ANTENNA ARRAY



### PATENTED vBLE TECHNOLOGY

In addition to the industry-leading Wi-Fi technology at the heart of the AP43, our second-generation, patented, dynamic 16-element virtual Bluetooth LE (vBLE) antenna array combines with machine learning to eliminate the need for battery-powered beacons. This maximizes scalability and optimizes the investment cost of deploying location-based services. vBLE enables businesses to provide rich location-based experiences that are engaging, accurate, real-time, and scalable.