

Cisco Virtual Beacon Solution

The Cisco® Virtual Beacon Solution provides the operational simplicity necessary to deliver a scalable BLE beacon solution across the enterprise. Virtual BLE beacons extend the capabilities of Cisco Connected Mobile Experiences (CMX) with proximity messaging, indoor wayfinding, and navigation for a richer location-aware engagement for the mobile device user. Enterprise IT teams no longer need to worry about stolen beacons or cumbersome maintenance demands of physical battery-operated beacons.

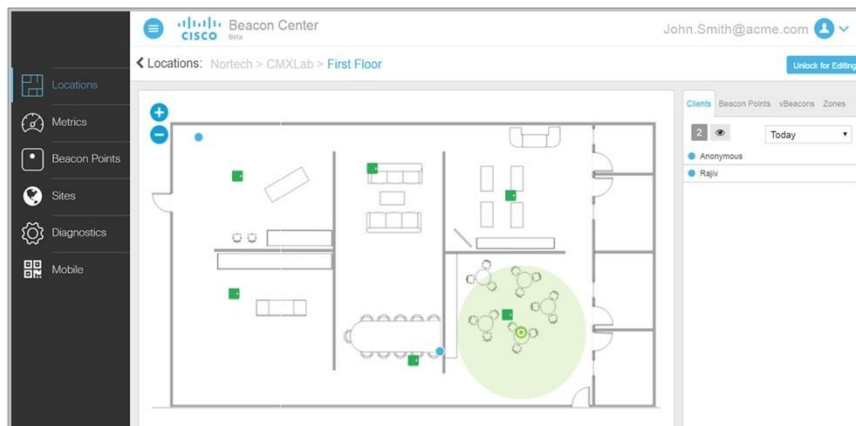
Cisco Virtual Beacon Solution is a unique and highly innovative solution that combines sophisticated cloud software, purpose-built hardware, and a mobile software development kit (SDK) to deliver wayfinding and proximity engagement experiences.

Figure 1. Cisco Beacon Point



Cisco Beacon Point is an industry-first virtual BLE array with 16 steerable antenna elements that can create eight virtual beacons (Figure 1). Cisco Beacon Point supports beaconing in Apple iBeacon, Google Eddystone, and AltBeacon advertising formats. IT teams can deploy beacon points in their venues to achieve desired coverage, with each beacon point covering 2500 square feet of area and mounted at heights up to 13 feet. Beacon points are powered over standard Power over Ethernet (PoE; 802.3af or 802.3at) and connect over the Internet to the CMX Cloud Beacon Center.

Figure 2. CMX Cloud Beacon Center



The CMX Cloud Beacon Center is subscription software delivered via the cloud. The Beacon Center application, shown in Figure 2, offers a way to create virtual beacons anywhere in the coverage area by a simple click, drag, and drop operation from the user interface. Administrators can create proximity messages or use the built-in zone and path editor for analytics and wayfinding. Marketers can deliver real-time, location-aware, personalized content to increase customer engagement and measure the effectiveness of marketing campaigns.

Businesses can now focus on outcomes while reducing the footprint of on-premises servers and battery-operated devices. Provisioning and deployment are quick and easy via the cloud.

The Cisco Virtual Beacon SDK supports iOS and Android mobile devices.

Features and Benefits

Table 1 lists the features and benefits of the Cisco Virtual Beacon Solution.

Table 1. Features and Benefits

Feature	Benefits
Virtual beacons	Eliminate physical, battery-operated beacons for proximity engagement or wayfinding use cases Rapid roll-out of proximity marketing campaigns and location services Avoid sending a technical IT crew onsite to replace dead or stolen beacons
Real-time location	Delivers a true blue dot experience for mobile clients on their app Typical experience is accurate within 10 feet (3 m), with latency of less than 5 seconds Enables indoor wayfinding and navigation use cases
Zone and path editor	Design your customers' indoor navigation experience with simple yet powerful tools that include a built-in map, path, and zone editor Plan the customer journey so that they receive engaging and relevant proximity messages along their way
BLE metrics	Visualize the level of engagement among your loyal app users from an intuitive dashboard Measure peak hourly counts and time spent in various zones in your venue
Advanced machine learning	Simplify deployment and eliminate expensive RF calibration across device types Continuously optimize the location experience for different devices throughout your venue
Virtual Beacon SDK	Preserve the battery life on users' mobile devices and let CMX Cloud Beacon Center do the heavy location computations Integrate the Virtual Beacon SDK into your branded iOS or Android app

Operational Simplicity – Creating Virtual Beacons Is as Simple as Dropping a Pin on a Map

IT and beacon administrators do not have to send an onsite crew to install, move, or replace physical beacons. Beacon Point status is monitored from the Beacon Center user interface, and each Beacon Point has an IP address, like any enterprise-grade networking device managed by IT.

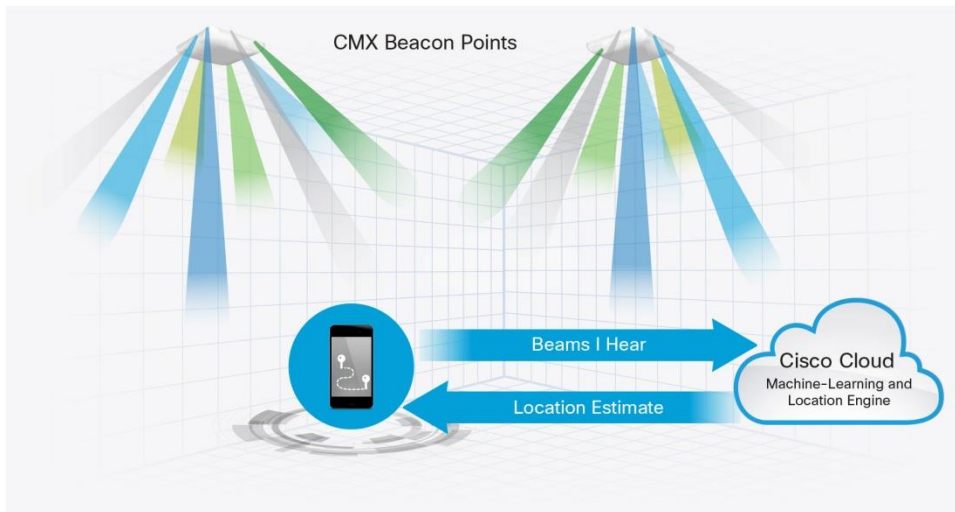
High Accuracy Location with Advanced Machine Learning

Differences in mobile device types (chipsets, antenna, OS, etc.) and dynamic RF characteristics contribute heavily toward inconsistent location experience.

As a mobile app user enters a virtual beacon service area, the mobile app receives multiple beams from the Beacon Points in the area. These BLE received signal strength indications (RSSI) are sent to the CMX Cloud Beacon Center. Communication between mobile device and Beacon Center can use any existing method of connecting to the Internet – Wi-Fi or LTE.

The CMX Cloud Beacon Center uses advanced machine learning algorithms to examine BLE RSSI coming from mobile devices and continuously updates the RF model for different mobile device types, such as iPhones, iPads, and Android smartphones, providing a consistent user experience across mobile devices without the need for expensive RF calibration (Figure 3).

Figure 3. Beacon Points, Beacon SDK, and Beacon Center



Licensing and Ordering

CMX Cloud Beacon Center licenses are metered on a per Beacon Point, per month basis and are available as a prepaid initial term of 12, 36, or 60 months, with the option of automatic annual renewals. An inherent multiyear discount is built in based on the initial term length. Table 2 lists the product IDs (PIDs) needed to place the order.

Table 2. Ordering Information

PID	Description
AIR-VBLE1-K9	CMX Beacon Point
AIR-CMX-SVC-VBLE	CMX Cloud Beacon Center subscription software includes software support

A one-time purchase of Beacon Point hardware (AIR-VBLE1-K9) is required to match the quantity of CMX Beacon Center licenses (AIR-CMX-SVC-VBLE). It is important to identify the default owner's email address for CMX Cloud Beacon Center and claim beacon points in that account.

Table 3 lists the specifications for the Cisco Beacon Point.

Table 3. Cisco Beacon Point AIR-VBLE1-K9 Product Specifications

Feature	Description
Power options	802.3af and 802.3at PoE
Dimensions	203 x 203 x 40 mm (7.99 x 7.99 x 1.57 in.)
Weight	0.636 kg (1.4 lb)
Operating temperature	Internal antenna 32° to 104°F (0° to 40°C)
Operating humidity	10% to 90% maximum relative humidity, noncondensing
Operating altitude	3,048 m (10,000 ft)
Electromagnetic emissions	FCC Part 15 Class B

Feature	Description
I/O	One 10/100/1000BASE-T auto-sensing RJ-45 with PoE In One 10/100/1000BASE-T auto-sensing RJ-45 with 48 VDC PoE Out
RF	2.4 GHz BLE with dynamic antenna array
Indicators	Multicolor status LED
Compliance standards	UL 60950-1 CAN/CSA-C22.2 No. 60950-1 FCC Part 15.247, 15.407, 15.107, and 15.109 RSS-247 ICES-003 (Canada)

The unit and all interconnected equipment must be installed indoors within the same building, including all PoE-powered network connections as described by Environment A of the IEEE 802.3af standard.

Included in the Box

- Cisco Beacon Point (AIR-VBLE1-K9)
- Mounting bracket with mounting hardware

Reset	Reset to the factory default settings
Eth1+PoE Out	10/100/1000 BASE-T RJ-45 interface that can output 48V PoE
Eth0+PoE In	10/100/1000 BASE-T RJ-45 interface that supports 802.3at PoE PD



System Requirements

Table 4 lists the system requirements for the Cisco Virtual Beacon Solution.

Table 4. System Requirements

CMX Cloud Beacon Center	CMX Cloud Beacon Center manages Cisco Beacon Points and allows the creation of virtual beacons
Cisco Beacon Point	Cisco Beacon Point transmits directional BLE beams to enable virtual beacons
Cisco Virtual Beacon SDK-enabled mobile app	Cisco Virtual Beacon SDK detects BLE beams and interacts with the cloud. The SDK is a required component and should be integrated into any branded app developed for proximity engagement or wayfinding. SDK is available for the last two major versions of iOS and Android.

Cisco and Partner Services

Services from Cisco and our certified partners can help you transform your indoor location experience and accelerate business innovation and growth. We have the depth and breadth of expertise to create a clear, replicable, optimized location services solution across technologies. Planning and design services align technology with business goals and can increase the accuracy, speed, and efficiency of your deployment. Technical services can help you improve operational efficiency, save money, and mitigate risk. Optimization services are designed to continuously improve performance and help your team succeed with new technologies. For more information, please visit <http://www.cisco.com/go/services>.

Cisco Capital

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For More Information

- To learn more about the service description of the CMX Cloud, visit <http://cmxcloud.cisco.com>.
- To learn how to use and deploy CMX Cloud, visit <https://support.cmxcloud.com/hc/en-us/articles/217123567-Cisco-CMX-Cloud-Deployment-Guide>.
- For more information about Cisco Connected Mobile Experiences, visit <http://www.cisco.com/go/cmxe>.



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