

# JUNIPER AND ZEBRA DELIVER INTELLIGENCE AT THE EDGE SOLUTION BRIEF

Real-Time Insights From Mist AI Simplify Troubleshooting For Zebra Devices.

## Challenge

*Remotely managing a network with a mix of large scale IoT, data, and voice devices requires accurate location, asset tracking, and the ability to quickly resolve network issues.*

## Solution

*An integrated solution from Juniper Networks and Zebra Technologies enhances intelligence at the edge with client-centered insights. The comprehensive solution integrates Wi-Fi with vBLE technology for real-time, accurate location and asset tracking—delivered with a secure, high-performance, experience.*

## Benefits

- Real-time, AI-driven visibility and root cause identification into Zebra and network devices
- Pinpoint accuracy for Indoor Location Services lets customers find devices that have lost power
- Remote troubleshooting of network issues through a virtual network assistant

## The Challenge

Delivering Wi-Fi networking, streamlining enterprise workflows, and connecting a growing number of mobile and IoT devices become more difficult all the time. Data delivery delays, packet loss in voice communications, and other issues can easily disrupt workflows, lead to inconsistent or lost real-time metrics, and dampen user experiences.

To prevent and quickly troubleshoot these issues while gaining the full benefits of digital transformation, faster wireless, and automation in your enterprise, organizations need visibility into networks and devices. They also need tools that deliver reliable performance and optimal user experiences.

The past several years have unveiled a vast increase in the adoption of Internet of Things (IoT) devices in consumer, edge enterprise, and industrial environments. As of 2023, reports indicate that more than 75 billion IoT devices will be installed by 2025. <sup>1</sup> Furthermore, integrating these devices into business processes improves efficiency by 83%.<sup>2</sup>

Digital transformation—the convenience of mobile and cloud access—combined with faster wireless and the use of AI is making IoT use cases more relevant and valuable for multiple industries. In heterogeneous Wi-Fi networks, connecting IoT and mobile data or voice devices can be problematic if not managed effectively. Delay in data delivery to and from IoT devices can lead to inconsistent or unavailable real-time metrics, while packet loss on voice communication mobile devices can lead to poor user experiences.

These issues are due to inadequate IT tools. They:

- **Lack visibility** between the network and client devices and cannot see and analyze client device and network events
- **Waste resources** due to time consuming and inefficient troubleshooting efforts
- **Increase workplace disruptions** due to lost productivity, lost revenue, and frustrated users

## The Juniper and Zebra Solution

The partnership between Juniper Networks, a leader in AI-driven networking, and Zebra Technologies, an innovator in mobile computing, data capture, and real-time location solutions provides superior wireless network performance and a seamless handheld client experience.

Leveraging Juniper’s mobile Marvis® Virtual Network Assistant client and Zebra’s Wireless Insights, this joint solution provides visibility into networking, connectivity, and application issues (e.g., voice call quality and roaming) when the handheld device is in use. The solution delivers and manages network performance and optimizes user experiences with greatly improved operational efficiency and business productivity (Figure 1).

<sup>1</sup> See [Findstack.com](https://www.findstack.com), 2023  
<sup>2</sup> See [Techjury.net](https://www.techjury.net), 2023



Figure 1: Marvis client sends Zebra handheld telemetry to the Juniper Mist AI engine that displays insights about the end-to-end user experience

Highlights of the joint solution include:

- **Actionable insights** with rich telemetry data from Juniper and Zebra devices, processed by the Juniper Mist™ AI engine, are displayed in the Juniper Mist dashboard
- **Correlation of network and client events** to easily identify the root cause of each issue and pinpoint the exact location of performance degradation, drastically reducing mean time to repair (MTTR)
- **Wi-Fi and vBLE support** enables Zebra offerings, such as [Zebra Device Tracker](#), to easily find missing Zebra Android mobile devices

This technology partnership provides valuable visibility into networking, connectivity, and application issues, such as voice quality, connection analysis, and roaming states. The co-developed solution uniquely highlights the complete Wi-Fi experience (as seen by the device) without the need to run offline synthetic tests.

## Features and Benefits

Table 1 details key features and benefits from Juniper and Zebra.

Table 1: Juniper and Zebra Joint Solution Features and Benefits

Juniper Virtual Network Assistant Features and Benefits	Zebra Wireless Insights Features and Benefits
<p><b>Marvis client:</b> Enable network visibility from the Zebra Android device's perspective that provides:</p> <ul style="list-style-type: none"> <li>• detailed information on how the device sees the Wi-Fi environment</li> <li>• anomaly detection to identify service-impacting events and determine the root cause for rapid remediation and resolution</li> </ul>	<p>Connection events: Decipher what is happening and why, whenever a device tries to connect, roam, and/or disconnect.</p>
<p><b>Microservices-based cloud architecture:</b> Provide <a href="#">AI-driven operations</a> and management at scale of Wi-Fi and BLE services</p>	<p>Roaming events: See what triggered the roam and why (such as poor coverage areas).</p>
<p>Self-Driving actions framework: Leverage <a href="#">Marvis Actions</a> with Mist AI to identify the root cause of issues across IT domains and automatically fix or recommend actions at the network or device level</p>	<p>Voice events: View not only when a call started and stopped but also the call's performance, including key voice metrics such as packet loss, latency, jitter, VoIP link quality, and Wi-Fi link quality (experience insights are provided with explicit metrics)</p>

## Solution Components

Key joint solution components are detailed in Table 2.

Table 2: Key Components of the Joint Solution

Juniper Networks Solution Components	Zebra Technologies Solution Components
<p><b>Marvis client</b>, a software agent installed on end-user devices (clients), views the network from the client's perspective. The Marvis client collects detailed data and telemetry about how the client experiences the wireless connection, including insight into client roaming behaviors.</p>	<p><b>Wireless Insights</b> provides client-based visibility into roaming events, data, and voice performance. Data is obtained directly from the end user's device, using Zebra's exclusive, manufacturer-enabled events and insights.</p>
<p>Juniper wireless <a href="#">access points</a> with <a href="#">vBLE arrays</a> deliver highly accurate <a href="#">Indoor Location Services</a> including asset visibility and wayfinding.</p>	<p>Reliable <a href="#">cordless scanners</a> capture data from the most challenging barcodes the first time, every time.</p>

**Juniper Networks Solution Components**

Juniper Mist [Wi-Fi Assurance](#) provides user service levels, anomaly detection, automated event correlation for troubleshooting, dynamic packet capture, policy configuration, guest WLAN, and more. Mist AI in Juniper Mist [Wired Assurance](#) and Juniper Mist [WAN Assurance](#) provide complete [client-to-cloud](#) experience guarantees.

Juniper Mist [Asset Visibility](#) makes it easy to find key assets and people using detailed location analytics for devices that contain a Bluetooth® LE asset tag and mobile devices with Bluetooth radios. This also provides Last Known location function, used for finding lost devices even without power.

**Zebra Technologies Solution Components**

High-performance [mobile printers](#) provide on-the-spot printing of labels and more for on-the-go productivity, while intelligent, configurable [mobile computers](#), including wearables and rugged tablets, are primed for everywhere connectivity.

Worker-optimized accessories such as voice headsets, [wearable scanners](#), and [head-mounted displays](#) help maximize the benefits of intelligent edge devices and software.

**Solution Examples**

Zebra Wireless Insights and the Marvis client reside on Zebra devices. Juniper’s Mist AI engine works together with Zebra Wireless Insights to automatically collect data from both the network and users’ Zebra devices.

The Mist AI engine continuously monitors and analyzes both network and device data to proactively detect problems before they occur; it corrects issues in real time or notifies network managers of issues, their causes, and recommended actions. It continuously learns and adapts to provide accurate and real-time responses.

Insights from Marvis and Zebra are presented on the Mist dashboard as a single location for customers to review network and device issues in one place. The two solutions work together to ingest telemetry from the device and network and provide insights into device and network health, which include:

- Device connection states and events
- Roaming analysis
- Voice analysis

Using these insights, Juniper provides a clear overview of performance and user experience (Figure 2).

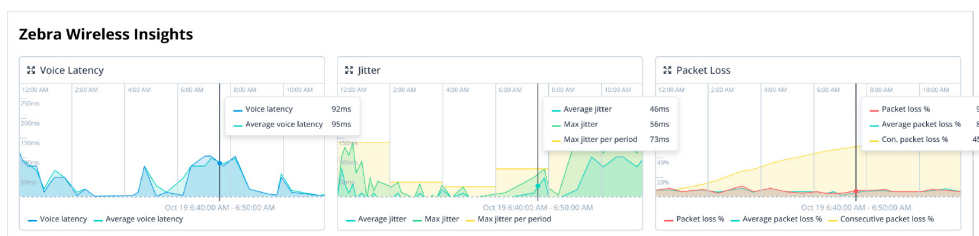


Figure 2: Monitoring and Managing the End-to-End User Experience

The solution significantly reduces site visits, troubleshooting time, and business disruptions. Figure 3 shows a sample detailed readout for device connection states and events.

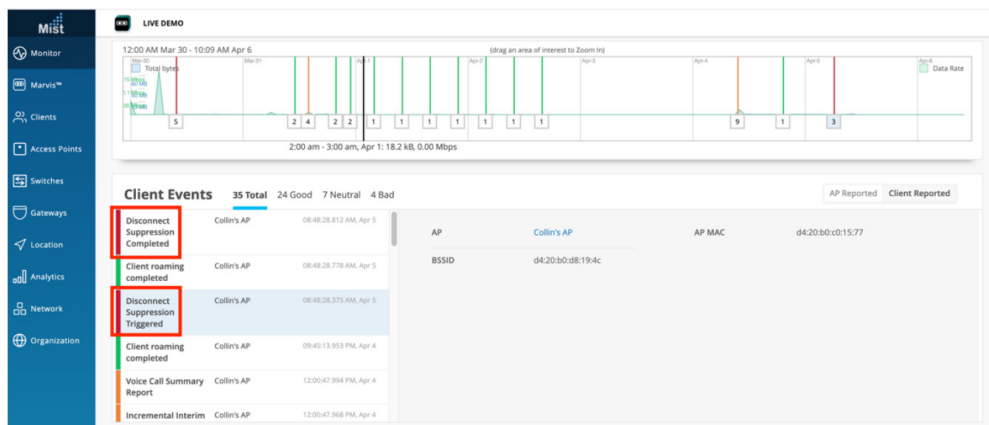


Figure 3: Device Connection States and Events

Figure 4 shows client reporting for voice analysis (top) and roaming analysis (bottom).

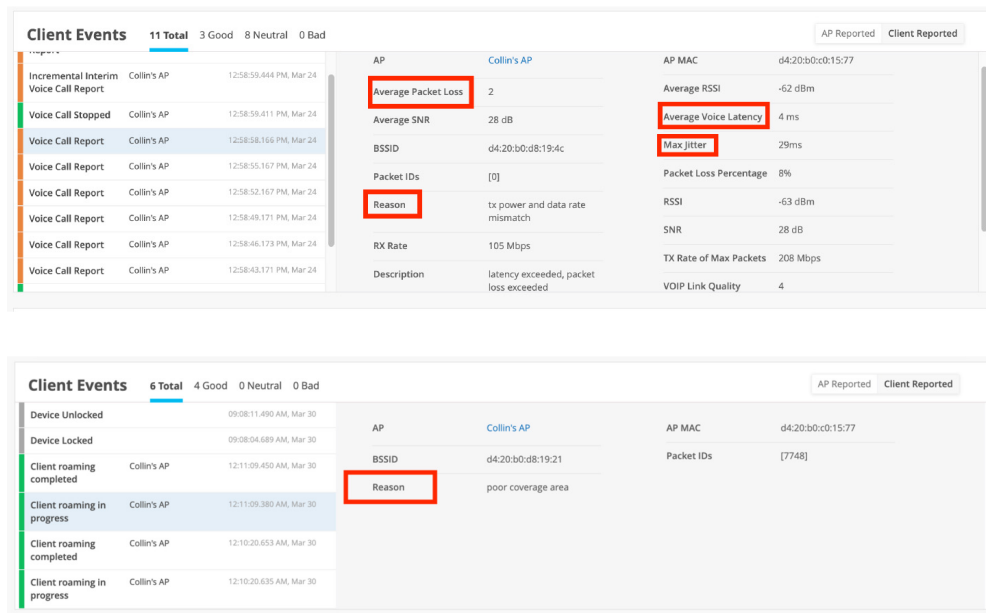


Figure 4: Voice and Roaming Analysis

For step-by-step detail on each of these workflows, see the [Marvis-Zebra Integration Documentation](#).

### Analyst Recognition

Juniper solutions have been recognized as a 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, highest in execution and furthest in vision across all vendors.

Both Juniper and Zebra are leaders in the [2023 Gartner Magic Quadrant for Indoor Location Services](#).

### Industry Use Case Examples

The Juniper and Zebra joint solution applies to a variety of use cases for multiple industries. Warehouses, healthcare, and retail are three common use cases, and the warehouse use case applies to both healthcare and retail.

#### Warehouse

Modern warehouses are optimizing operations and business workflows through the use of mobile and intelligent IoT devices. IT staff in these environments are almost nonexistent, and the deployment of networking equipment is limited to reduce truck rolls and operational costs. With warehouses keeping things spare, it's no wonder that warehouse managers rely on technology providers that can provide reliable, remotely managed wireless and networking solutions with zero-touch configurations.

Furthermore, the increase in intelligent mobile and IoT devices introduces a new set of challenges when trying to remotely diagnose network issues. Remote IT staff who use traditional remote monitoring and diagnostics tools spend too much time analyzing large amounts of complex data.

These challenges call for a new approach to the problem. Zebra delivers intelligence at the edge with its mobile warehouse devices, and Juniper helps Zebra improve user and operator experiences.

Mist AI transforms the way people connect in the modern warehouse, streamlining IT remote operations by providing AI-driven automation, actionable insights, and simple, scalable, and elastic network provisioning. Marvis Virtual Network Assistant supports AI-driven operations and proactively resolves on-site warehouse issues before they occur, while Wi-Fi Assurance replaces manual troubleshooting tasks with automated wireless operations to make Wi-Fi predictable, reliable, and measurable.

On the infrastructure side, Juniper high-performing Wi-Fi 6 and 6E access points, EX Series switches, and Session Smart™ Routers deliver secure wired, wireless, and SD-WAN networking connectivity for warehouses.

#### Retail

Retailers are facing challenges and opportunities that call for emerging network requirements including IoT readiness, AI

Operations (AIOps), and cloud adoption. Retailers need an agile network framework that handles rapidly changing environments and emerging consumer behaviors.

Back-office requirements are similar to the warehouse scenarios detailed previously. In addition, retailers need asset management and real-time inventory visibility, voice and video analytics and surveillance, and the management of asset and temperature tags, sensors, security, and other IoT devices.

At the same time, retail storefronts need enhanced mobile experience for guests and staff, personal content and wayfinding for shoppers, and contactless self-service and checkout, as well as secure shopping and authorized access.

Relevant technologies include IoT platforms, ordering systems for touchless delivery, and contactless payment systems. Key applications include smart, up-to-the-minute inventory systems, loyalty and reward systems, and dynamic merchandise presentations often driven by machine learning algorithms.

Zebra accelerates retail transformation with solutions for inventory and fulfillment, smart store operations, and elevated customer experiences. The Mist AI engine and Marvis incorporate Zebra Wireless Insights to target and improve [Service Level Expectations \(SLE\)](#) for users and the operations teams in retail environments.

## Healthcare

Healthcare environments, like hospitals, pharmacies, and care facilities are leveraging smarter edge devices to connect medical personnel with patients. When edge devices are smart, caregivers can monitor—in real time—patient health and well-being. Most healthcare professionals in hospitals carry mobile handheld devices, such as rugged tablets, to check patient records, or wireless voice communication devices to communicate with other healthcare professionals onsite.

Inside the patient's room, remote patient monitoring automatically collects health metrics like heart rate, blood pressure, and temperature of the patient, sending this data back to healthcare professionals to analyze and make recommendations. Location tracking of patients, IoT devices, and healthcare workers is also vital in these busy environments.

These complex and sensitive environments depend on a reliable network and user experience so that medical professionals can worry about important matters like patient care. Juniper understands these challenges, and strives to provide reliable, high-quality wired and wireless solutions that deliver superior user experiences.

By partnering with Zebra and connecting to intelligent edge devices, such as mobile computers and rugged tablets, Juniper

wireless solutions deliver the unmatched network performance and user experiences healthcare professionals need. Using AI-driven insights, healthcare professionals can be assured that a self-driving network, with actionable steps to remediate network issues, will keep them always connected to patients and other healthcare professionals. With vBLE-enabled, high-performance Wi-Fi 6 and 6E access points, Juniper can assure delivery of real-time patient and location data between healthcare professionals and Zebra intelligent edge devices.

Together, Juniper and Zebra unburden the delivery of patient care via positive patient identification, secure high-performance communication and collaboration, and real-time location and asset tracking.

## Summary—Smarter Troubleshooting and Better Experience

Troubleshooting IT issues at both the client and network levels is time consuming and challenging due to a lack of visibility. Together, Zebra and Juniper Networks enable rapid troubleshooting with unmatched visibility. Zebra Wireless Insights and the Marvis Client provide rich telemetry to the Mist AI engine, which correlates network and client events to pinpoint the root cause when problems occur and provides actionable insights for remediation.

With this “better together” joint solution, enterprises gain faster time to remediation and optimal user and operator experiences when network issues arise.

## Next Steps

To learn more about the Juniper-Zebra technology partnership, contact your Juniper or Zebra account representatives. Juniper provides a [Weekly Mist AI Demo](#), and you can [contact sales or request a demo](#) from Zebra.

You can experience how to perform many relevant tasks by setting up an account at [manage.mist.com](https://manage.mist.com) and following the tutorials. Ask your account representative to help you get started.

## 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.

## About Zebra

At Zebra, we're committed to empowering teams with the mobility and insight to deliver at the cutting edge of excellence. More than just providing intelligent hardware, we offer solutions that give organizations complete visibility to make smart, nimble decisions about what action to take now, and how to plan for tomorrow.

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### 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**  
**www.juniper.net**

### APAC and EMEA Headquarters

Juniper Networks International B.V.  
Boeing Avenue 240  
1119 PZ Schiphol-Rijk  
Amsterdam, The Netherlands **Phone:**  
**+31.0.207.125.700**