

REALIZE SCALABLE, AFFORDABLE INFRASTRUCTURE FOR MASSIVE IOT

Harness the power of Thinaer active and passive BLE beacons, an IoT platform, and AI-backed insights combined with Juniper Access Points for a reliable, scalable M-IoT infrastructure.

Challenge

Companies struggle to effectively deploy and scale end-to-end IoT solutions due to high costs and limited data insights. They lack integrated solutions that allow them to collect data across operations and make impactful business decisions based on that valuable data.

Solution

The Juniper and Thinaer joint solution enables businesses to unlock IoT data insights by leveraging Juniper access points and advanced analytics. The Thinaer active and passive BLE sensors coupled with the Thinaer platform provide an end-to-end IoT solution at scale.

Benefits

- Streamline inventory management and increase employee productivity
- Limit infrastructure needs, reducing deployment costs
- Simplify scaling of massive IoT use cases

The Challenge

Industry research shows that the Industrial Internet of Things (IIoT) market continues to grow at an impressive pace. The global industrial IoT market was valued at \$313.27 billion in 2020, and it is expected to reach a value of **\$607.73 billion by 2026**, registering a CAGR of 12.3% over the forecast period 2021-2026. Although the market is growing, organizations are faced with multiple challenges of how to effectively deploy IIoT and digital transformation strategies—especially in large environments with massive amounts of IoT devices.

A Massive IoT (M-IoT) deployment involves the deployment of hundreds of thousands to millions of connected smart devices that monitor and collect data on various aspects of industrial operations. These operational areas include production processes, machine performance, energy usage, and supply chain logistics. These smart devices are typically equipped with sensors that collect data on KPIs and transmit this data to a central data platform for analysis.

The deployment of massive IoT devices can have significant implications for industrial businesses. By collecting and analyzing vast amounts of data from these devices, businesses can gain insights into their operations that were previously unavailable or difficult to obtain. This can enable businesses to optimize their operations, reduce costs, and improve the overall efficiency and productivity of their operations.

Several types of business decisions can be made with the data collected and analyzed from a M-IoT deployment at an industrial scale. A few examples are:

- **Operations and supply chain optimization:** By collecting data on inventory location, movement, and pinpointing lost inventory, businesses can optimize their supply chain operations to reduce lead times, improve on-time delivery, and eliminate unnecessary costs.
- **Preventative maintenance:** By collecting data on machine performance and using machine learning algorithms to analyze this data, businesses can prevent equipment downtime. This can reduce maintenance costs, as well as improve the overall reliability of equipment.
- **Energy management:** By collecting data on energy usage across an industrial facility, businesses can identify areas of inefficiency and implement energy-saving measures. This can reduce energy costs and improve sustainability.
- **Quality control:** By collecting data on production processes and product quality, businesses can identify areas for improvement and optimize their production processes to improve product quality and reduce waste.



A major concern for companies considering a massive IoT deployment is ensuring that it delivers value. Based on McKinsey research, **70%** of digital transformation initiatives do not reach their full potential. An often missed component in M-IoT deployments is to unify the data in a singular platform that can integrate with multiple in-house systems. These types of platforms are integral to successful deployments and digital transformation.

To achieve the promise of IIoT, organizations need scalable solutions that can collect, manage, and analyze the massive amount of valuable data coming from IoT sensors. When it comes to deploying IIoT solutions, organizations need to understand:

- Where can operational inefficiencies be improved?
- What data is needed to inform business decisions?
- How can IIoT data complement existing systems?

The Juniper Mist and Thinaer Solution

Juniper and Thinaer have partnered to deliver an end-to-end IoT solution designed for massive IoT deployments. Juniper® High-Performance Access Points, working in conjunction with Juniper Mist™ cloud and Mist AI deliver premium wireless access capabilities. The Thinaer IoT platform, real-time dashboard, and advanced analytics provide data-driven insights for better business decisions.

The combined Juniper and Thinaer solution provides businesses with the opportunity to deploy and scale IoT transformation across the business enterprise. By using Juniper access points and Thinaer IoT-enabled sensors, which provide real-time location and application data, as well as AI-driven business insights, businesses can create a powerful, massive IoT infrastructure.

The Juniper Mist and Thinaer solution allows organizations to avoid the typical choke points that come with passive technology. The solution enables the blending of passive BLE and active BLE with extreme data sensors that can track temperatures up to -1,000 degrees and vibrations from up to 52,000 data points per second. Within this type of sophisticated infrastructure, massive IoT becomes truly possible.

Features and Benefits

- Streamline inventory management and increase employee productivity—Sonar, the Thinaer front-end dashboard, streamlines asset management by generating insights from real-time location and application data gathered from on-site machines and equipment. The valuable asset data is analyzed and delivered in graphs and reports on Sonar to help track assets and keep accurate inventories that save employee time.
- Limit infrastructure needs, lowering deployment costs—Juniper access points collect and route IoT sensor data to the Thinaer IoT platform, reducing the need for additional infrastructure to deliver Thinaer's AI-driven business insights.
- Easily scale and support massive IoT use cases—The Juniper Mist and Thinaer solution permits simple scaling of massive

IoT use cases, such as asset management, machine usage, and supply chain pedigree. The combination of active and passive BLE technology collects trillions of data points from a range of assets located throughout an organization.

Solution Components

Thinaer helps organizations sense and monitor every asset and uncover real-time insights in massive IoT deployments. The IoT platform, sensors, beacons and real-time dashboard improve operations and optimize productivity. Juniper Mist solutions, driven by Mist AI, offer market-leading wireless services, automation, and AI. They are part of the Juniper AI-Driven Enterprise portfolio and deliver network intelligence and automation across wired, wireless, and wide area networks.

In this joint solution, the following Juniper Mist components are included:

Juniper Mist cloud: All wireless deployment, operational, and management functions are handled via the Juniper Mist cloud, which delivers Wi-Fi and virtual Bluetooth LE services:

- Juniper Mist Wi-Fi Assurance includes user service levels, anomaly detection, automated event correlation for troubleshooting, dynamic packet capture, policy configuration, guest WLAN access, and more.
- Marvis™ Virtual Network Assistant provides natural language queries with integrated help desk functionality for rapid and simple root cause determination and problem resolution while realizing the Self-Driving Network™ with its Marvis Actions framework.
- Juniper Mist User Engagement pushes location-based information to mobile users, such as turn-by-turn directions and proximity notifications.
- Juniper Asset Visibility finds high-value resources such as shipping pallets, wheelchairs, security personnel, and more.
- Juniper High-Performance Access Points support on premises Wi-Fi, BLE, and/or IoT access.

The Thinaer solution includes the following components:

- Sonar, a real-time data dashboard democratizes IoT sensor data, making it easy for everyone to make decisions based on data-driven maps, tables, and other data visualizations.
- API connectivity integrates Sonar with other enterprise platforms through the Representational State Transfer (REST) framework, allowing easy connection to systems.
- Statistical and AI modeling identifies misplaced assets and quickly reconciles asset management inefficiencies with out-of-the-box statistical and AI modeling such as Cluster Analytics
- Massive IoT alert engine notifies users when assets or equipment are out of compliance or when assets are moving throughout a facility.

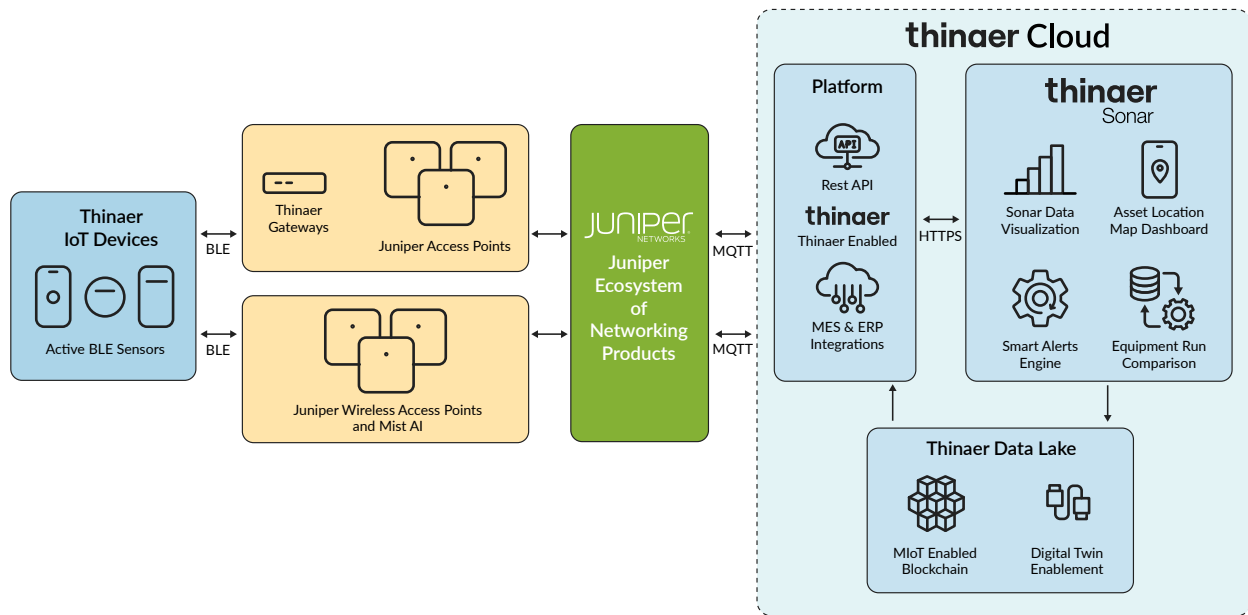


Figure 1: Juniper and Thinaer integrated topology

Summary

Creating a powerful and affordable IoT infrastructure is possible by combining Juniper access points with Thinaer's real-time location, application data, and AI-driven business insights, generated by millions of valuable assets and from raw materials. Organizations can understand where their assets are, what their equipment is doing, and how they can streamline efficiency. By leveraging Juniper access points and Thinaer's active and passive BLE sensors, business can generate millions of data points relating to asset location, environmental conditions, machine health, and supply chain pedigree. Obtaining this data and scaling across the enterprise has never been easier or more affordable.

Next Steps

To learn more about the joint Juniper and Thinaer solution, please contact your Thinaer or Juniper Mist representative, or visit thinaer.io and www.juniper.net

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 Thinaer

Thinaer is a Platform as a Service that synthesizes millions of physical, digital, and human experience data points every second to create AI backed business insights.

Thinaer is trusted by leading organizations in manufacturing, defense, and retail. Thinaer provides high-scale, real-time location and application data, as well as AI-backed business insights from data generated by millions of valuable assets and from raw materials. Our customers are in aerospace, healthcare, automotive, CPG, and space agencies.



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