AI-DRIVEN ENTERPRISE FOR RETAIL

Experience-First Networking for Retailers with Managed Service and Self-Managed Options

Challenge

Retailers face many revenue-impacting priorities as they undergo continued digital transformation. They need to improve performance, reduce costs, simplify operations, and improve security. They must deliver optimal personalized experiences for customers, as well as their own store employees and IT staff. This level of support frequently spans many stores, if not dozens or thousands.

The complexity of operating LAN and WAN networks—from access and policy to ensuring uptime and security in distributed locations—places a heavy burden on IT staff, yet it can be alleviated.

Solution

The AI-driven Enterprise provides retail businesses with the following:

- Industry-leading wireless, wired and WAN solutions for stores or warehouses
- AI-driven insights, anomaly detection and automated troubleshooting with Service Level Experiences (SLEs)
- Rapid store deployments with cloud-based ZTP
- Zero trust networking in the WAN
- An extension of your team when deployed as a managed service
- Industry-leading LAN features such as Indoor Location Services

Benefits

An AI-driven Enterprise ensures a better retail experience (for customers and associates) with proactive remediation:

- Optimize network performance based on insights from client-to-cloud telemetry (and AIOps actions) for applications, devices and bandwidth
- Cloud-hosted operations ensure seamless availability with no downtime
- Location services further optimize the in-store shopping experience with user engagement and asset tracking
- Superior user experiences and assurance across the wireless, wired and WAN domains
- Accelerated deployments for all access points, switches and routing nodes

Solution Brief

How Does an AI-driven Enterprise Serve Retail?

Uptime and security are critical in retail. An AI-driven Enterprise removes the pressures of maintaining LAN and WAN networks, and guides IT teams to the best resolutions for delivering optimal experiences. These solutions can come in different packages: a fully managed service, an internal IT strategy, or a hybrid.

Through continuous insights and recommended actions, the AI-driven Enterprise leverages the cloud and AIOps to shift the focus from managing individual elements (such as access points, switches, and WAN routers) to ensuring an ideal experience for individual users (shopper or employee) and for IT staff.

These capabilities apply equally to in-house and Managed Service Provider (MSP) implementations which can add even greater value. AI-driven support identifies problems that operators—whether in-house or third-party—may not even know exist. This leads to faster identification and resolution as well as lower cost.

Key to the AI-driven Enterprise

Juniper Networks has executed on an entirely experience-first networking vision, delivered with our AI-driven enterprise architecture. These open and programmable solutions are optimized for both end users and operators (*Figure 1*).

An AI-driven Enterprise serves retail with automation, insights and self-driving actions. Service providers and/or in-house administrators can deliver high performing, industry-recognized services across the wireless, wired and WAN domains.
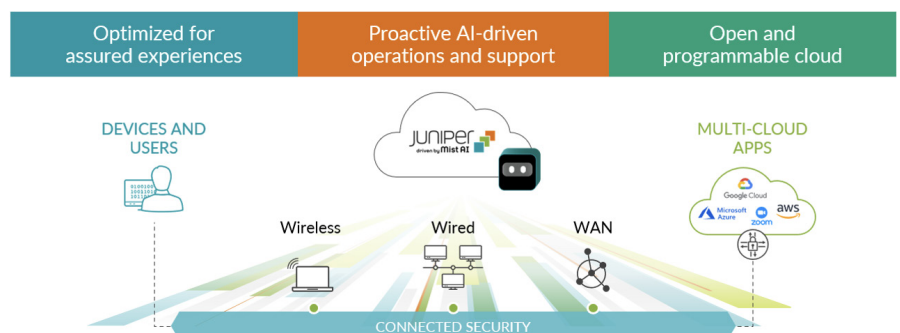

Figure 1: The AI-driven Enterprise Architecture

Better User Experiences

The AI-driven Enterprise measures user experience by reporting on characteristics such as application response time. When an employee or customer connects to a wireless network, the AI-driven Enterprise correlates events in the wireless, wired and WAN domains to ensure the right Service Level Experience (SLE) is being delivered. This provides assurances that all individuals and devices accessing the network receive the experience they expect and need.

The store brand is also elevated with Location-Based Services, which provide the ability to easily connect customer activities (and their physical presence in the store) to personalized experiences, such as tailored offers and in-store navigation. Location services also optimize warehouse operations with asset tracking. Virtual Bluetooth LE and integrated IoT provide this service without extra hardware or software.

Power of AIOps

AIOps helps deliver better experiences for IT LAN and WAN operators as they manage and operate the network with ease. If a store customer or employee falls below a service level, operators can take corrective actions and even predict if a service level may possibly fall below an acceptable level. Juniper's cloud service and AI engine derive user experiences from many disparate events. Choosing the right parameters—and allowing the AI engine to take the correct actions—enables self-driving operations.

Cloud Agility and Scale

The above benefits are made possible with an open and programmable cloud, designed for ease of management, agility and scale. In developing this cloud, Juniper uses the same techniques and tools as those employed by cloud titans. This results in the ability to continually collect—and act upon—thousands of user, device, network element, and application states and events.

Example: A Store Manager's Video Experience

To provide an example of what the AI-driven enterprise can do, let's consider a store manager's video experience and how this might be affected by events in the store's networks. We'll explore possible reasons why the manager's video call has dropped (*Figure 2*).

With end-to-end service levels, event correlation, anomaly detection, and self-driving functionality, you can easily discover the issue and fix it before the store manager even knows there is a problem. The solution knows that even though the network is up, the manager's experience is not good. It also identifies possible causes: perhaps the user is having trouble connecting to a Wi-Fi access point. Further upstream, a bad Ethernet cable on a switch or router could be causing the issue. Alternatively, a server housed in a cloud data center could be yielding low performance on a virtual machine. There could even be a problem with the store manager's Internet connection, or a node in the enterprise WAN.

In many cases, a virtual network assistant can direct the administrator to a fix, or even perform the repair. This ability to zero in on the problematic "user minute," and then correct any issues, is a game changer for IT professionals.

For an example of optimized user experiences and cross-domain problem resolution, see the **Northgate Market** case study. More case studies are listed in the *Resources* section below.
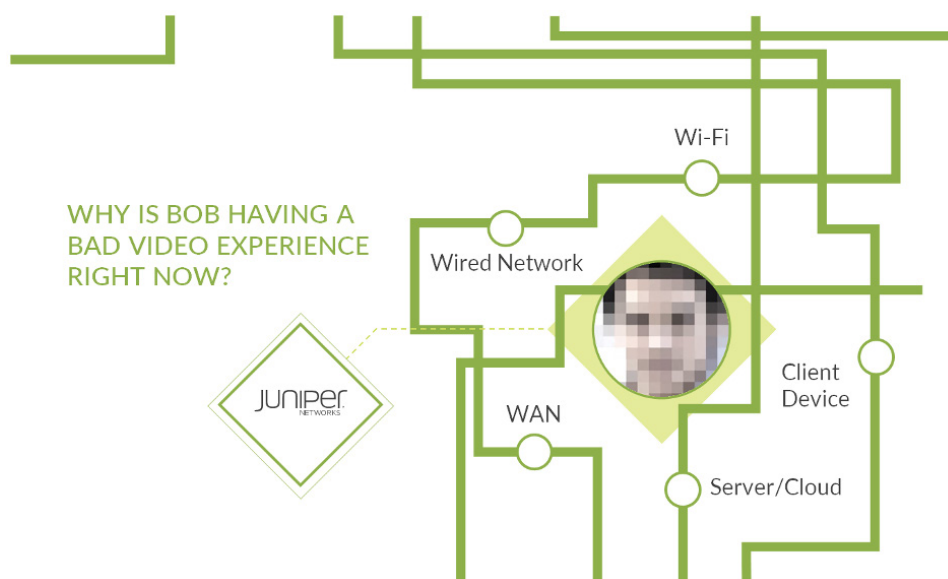

Figure 2: Many Domains Can Contribute to Poor Experience

Juniper Mist Cloud and Services

The Juniper Mist™ AI Platform makes networking in the retail space predictable, reliable and measurable. Mist offers customizable service levels for clients, applications, and networks, and makes proactive recommendations to assure the best user experiences.

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. These analytics are processed in the Mist AI Cloud, resulting in optimized user and operator experience.

The Juniper Mist Cloud uses AI and data science to analyze large amounts of rich metadata collected from Juniper Access Points, Juniper EX Series Switches and Juniper Session Smart Routers to provide actionable insights in the wireless, wired and WAN domains. Problems are resolved more quickly, with event correlation from the client to the cloud.

Components of the AI-driven Enterprise

The below diagram maps Juniper products to the domains and functions of the AI-driven Enterprise.

The following sections discuss the benefits of the portfolio.

Benefits of Microservices Architecture

It's straightforward to add or remove new features with Mist's microservices architecture. Services scale up or down elastically when they're needed, eliminating the cost and complexity of monolithic hardware. New enhancements and bug fixes are delivered continually without network disruption.

The platform is inherently resilient and secure. A failure in one service does not impact others throughout the system, and zero trust network access control (NAC) with AIOps greatly simplifies the increasingly complex problem of managing policies for the rising numbers of users, devices, applications and services in the LAN.

The architecture works across the distributed enterprise delivering AIOps to address any and all Quality of Experience (QoE) issues. Marvis, the platform's Virtual Network Assistant (VNA) and conversational AI interface, solves issues anywhere in the LAN or WAN, providing insights and remediations for devices, users and applications. This delivers maximum scalability and performance while also bringing DevOps agility to LAN and WAN networks.

Wireless Assurance

In the Wi-Fi domain, Wireless Assurance ensures optimal experiences by first providing premium analytics. The power of Juniper Access Points includes the ability to analyze large amounts of rich metadata collected from shoppers, employees and operators in the wireless and wired domains.

Wireless Assurance is based on machine learning and driven by Mist AI. This results in actionable insights powered by machine learning that correlates events with root causes and solutions.

Wireless Assurance replaces manual troubleshooting tasks with automated wireless operations to make Wi-Fi predictable, reliable, and measurable. It provides unique visibility into user service levels.
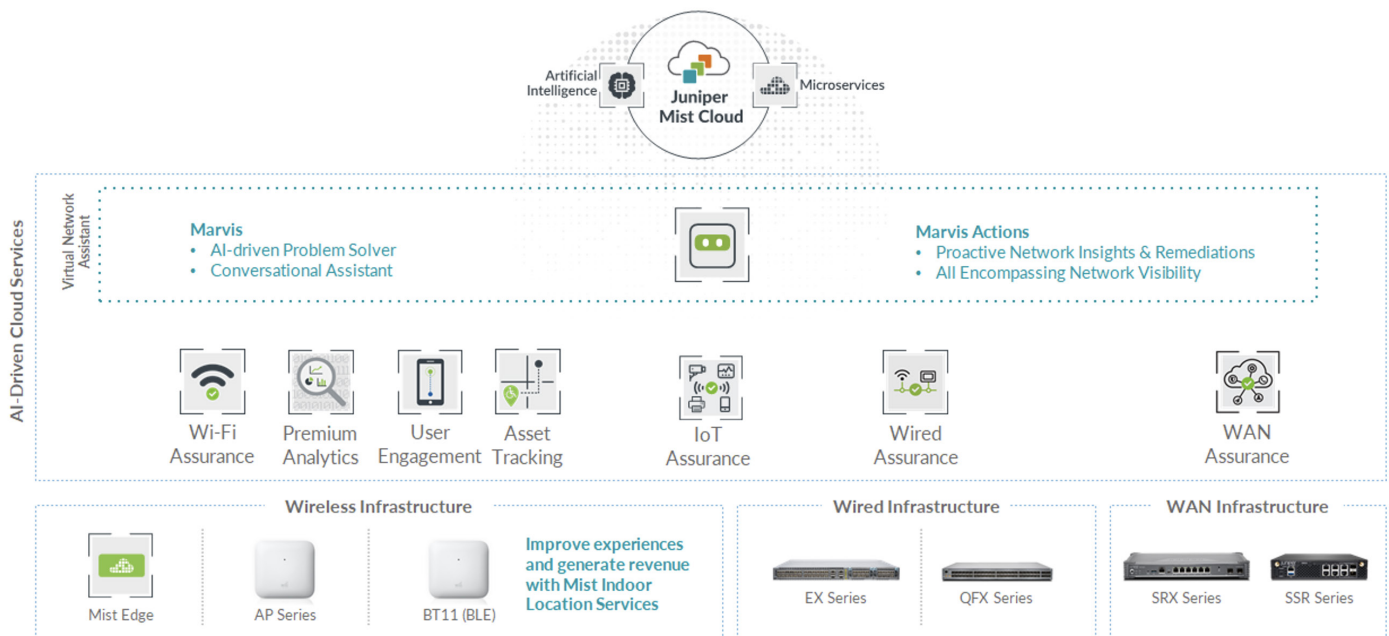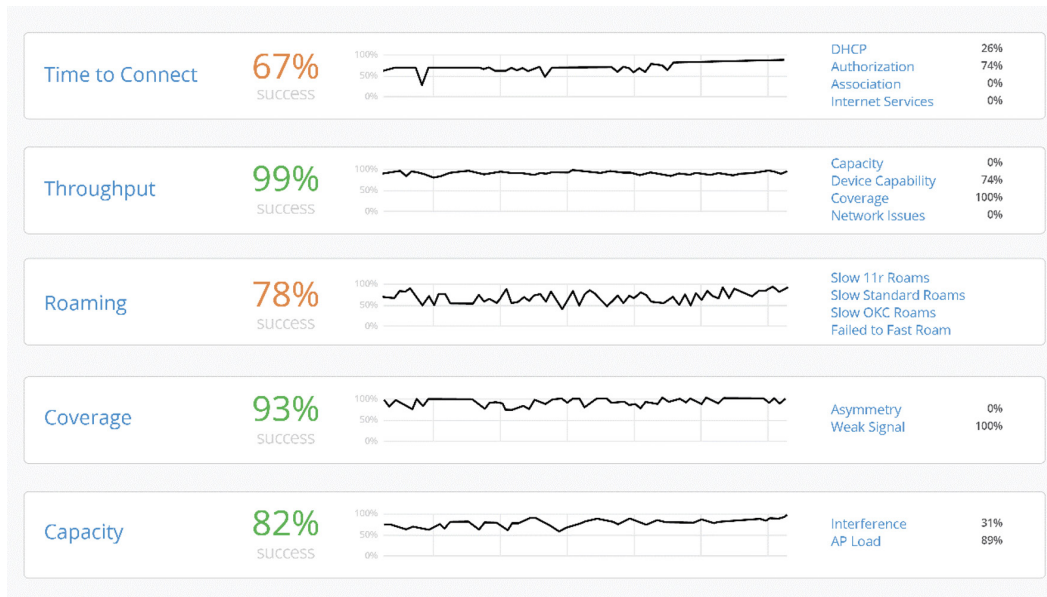

Figure 3: AI-driven Enterprise Portfolio

Figure 4: Actionable Analytics from Mist Wi-Fi Assurance

Administrators can set up and track key wireless criteria (pre- and post-connection metrics), such as time to connect, capacity, coverage, and throughput (*Figure 4*).

For more information, see the Mist Wi-Fi Assurance page and the Juniper Mist Wi-Fi Assurance Overview.

Wired Assurance

Wired Assurance delivers unparalleled user experiences in the store and the warehouse. This assurance provides simpler operations, shorter mean time to repair, and better visibility into connected devices. This brings cloud management and Mist AI to campus fabrics.

With Wired Assurance, Juniper EX and Juniper QFX Series Ethernet Switches provide rich telemetry to the Juniper Mist Cloud, which streamlines deployment and management of your campus fabric. Wired Assurance provides metrics for throughput, successful connections and switch health (*Figure 5*).

This helps IT teams reduce mean time to repair (MTTR) and deliver a new generation of experience-first networking.

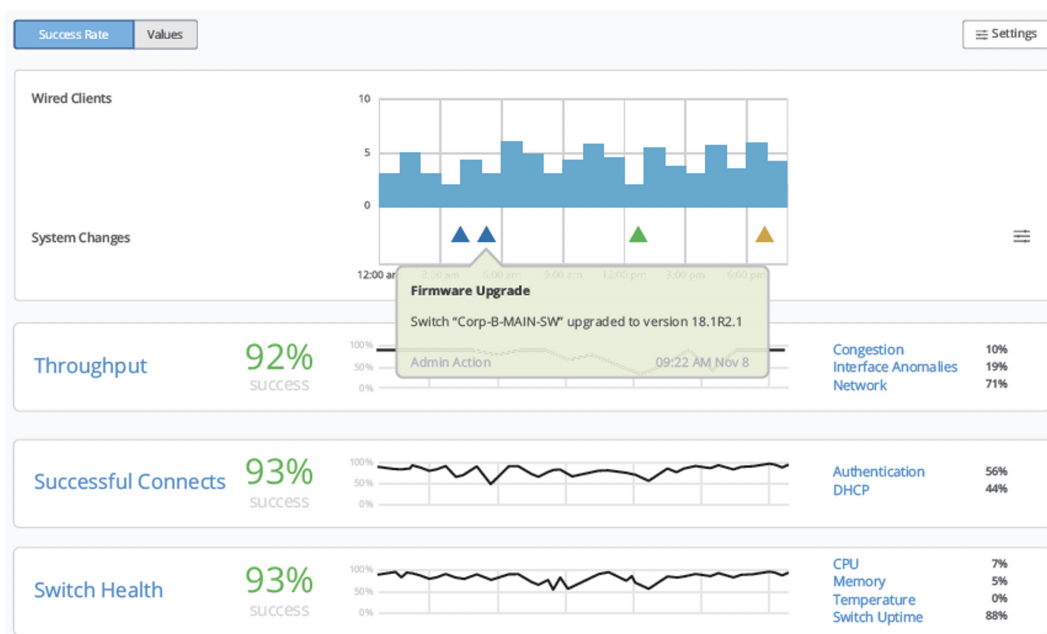For more information, see the Mist Wired Assurance page and the Mist Wired Assurance data sheet.

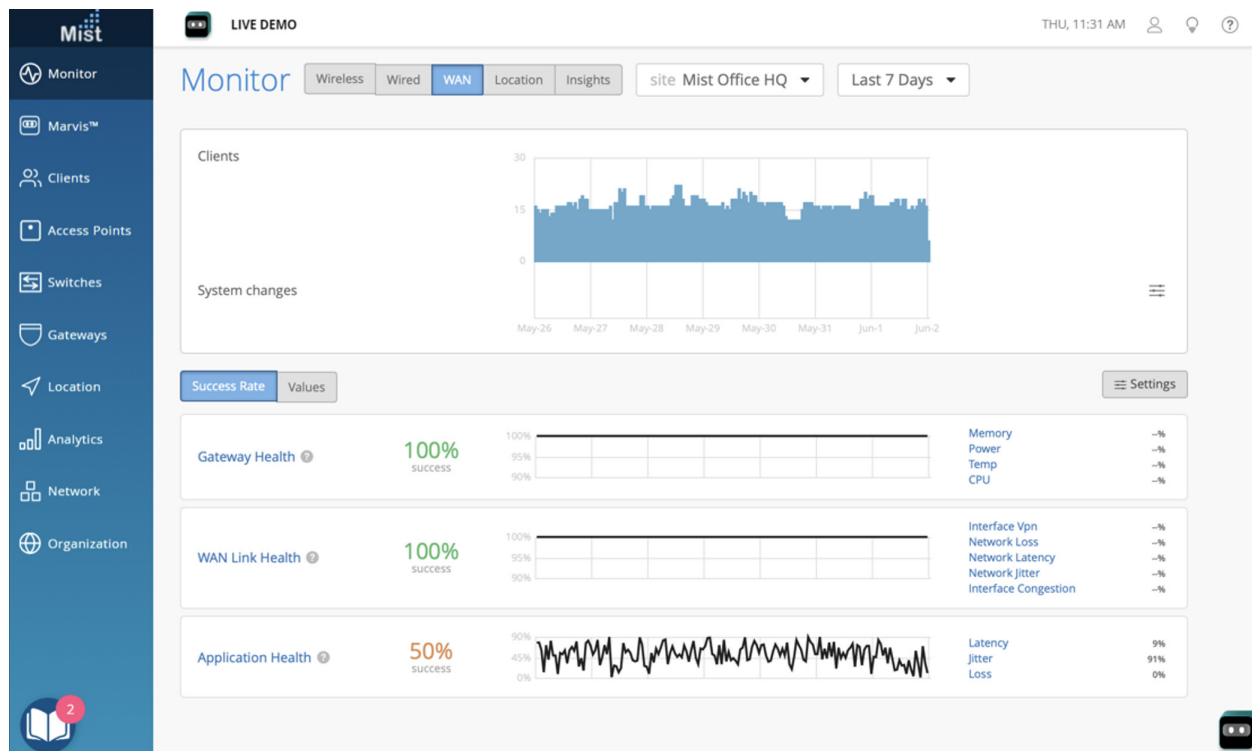*Figure 5: Wired Assurance Service-Level Experiences*

Figure 6: WAN Assurance Delivers Service Level Experiences

WAN Assurance

Juniper Mist WAN Assurance is a cloud service that brings AI-powered automation and service levels to the SD-WAN solution. Driven by the power of Mist AI and Marvis Virtual Network Assistant, WAN Assurance monitors Service Level Experiences (SLEs) for gateway health, WAN link health and application health for every user and every device on the network. When a disruption to the user experience inevitably occurs, WAN Assurance provides actionable insights to assist IT administrators in quickly resolving the issue.

The analytics for WAN Assurance are driven by the AI-driven SD-WAN, which intelligently connects all branch offices to locations where all your most critical business assets are held—your data center or local cloud, a public cloud, or cloud services. AI-driven SD-WAN offers a flexible, application-aware network fabric that meets stringent enterprise performance, security, and availability requirements (*Figure 6*). AI-driven SD-WAN also supports zero-touch provisioning (ZTP) for plug-and-play installation at remote sites with minimal or no IT expertise required.

AIOps ensures that customers can understand and improve their users' experience across the SD-WAN. For more information, see the Juniper WAN Assurance page and the Mist WAN Assurance Data Sheet.

The AI-driven Enterprise as a Managed Service

Juniper's AI-driven technology has been deployed for years, but the question for many enterprises is how to bring it on board. Using a Managed Service Provider (MSP) to deliver and maintain the solution is often the ideal way to consume an AIOps solution.

Retail market requirements are evolving, and there are many choices for consuming managed services. Juniper's strong service provider partnerships ensures success for many different delivery vehicles.

An Evolving Market Landscape

With many IT teams understaffed and looking for resources, it is natural that many customers will desire outside resources. This is why 73% of enterprises have their SD-WANs hosted by MSPs, a number that is expected to grow through 2023.[1] Similarly, the near-term future for cloud managed Wi-Fi will see growth of 21% for the next couple of years.[2]

[1]Source: Enterprise Strategy Group

[2]Source: Omdia Cloud-Managed Networking, July 2020.

Pros and Cons of Service Options

Table 1 shows variations on service levels and the pros and cons enterprises need to consider for each one.

Table 1: Comparison of "Do it Yourself" with Fully Managed and   Co-managed Options

	DIY	Fully Managed Service	Co-Managed
Definitions	Customer manages solution from installation to administration.	MSP manages solution and customer is completely hands off.	Solution designed and managed by both the customer and the MSP.
Pros	Customer has autonomy and control over all aspects of the solution, and can build in-house IT skill sets.	Time and cost savings as IT resources are supplied as needed. Greater assurance of necessary knowledge and experience. Integration with other network and cloud services. Ensured stability of the solution.	Potentially provides greater flexibility. Customer may have limited time to deploy or maintain a new LAN, or they may benefit from an accelerated deployment and a co-managed solution. MSP can handle connectivity while customer controls policies.
Cons	Unexpected costs and lack of in-house expertise. Difficulty in cloud integration.	Customer may lose control over aspects of the solution. They may have configuration needs not supported by the MSP.	May incur overhead aligning business and technical goals between customer and MSP.

Juniper's Strengths with Managed Services

By working with an MSP that partners with Juniper, the life of retail IT support in a changing world can be greatly simplified. All of the solution benefits apply equally well when delivered as managed services:

- A broad end-to-end portfolio in wireless, wired and WAN networking
- Optimized operations with Integrated AIOps for faster root cause analysis, event correlations, and self-correcting actions (through natural language conversations)

- Better SLAs through complete visibility and control, as well as better application performance and security
- Lowers the cost of managing a customer's network as your team can leverage AIOps to accelerate problem resolution and solve most problems without a truck roll

Figure 7 shows the strength of Juniper's relationships with service providers supporting enterprises.

Juniper is deeply invested in the success of service provider channels, and has Tier 1 references in many vertical industries. You can be assured that the Juniper partner you select has access to the full assortment of resources to ensure your success.
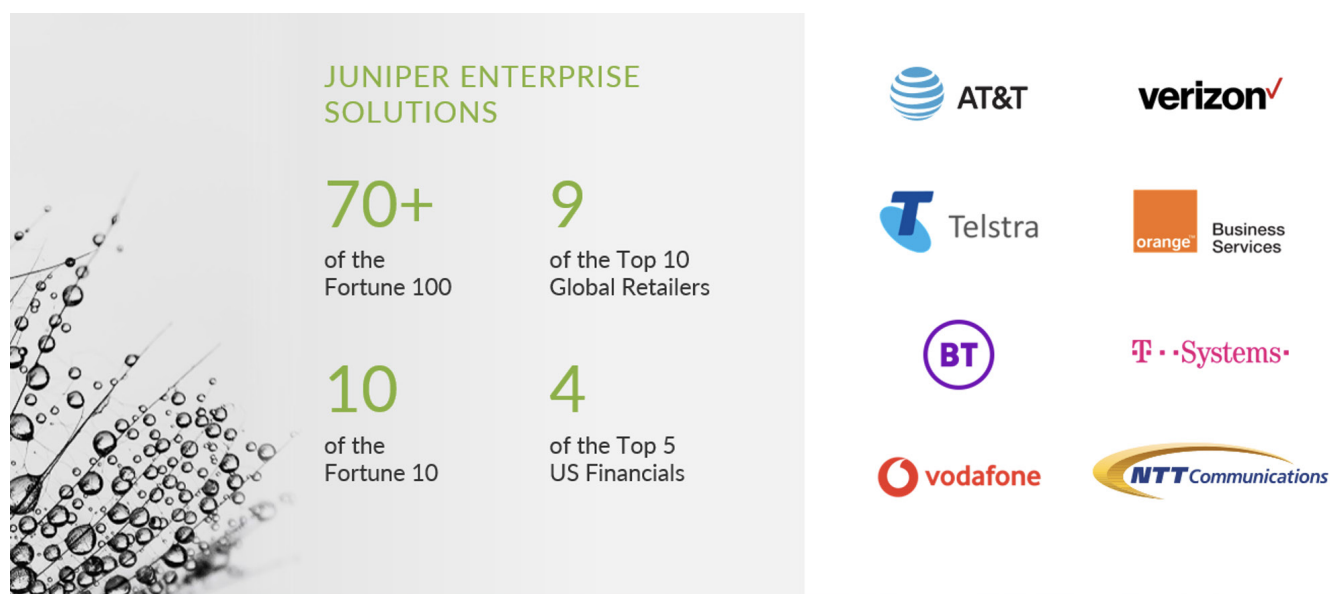

Figure 7: Strong Partner Momentum with Juniper Enterprise Solutions

Conclusion: Transforming the Economics of Networking

Retail businesses must continue to modernize their LAN and WAN architectures to support AIOps and the cloud-based applications and services of today and tomorrow. The AI-driven Enterprise provides this modernization by optimizing experiences for customers, store employees, and IT staff alike. Having a single source of truth for your network allows operators to specify exactly how they expect their network to operate and as a result can expect a substantial reduction in service tickets.

Traditional networking products and legacy solutions, designed to support conventional architectures and traffic flows, are too costly and complicated. They don't meet the needs of an evolving digital era.

Juniper has created industry-leading technology across the wired, wireless and WAN domains to support this effort. An AI-driven Enterprise, whether deployed in-house or managed by an MSP, simplifies secure service delivery while guaranteeing optimal experiences in the retail environment.

This position is well supported by leading industry analysts who communicate regularly with customers in all verticals, and vendors who base their reputation on accountability and reliability. For instance, Juniper is a Leader in the Gartner Magic Quadrant for Wired and Wireless Networking 2021 report, leading on both the *Completeness of Vision and Ability to Execute* axes.

Also see the Gartner Magic Quadrant for Indoor Location Services, where Juniper is a leader, and the Gartner 2021 Magic Quadrant for WAN Edge, where Juniper is a visionary.

Related Resources

The following resources provide additional perspective and details on the AI-driven Enterprise.

Web Pages
- Mist Location Services
- Mist Wi-Fi Assurance
- Mist Wired Assurance
- Mist WAN Assurance
- Mist AI and Cloud
- Marvis Virtual Network Assistant
- Retail Solutions
- Wireless Access Points and Edge

Analyst Reports
- Gartner Magic Quadrant for Wired and Wireless Networking 2021
- Gartner Magic Quadrant for Indoor Location Services 2022
- Garner Magic Quadrant for WAN Edge 2021

Solution Briefs
- Enabling the AI Driven Enterprise
- The AI-Driven Campus Architecture

Data Sheets
- Marvis Virtual Network Assistant
- Mist WAN Assurance
- Mist Wi-Fi Assurance
- Mist Wired Assurance
- Session Smart Routers

Case Studies
- Outlet City Metzingen
- Northgate Market
- The Gap

Videos
- 2022 Retail Summit on MSP SD-LAN (Mar 2022)
- Experience First Networking for MSP (Dec 2021)
- AI-driven Campus Fabric (Sep 2021)
- Mist AI Journey (Sep 2021)
- Mist Wireless – Full Mist Demo (Spring 2021)
- Mist Marvis Innovations (July 2021)

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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APAC and EMEA Headquarters
Juniper Networks International B.V.
Boeing Avenue 240
1119 PZ Schiphol-Rijk
Amsterdam, The Netherlands
Phone: +31.207.125.700
Fax: +31.207.125.701

Corporate and Sales Headquarters
Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, CA 94089 USA
Phone: 888.JUNIPER (888.586.4737)
or +1.408.745.2000 | Fax: +1.408.745.2100
www.juniper.net