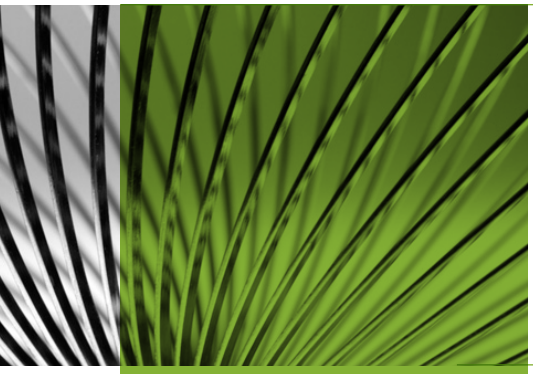

TRANSFORMING MANUFACTURING NETWORKS WITH AN AI-DRIVEN ENTERPRISE

The Power of Mist AI and AIOps brings innovation and modernization to the manufacturing industry

Challenge

- *Improve operational efficiencies by addressing limitations of legacy equipment*
- *Address rising costs, skills gaps, and worker shortages*
- *Improve communications across network domains*
- *Address security and inventory management Industrial IoT (IIoT)*
- *Ensure a rapid mean time to repair (MTTR)*

Solution

- *Industry-leading wireless and wired solutions with cloud-based AIOps*
- *Pinpoint-accurate indoor location services for efficiency and safety*
- *Simplified operation for IoT devices*
- *Rapid deployments and upgrades with microservices cloud*
- *Full-stack support for wired, wireless, and WAN*

Benefits

- *Optimized network performance based on applications, devices, and users*
- *Self-driving automation with AIOps for insights and actions*
- *Improved workforce development and better experiences for employees and customers*
- *Improved supply chain resiliency*
- *Realization of smart factory and Industry 4.0+ goals*

Solution Brief

The Challenge

Rising labor costs and productivity pressures, along with the complexity of competing in global markets, have intensified competition in manufacturing. Manufacturers and companies across the supply chain are focused on exploring and driving change with new technologies to improve competitive advantage and reduce costs across complex, manual, and disparate processes.

Furthermore, the Industrial Internet of Things (IIoT), automation, and robotics—key components of Industry 4.0—continue to play vital roles in increasing productivity and efficiency by improving statistics for production times and error rates while repositioning workers off factory floors into more purposeful positions such as quality control operations.

As manufacturing continues its technological transformation, some areas remain top of mind as they impact revenue growth. There is considerable emphasis on supply chain instability (which impacts margins and operational efficiency), workforce shortages, and the need to improve business agility.

Key Priorities and Technologies

IT can help their organization reach the promise of smart factories and Industry 4.0 by supporting technologies that:

- **Improve workflows**: Utilize resources more effectively, track location of critical assets including wireless and wired devices, assure priorities and service levels, optimize production, and improve engagement opportunities
- **Stabilize supply chains**: Enhance visibility with integrated data from partners, facilities, and transportation systems to sharpen planning and provide resilience in the supply chain
- **Automate and streamline IT operations**: Use artificial intelligence (AI) and machine learning (ML) to ensure fewer support tickets, decrease time to resolution, eliminate physical beacons and redundant site surveys, and boost visibility, accuracy, and performance
- **Integrate IoT**: Connect user devices, printers, robotics, asset tags, sensors, and more on IP networks, as well as on interconnected sensors, instruments, and devices on Industrial IoT (IIoT) and 5G for augmented and virtual reality, 3D printing, robotics, and other solutions
- **Ensure security**: Deliver zero trust security for sensitive applications and physical security for cameras, door locks, lighting, alarms, etc.

Unique Role of the Network

For manufacturing networks to have a positive impact on productivity, they must first provide reliable and secure connectivity. Manufacturing operations rely heavily on stable and resilient networks for communication, data transfer, and control systems.

Maintaining network reliability, minimizing downtime, and ensuring uninterrupted connectivity are critical challenges—even brief network disruptions can have significant operational and financial impacts. Furthermore, network scalability and flexibility become crucial challenges as manufacturers need to adapt their networks to accommodate new devices, locations, and production requirements without causing disruptions or compromising performance.

To accommodate the requirements of Industry 4.0, the network must provide for the sensing and reporting of analytics data in the manufacturing environment. With the proliferation of connected devices, IoT sensors, and data-intensive applications, these networks face increased demands for bandwidth and network capacity.

High traffic volumes can especially be a concern in large-scale manufacturing facilities. Many manufacturers have limited IT resources to meet these requirements, and networks built to accommodate the fast-moving operations in today's manufacturing landscape can fill critical gaps.

In addition, the sharing of networks between communications and manufacturing processes (for instance, to support smart factories and warehouses) can put a strain on wireless functionality. Sophisticated wireless access can enable businesses of any scale to always maintain reliable connections for their diverse business requirements—without hindering workflows or slowing down production.

A network that pulls disparate IoT (including IIoT) together in the wired and wireless domains helps optimize costs not only in terms of network IT efficiency but in allowing manufacturers to make better use of their existing equipment and software resources. Thousands of IoT devices can exist within a single large facility.

Location services applications that provide better user experiences can be pivotal in streamlining operations. In addition to always locating key assets, these applications allow manufacturers to gain valuable insights that help optimize workflows. Critical use cases include asset tracking and management, workforce safety and security, and production process optimization.

Automation and AI, and ML, including sophisticated AIOps functionality, ensures high-quality experiences for all users. These technologies can also assure maximum uptime and rapid mean time to repair (MTTR). Data analytics provide insight to help avoid supply chain disruptions by helping to better forecast, model, and maintain inventory. Analytics also simplify and automate troubleshooting to ensure the fastest possible response times.

Many manufacturers are migrating IT systems and applications to the cloud. These cloud-based solutions lead to better business performance. The cloud reshapes WAN traffic that needs to meet new requirements for service quality, security, and high availability. WAN requirements can also grow after mergers and acquisitions, leading to an immediate need to integrate the IT infrastructure of all affected companies to enable full economies of scale.

Protecting sensitive manufacturing data, intellectual property, and control systems from cyber threats is a critical challenge. Manufacturers must implement robust network security measures, including firewalls, intrusion detection and prevention systems, access controls, and data encryption, to safeguard their networks against unauthorized access, data breaches, and cyberattacks. A network that ensures zero trust access based on validated applications (and policies governing access to them) goes a long way toward ensuring a zero-trust environment.

For many manufacturers, especially those with limited in-house IT resources and a long list of technology priorities, a more hands-off model implemented by a trusted managed service provider (MSP) can lead to a faster realization of their smart factory and industry 4.0 goals.

The Solution: An AI-driven Enterprise for Manufacturing

The Juniper AI-Driven Enterprise is built on Mist AI™ for wireless, wired, and WAN networks. Seamlessly integrated in the AI-Driven Enterprise are Juniper® Mist™ Indoor Location Services, Juniper Mist IoT Assurance, and Juniper Access Assurance, which offer unique benefits in manufacturing environments. AI-Driven Enterprise solutions also bring the benefits of Session Smart™ Networking and Juniper SD-WAN, driven by Mist AI into manufacturing networks and cloud environments with high scale and security.

Wired and wireless networks are key vehicles for delivering optimal experiences for those on the factory floor and the corporate office. Cloud-based services such as Indoor Location Services, Access Assurance, and IoT Assurance provide the foundation for relevant applications. Mist AI visually quantifies positive experiences throughout the manufacturer's network via service level experience (SLE) metrics available in the cloud-based dashboard.

Deployment and management is crucial in manufacturing. Juniper AI-Driven Enterprise enhances and speeds the process of planning, deploying, and managing complex IoT dependencies with device scanning and claiming techniques

that set networkwide policies via template-based configurations. Day 2 operations are simplified with the Natural Language Processing (NLP) capabilities of the Marvis™ Virtual Networking Assistant and lead to proactive problem resolution and rapid troubleshooting in the event of experience disruption.

Using an MSP to deliver and maintain the solution can be an ideal way to consume an AIOps solution, reducing time and costs as IT resources are supplied on demand. This can lead to greater assurance of necessary knowledge and experience, and smoother integration with other network and cloud services.

Solution Benefits

Manufacturers can realize many benefits from having an AI-driven enterprise. They start from having an architecture that provides deep visibility and AIOps, along with a resilient and flexible cloud management solution and a patented technology for digital engagement.

AIOps for Distributed Manufacturing Operations

Built on a microservices cloud architecture and connected with a common AI engine, the AI-Driven Enterprise portfolio provides real-time insight into user experience with assured service levels for wired, wireless, and WAN networking. This includes AI-driven SD-WAN, switching, Wi-Fi, indoor location, and enhanced security—all delivered by the Juniper Mist cloud.

Tunnel-free Session Smart Networking and Mist AI combine to deliver improved application performance, simplified operations, and a secure branch. Session Smart Networking further assures optimal experiences with zero-trust security and tunnel-free session-layer routing, along with built-in firewall functionality such as intrusion detection and prevention (IDP) and URL filtering.

AI-Driven Enterprise solutions simplify network configuration, deployment, and operations across wired and wireless LANs and WANs with cloud-based management, allowing IT teams to do more with less.

Mist AI Scope and Architectural Differentiators

A single dashboard under Mist AI covers the wired, wireless, and WAN domains (Figure 1).

Figure 1: Mist AI controls all network domains.

The advantages can be seen in how the solution resolves issues that may have sources in any network domain. The network can be explored end to end (client to cloud) and problems that may appear in one domain, but are sourced from a different one, can be resolved quickly and automatically.

Many manufacturers of all sizes are moving away from legacy architectures and replacing their networks with Juniper solutions, driven by Mist AI.

Figure 2: AI-driven enterprise is transforming manufacturing networks.

Four key drivers (Figure 2) are leading to the increased adoption of Juniper and Mist AI:

1. **Deep client-level visibility** enhances the user experience. When a device attaches to a network, hundreds of things can potentially go wrong. Mist AI tracks every device in real time and understands exactly what is happening, monitoring hundreds of states per device. This is critical in a manufacturing environment, where there can be hundreds of devices on a factory floor.
2. **AI-driven operations** use data science and deep learning to create a self-driving network. Mist AI takes intelligent, targeted packet captures to provide automated root cause analysis that tells operators exactly what is wrong even before problems begin to show. Mist AI often takes actions that a human operator would otherwise have to perform.
3. **Microservices-based cloud** allows levels of agility that are not possible with embedded controller architectures, which can often not be regularly upgraded in manufacturing environments. The full stack network can evolve at the same rate as the endpoints attached to it.
4. **Wireless network made relevant with digital engagement that** leverages Bluetooth Low Energy (BLE). A patented vBLE antenna array enables identification and sophisticated engagement of manufacturing equipment.
5. **API-driven architecture** supports the development of digital engagement applications such as smart security measures by forward-looking manufacturing facilities.

Service Level Experiences and their Classifiers

SLEs are effectively the high-level states that are tracked for all devices and equipment connected to the network. Within all domains, AI-Driven Enterprise solutions provide SLEs that focus on potential issues in any network (Table 1).

Table 1: SLEs by network domain

Wireless	Wired	WAN
Overall service Time to connect Successful connections Coverage Roaming Throughput Capacity AP Health	Overall service Switch health Successful connections Throughput	Overall service WAN edge health WAN link health Application health

These SLEs include classifiers that are continually updated based on analytics and that help quickly isolate and repair network problems. For example, wireless issues with "Successful Connections" can be classified as authorization or DHCP issues, among others. Similarly, a problem with WAN link health could be a physical cabling problem or could be related to ISP reachability.

Finding problems and ensuring the lowest possible MTTR is critical in manufacturing for reasons that go far beyond traditional business efficiency requirements. For an example of how AI-Driven Enterprise solutions can help, consider the case of a real-time video call (Figure 3).

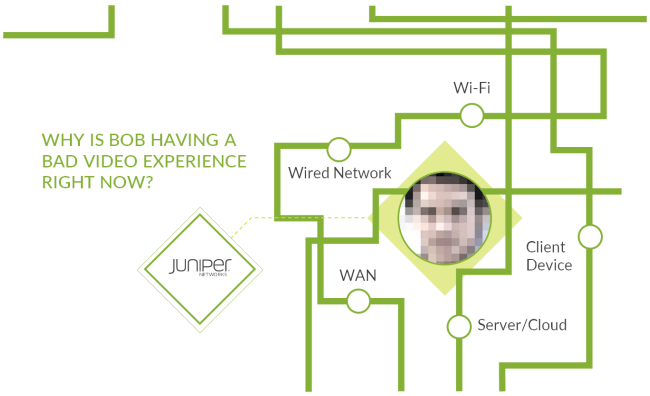

Figure 3: Many domains can contribute to poor experience on a video call.

With end-to-end service levels, event correlation, anomaly detection, and self-driving capabilities, administrators can easily isolate the domain and the failing component. A possible cause could come from the Wi-Fi access point—perhaps the provider is having trouble connecting to it.

Further upstream, a bad Ethernet cable on the router could be causing the issue. The video application server, housed in a cloud data center, could be yielding low performance on a virtual machine.

Alternatively, there could be a problem with the provider's PC, Internet connection, or a node in the system's WAN. Mist AI can correlate SLEs and classifiers across all domains to find the underlying cause and either recommend or perform a correction.

Video experiences are further assured by incorporating Zoom experience information into Marvis, providing the ability to better understand Zoom user experiences for any or all employees globally.

Marvis Virtual Network Assistant

The AI-Driven Enterprise analytics discussed previously are integrated with Marvis Virtual Network Assistant for AIOps-based troubleshooting. Marvis, powered by Mist AI, proactively detects network issues before they impact users. As such, time-consuming manual IT tasks are replaced with proactive automation and self-healing capabilities, lowering operational costs—a critical requirement in Industry 4.0.

Marvis Actions drives simplicity and transforms IT methodologies from reactive troubleshooting to proactive remediation. Marvis with Marvis Actions delivers a self-driving network with automatic actions, and/or assistance to recommend actions (Figure 4).

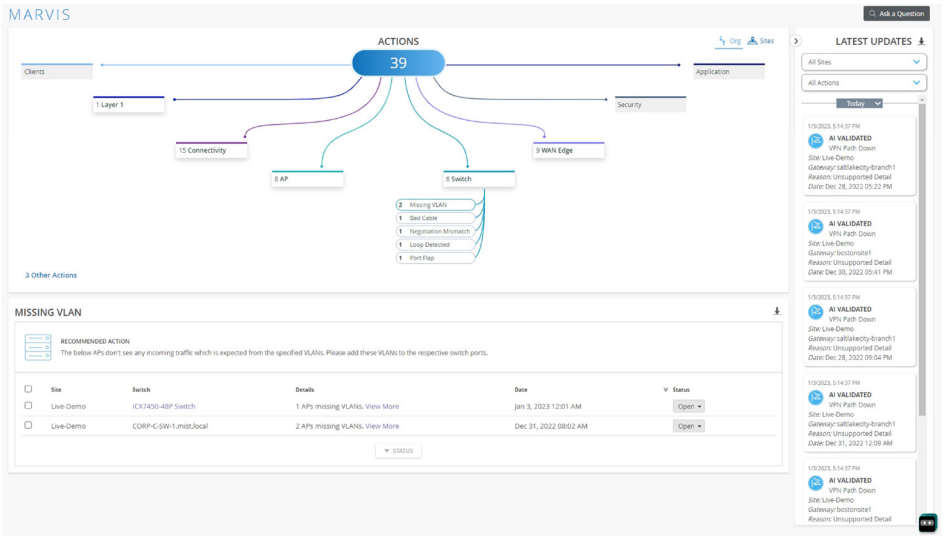

Figure 4: Marvis Virtual Network Assistant offers recommended actions.

For instance, network administrators can track upgrades, repair misconfigured ports or VLANs, identify bad cables, locate switching loops, or identify compromised devices and their attendant risks to the network. These capabilities directly result in optimized operational efficiencies.

The Juniper AI-Driven Enterprise portfolio also includes the Marvis Conversational Interface (Figure 5) which uses NLP to understand user intent and goals. Inquiries are contextualized to return specific results. Marvis understands intent, and will take actions without requiring operators to remember specific dashboards or CLI commands to implement the change.

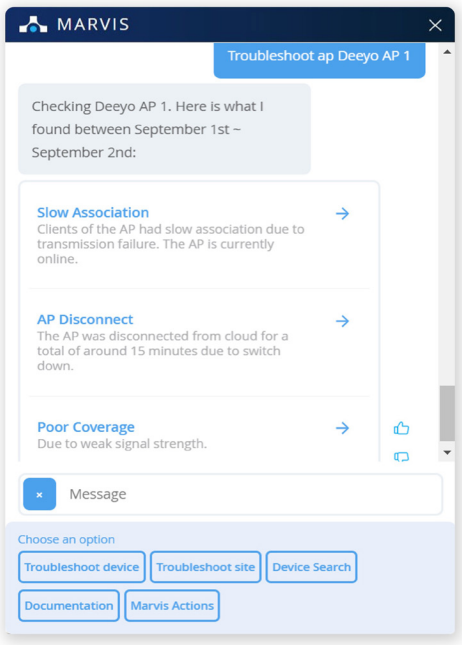

Figure 5: Marvis Conversational Interface uses NLP to understand user intent and goals.

AI-Driven SD-WAN

Keeping pace with change is a significant challenge for manufacturers with multiple sites or tightly integrated partners in the supply chain. Manufacturers are continuously extending services to new locations and merging with partners to improve business results.

Cloud applications and digital solutions are the lifeblood of today's manufacturing organizations. A key component of Juniper's AI-Driven Enterprise, the Juniper SD-WAN, driven by Mist AI solution (Figure 6) delivers reliable WAN connectivity for all applications in all locations, with a flexible and scalable tunnel-free architecture that has built-in, zero-trust security capabilities.

Service-based routing ensures that sessions are delivered based on identity and context to relevant parties following unified policies. This ensures that a modern cloud-centric manufacturer can provide secure access and high performance to employees, customers, partners, and devices wherever they are located.

Juniper AI-Driven SD-WAN supports large headquarters and data center environments. Public clouds and SaaS applications are accessible over any common WAN or Internet links.

Juniper SD-WAN is driven by Mist AI (for AI-based insights and resolution) and leverages the Juniper Session Smart™ Router (SSR), which provides application-layer control so that critical applications receive priority treatment and guaranteed uptime based on session policies and network status.

The result is a Session Smart Networking fabric that maintains full end-to-end context (state) of user sessions, services, and applications, as well as other dynamic workloads for a far more responsive, application-aware, network. The solution scales to tens of thousands of sites, while the tunnel-free architecture enables a 30- to 50-percent reduction in bandwidth costs.

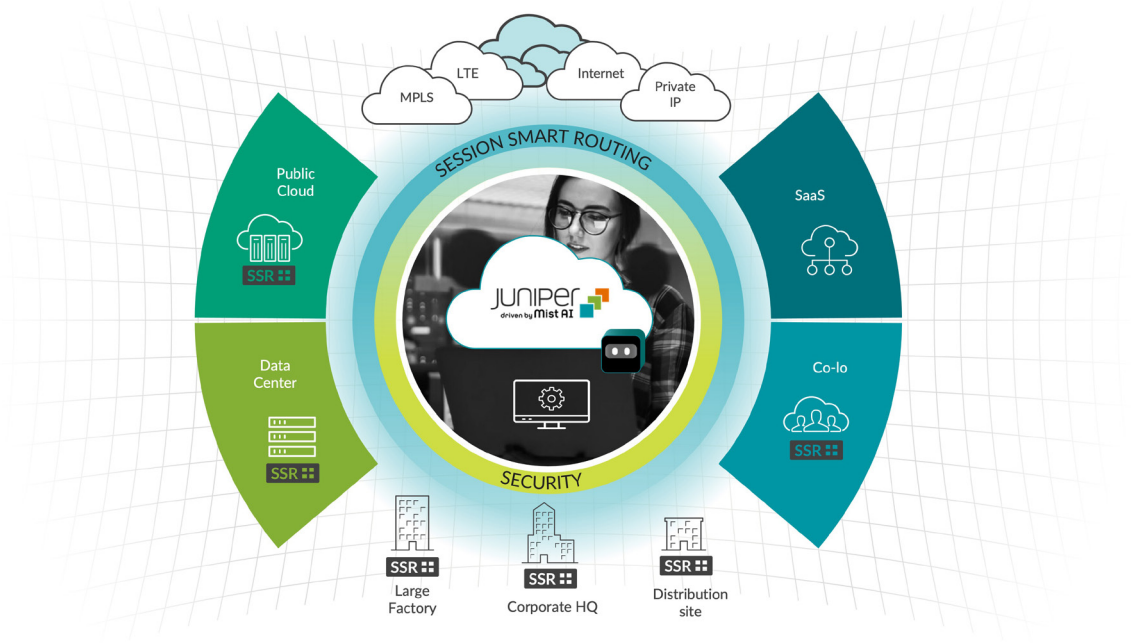

Figure 6: AI-driven SD-WAN supports any distributed manufacturing network.

The AI-Driven Juniper SD-WAN provides a self-driving distributed network, identifying and acting on root causes of issues across IT domains, automatically recommending actions or performing repairs. The solution provides fine-grained quality of service (QoS), subsecond failover, and lossless application delivery.

For more details about role of SD-WAN in manufacturing, including examples from manufacturers, see the Deployments section below.

Cross-Domain Security

Security is critical in manufacturing networks for safety and compliance with mandates. Juniper SD-WAN has built-in capabilities to provide numerous security services from every router in the network.

The primary security advantage of Juniper SD-WAN is the deny-by-default approach to session access, providing a zero-trust environment. Adding to this, an Advanced Security Pack contains intrusion detection and prevention systems (IDS/IPS) and URL filtering capabilities (Figure 7).

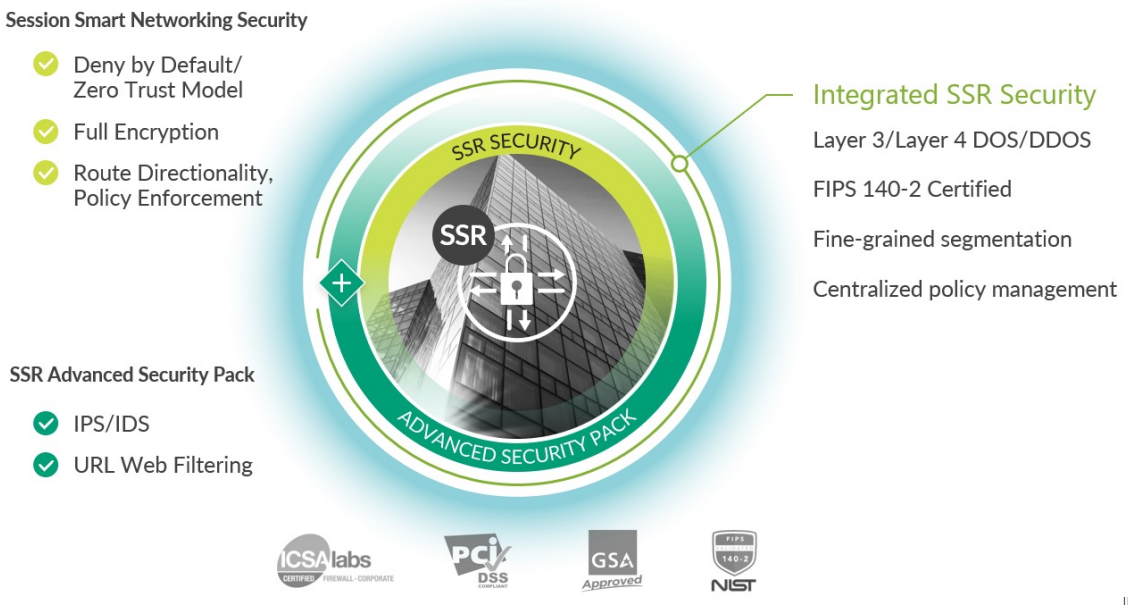

Figure 7: Smart Session Networking delivers a secure SD-WAN with zero trust.

Juniper SD-WAN also includes built-in corporate network firewall functions and provides policy-based policing and forwarding. Distributed manufacturers can provide differentiated security and services to every traffic flow.

Session Smart Routers can encrypt, decrypt, and authenticate any packet flowing through them. They support adaptive encryption to dynamically detect encrypted sessions and prevent double encryption, ensuring that user experiences aren't sacrificed as a result of needless double encryption and overhead.

Administrators must explicitly define policies for valid sessions. If no policy is associated with a session, the session will be dropped. This level of security aligns well with strict manufacturing standards.

If and when more Secure Service Edge (SSE) functionality is needed, often required in SASE-based architectures, Juniper delivers a suite of these capabilities under unified security management with the Juniper Secure Edge, providing a best-in-class security solution. Additionally, the rich application-aware capabilities of the Session Smart Router can identify specific sessions that require routing to other third-party security providers as required.

Wireless Leadership

For the wireless domain, Juniper provides reliable and consistent Wi-Fi access in all provider locations. The AIOps capability begins with the ability of Juniper Wireless Access Points to analyze large amounts of rich metadata collected from users, devices, and operators on the factory floor or on a remote office LAN. This enables operators to set up pervasive and reliable Wi-Fi connectivity with consistent coverage networkwide. From a TCO perspective, this delivers maximum value to manufacturers.

A wireless network managed by Mist AI (Figure 8) provides proactive optimization of wireless performance.

The deep learning capabilities of Mist AI provide actionable insights that correlate events with root causes and solutions. Maintenance and troubleshooting throughout any location is greatly simplified with the Mist AI cloud. Regular firmware and security updates can be pushed to all sites from a centralized management console, which also allows for remote troubleshooting of many common problems.

When appropriate, security cameras, robotic arms, and other IoT devices such as door locks can be triggered based on location. These unique applications are only possible with the Mist SDK and access points with vBLE technology providing the industry's most accurate and scalable indoor location services (Figure 9).

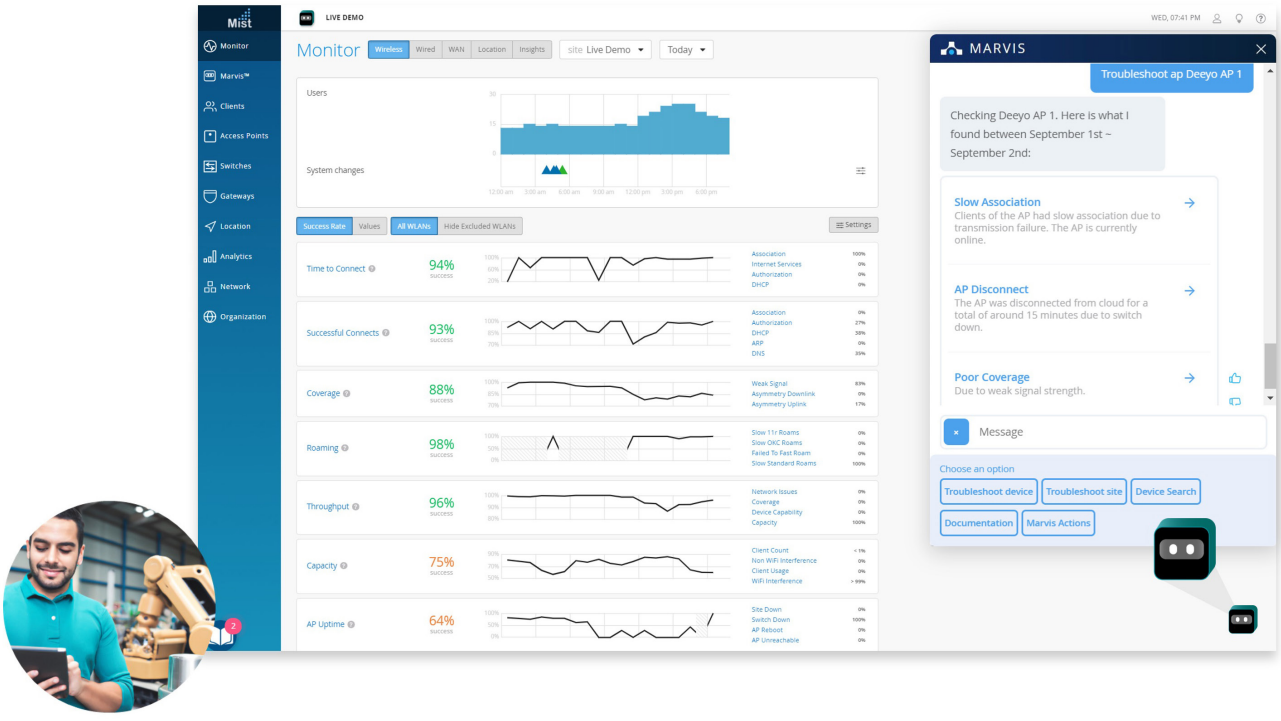

Figure 8: Mist AI and Marvis optimize wireless performance.

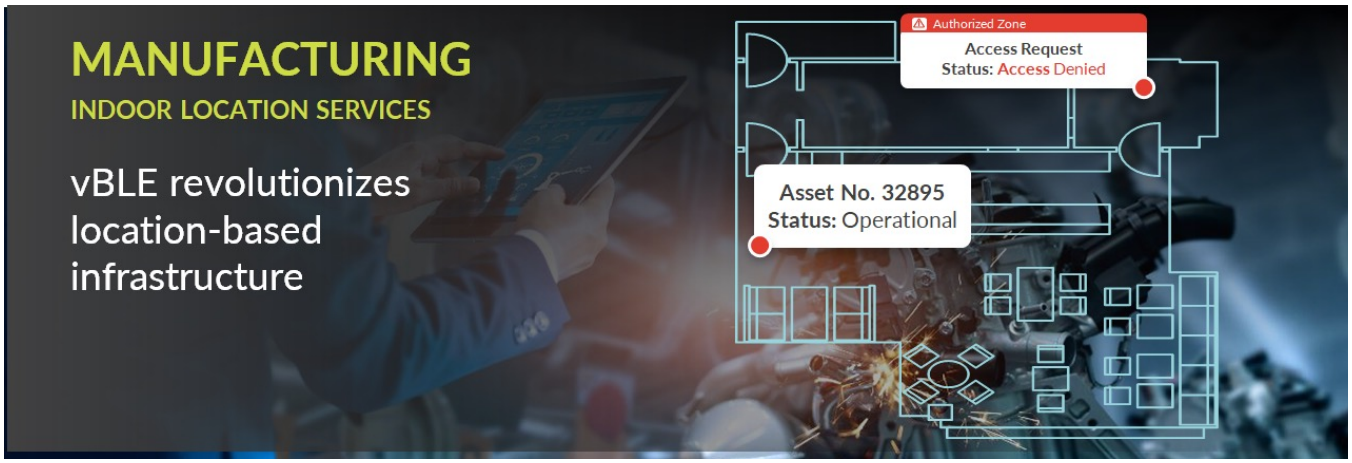

Figure 9: Indoor location services enable better experiences.

Indoor location service technology offers many benefits to the manufacturing industry, especially in the areas of tracking assets, optimizing workflows, and providing workplace safety. With indoor location services, manufacturing staff can:

- Track assets, such as machinery, tools, and inventory, which improves operational efficiency by reducing search time and minimizing asset loss or theft
- Optimize processes and overall workflow efficiency by providing insights into the flow of materials, equipment utilization, and employee movement
- Improve workplace safety improving the placement and movement of workers and equipment and identifying potential safety hazards

These personalized services greatly accelerate digital transformation with enhanced user engagement and key insights. The insights include data points to optimize operations throughout each location. Manufacturers can better understand foot traffic patterns and staffing resources can thus be optimized to accommodate demand.

Juniper Mist User Engagement provides technologies to improve the accuracy and agility of these services, and Juniper Mist Asset Visibility revolutionizes manufacturing operations with immediate identification and location of Bluetooth LE tagged items.

In terms of access, Juniper's Mist Access Assurance combines full network access control (NAC) and policy enforcement to simplify network operations. Also, Juniper Mist IoT Assurance provides a full suite of access control functionality for IoT and BYOD using multiple and private pre-shared keys (MPSK and PPSK).

Wired Leadership

Equipment on the manufacturing network is critical for manufacturers with 24x7 operations. In the wired domain, Juniper EX and Juniper QFX Series Ethernet Switches provide rich telemetry to the Juniper Mist Cloud, which streamlines deployment and management of a campus fabric. The wired network provides metrics for throughput, successful connections, and switch health (Figure 10).

Having Wired Assurance helps IT teams reduce MTTR and deliver a new generation of experience-first networking. As a physical controller is not required, Juniper wired solutions require minimal on-premises physical infrastructure. As a result, manufacturers report needing as little as half the physical space of competing solutions, with corresponding reductions in power consumption. In addition to creating a more reliable and agile environment, moving from controller to cloud allows manufacturers to use a SaaS licensing model for network operations and management.

As with the wireless portfolio, the wired portfolio allows for a streamlined campus deployment. Once deployed, AI-Driven Enterprise solutions ensure simplified troubleshooting. Operators can quickly identify and troubleshoot "needle in haystack" problems like misconfigured VLANs and bad cables.

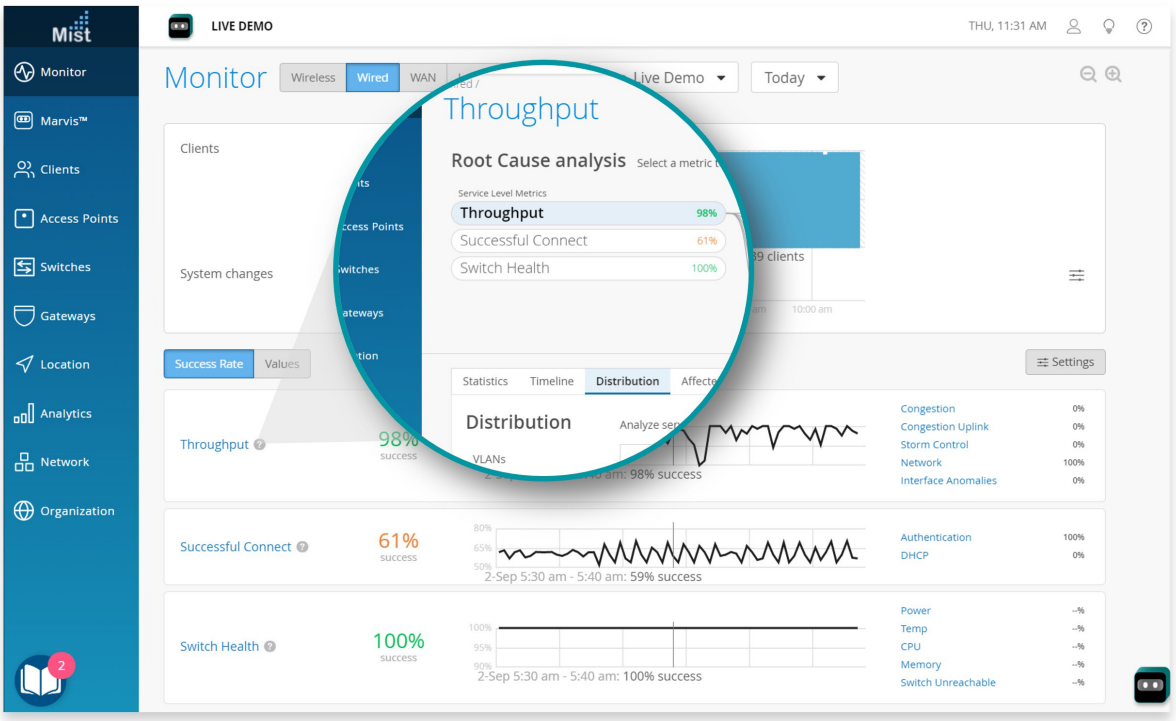

Figure 10: Wired Assurance displays service-level experiences.

Day 0, 1 and 2 Operations

The deployment and provisioning for all Day 0, 1, and 2 operations is simple and secure. Preconfigured devices—access points, switches, and Session Smart Routers—are shipped to sites and can be set up in a "plug and play" fashion in a matter of minutes.

Users can simply scan the claim code on the devices and the predefined configurations are instantly applied. They can then apply additional policies via templates and remotely provide updates from the Mist portal.

With the preconfiguration of device types, port detection, and dynamic configuration, this is a true Zero Touch Provisioning (ZTP) operation. For access points, a deployment service allows for automatic placement and orientation.

This approach scales to any number (thousands) of locations, and proactively ensures exceptional experiences. Administrators can quickly, easily, and accurately configure and make changes to new sites and applications. Juniper Access Points are designed to mount securely within existing ceiling brackets.

For details on these operations, see Implementing Branch Networks for AI-Driven Enterprise Customers. These operations can be made more predictable by having some or all of them performed by a trusted MSP.

Industry Analyst Perspective

Juniper AI-Driven Enterprise solutions have been recognized as the unequivocal leader in the Gartner Magic Quadrant for Wired and Wireless LAN Access infrastructure for three consecutive years (2020-2022). Gartner has positioned Juniper as a Leader, ahead of all other vendors in both completeness of vision and ability to execute.

Juniper is also a leader in the 2023 Gartner Magic Quadrant for Indoor Location Services, Global, and is the only company in the leader quadrant for both of these categories. Manufacturers thus get two industry-leading solutions from one, single network provider.

In addition to leadership positions in 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 financial benefits of the AI-Driven Enterprise portfolio are detailed in this report from ACG Research.

Deployments

AI-driven Enterprise deployments are growing rapidly year over year; this is due to Juniper and Mist AI providing the industry's most sophisticated AIOps, significantly ahead of all other networking vendors.

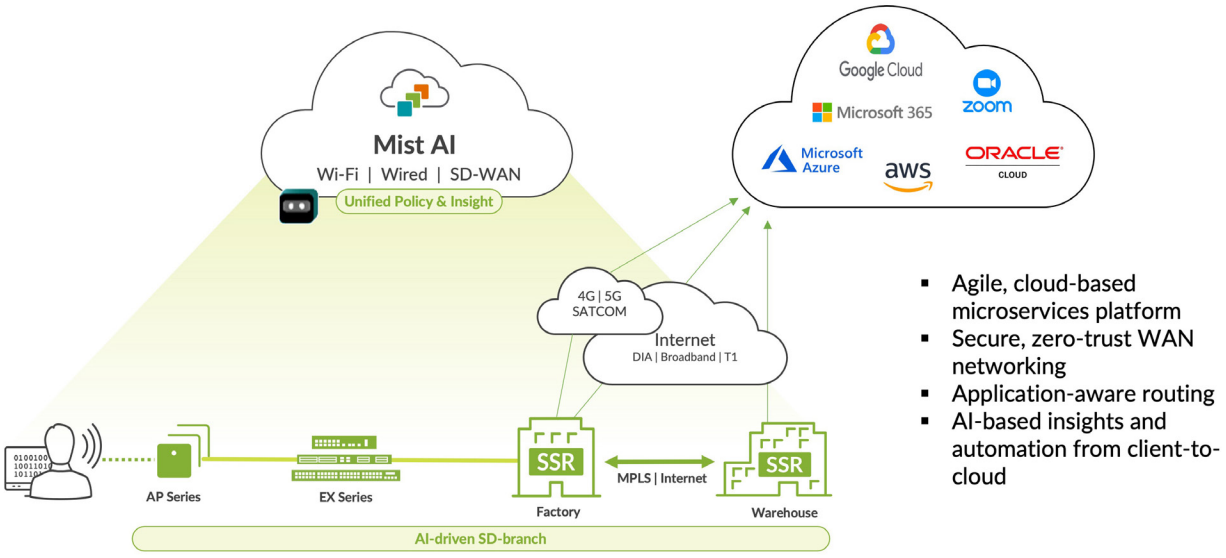

Figure 11: An AI-Driven Enterprise architecture can transform manufacturing networks.

Architecture

A high-level AI-Driven Enterprise architecture is shown in Figure 11.

Mist AI drives the full stack branch and its connections to all domains in the distributed enterprise. This includes Session Smart Router nodes in all locations: branches, headquarters, data centers, and public or private clouds. The solution includes multiple WAN links for redundancy and/or load balancing.

Mist AI and Juniper SD-WAN create and enforce shared policies and AI-based insights for all locations, clouds, users, and devices. The application-aware routing in Juniper SD-WAN is deny-by-default for zero trust security and is tunnel-free for bandwidth optimization.

For brownfield or WAN-only deployments, or when customer-specific capabilities are needed for a particular network function, Juniper SD-WAN is vendor agnostic when it comes to operating with other switching and wireless solutions, or third-party SSE solutions.

AI makes a huge difference to manufacturing IT, and Juniper Mist is fundamentally unique, providing improvements in user experiences and IT outcomes. Customers report as much as 96% improvement on mean time to repair (MTTR), 85% reduced site visits, and a 90% reduction in user-opened support tickets. Escalated tickets are reduced by a factor of 10.

Juniper customers note that Juniper solutions with Mist AI offer the fastest and most efficient rollouts they have ever experienced. See Implementing Branch Networks for AI-Driven Enterprise Customers for more information. These rollouts may also be performed by an MSP.

Ossur Rapidly Connects Offices in All Geographic Regions

Ossur, a multibillion-dollar company with over 4,000 employees that operates in 36 countries, develops, manufactures and sells non-invasive equipment for orthopedics, including bracing and support products and prosthetics. Globalization on this scale requires rapid deployment for sites, application awareness, and bandwidth efficiency for worldwide offices.

Ossur is able to incorporate new offices into their global fabric faster than ever before with AI-Driven SD-WAN, powered by Session Smart Networking. “We accomplished in three weeks what we were unable to achieve in five years with MPLS,” says Einar Dagfinnur Klemensson, Ossur’s platform owner for data center and networking.

Seagate Leverages Juniper’s AI-Driven Operations

Seagate Technology utilizes Juniper’s full stack AI-Driven Enterprise portfolio to support its evolving business needs. Mist AI offers Seagate proactive automation and unique client-to-cloud insight, as well as optimized performance and cost savings in key areas of its IT infrastructure.

Seagate has multiple sites in 18 countries that share vast amounts of data. To decrease costs and optimize application performance, Seagate is moving from a traditional MPLS network to Juniper’s AI-driven SD-WAN solution. Juniper’s 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."

ZF Group Utilizes WAN Assurance to Refresh Hundreds of Locations

ZF Group is a world leader in next-generation mobility systems for autonomous driving, electric vehicles, vehicle safety, and vehicle motion controls. Realizing that future of transportation demands business agility, ZF Group relies on the high performance, scalability, and programmability of Juniper networking from campus to cloud.

In addition to using Juniper QFX Series Switches in the data centers, ZF is rolling out Juniper EX Series Ethernet Switches and Juniper Mist Wired Assurance with the goal of refreshing 400 office locations.

"Successful digital transformation requires companies to deliver applications to users anywhere, at any time, and on any device," says Dr. Rolf Reinema, vice president workplace, infrastructure, operations, and IT security at ZF.

Summary

Manufacturing industries 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 staff and IT staff alike.

Many providers are implementing AI-Driven Enterprise solutions through MSPs. This leads to time and cost savings as IT resources are supplied as needed, and the stability of the solution is guaranteed by the MSP.

The Juniper AI-Driven Enterprise portfolio provides insights to ensure each manufacturing enterprise is optimized to deliver the best experience for all network users. This includes optimizing mobile traffic and streamlining advanced user services.

Juniper is a leader in wired, wireless, and SD-WAN, offering the easiest and most comprehensive Day 0, 1, and 2 operations in the industry. Juniper also leads in indoor location services that drive better user experience and utilization of manufacturing assets.

Next Steps

For more information and assistance in starting or continuing your AI-Driven Enterprise journey, contact your Juniper account representative or inquire about a Juniper AI-Driven Enterprise managed service offering through your trusted provider. In many cases, this can reduce time and costs as IT resources are supplied on demand. You can also work with your representative to set up a reference call with an existing customer.

Finally, you can see firsthand how to perform many of these tasks by setting up an account at manage.mist.com and following the online tutorials. Ask your account representative to help you get started.

Resources

Solution Briefs and White Papers

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

Solution Pages and Case Studies

- Juniper Mist IoT Assurance
- Juniper Mist Access Assurance
- Ossur Case Study
- Seagate Case Study
- ZF Group Case Study

Analyst Recognition

- 2022 Gartner Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure
- 2023 Gartner Magic Quadrant for Indoor Location Services

Videos

- AI-Driven SD-WAN in Action: Design, Deploy, and Operate a Full Stack Branch with Mist AI
- AI-Driven Enterprise in Action–MSP Dashboard Demo
- Juniper AI-Driven Enterprise: Full-Stack AIOps
- The Network for the Next Decade
- Meet Marvis

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™

BLACK BOX
BLACKBOX.COM

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

3510808-001-EN Sept 2023