JUNIPER MIST USER ENGAGEMENT DATASHEET

Product Overview

The Juniper Mist User Engagement service delivers high accuracy, real-time wayfinding and indoor location-based proximity notifications to engage users in meaningful ways. The service can help navigate customers, guests, or patients to a destination or send them proximity messages, advertising, and contextual offers.

The service is enabled by the Juniper Mist Cloud, machine learning, and the patented virtual Bluetooth low energy (vBLE) antenna array within Juniper high-performance Access Points. The unique combination eliminates manual calibration so that engagement services are easy to deploy and scale. The future-ready access points with built-in User Engagement capabilities provide unprecedented accuracy, intelligence, and agility to engage users and customers with immersive and contextual user experiences.

Product Description

The Juniper® Mist™ User Engagement cloud service delivers indoor location capabilities for context-based interactions with users via mobile applications, leveraging standards-based Bluetooth LE technology with Juniper Wi-Fi Access Points. User Engagement is built on the Juniper Mist Cloud, a scalable microservices-based cloud platform, and leverages Juniper's virtual Bluetooth® LE (vBLE) technology with a differentiated mobile SDK that has sensor fusion for IOS and Android OS. This powerful technology combination delivers real-time, accurate blue dot location for mobile applications and virtual, beacon-based push notifications.

Juniper Access Points with a patented 16-element vBLE antenna provide extreme low latency location estimates at extremely high scale using the open and programmable microservices-based Juniper Mist cloud architecture. This enables the industry's most accurate and scalable location services, without the need for battery-powered BLE beacons or manual location calibration. Internal passive antennas in the Juniper Access Points boost transmit power and produce directional beams for 1- to-3-meter location accuracy. With the Juniper vBLE technology, you can more easily deploy and scale user engagement services with unprecedented accuracy and agility.

User Engagement enables real-time location services for mobile applications integrated with mapping solutions and mobile device hardware. Possible use cases are:

- **Retail** applications that give businesses better control over their users' mobile journeys. Retailers can deliver rich in-store experiences, with features like contextual offers, easy product navigation, and personalized messages, creating a seamless and rewarding customer experience.
- **Healthcare** applications allow providers to deliver wayfinding and turn-by-turn navigation to outpatients and visitors, personalized engagement for patients, push notifications, and volunteer assistance.
- **Higher Education** institutions can offer accurate wayfinding to classrooms, auditoriums, and food services while enhancing overall student and staff experiences.
- **Enterprise businesses** can streamline employee operations with real-time indoor positioning, directing them to available resources and facilitating communication.
- **Warehouse managers** can direct employees to products for pickup, minimize walking routes, and push notifications to help locate products or other assets.
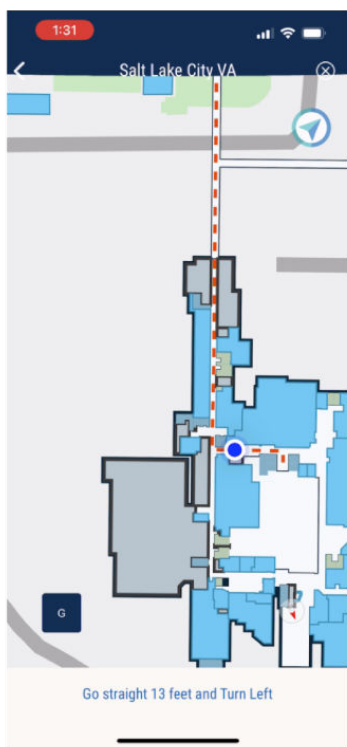
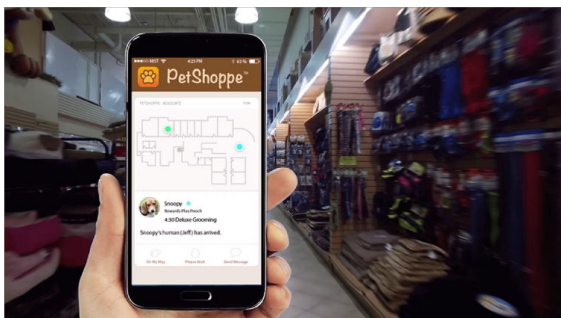Figure 1: Wayfinding application using Juniper Mist User Engagement

Figure 2: User notifications triggered by Juniper Mist User Engagement

Architecture and Key Components

User Engagement is a cloud-based service delivered by the Juniper Mist platform. The combination of Juniper High-Performance APs with vBLE, an open SDK, APIs, and a standard-based platform supports the development of a range of innovative, user-focused applications.

Access Points with Directional BLE Antenna Arrays

The first step in a BLE location service is to blanket the room with BLE signals. Rather than using physical beacons, Juniper Access Points have a patented 16-element directional antenna array that sends unique RF energy in multiple directions. With BLE signals emanating from the AP, Juniper eliminates the need for battery-powered BLE beacons and tags and lets mobile devices interact with an entire room instead of a single transmitter.

Figure 3: Juniper Access Points and Patented vBLE Array

Virtual BLE Beacons

Juniper eliminates the need for battery powered beacons by moving the BLE beaconing functionality into the AP and using machine learning in the cloud. To enable location-specific messages, Juniper patented a new concept known as "virtual beacons." Virtual beacons allow specific messages to be displayed anywhere on a floor plan. The message, range, and location are completely configurable in the Juniper Mist UI or via APIs. With Mist AI and Juniper vBLE technology, an unlimited number of virtual beacons can be added and move at will in a physical environment with the simple click of a mouse. This flexibility ensures unsurpassed scalability and ease of use.

The virtual beacons enable delivery of 1- to 3-meter location accuracy with sub-second latency, making it ideal for many use cases. By integrating this functionality into the Juniper enterprise-grade WLAN platform, organizations can save substantial time and money on deployment and operations while ensuring maximum scalability and reliability.

Machine Learning in the Cloud

An iPhone, Android phone, or BLE tagged assets all behave a little differently on a wireless network. The Juniper Mist Cloud uses artificial intelligence to account for differences in devices, as well as constant changes to the RF environment. It continuously takes client location, detects the RF characteristics based on the actual input, and adapts the path loss formula for optimal client performance and location accuracy. The AI learning system continuously and automatically adapts to different devices and changing RF environments, eliminating the need for manual calibration in Wi-Fi/BLE environments.
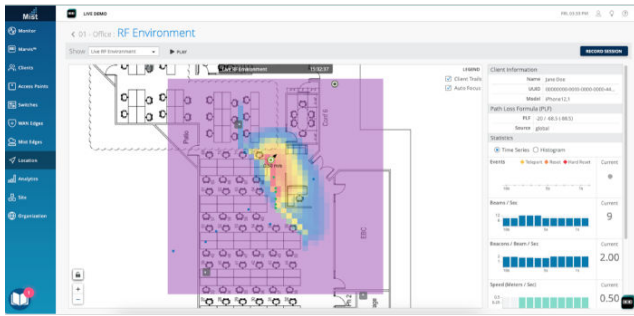
Figure 4: RF view of client moving in an office environment

Workflow Applications

Juniper's extensive group of [third-party partners](#) provide tailored workflow applications to get the most value out of User Engagement. From mapping, wayfinding, and customer-experience applications, partners enable a range of innovative use cases and deliver data-driven decision making across the various vertical business segments.

Features and Benefits

Real-Time Wayfinding

With accuracy down to 1-meter, real-time wayfinding helps employees, guests, and customers get to where they need to be, with turn-by-turn directions and sub-second latency. Real-time wayfinding is beneficial in various settings, including large buildings, shopping malls, airports, hospitals, and event venues. It improves navigation efficiency, reduces the risk of getting lost, and enhances the overall user experience by providing reliable and up-to-date directions.
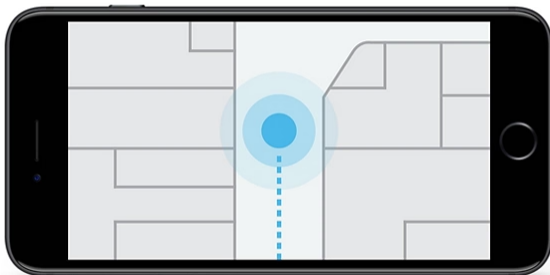

Figure 5: Wayfinding with Juniper Mist User Engagement

Real-Time Proximity Notifications and Alerts

With proximity notifications and alerts, you can greet patients, clients, or customers as they arrive on site. Another example is when customers approach a specific section of a store or museum, their smartphones can receive a notification about ongoing offers, product, or exhibit details. All types of opportunities for location-aware applications, targeted marketing, context-aware information delivery, and enhanced user experiences become possible.

Figure 6: Proximity notification to mobile phone

Total Programmability via Open APIs, Mobile SDK, and Webhooks

By accessing the Juniper Mist SDK and 100% open APIs, organizations can add full automation and seamless integration with their mobile service and complementary external applications. The APIs provide the capability to invoke actions based on user or external events, as well as for using the cloud native Webhook framework. The Juniper Mist platform is 100% programmable for full automation and seamless integration across Juniper access, wired, wireless, WAN, security, user engagement, and asset location domains.

Innovative vBLE Technology

Deploying location services is cost effective and efficient with Juniper APs that incorporate a patented, dynamic 16-element directional antenna array for Bluetooth LE signals. Combined with unsupervised machine learning, this unique vBLE solution enables enterprises to deliver user engagement solutions with scale and minimal costs.
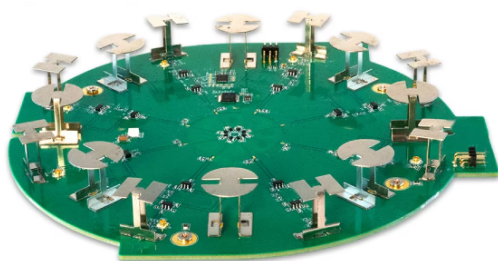
Figure 7: Juniper's patented 16-element virtual BLE antenna array

The Juniper solution with vBLE offers numerous advantages:

- Eliminates the need for battery powered beacons and their costly maintenance
- Gets rid of site surveys and ongoing calibration
- Ends onsite visits because virtual beacons are easy to set up and moved via software
- Removes risk of loss, theft, or movement of physical beacon
- Reduces impact on building aesthetics
- Enables tenants and applications to receive different messages from virtual, stackable beacons
- Co-exists with current BLE deployments, leveraging your existing investment

Digital Transformation with Network Insights

User Engagement includes base capabilities for analyzing up to 30 days of data, simplifying the process of extracting actionable insights from across your enterprise network. Access to weekly location data helps properly align support resources or introduce enhanced premium services. Detailed analytics monitor visits and dwell times, with detailed drill down into zone traffic patterns and congestion points. In addition, with Juniper Mist Premium Analytics, data retention extends to 13 months enabling users to perform long-term, historical time series analyses of network, app, visitor, and employee behavior to enhance business decision-making.

Automatic Feature and Security Updates

The Juniper Mist cloud architecture keeps User Engagement optimized with the most advanced technologies. New features, security patches, and updates are automatically added on a bi-weekly basis without interruptions or service downtime. This capability dramatically simplifies and improves service operations for network IT administrators by eliminating lengthy software upgrades and service downtime.

Partner Ecosystem

Having a standards-based platform has been vital to Juniper building a strong ecosystem of partners that can implement User Engagement and wayfinding services. These partners utilize Juniper Mist User Engagement data in their engagement applications, workflows, and tracking applications to interact with users in many ways. BLE tags and wireless handsets can also be integrated with other third-party information and platforms.

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: +31.207.125.700