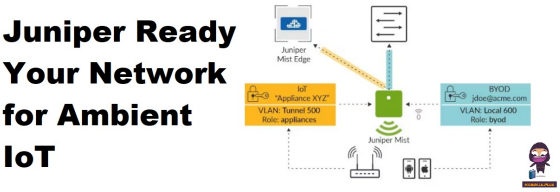

Juniper Ready Your Network for Ambient IoT User Guide

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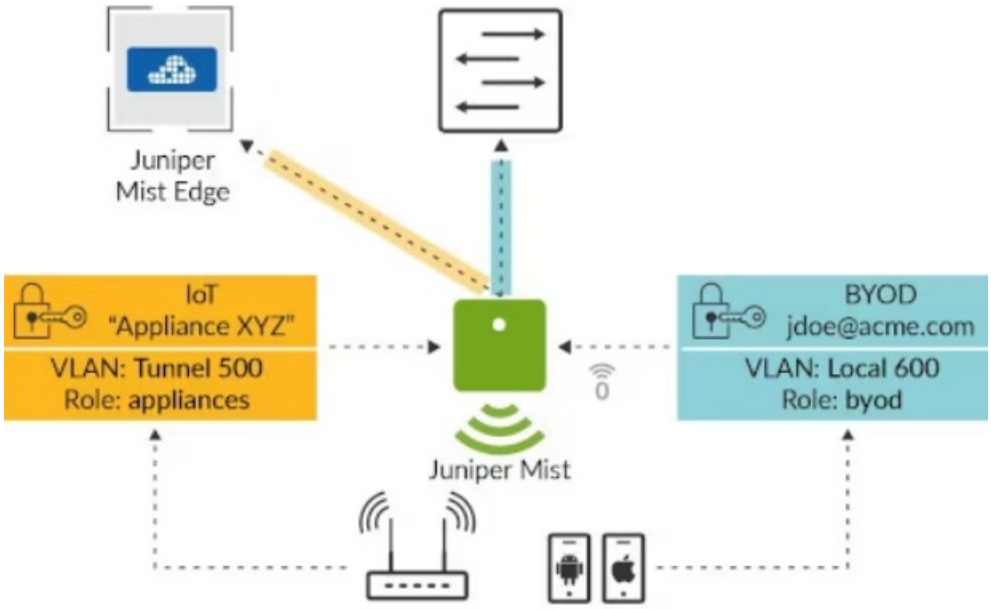

Product Information

Specifications:

- Product Name: Ambient IoT Solution
- Components: Wiliot's IoT Pixels, Juniper Access Points
- Features: Asset temperature monitoring, Real-time inventory location, Scan-free inventory automation, Automated traceability

Product Usage Instructions

- **1. Ready Your Network:**
  - Prepare your network for Ambient IoT by combining Wiliot's IoT Pixels with Juniper Access Points.
- **2. Attach IoT Pixels to Assets:**
  - Attach the battery-free Bluetooth IoT Pixels to your assets for continuous data streaming.
- **3. Access Real-Time Insights:**
  - Utilize the Wiliot Cloud to access real-time insights on asset temperature, environment, and inventory location.
- **4. Benefit from Ambient IoT:**
  - Experience asset-level indoor location tracking with accuracy, continuous visibility, and no manual scanning required.

FAQ

- **Q: What are the key components of the Ambient IoT solution?**
  - A: The key components include Wiliot's IoT Pixels for asset tagging and Juniper Access Points for data transmission.
- **Q: How often does the IoT Pixels transmit location data?**
  - A: The IoT Pixels transmit location data every two to 10 minutes with an accuracy of 1-5 meters.

READY YOUR NETWORK FOR AMBIENT IOT WITH JUNIPER MIST AND WILIOT SOLUTION BRIEF

Combining Wiliot's IoT Pixels (Battery-Free Bluetooth Stickers) With IoTReady Juniper Access Points Creates Real-Time Visibility For All Your Assets At Scale.

Challenge

Retailers are under increasing pressure to improve product quality and availability while dealing with labor shortages and outdated inventory systems. To compete online and meet instore customer expectations, they need intelligence and solutions that provide accurate visibility into inventory and item locations.

The challenge

Retailers are facing increasing pressures on multiple fronts. Customers are demanding higher-quality products, immediate availability, and seamless shopping experiences both online and offline. At the same time, labor shortages, shrinking floor space, and an expanding array of SKUs are reducing on-hand inventory. In this environment, an inventory system's ability to swiftly respond to, forecast, and fulfill customer needs can make or break an earning cycle. However, traditional inventory systems, whether barcode- or RFID-based, have changed little since their inception decades ago—a time when online shopping was not prevalent and manual labor was relatively cheap. These labor-intensive traditional systems come with inherent limitations; they depend on periodic manual scans at a few checkpoints, resulting in limited accuracy of in-store inventories and poor customer experience for on-shelf availability. Online competition has led in-store customers to demand higher-quality products and availability. In the grocery sector, this includes the expectation of fresher, safer food options that can be traced back to their source and accurately recalled if contaminated with foodborne diseases. Additionally, customers expect products to be readily available during in-store shopping and to experience faster, more reliable deliveries for online purchases. Real-time inventory visibility and management are increasingly critical, especially with the rise in popularity of Buy Online, Pick up in Store (BOPIS). Consumers expect inventories reported online to match the actual in-store stock levels. Any discrepancy between the two can significantly reduce the convenience and trust associated with this service. The solution lies in achieving greater precision in inventory accuracy. Unfortunately, traditional inventory methods often focus on increasing the frequency of stock checks, whether through manual counts or scan tunnels, to capture snapshots of inventory at specific points in time. This approach presents two challenges: Dwindling labor pools and rising operating costs make it financially challenging to justify, and modern supply chains already incorporate numerous inventory checkpoints, resulting in marginal returns from adding more. Consequently, there's an increasing need for businesses to embrace new inventory technologies that offer continuous visibility without adding manual labor or substantial costs.

Solution

Ambient IoT brings the power of the internet down to the item and case level, unlocking unprecedented intelligence about retailers' inventory and store operations. Combining Wiliot's IoT pixels (battery-free Bluetooth tags) and infrastructure with IoT-ready **Juniper Access Points** enables retailers to immediately harness the power of ambient IoT across their networks.

The Juniper Mist-Wiliot solution

Ambient IoT is transforming inventory and retail intelligence by extending the power of the internet to the item and case level. Wiliot pioneered this advancement with IoT Pixels— compute devices embedded in stickers, powered by radio waves, that cost cents. They measure environmental factors like temperature and humidity and transmit data via Bluetooth so that the Wiliot Cloud can deliver real-time insights crucial for smarter inventory management. The elimination of batteries in IoT Pixels is a key innovation, making them cost less and easier to dispose of with no maintenance required. The effectiveness of Ambient IoT deployments relies on a network comprised of two key components: "bridges," or low-cost Bluetooth devices that serve as both energizers and communication relays, and "access points," which are internet-connected devices that facilitate data transmission to and from the cloud. The Wiliot Cloud centrally oversees all bridges across an entire deployment, continuously monitoring and managing individual settings to maintain optimal network performance. This communication framework can be

simplified with an internet access point already tailored for Ambient IoT. With Juniper access points, Juniper Networks is at the forefront of networking, delivering the first Ambient IoT-ready access points that seamlessly connect Wiliot's physical installations to the cloud. Juniper's robust infrastructure efficiently manages diverse Ambient IoT data, guaranteeing reliable connectivity and effective bridge management through the Wiliot cloud. Together, Juniper Mist and Wiliot create a seamless platform that brings the benefits of ambient IoT to businesses at any scale. Customers can expect unprecedented visibility and insights into their product quality and inventory intelligence while relying on familiar networks and service.

Benefits

By readying your network for Ambient IoT, and attaching IoT pixels to your assets, you can get a continuous stream of data to support:

- Asset temperature and environment monitoring
- Real-time inventory location
- Scan-free inventory automation
- Automated traceability

Features and Benefits

The Wiliot and Juniper Mist IoT platform creates a stream of visibility data for all your assets tagged with IoT Pixels. When connected to an Ambient IoT network, these pixels offer new levels of continuous visibility, with no scanning or manual labor. This delivers a host of benefits throughout the supply chain without added labor. including:

Temperature handling compliance.

Ambient IoT Pixels provide real-time, asset-level temperature monitoring on an ultra-low-cost smart tag, marking a breakthrough in ensuring the high quality and trustworthiness of every single sensitive good sold. Previously, monitoring relied on a patchwork of pallet or container-level temperature sensors that could not discern microclimates—which can vary by as much as 20 degrees—within shipment containers With Ambient IoT, retailers and customers can now guarantee that every asset was handled correctly throughout its journey.

Asset-level indoor location.

Assets equipped with Ambient IoT Pixels continuously transmit their location within an accuracy of 1-5 meters at a cadence of every two to 10 minutes. This stream of real-time location data has shown value throughout product supplchains. For example, distribution centers for a major e-commerce retailer were able to locate 80% of packages missing from their conventional scan points, substantially increasing their efficiency and customer satisfaction.

Scan-free Inventory automation.

The continuous visibility stream provided by Ambient IoT technology revolutionizes inventory management. Not only are manual inventory scans no longer necessary, but customers can also create actionable real-time alerts that notify staff when inventory replenishment or reordering is necessary. This shift represents a transition from a passive inventory system of addressing issues after they occur to one that proactively solves problems, ensuring customers never encounter out-of-stocks before inventory is replenished. Such advancements have significantly improved the quality of service for both in-person and online retailers, as well as retailers offering BOPIS. Automated traceability. Ambient IoT Pixels can be configured to automatically collect where, how, and by whom they were handled throughout the supply chain. This has proven invaluable for food safety: The Food Safety Modernization Act section 204 (FSMA 204) has mandated the need to precisely trace higher-risk foods and produce throughout the supply chain to address the growing risk of foodborne illnesses. Automated tracking with Ambient IoT provides a more surgical approach to food recalls. Instead of broadly recalling entire SKUs from

shelves across the U.S., causing mass panic, retailers can now identify and remove only the specific containers that were likely affected based on their handling conditions and supply chain route. This approach minimizes disruption while maintaining consumer confidence in the safety of the remaining products. Solution components

The Juniper Mist solution includes the following components:

- **Juniper Mist Cloud**: All wireless deployment, operational, and management functions are handled via the AI-Native Juniper Mist Cloud, which delivers the following Wi-Fi and **virtual Bluetooth LE (BLE) services:**
- Ambient IoT-ready access points: Juniper access points are designed to receive and route IoT Pixel data to the Wiliot Visibility Platform and manage the network of Ambient IoT bridges
- **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 enabling a self-driving network through the Marvis Actions framework
- **Juniper Mist Asset Visibility**: Locates high-value resources, such as shipping pallets, wheelchairs, and security personnel, in real time
- **Juniper access points:** Provide on-premises Wi-Fi, BLE, and/or IoT access
- **Juniper Mist Premium Analytics:** Enables users to quickly analyze behaviors, such as dwell times, asset movement, and zonal metrics, over longer-term time periods

The Wiliot solution includes the following components:

- Ambient IoT Pixel: A compute device embedded in a sticker that powers itself through radio waves and costs cents Ambient IoT Pixels measure temperature, humidity, and other factors in the nearby environment, sending the data via Bluetooth to Ambient IoT bridges
- Ambient IoT Bridges: Fixed or mobile Bluetooth devices that create the network for Ambient IoT coverage. They serve as energizing and Bluetooth-receiving hubs, powering IoT Pixels, receiving and enriching their data, and relaying it to Juniper access points
- Wiliot Visibility Platform: Wiliot's cloud transforms raw sensory data into powerful insights, using machine learning-based algorithms that learn and improve over time, leading to a smarter ambient IoT network with time and scale. These insights are delivered to simple endpoints, allowing endless opportunities for connected apps and integrations

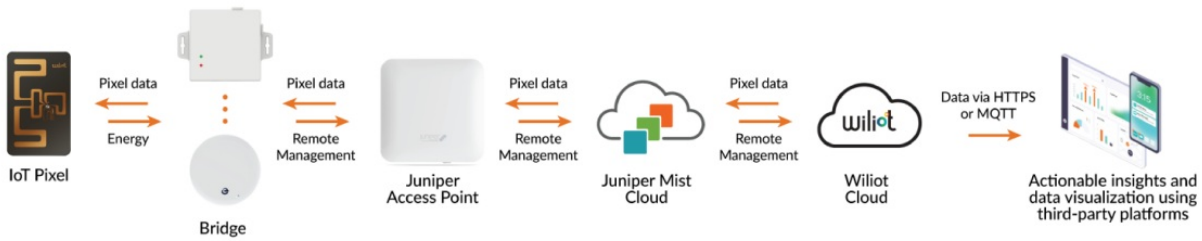

Figure 1: IoT Pixel data is transmitted though Juniper access points and the Juniper Mist Cloud to the Wiliot Cloud

Summary—Modernize your inventory systems with ambient IoT

Ambient IoT is revolutionizing inventory and retail intelligence by extending internet connectivity to individual items

through Wiliot's innovative IoT Pixels. These postage stamp-sized compute devices, embedded in stickers and powered by radio waves, collect environmental data and transmit it via Bluetooth for real-time insights facilitated by the Wiliot Cloud. Innovative infrastructure components, including low-cost Bluetooth bridges that are centrally managed by the Wiliot Cloud, and Juniper Access Points, that further enhance connectivity and facilitate seamless integration between physical installations and the cloud, support deployments. This transformative technology modernizes inventory systems, enabling retailers to offer enhanced services, such as precise temperature monitoring, item-level freshness calculations, and improved supply chain visibility in support of evolving marketplace demands.

Next steps

To learn more about the joint Juniper Mist-Wiliot solution, please contact your Wiliot or Juniper representative, or visit **https://www.wiliot.com** and **https://www.juniper.net**.

About Juniper Networks

Juniper Networks believes that connectivity is not the same as experiencing a great connection. Juniper's AI-Native Networking Platform is built from the ground up to leverage AI to deliver exceptional, highly secure, and sustainable user experiences from the edge to the data center and cloud. Additional information can be found at **www.juniper.net** or connect with Juniper on **X** (formerly Twitter), **LinkedIn**, and **Facebook**.

About Wiliot

Wiliot is an ambient IoT data carrier platform. Our Visibility Platform connects the digital and physical worlds using IoT Pixels, battery-free smart tags that push data to the cloud in real-time without human intervention. Our platform exists within a fast-growing ambient IoT ecosystem, where partners also provide tags and edge devices. Our mission is to make every single thing an agent of change by adding intelligence and automation to food, apparel, packaging, pharmaceuticals, and other products. Visit **www.wiliot.com** to learn more.

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Documents / Resources

	Juniper Ready Your Network for Ambient IoT [pdf] User Guide Ready Your Network for Ambient IoT, Your Network for Ambient IoT, Network for Ambient IoT, Ambient IoT, IoT

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- Internet of Things (IoT) Platform | Wiliot
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