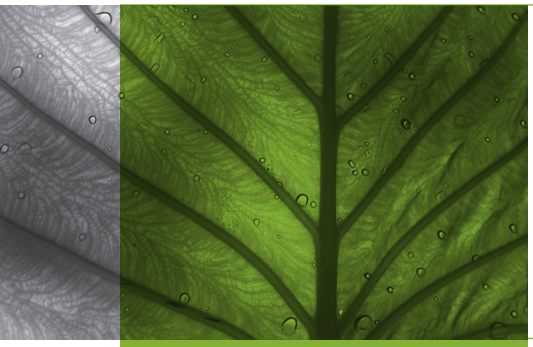


PROVIDING MANAGED INDOOR LOCATION SERVICES TO ENTERPRISES

Benefits of Offering Indoor Location Services in Many Enterprise Verticals

Challenge

- *Growing market share requires service differentiation that is elusive with legacy technologies*
- *Margins are tightening on connectivity and hardware/software services*
- *Offering new services requires planning for high value from incremental costs*
- *Application sprawl and a plethora of overlapping management tools make it difficult to stay ahead of disruptions*
- *Gaps in personnel and technical resources make it hard to fulfill customer demands for superior experience*

Solution

- *Indoor Location Services is the ideal way to enhance the relationships between MSPs and enterprises*
- *User engagement services such as indoor navigation with proximity messages has broad applicability across many verticals*
- *Asset tracking allows enterprises to pinpoint critical materials and personnel throughout the campus*
- *Triggering of IoT devices (such as HVAC systems or cameras) improves customer operations and security*
- *Customers can easily direct employees to available resources such as meeting rooms*

Benefits

- *MSPs and enterprises reduce vendor, appliance, and application sprawl*
- *Improved experience for enterprise staff including but not limited to IT*
- *Increased portfolio monetization for MSPs and revenues for enterprises by fostering greater customer engagement*
- *Simplified operations for rapid ROI and lower TCO*

Challenges for Managed Service Providers

Managed Service Providers (MSPs) enjoy growing markets but continue to face new business challenges. For example, new connection models are eating into revenue, and the urgency to gather new technology and talent continues.

MPLS revenues continue to slow as more and more enterprises turn to Internet connectivity, even for mission-critical needs. This will likely continue, so managing accounts—which had long been a familiar approach of selling circuits and connectivity—has become much more complicated.

In this competitive market, MSPs need to constantly transform to keep up with the pace of innovation. However, doing so can be difficult for those who are often faced with technological debt and a sprawl of management tools. Infrastructure is complex and so is the ecosystem of network operations tools to manage it. The network stack is siloed, and visibility into user experience is difficult to near-impossible.

This must all be addressed to be able to offer new services and to backfill revenue gaps. The key is how to best serve customers, while standing out in a crowded marketplace.

MSPs know they need to be able to offer valuable new services, and that they will have to invest in order to do this. The question is how to minimize operational complexity, keep the investments manageable, and still provide new high value offerings such as Indoor Location Services.

The Way Forward with Juniper

MSPs need to craft offerings that have broad applicability, drive transformation, and widen their TAM. They must find innovative ways to generate additional revenues that don't unnecessarily impart additional complexities to the technology stack.

This is critical, because while it seems intuitive that an MSP should add new service offerings and attract new revenue streams, the reality is that coordinating with new partners for additional solutions, with a new technology, may cut into margins and add another layer of complication for operators and sellers.

A full stack solution with seamless communications and a friendly interface mitigates this risk. It allows MSPs to select, and take to market, industry-leading solutions that help their sellers tack on additional, high margin services to their quotes for branch solutions.

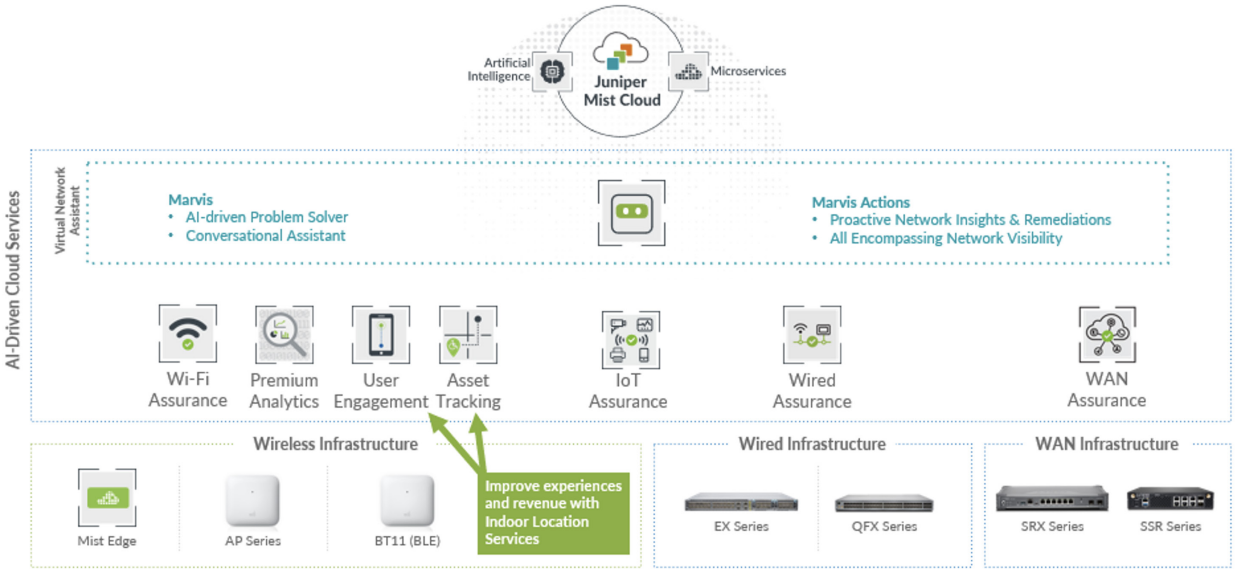


Figure 1: Location Services in AI-driven Enterprise Portfolio

Helping Service Providers Simplify Operations

Juniper Networks continues to develop new ways to help service providers simplify operations, differentiate offerings, deliver premium experiences, and improve their bottom line. MSPs are thus better able to help end customers grow their businesses.

Indoor Location Services—an integrated component of the AI-driven Enterprise—is the perfect solution to meet the challenges faced by many customers in many verticals.

Additionally, a unique feature for service providers looking to simplify multi-tenant operations is the Juniper Mist Managed Services Dashboard, which provides visibility into an MSP's entire managed estate across all customer organizations. Using the dashboard, MSPs provide experience-first networking for users and operators in all network domains—wireless, wired and WAN—across their entire customer base.

Indoor Location Services as Part of the AI-driven Enterprise

Figure 1 shows a high-level view of the AI-driven Enterprise, which provides value-added services that allow providers to differentiate and drive premium user experiences for network operators and end customers with AIOps.

Indoor Location Services is an integral component of the Juniper's Wireless Infrastructure and the Mist AI Cloud.

With Indoor Location Services, MSPs can co-purpose their Wi-Fi solutions to extend their service offerings without taking on additional partners or technology.

The same quality of experience measurements that can be taken throughout the enterprise are valuable to the demands of Indoor Location Services, which are most useful with near-instantaneous and correct response. Key use cases of Indoor Location Services includes user engagement, wayfinding, proximity visibility, and asset tracking.

In deploying Indoor Location Services, MSPs add valuable services to those that customers already enjoy (such as wireless networking with AIOps capabilities). For example, an MSP can build an app for a customer in a "big box" store using APIs packaged into an SDK to give shoppers an enhanced in-store experience with easy-to-use product locators, price matching, and personalized offers. Leveraging location data, store managers can also reposition employees around the store, or locate congested points where customers get stuck and position employees there to help. A similar process is repeatable across a wide variety of verticals.

Indoor Location Services is built on Juniper Wi-Fi; with Juniper as a partner, MSPs can vastly extend their impact and offer a supplemental purpose to this critical solution without adding hardware or management tools.

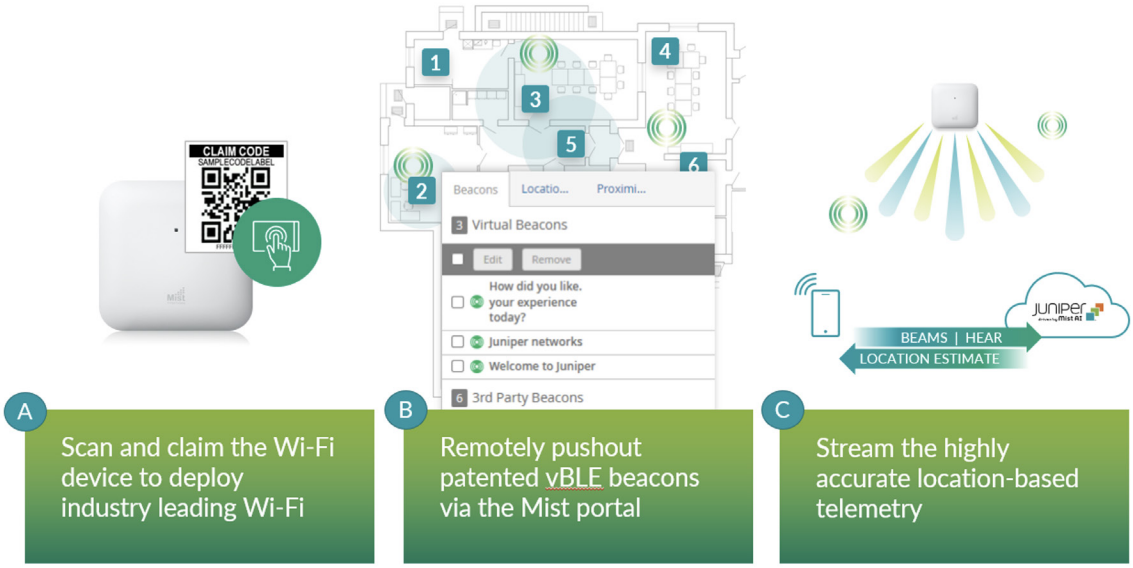


Figure 2: Indoor Location Services—How it Works

Indoor Location Services (Figure 2) utilizes Bluetooth Low Energy (BLE) with a high density of antenna arrays integrated into Mist's Access Points. The service incorporates AI capabilities from the Mist AI Cloud and is unique in its ability to both send and receive BLE signals. Virtual BLE (vBLE) beacons can be distributed liberally and as necessary to deliver the best user experience.

The deployment is simple:

A. Scan and claim the Wi-Fi device to deploy industry-leading Wi-Fi

B. Remotely deploy patented vBLE beacons via the Mist portal

C. Stream the highly accurate location-based telemetry

Once in service, the mobile devices listen to the vBLE beacons and send Received Signal Strength Indicator (RSSI) information to the Mist AI Cloud, which maintains location and map information. The Mist Location Engine in the cloud sends location and map information back to the mobile application. Bluetooth tags can additionally be pinged for asset tracking purposes. Virtual beacons can be created anywhere in the coverage area for personalized experiences.

From the Mist AI Cloud perspective, the interface is intuitive, simple and powerful. It can all be accessed through the same cloud-based portal (Figure 3).

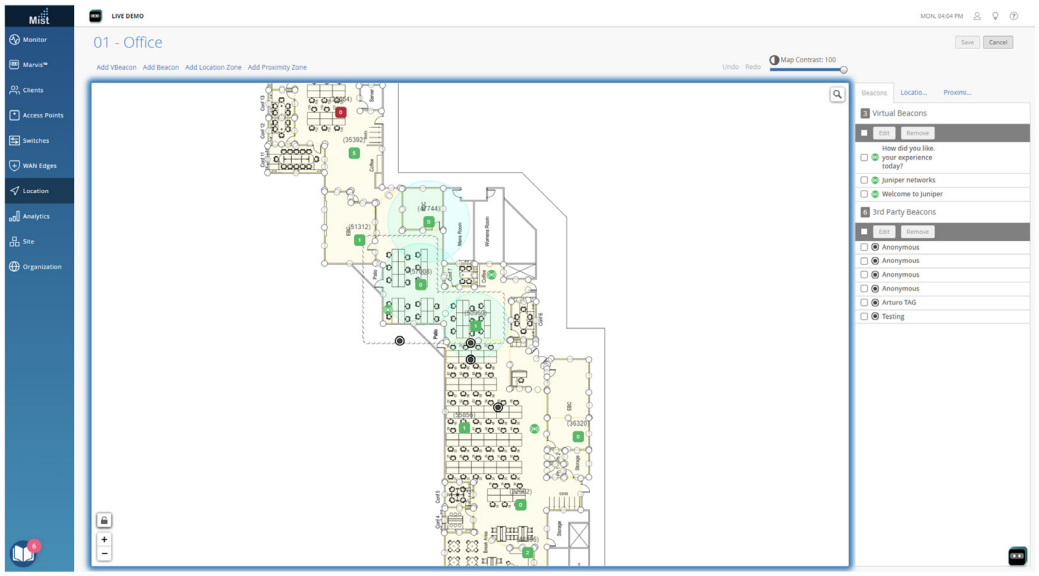


Figure 3: Indoor Location Services Interface

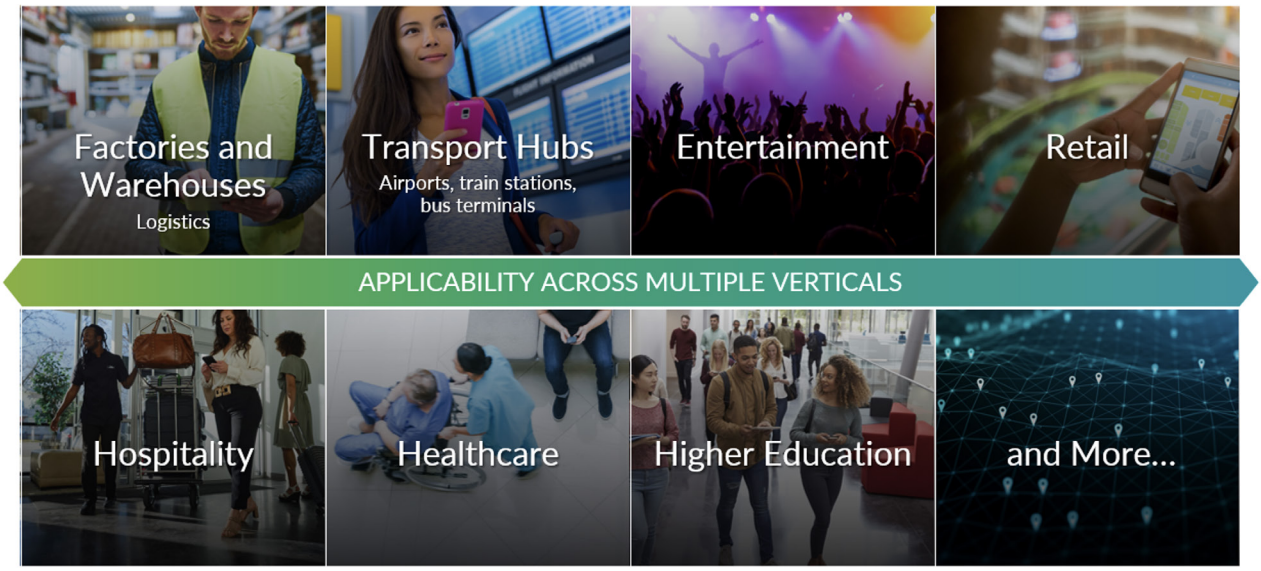


Figure 4: Applicability Across Multiple Verticals

Serving Many Verticals with Indoor Location Services

The solution applies to many verticals (Figure 4).

This allows MSPs to drive stickier engagements and further establish themselves as a key strategic business partner to their customers:

- **Factories and Warehouses:** Facilitate delivery, inventory, and access logistics
- **Transportation:** Improved service at airports, train stations, bus terminals
- **Entertainment:** Experience optimization at concerts, festivals, events etc.
- **Retail:** Consumers find items more easily, employees are located more easily, etc.
- **Hospitality:** Serves the functionality of a maître d' and other staff in travel accommodations
- **Healthcare:** Location to the specialist's office, find a doctor or equipment in the building. Keeps patients safe to tie location and IoT together
- **Higher Education:** Find available study rooms, classrooms, and locating emergency beacons across campus

For all of these verticals, MSPs can offer new industry leading, premium services on top of Wi-Fi connectivity that has little to no overhead. They can innovate offerings with professional services across a wide range of use cases. Accordingly, account teams within MSPs can now sell another industry-leading technology with a value proposition that is easy to communicate.

Business Outcomes

With the AI-driven Enterprise, MSPs can add services, increase revenues, simplify operations, and further evolve into a key strategic partner to end customers without heavy lifting. There are better business outcomes for both providers and their enterprise customers.

For Providers

With a Managed Indoor Location Services offering, MSPs can generate new revenue streams leveraging a solution with broad applicability.

For instance, Mordor Intelligence estimates that the indoor location market will see a CAGR of 21.7% through 2026. And Markets and Markets estimated that global indoor location market will grow from about $7 billion this year to $19.7 billion by 2026.

Using Wireless LAN and Indoor Location Services (which is all built into the AI-driven Enterprise portfolio), providers get two market leading solutions in one, without the added complexities of additional hardware or software.

This is a compelling supplemental offering: providers immediately extend and co-purpose the capabilities of an industry leading Wi-Fi and Wired LAN solution, and simplify the management tool portfolio with a single, microservices cloud-based portal to manage user experience and engagement, all built on a 100% open API architecture.

Furthermore, as mentioned above, the Juniper Mist Managed Services Dashboard provides visibility into an MSP's entire managed estate across all customer organizations. Using the dashboard, MSPs provide experience-first networking for users and operators across their entire customer base.

For Enterprises

With a managed wireless offering powered by Juniper, enterprises get a best-in-class Wi-Fi experience in addition to industry leading Indoor Location Services. Combined together, enterprises can reduce overall TCO, minimize appliance and vendor sprawl, and drive greater revenues, all while accelerating digital transformation.

Conclusion

By using Juniper access points and the Mist SDK, MSPs can deliver pervasive and reliable Wi-Fi connectivity with consistent coverage everywhere, along with scalable and highly accurate Indoor Location Services utilizing vBLE technology.

This combination greatly accelerates the digital transformation initiatives of an MSP's customers. Enterprises gain valuable insights into their workflows and increase productivity with services such as wayfinding and asset tracking.

The integration of Wi-Fi and Indoor Location Services allows customers to simplify operations and consolidate these disparate services into a single industry-leading solution. This ensures improved performance and an overall TCO reduction for these services.

Finally, MSPs can easily tap into Juniper's large partner ecosystem to develop powerful and engaging applications across a wide variety of industries.

Resources

Video

- View the Indoor Location Services Video for a demo and executive discussion of benefits

Web Pages

- Indoor Location Services
- AI-driven Operations
- Wireless Access
- Marvis Virtual Network Assistant

Data Sheets and Solution Briefs

- Mist MSP Dashboard Data Sheet
- Client to Cloud Assurance with an AI-driven Enterprise

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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