

Cisco Virtual Beacon Solution

The Cisco® Virtual Beacon Solution provides the operational simplicity necessary to deliver a scalable Bluetooth Low Energy (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 and Beacon Point Module (on Cisco Aironet 3800 Series)



Cisco Beacon Point is an industry-first virtual BLE array with 16 steerable antenna elements that generate 8 BLE beams (Figures 1 and 4) that are used to create numerous virtual beacons. Cisco Beacon Point supports beaconing in the Apple iBeacon, Google Eddystone, and AltBeacon advertising formats. IT teams can deploy Beacon Points in their venues, with typical indoor ceiling height of 13 to 15 feet, to achieve desired coverage, with each Beacon Point covering an area of 1500 to 2500 square feet. Beacon Points are powered over standard Power over Ethernet (PoE; 802.3af or 802.3at) and connect to the Beacon Center via the Internet using secure protocols for control plane and management traffic. Beacon Points are an overlay network and do not have any software or hardware dependencies with an existing Wi-Fi network.

Unlike a traditional physical beacon, Beacon Points have IP addresses and can be easily managed by network IT teams. In the future, Cisco Beacon Points will have the hardware support for daisy-chaining up to four Beacon Points when connected to PoE+ (802.3at) power.

Figure 2. Cisco Beacon Point Module

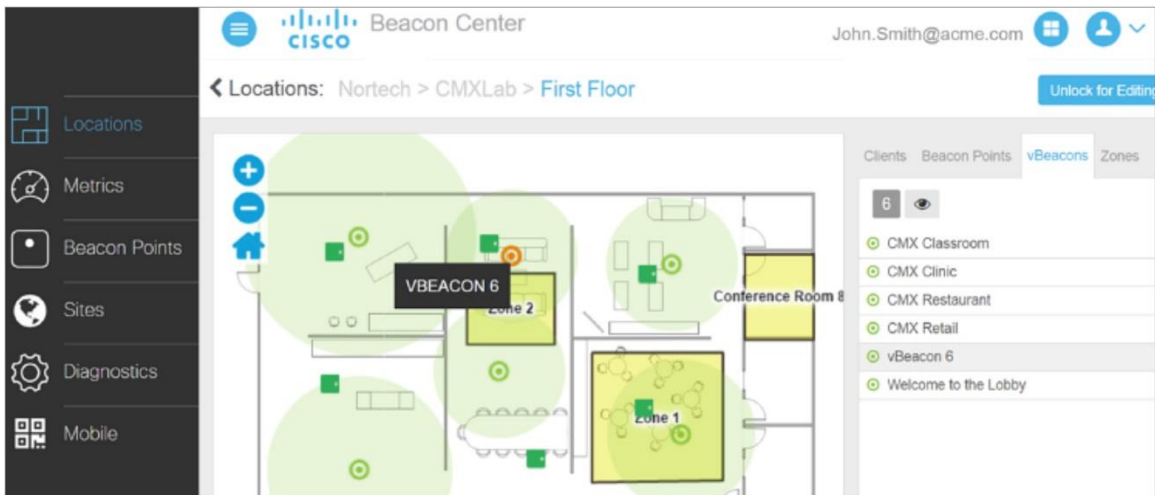


In addition to the standalone Beacon Point, Cisco also offers the **Cisco Beacon Point Module** (Figure 2), which is a module form factor of the Beacon Point and attaches to the Cisco Aironet® 3800 Series Access Points. Having the Beacon Point Module on the access point enables the deployment of virtual BLE technology while reducing:

- The number of boxes on the ceiling by half
- The number of unit installations by half
- The Ethernet cables pulls by half
- The number of ports used on the Ethernet switch by half

The combination of the Beacon Point and the Beacon Point Module give users more tools in their virtual beacon deployment toolbox. Organizations can deploy the Beacon Point Module at the locations where the Aironet 3800 Series is used and mix and match with the standalone Beacon Point to address their Wi-Fi, wayfinding, and proximity engagement use cases most economically and as they see fit.

Figure 3. CMX Beacon Center



The **CMX Beacon Center** is subscription software delivered via the cloud, making provisioning and deployment quick and easy. The Beacon Center application, shown in Figure 3, 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.

Businesses can now focus on outcomes while reducing the footprint of on-premises servers, number of battery-operated devices, need for equipment upgrades, and overall operational complexity. Marketers can deliver real-time, location-aware, personalized content to increase customer engagement and measure the effectiveness of marketing campaigns.

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	Network powered and managed

Feature	Benefits
	Eliminate physical, battery-operated beacons for proximity engagement or wayfinding use cases Rapid roll-out of proximity marketing campaigns and location services Avoid equipment upgrades and the need to send 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 (3m), median, with latency of less than a couple of seconds Enables indoor wayfinding and navigation use cases along with proximity engagement
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.

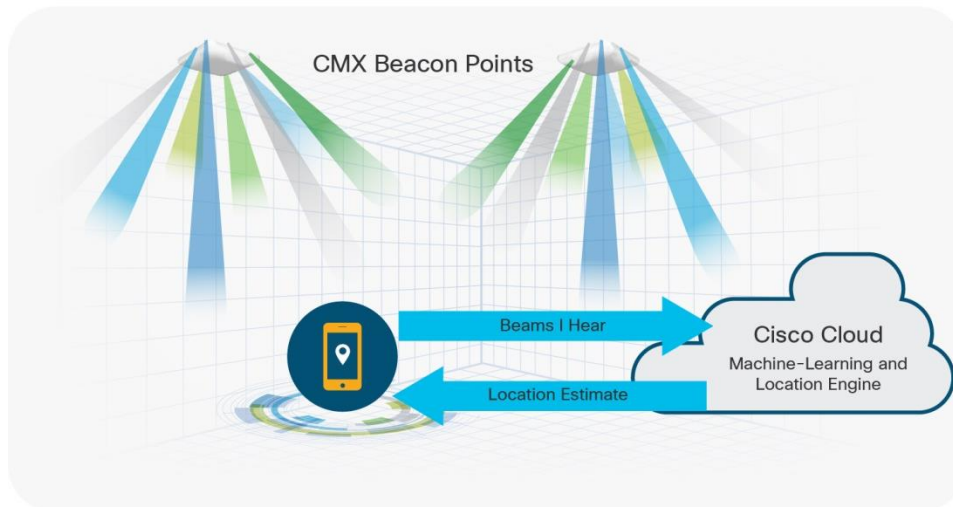
High-accuracy location with advanced machine learning

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 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 4).

Figure 4. Beacon Points, Beacon SDK, and Beacon Center



Licensing and ordering

CMX Beacon Center licenses are metered on a per Beacon Point or Beacon Point Module, 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

Product ID	Description	
AIR-VBLE1-K9	Beacon Point	
AIR-RM-VBLE2-K9=	Beacon Point Module	
AIR-CMX-SVC-VBLE	CMX Beacon Center subscription software includes software support. This product ID is found as an option under the (AIR-CMX-CLOUD) product ID A CMX Beacon Center license is needed for each Beacon Point or Beacon Point Module	

A CMX Beacon Center license is required for each Beacon Point or Beacon Point Module. It is important to identify the default owner's email address for the CMX Beacon Center and to claim the Beacon Point or Beacon Point Module in that account.

Table 3 lists the specifications for the Cisco Beacon Point and Beacon Point Module.

Table 3. Cisco Beacon Point and Beacon Point Module product specifications

Feature	Beacon Point (AIR-VBLE1-K9)	Beacon Point Module (AIR-RM-VBLE2-K9=)
Power Options/Consumption	802.3af and 802.3at PoE / <6W	802.3at (AUX/USB ports not used) or Cisco UPOE™ adhering to 802.3bz cabling standards / <6W
Dimensions	203 x 203 x 40 mm (8.0 x 8.0 x 1.6 in.)	285 x 275 x 61 mm (11.2 x 10.8 x 2.4 in.)
Weight	0.6 kg (1.4 lb)	1.4 kg (3.0 lb)
Operating temperature	32° to 104°F (0° to 40°C)	32° to 104°F (0° to 40°C)
Operating humidity	10% to 90% maximum relative humidity, noncondensing	10% to 90% maximum relative humidity, noncondensing
Operating altitude	3,048 m (10,000 ft)	3,048 m (10,000 ft)

Feature	Beacon Point (AIR-VBLE1-K9)	Beacon Point Module (AIR-RM-VBLE2-K9=)
Electromagnetic emissions	FCC Part 15 Class B	FCC Part 15 Class B
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	PCIe interface of Aironet 3800 Series
RF	2.4 GHz BLE with dynamic antenna array	2.4 GHz BLE with dynamic antenna array
Indicators	Multicolor status LED	Multicolor status LED
Compliance standards	UL 60950-1 CAN/CSA-C22.2 No. 60950-1 FCC Part 15.247, and 15.109 RSS-247 ICES-003 (Canada)	UL 60950-1 CAN/CSA-C22.2 No. 60950-1 FCC Part 15.247, 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/802.3at and 802.3bz cabling standard.

Included in the Beacon Point box

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



Included in the Beacon Point Module box

- Cisco Beacon Point Module (AIR-RM-VBLE2-K9=)
- Mounting bracket with mounting hardware



System requirements

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

Table 4. System requirements

Hardware	Cisco Beacon Point or Beacon Point Module	Cisco Beacon Point or Beacon Point Module transmits directional BLE beams to enable virtual beacons
Software	CMX Beacon Center	CMX Beacon Center manages Cisco Beacon Points and allows the creation of virtual beacons
Software Development Kit (SDK)	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. SDK is included at no extra charge.

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 <https://www.cisco.com/go/services>.

Cisco Capital

Financing to help you achieve your objectives

Cisco Capital[®] can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. Learn more.

For more information

- To learn more about the service description of the CMX Cloud, visit <https://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 <https://www.cisco.com/go/cmxe>.



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