

ENABLING THE AI-DRIVEN ENTERPRISE SOLUTION BRIEF

Juniper is using Mist AI to revolutionize enterprise networking. By delivering unprecedented automation and insights, the Juniper Mist AI Platform saves time and money, maximizes IT productivity, and delivers the best networking experience to any digital user.

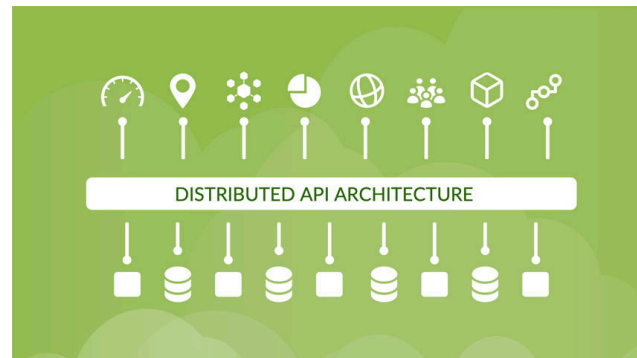
Overview

Juniper has brought true innovation to the networking space with the world's first AI-driven wired and wireless network.

The [Juniper Mist™ AI Platform](#) makes networking predictable, reliable and measurable with unprecedented visibility into the user experience. Time-consuming manual IT tasks are replaced with AI-driven proactive automation and self-healing capabilities, lowering networking operational costs and saving substantial time and money.

Juniper also brings enterprise-grade Wi-Fi, Bluetooth® 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 the patented [virtual BLE \(vBLE\)](#) technology, no battery beacons or manual calibration are required. Juniper also extends AI operational efficiency and insights to the [wired](#) side of the business, including campus fabrics and SD-WANs.

All operations are managed via the Juniper Mist open and programmable microservices cloud architecture. This delivers maximum scalability and performance while also bringing DevOps agility to wired, [wireless](#), and [WAN](#) networking and location services.



The Juniper Mist Cloud

Microservices bring unparalleled agility, scale, resiliency

Juniper makes it easy to add or remove new features by leveraging a microservices cloud architecture driven by Mist AI. New enhancements and bug fixes are delivered almost weekly without network disruption. Services scale up or down elastically when they're needed, eliminating the cost and complexity of monolithic hardware. Plus, the Juniper Mist platform is inherently resilient as the failure of one service does not impact others.

AI engine lowers OpEx, delivers unprecedented insight

The Juniper Mist cloud uses AI and data science to analyze large amounts of rich metadata collected from [Juniper Access Points](#), [EX Series Switches](#), and [SSR Series Routers](#) to provide actionable insight. For example:

- Supervised machine learning correlates events for rapid root cause identification.
- Time-series anomaly detection identifies negative trends and determines the magnitude of their impact.
- AI-driven Radio Resource Management (RRM) optimizes the RF settings in real-time based on changing conditions.
- Natural Language Processing (NLP) is used for making complex queries simple and fast.
- Unsupervised machine learning is used with Juniper's vBLE technology to accurately locate users and devices.

Networking-as-a-Service

The Juniper Mist cloud enables networking and location services to be consumed in a scalable and cost-effective manner. Customers select the specific subscription services that are best for their environment, and can easily add/remove cloud services as business requirements change. No additional hardware is required.

Fully programmable cloud

The Juniper Mist platform is 100% programmable, using open APIs, for full automation and seamless integration with complementary products including our AI for IT partners across LAN, WAN, security, engagement and asset location.

Accelerate Your Digital Transformation with Network and Business Insights

[Juniper Mist Wired Assurance](#), [Wireless Assurance](#), [User Engagement](#), and [Asset Visibility](#) services include a base analytics capability for analyzing up to 30 days of data, simplifying the process of extracting network insights from data and analytics across your enterprise—allowing you to properly align support resources or introduce enhanced premium services. For enterprises needing deeper flexibility to extend the data timeline beyond 30 days or access other third-party solutions with customizable reporting for better shopper and guest behavior understanding, [Juniper Mist Premium Analytics](#) Subscription services is available. Learn more about Juniper Mist Premium Analytics Subscription [here](#).

AI-Driven Campus Fabric Management

Juniper's AI-Driven Enterprise portfolio enables customers to scale and simplify the deployment of their campus wired and wireless networks while bringing greater insight and automation to network operators. An enhancement to the Juniper Mist Cloud and AI engine, EVPN-VXLAN campus fabric management is part of Wired Assurance, and it expands on Juniper's unique automation, AIOps, and cloud capabilities to streamline IT operations, lower IT costs, and deliver unparalleled agility and scale. It helps IT teams:

- Simplify device onboarding using a QR code
- Provide cloud-based EVPN-VXLAN configuration using intent and choice of topology
- Verify, apply, and confirm intent once fabric is provisioned

IT teams using AI-driven campus fabric management can easily onboard, deploy, and manage campus fabrics at scale from the Juniper Mist cloud.

AI-driven Wi-Fi

Juniper Mist Wi-Fi Assurance

Juniper makes Wi-Fi predictable, reliable, and measurable. Automate operations, save time and money, and get unprecedented visibility into the Wi-Fi user experience. Secure your network with 802.1X, IPsec, rogue AP detection, and more.

- **Customizable Wi-Fi Service Levels** Set, monitor, and enforce Service Level Expectations (SLE) for key Wi-Fi performance metrics.
- **Root Cause Identification** in One Click Proactively identify and fix the root causes of problems using Juniper's Proactive Analytics and Correlation Engine (PACE).
- **Guest Wi-Fi** The industry's most scalable guest access solution with options including, multiple language support, customizable branding, social login, and external portal/ AAA/ RADIUS integration.
- **AI-Driven Radio Resource Management** Learn and better optimize radio settings to assure performance, while also instantaneously adapting to intermittent outside interference.
- **Real-time User State Information** Dynamically capture packets the moment an event occurs; Rewind to see any user's state at any point in time.
- **Simple Resource Assignment and QoS** with WxLAN, assign and prioritize network resources to Wi-Fi users with the click of a mouse or via pre-assigned policies.

Access Points



Access Points

Best Wi-Fi and Bluetooth LE performance

In addition to delivering the best 802.11ax (Wi-Fi 6) and 802.11ac Wi-Fi range and performance, Juniper APs incorporate a patented dynamic vBLE 16 element antenna array to deliver the industry's most accurate and scalable location services.

Data collection, analysis and enforcement

Juniper APs collect data and enforce policies in conjunction with the Juniper Mist cloud, which is critical when doing

analytics, machine learning, location services, and event correlation. For enhanced visibility, several models incorporate IoT sensors and a third radio for business process automation, constant monitoring and intelligent packet capture to speed up troubleshooting.

Single, enterprise-grade platform for Wi-Fi, Bluetooth LE, and IoT

For network convergence, Juniper APs incorporate a port for direct, and programmable, integration to the analog and digital interfaces of IoT devices.

	AP45	AP34	AP43	AP63	AP33	AP24	AP12
Deployment	Indoor	Indoor	Indoor	Outdoor	Indoor	Indoor	Indoor Wall Plate/ Desk Mount
Wi-Fi Standard	Wi-Fi 6E 802.11ax (Wi-Fi 6) 4x4 : 4SS	Wi-Fi 6E 802.11ax (Wi-Fi 6) 2x2 : 2SS	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	Wi-Fi 6E 802.11ax (WiFi 6) 2x2 : 2SS 2.4/6 + 5 GHz	802.11ax (Wi-Fi 6) 2x2 : 2SS
Wi-Fi Tri-Radios	Dedicated fourth radio	Dedicated fourth radio	Dedicated fourth radio	Dedicated fourth radio	Dedicated fourth radio	Dedicated third radio	Dedicated fourth radio
Antenna Options	Internal/External	Internal	Internal/External	Internal/External	Internal	Internal	Internal
Virtual BLE	✓	–	✓	✓	✓	✓	–
IoT Interface	–	–	✓	–	–	✓	–
IoT Sensors	Temperature, Accelerometer	Temperature	Humidity, Pressure, Temperature	–	–	Temperature, Accelerometer	–
Warranty	Limited Lifetime	Limited Lifetime	Limited Lifetime	One Year	Limited Lifetime	Limited Lifetime	Limited Lifetime
Frequencies Supported	5GHz 6GHz	5GHz 6GHz	5GHz	5GHz	5GHz	2.4GHz 5GHz 6GHz	5GHz

AI-driven Wired Access

Juniper Mist Wired Assurance

Deliver better experiences for connected devices with AI- powered automation and service levels. Wired Assurance leverages rich Junos telemetry from EX Series Switches to enable simpler operations, shorter mean time to repair and improved visibility into end-user experiences of wired devices.

- **Wired Service Levels** Enforce SLAs of pre-/post- connection performance metrics such as throughput, successful connects and switch health.
- **Root Cause Identification in One Click** Proactively identify and fix the root causes of problems using Juniper’s Proactive Analytics and Correlation Engine (PACE).

Juniper Networks EX Series Switches

Meet your digital transformation needs with Juniper EX Series Switches that address enterprise demands for a full end-to-end software-defined enterprise.

EX2300	EX3400	EX4100/EX4100-F	EX4300	EX4400/EX4400-24X	EX4600/EX4650	*QFX51xx	EX9200	EX9250
Access or MultiGig Access	Access	Access	MultiGig Access and Aggregation	MultiGig Access and Aggregation	Core and Aggregation	Core and Aggregation	Core and Aggregation	Core and Aggregation
48 x 1GbE or 16 x mGig + 32 x 1GbE	48 x 1GbE	EX4100: 24 x 1GbE or 48 x 1GbE EX4100-F: 12 x 1GbE or 24 x 1GbE or 48 x 1GbE	48 x 1GbE or 24 x mGig + 24 x 1GbE	EX4400: 12x10GbE + 36x1GbE/24 or 48 x 1GbE/ 12x mGig + 36 x 1/2.5GbE / 24 xmGig EX4400-24X: 24 x 1/10GbE	EX4600: 24 x 10GbE and 4 x 40GbE EX4650: 48 x 10/25GbE	QFX5110: 48x1/10GbE 32x40GbE QFX5120: 48 x 10/25GbE 32x100GbE 48 x 10GT	48 x 1GbE	48 x 1GbE
4 x 10GbE or 6 x 10GbE uplinks	4 x 1/10GbE or 2 x 40GbE uplinks	EX4100: 4 x 1/10GbE or 4 x 10/25GbE uplinks EX4100-F: 100M/1/2.5/5/10GbE 4 x 1/10GbE uplinks	10GbE/40GbE/ 100GbE uplinks	EX4400: 4 x 25GbE or 4 x 10GbE uplinks EX4400-24X: 4 x 25G or 4 x 10G or 1 x 100G uplinks	EX4600: 8 x 10GbE or 4 x 40GbE uplinks EX4650: 8 x 40/100GbE uplinks	QFX5110 uplinks: 4x40/100GbE QFX5120 uplinks: 8 x 40/100GbE	N/A	N/A
PoE+	PoE+	PoE+ (802.3at) PoE++ (802.3bt)	PoE+ (802.3at) PoE++ (802.3bt)	PoE+ (802.3at) PoE++ (802.3bt)	N/A for PoE	N/A for PoE	N/A for PoE	N/A for PoE

Juniper SD-WAN, Driven by Mist AI

Juniper Session Smart Router

The Session Smart™ Router powers Juniper’s SD-WAN solution to connect users with exceptional experiences and meet stringent performance, security, availability, and scalability requirements.

Built on an application-aware and zero-trust secure network fabric, the Session Smart Router overcomes inherent inefficiencies of conventional routing and SD-WAN solutions with a tunnel-free architecture. The Session Smart Router delivers improved performance, fast deployments, and operational efficiency.

A Session Smart Networking fabric scales rapidly to thousands of sites and provides:

- **Improved application performance** – With the Session Smart Router, organizations gain highly responsive application performance. The Session Smart Router uses a tunnel-free

- **AI-Driven Switch Insight** Get switch insights down to the port level for detailed views of CPU, memory utilization, bytes transferred, traffic utilization and power draw.
- **Simplified Onboarding** Claim Juniper EX switches with one activation code for true plug-and-play capabilities. Use templates and profiles to streamline for auto-provisioning and switch configuration.
- **Simplified campus fabric deployments** with guided configuration wizard. Options to deploy campus fabric architectures including collapsed core with ESI-LAG, Link Aggregation Group, EVPN core/distribution with ESI-LAG, Link Aggregation Group or IP Clos with L3 at the Edge.

architecture that reduces bandwidth usage by 30 to 50 percent, reducing network congestion and enabling instant failover for voice, video, and business- critical applications. It creates an application-aware fabric that supports load balancing and traffic steering based on session policies and network status.

- **Zero Trust security** – The Session Smart Router has inherent zero trust access control, directionality, and segmentation policy, all powered by secure vector routing. IDS/IPS and URL filtering provide application and content security.
- **Deployment and management flexibility** – The Session Smart Router software can run on Juniper SSR Series appliances (Table 1), certified customer premises equipment (CPE), data center network servers, or Juniper NFX Series Network Services Platforms. It is centrally manageable via the Juniper Mist Cloud.

Table 1: SSR Appliances and Suggested Locations

Appliance	Suggested Location	Encrypted Throughput	Description
SSR120	Small Branch	1.5 Gbps	SSR 100 Line of Routers
SSR130	Medium Branch	2 Gbps (Line rate on ports)	
SSR1200	Large Branch or Small Data Center / Campus	10 Gbps	SSR 1000 Line of Routers
SSR1300	Medium Data Center / Campus	20 Gbps (Max. throughput on NIC)	
SSR1400	Large Data Center / Campus	40 Gbps	
SSR1500	Extra Large Data Center / Campus	50 Gbps (Max. throughput on NIC)	

Juniper Mist WAN Assurance

The Juniper Mist WAN Assurance cloud service simplifies WAN deployment and operations, improves visibility into end user experiences in branch and remote locations, and shortens the Mean Time to Repair (MTTR) for SD-WAN issues.

WAN Assurance leverages data and intelligence from Mist AI, Session Smart Routers, and SRX branch firewalls, providing:

- **Improved WAN User Experiences** – Monitor and enforce SLEs using key metrics on application response times, WAN link status, gateway health, and other network conditions. Insights into how these metrics impact end-user experiences are critical to proactively identifying the root cause of service degradation.
- **AI-driven Application Insights** – Mist AI-powered intelligence assesses the impact of network latency, jitter, packet loss, and other network metrics on end user experiences by application. Get insights into gateway health, including CPU and memory consumption, and link utilization levels.
- **Proactive anomaly detection** – When combined with Marvis Virtual Network Assistant (VNA), WAN Assurance proactively detects WAN gateway anomalies to identify and resolve application issues before they impact users.

Premium Cloud Services

Juniper Mist Access Assurance

Revolutionizing the experience-first network for user and device security, Access Assurance is a cloud-based network access control solution simplifying on-boarding of clients with easy policy creation and enforcement, and removing the struggles of design, deployment, and Day 0/1/2 operations.

- **Zero trust, Experience first** – Access Assurance is centered around secure onboarding of guest, IoT, BYOD and corporate managed devices, focusing on the end-to-end user experience and offboarding of users/endpoints.

- **Network Policy Enforcement** – Based on user and device identity, Access Assurance can instruct the network to assign users to specific network segments (e.g. VLANs), as well as enforce network policies by assigning user roles.
- **Cloud-native** – Industry's only cloud-native, micro- services, API-first network access platform. It removes all the infrastructure requirements needed by all other (zero trust network access) ZTNA vendors and unify the client experience.
- **Unified management** – Network access insights are ingested into the Juniper Mist Cloud, bringing greater insight and automation to network operators. This creates a single view to observe all User experience data.

Marvis Virtual Network Assistant

Meet Marvis—the first interactive, virtual network assistant for The Self-Driving Network™. It helps IT teams get to answers in real-time by streamlining operations and simplifying troubleshooting, while boosting user experiences.

- **A Conversational Interface** Marvis uses Natural Language Processing (NLP) with Natural Language Understanding and Knowledge Graphs to understand user intent and goals. It contextualizes the inquiry and returns specific results, and can even take actions based on user feedback.
- **Marvis Actions for The Self Driving Network** Marvis Actions leverages the Mist AI engine to identify the root cause of issues across the IT domains (WLAN, LAN, WAN, Security) and automatically fixes (self-driving) or recommends actions (driver-assist) with high efficacy.
- **Anomaly Detection** Marvis adds anomaly detection to the SLE framework so that administrators can rapidly and proactively identify service impacting events that assure rapid determination and resolution of the root cause of issues.
- **Correlate Data to Understand Scope** Marvis correlates information across a large knowledge base to determine the scope and magnitude of a problem.
- **Accurate Root Cause Analysis** Bayesian Inference, a part of our data science toolbox, is used to identify causes with the highest probability of association to the problem occurring on the network.

Juniper Mist Premium Analytics

- **End-to-end Network Observability** Get insights across your entire network—wired, wireless, and WAN—based on any combination of Juniper Mist AI-driven data sets and, optionally, third-party data sets. Use these insights to identify trends, optimize IT operations and end-user/client

experiences, plan your IT infrastructure, and manage resources.

- **Line-of-Business Insights** Analyze long-term trends, visitor behavior, and zone movement in a range of vertical markets, including retail, healthcare, education, and hospitality. Improve facilities management with insights into occupancy and asset movements.
- **Up to 13 Months (or More) of Data Storage** Perform long-term historical time series analyses of network, app, visitor, and employee behavior to enhance business decision-making.
- **Orchestrated Networking and Application Performance Queries** Correlate and analyze data across the Juniper Mist cloud architecture and third-party networking devices for optimized application delivery. Generate customized queries to monitor WAN performance from campus to branch.
- **Customer Segmentation** Use visitor telemetry to gain insights into customer/workforce traffic patterns and visitor traffic flow for resource planning, customized notification services, or cross-sell service delivery. Segment visitor traffic patterns with motion paths (traffic flow between departments) dynamically or historically.

Bluetooth LE Cloud Services

Juniper Mist User Engagement

Juniper flipped the indoor location model on its head. With patented virtual Bluetooth LE (vBLE), indoor location is finally easy to deploy and scale, with unprecedented accuracy and agility.

- **Real-time Wayfinding** Help employees, guests, and customers get to where they need to be with turn-by-turn directions. Enable wayfinding with accuracy of up to 1 meter (3.3 feet) with sub-second latency.
- **Real-time Proximity Notification and Alerts** Greet patients, clients or customers as they arrive onsite. Create push notifications anywhere with unlimited virtual beacons. Deliver

contextually relevant messages anywhere for a personalized mobile experience.

- **SDK for Mobile App Integration** Juniper offers a mobile SDK that enables you to integrate your mobile application wayfinding and notifications with Juniper's virtual Bluetooth LE infrastructure.

Juniper Mist Asset Visibility

With Juniper's patented virtual Bluetooth LE technology, the same infrastructure for engaging with mobile users can be used for asset visibility.

- **Get Full Visibility Into People and Things Using Standards-based Bluetooth LE Services** Easily locate key resources, like nurses, security guards, and sales associates. Track IV pumps, forklifts, and high value assets with Bluetooth LE tags.
- **Asset Identity** Assign names to asset tags or BLE-enabled mobile/IoT devices to locate these assets on your venue map or integrate location with business applications.
- **Detailed Analytics** Monitor visits and dwell times, with detailed drill down into zone traffic patterns and congestion points.
- **Asset Location and Analytics Powered by APIs** A complete and open set of APIs enable you to integrate your asset tags as well as asset location and analytics applications with the Juniper virtual Bluetooth LE infrastructure.

About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our [solutions](#) deliver industry-leading insight, [automation](#), [security](#) and [AI](#) to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability and equality.

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