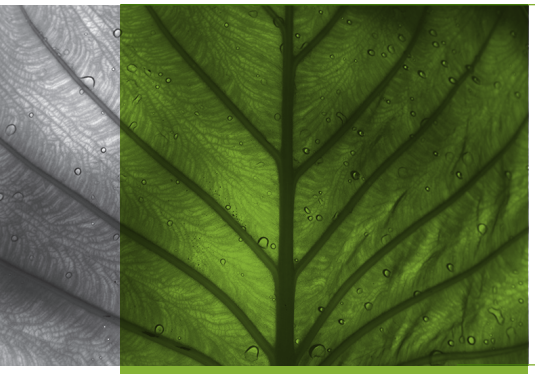

CREATING BUSINESS VALUE WITH AI-DRIVEN SD-WAN AS A MANAGED SERVICE

A Flexible Service Edge with AIOps provides WAN assurance with high-performing applications and services

Challenge

- *MSPs need differentiated services with deep integration and reduced OPEX*
- *Margins are tightening on connectivity and hardware/software services*
- *Gaps in personnel and technical resources make it hard to fulfill customer demands*

Solution

- *The Flexible Service Edge including Session Smart Networking*
- *A unified edge platform that supports connectivity to managed router to full-featured AI-Driven SD-WAN*
- *Flexible, session-aware network fabric*
- *Automation and real-time insights into user experience with Mist AI*
- *MSPs seamlessly upgrade from one service to another with a simple licensing upgrade*

Benefits

- *Differentiated offering with multiple tiers depending on customer needs*
- *Proactive AI-driven operations and support for low Mean Time to Repair (MTTR)*
- *Accelerated performance for applications and revenue*
- *Includes next-gen firewall, IDS/IPS, URL filtering, and zero-trust security*

Solution Brief

The SD-WAN market experienced double-digit compound annual growth over the last several years, a trend that leading industry analysts expect to continue. Dell'Oro expects the market to double by 2027, while Gartner and IDC report similar forecasts, anticipating an addressable market between $7 to $8 billion by 2026.[1]

This represents a tremendous opportunity for managed service providers (MSPs) that can deliver services to enterprises at lower costs while improving security and reliability. For the enterprise, an MSP-delivered service can have a positive impact on CapEx as well as OpEx and remove the burden of incremental IT staff and negotiations with multiple vendors.

The challenge for MSPs is to differentiate services and provide excellent customer service while growing revenues and managing costs. Connectivity services may be the appropriate place to start, but to retain customers and expand market share, MSPs must provide value in the form of innovative services with an accelerated time to market.

Juniper provides this differentiation with a tunnel-free architecture that reduces overhead and improves application performance, reducing customer churn. The Juniper® Flexible Service Edge (FSE) solution provides an extensible foundation for service innovation, helping MSPs evolve their offerings and move up the value stack on their timeline. The Flexible Service Edge is a unified platform that can start as an intelligent Layer 3 network interface device (NID), and then be upgraded to a managed router or to a Juniper Networks® SSR Series Router—providing all the benefits of the tunnel-free SD-WAN solution.

With the Flexible Service Edge, service providers have a launching point to deliver a host of new service offerings that can help them along their journey from managed circuits to managed SD-WAN, unified communications, and total digital transformation. This solution can also be remotely upgraded without any hardware changes, software changes, or downtime, for fast and easy service turn-up.

By integrating this architecture with the Juniper Mist™ Cloud, Juniper has created the industry's only AI-Driven SD-WAN for distributed enterprises, a unique offering that provides unprecedented business value for MSPs and their customer base.

[1] See SDX Central, SD-WAN By the Numbers: Market Growth, Size, and Adoption, Sean M. Kerner, August 1, 2023.

State of the Industry

Most SD-WAN solutions repackage legacy technologies along with abstraction, segmentation, analytics, and orchestration. While this approach may yield some business benefit, it does not provide an opportunity for MSPs to differentiate their service offerings.

All SD-WAN solutions use two or more WAN transport networks by building an overlay network with encapsulation such as generic routing encapsulation (GRE), Virtual Extensible LAN (VXLAN), IPsec, dynamic multipoint VPN (DMVPN), or a proprietary tunneling technology. Overlays and tunnels attempt to mask network weaknesses and inflexibility by introducing wrappers, but these increase complexity. This causes costly overhead and prevents end-to-end networking, which hinders performance.

To deliver a differentiated service cost effectively, MSPs require a transformational approach to SD-WAN.

AI-Driven SD-WAN

Juniper SD-WAN, driven by Mist AI, is an advanced, service-centric offering for your customers that takes software-defined routing to a new level. Ideal for cloud-centric businesses of all sizes, it provides agile, secure, and resilient WAN connectivity with breakthrough economics and simplicity. AI-Driven SD-WAN eliminates the inherent inefficiencies and cost constraints of conventional networking products and legacy SD-WAN solutions, reducing bandwidth consumption by 30% or more compared to alternative networking platforms.

The solution offers customers a flexible, application-aware network fabric that meets stringent enterprise performance, security, and availability requirements (Figure 1).

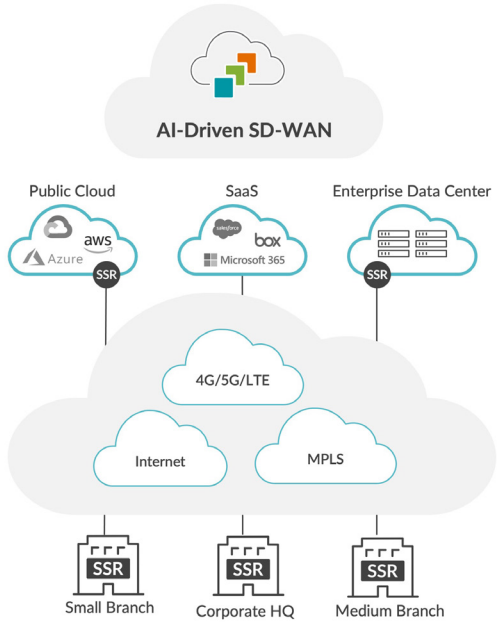

Figure 1: AI-driven SD-WAN

The Session Smart Routers (SSR) in AI-Driven SD-WAN support many use cases and modernization initiatives, including multicloud connectivity, IoT, and managed services. You can stretch AI-Driven SD-WAN from the edge to the data center to the cloud and beyond. Public cloud support includes AWS, Microsoft Azure, and Google Cloud.

AI-Driven SD-WAN optimizes user experience, with guaranteed application performance, instant failover for all applications (including uninterrupted voice and video calls), and continual insights with recommended actions to assure the highest Service Level Experiences (SLEs). AI-Driven SD-WAN enforces user-based security policies and application Service Level Agreements (SLAs) applied in real time.

AI-Driven SD-WAN provides a deny-by-default approach for zero-trust security. A next-generation firewall protects applications and infrastructure against data loss and malicious attacks. Key capabilities include Layers 3-4 Denial of Service/Distributed Denial of Service (DoS/DDoS) protection, adaptive payload encryption, Network Address Translation (NAT), and VPN functionality. A branch security pack includes intrusion detection and prevention (IDS/IPS) along with URL filtering (Figure 2).

AI-Driven SD-WAN provides your customers with continuous connectivity without requiring expensive hot-standby tunnels like legacy solutions. In the event of a link failure or network outage, the solution seamlessly redirects traffic over an alternative path without disrupting sessions or impairing application performance.

AI-Driven SD-WAN is fully software-based for ultimate flexibility and economics. The software runs on any commercial off-the-shelf or white box server platform, eliminating middlebox sprawl. Additionally, enterprises can take advantage of Juniper-branded options that provide small and medium branch platforms with multiple WAN link options including LTE.

Integration with Juniper Mist Cloud allows for central onboarding of SSR Routers: field engineers can simply plug in the device, scan the QR code, and cause it to automatically provision and come online. The solution supports zero-touch provisioning (ZTP) for plug-and-play installation at remote sites with minimal or no IT expertise required.

The solution includes Juniper Mist WAN Assurance, a cloud service that brings AI-powered automation and service levels to the Juniper AI-Driven SD-WAN solution. The resultant AIOps ensures your customers can understand and improve their users' experience across the SD-WAN (Figure 3).

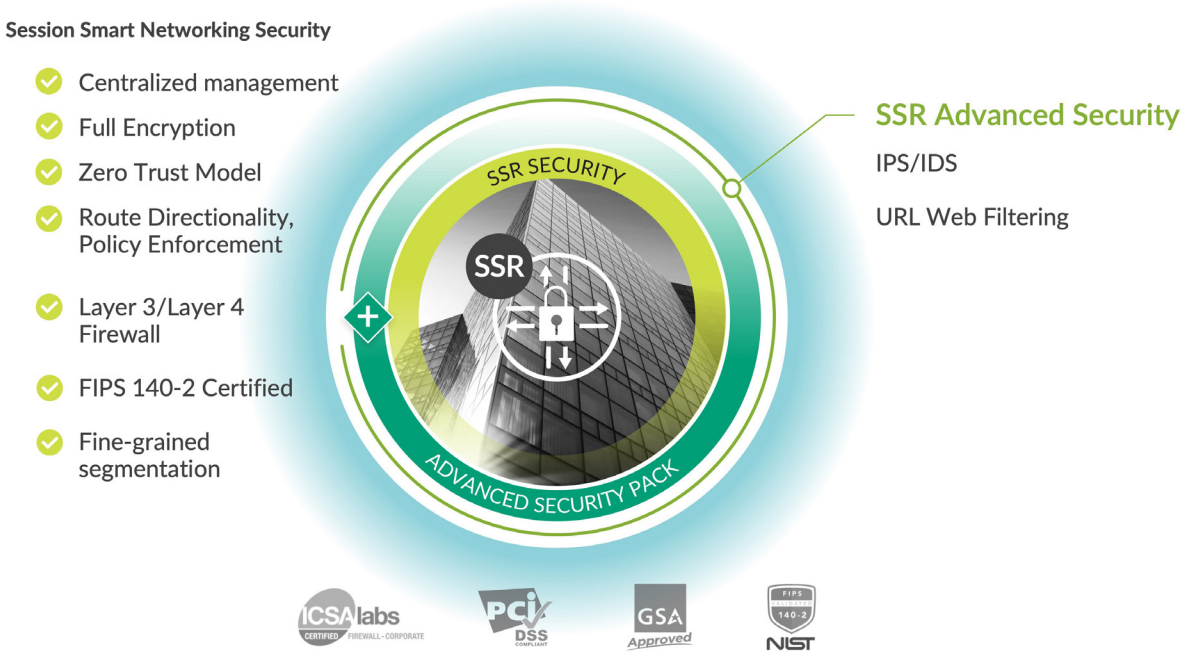

Figure 2: Session Smart Networking Delivers a Secure SD-WAN with Zero Trust

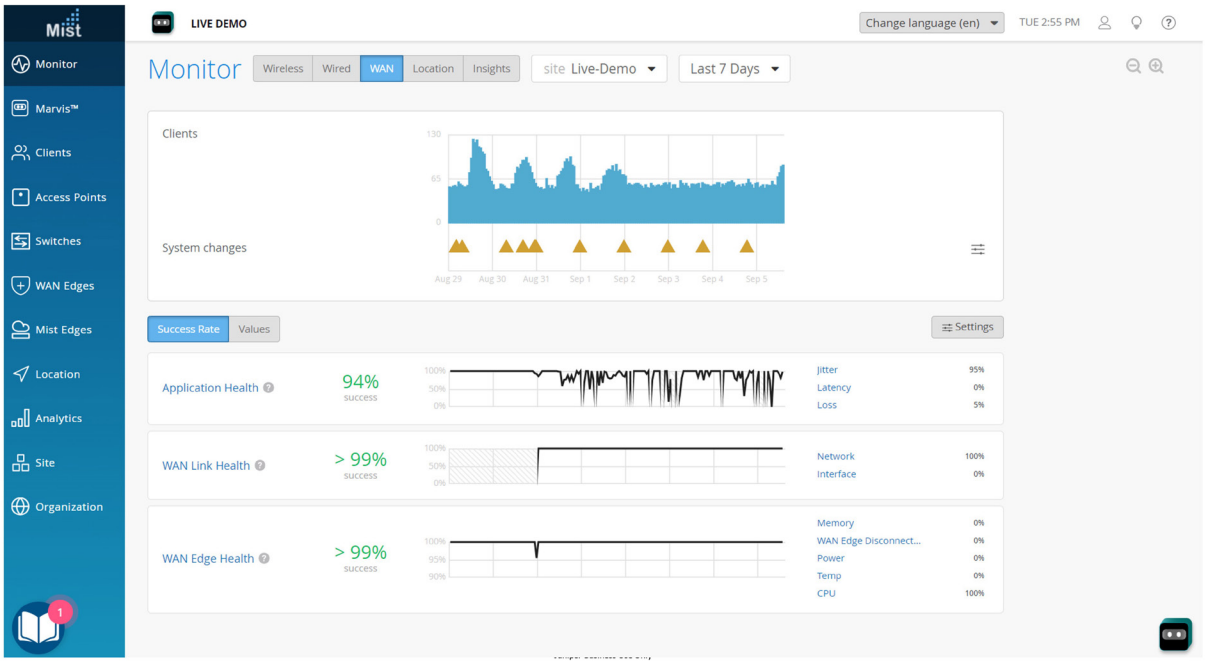

Figure 3: WAN Assurance Delivers Service Level Experiences

With WAN Assurance, users can measure the impact of gateway and WAN circuit health on end-user application experiences. The WAN Link Health SLE delivers insights into how these factors affect a given network user or application. Driven by the power of Mist AI and Marvis Virtual Network Assistant, WAN Assurance simplifies operations with proactive anomaly detection and remediation, and automated troubleshooting.

For an example of WAN Assurance in action, see the WAN Assurance datasheet and this short explainer video.

A Flexible Service Edge for Continuous Innovation and Growth

The AI-Driven SD-WAN is the apex of a set of solutions in the Flexible Service Edge. Customers that may not be quite ready for the top-tier offering can start with simple connectivity and upgrade to a managed routing solution through licensing options. Because the Flexible Service Edge runs as a single network element, it provides a simpler topology than competing solutions that require separate "boxes" for individual network functions.

Transformational and Strategic Approach

The Flexible Service Edge is a solution for today, tomorrow, and beyond. As the end user organization and MSP's customers increase, the Flexible Service Edge can be used to securely connect hybrid/multicloud environments as strictly network/cloud security solutions, in IoT environments, data center interconnect, and more. This is a very versatile addition to the MSP's toolbox.

Table 1: Benefits of the Flexible Service Edge

Benefit	Description
Service Centric Fabric	• Multcloud, multiservice edge and 5G • Differentiated user experience for maximum satisfaction • High scale to manage costs • Agility for time to market • Consistent maintenance of service and tenancy context
Improved Business Outcomes	• 75% decrease in deployment times • Tunnel-free architecture offers 30% to 50% bandwidth reduction • 50% savings compared to competitive CPE solutions • Expansion into high margin businesses • Cost competitive for both low- and high-value services
ZTP for Cloud Scale	• Support traditional SD-WAN or 5G, IoT, and edge compute • Deploy and upgrade 100s or 1000s of endpoints rapidly and cost-effectively • Provides full analytics and policy
Freedom from Legacy Architectures	• High agility and cost-effective economics delivered from the cloud • Single network element reduces complexity and technology sprawl • Far better scale than with tunnel-based architectures • Programmable, software-based solution • Distributed, elastic, and mobile
Secure Edge	• Mitigates the security risks of many IoT endpoints • Goes well beyond perimeter security • Baked-in security with zero-trust, deny-by-default fabric • Secure Vector Routing provides fine-grained security on a session level

The levels of the Flexible Service Edge are described in the following sections.

Provide Connectivity with the Session Smart NID

The Flexible Service Edge solution can function as an intelligent Layer 3 Network Interface Device (NID) to enable or improve internet access, cloud connectivity, or VPN services. The Flexible Service Edge gives service providers maximum flexibility and extensibility by supporting multiple access methods, including Internet, Carrier Ethernet, and 4G/5G/LTE. It provides detailed visibility into application-level usage and performance data so service providers can monitor service quality and streamline diagnostics to provide a superior customer experience.

Table 2: Features and Benefits for Layer 3 NID

Feature	Benefits
Complete analytics solution with intelligent instrumentation	Provide valuable insights into key usage and performance data (such as bandwidth utilization and link quality) on a per session, per segment basis
Application-relevant statistics	Track and report on application-level SLAs
Multiservice enterprise edge	Ensure standardization and 5G readiness; a single WAN edge termination point for all fixed and wireless access services
Multidimensional visibility	Allow informed decisions from always-visible traffic rates and shapes, error conditions, circuit utilization, and link states
Easy installation and setup	Provide easy turn-up and a plug-and-play deployment
Runs as a single network element	Reduce cost and simplify topology

Leverage Analytics to Upsell to the Session Smart Managed Router

Because MSPs now understand the attributes that impact service quality at the application level, they can more clearly demonstrate to customers when they should upgrade to a more robust service, such as a managed router. With the Flexible Service Edge, service providers can easily configure, monitor, and control routing for their customers. Because moving up the value chain to a managed router with Session Smart Networking requires only a license change but no new hardware, service providers can quickly begin delivering high-margin services with minimal disruption.

A managed router solution with Session Smart Networking includes all the features and benefits of the Layer 3 NID as well as those shown in Table 3.

Table 3: Features and Benefits of a Managed Routing Solution

Feature	Benefits
Full-featured, enterprise edge router with unified communication support	Help customers prioritize applications with granular traffic engineering
Full ICSA-certified firewall	Provide filters as needed for devices, users, and applications
Tunnel- free architecture	Realize low overhead and flexible traffic forwarding based on applications and services
Fast failover and redundant configuration	Provide high availability with service guarantees
Visibility and analytics	Make timely configuration corrections based on real-time information about customer traffic

Transform into a Strategic Business Partner with AI-Driven SD-WAN

When customers are ready, service providers can unleash the full functionality of the Juniper SSR Routers, including high-value services like managed AI-Driven SD-WAN. The MSP now establishes itself as a strategic partner enabling its customers' digital transformation journey.

AI-Driven SD-WAN supports all of the features of the Flexible Services Edge. Additional features and benefits are shown in Table 4.

Table 4: Features and Benefits of MSP-Delivered AI-Driven SD-WAN

Feature	Benefits
Application-aware routing	Support demanding application-level SLAs and stateful failover for priority applications
AIOps	Assure the highest SLEs and optimal user experience with continual insights and recommended actions
WAN Assurance	Quickly identify and correct issues in the WAN, whether they are related to applications, devices, or network connections
Zero trust network	Provide highest security as sessions are only allowed based on explicit business policies
Session-aware data plane	Provide ultimate service quality and resiliency by selecting the best path for the right application at the right time
Unified communications	Provide support for managed voice and video

Analyst Perspectives and Case Studies

In addition to leadership positions in Gartner's Wired and Wireless and Indoor Location Services, Juniper is a visionary in the SD-WAN Infrastructure Magic Quadrant. From a portfolio-wide perspective, this is the strongest combined position of any networking vendor.

The following case studies are proof points for AI-Driven SD-WAN.

Granite Projects Rapid Growth with AI-Driven SD-WAN

MSP Granite Telecommunications turned legacy landlines into a $1.7 billion business. Early success came from helping customers consolidate their phone services with one point of contact and one invoice for all their office locations.

Granite is anticipating 30% growth for managed SD-WAN services, with over 10,000 automated SD-WAN connections per year. Their retention rate for customers is greater than 5 times the industry average.

"With Juniper technology behind Granite FlexEdge, we can allow customers to scale services quickly and efficiently," says Kayla Zbinden, Director of MSP Product Development.

Meesho Triples Call Center Volume with SD-WAN

Meesho connects millions of consumers with sellers across India, with a vision to enable 100 million small businesses to succeed online. It had zero call drops out of 400,000-plus customer service calls per day during peak holiday hours. With over 140 million annual transacting users, Meesho handled 33.4 million orders during the five peak days of sales.

"The Juniper SD-WAN provides more reliable connectivity to our outsourced call centers, allowing us to handle a 30% increase in call volume," says Ismail Mohideen, the Director of IT at Meesho.

Seagate Leverages AI-Driven Enterprise Solutions

Seagate Technology utilizes Juniper AI-Driven SD-WAN to support its evolving business needs. Seagate has multiple sites in 18 countries that share vast amounts of data. Tunnel-free AI-Driven SD-WAN reduces Seagate's telco and hosting costs, which is ideal for high-bandwidth activities like data transfers.

According to Vinod Pasi, VP and Head of Global Infrastructure at Seagate, "The Juniper AI-Driven SD-WAN with Session Smart Networking had the highest throughput and yielded the best results for our key use cases. Plus, we leverage a single Juniper Mist cloud and AI engine across our entire campus and branch portfolio."

Summary

The Flexible Service Edge lets MSPs launch a variety of high-value, cloud-centric services—quickly and cost-effectively. This allows MSPs to enable new functionality and deliver new services in an incremental, non-disruptive fashion with a simple software license update. The solution serves as an extensible platform for innovation, integrating with Mist AI to provide an AI-driven SD-WAN. These solutions redefine the potential of the WAN edge infrastructure, helping MSPs to extend their value proposition, strengthen customer relationships, and restore margin and revenue growth in today's hypercompetitive marketplace.

Next Steps

To learn how to deliver Juniper's Flexible Services Edge options including AI-Driven SD-WAN, contact your Juniper account representative or visit www.juniper.net/us/en/solutions/managed-services.html.

Resources

Solution Briefs and White Papers

- Building a Secure AI-Driven SD-Branch
- Client-to-Cloud Assurance with an AI-Driven Enterprise
- Session Smart Routing: How it Works

Solution Pages and Case Studies

- AI-Driven SD-WAN
- Juniper Mist WAN Assurance
- MSP Granite Projects Rapid Growth with AI-Driven SD-WAN
- Meesho Triples Call Center Volume with SD-WAN
- Seagate Leverages AI-Driven Enterprise Solutions

Videos

- AI-Driven SD-WAN and Session Smart Networking
- Mike and Marvis: Introducing Marvis
- The Network for the Next Decade

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.

JUNIPER NETWORKS | Driven by Experience™

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

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