

# Cisco Connected Mobile Experiences

This document details the specifications for the Cisco® Connected Mobile Experiences (CMX) 10.0 and newer application running on the virtual and physical versions of the Cisco Mobility Services Engine (MSE). Cisco CMX is a smart Wi-Fi application suite that uses the Cisco wireless infrastructure to locate smartphones, tablets, and other mobile devices and deliver relevant services to them. With it, your organization can directly serve personalized content to users.

## What's New with CMX 10.2

- **Presence Analytics:** CMX now supports presence analytics. Because presence does not require x,y coordinates, a CMX presence deployment can be completed in less than 30 minutes.
- **Social Media Analytics** - Track to social media postings.
- **Automatic Report Generation by Industry:** Select your industry and CMX automatically generates reports most relevant to that industry.
- **Cisco Hyperlocation Solution:** CMX now supports location accuracy to under one meter.
- **Cisco CMX FastLocate:** Improved for greater location refresh rate, FastLocate is also available for access points without the Cisco Wireless Security Module.
- **CMX Connect Portals and Templates:** Creating a custom, captive portal has never been easier with more available templates, images, and language support. You can create a customer portal within minutes.

## Product Summary

Designed as an open platform, Cisco CMX supports mobility services with a modular, licensed approach. Table 1 provides an overview of the services, platforms, and location technologies available.

**Table 1.** Connected Mobile Experiences Overview

Feature	Benefits
<b>Services</b>	<p><b>CMX Base License</b></p> <ul style="list-style-type: none"> <li>• Track and locate Wi-Fi devices, interferers, rogues, and RFID tags</li> <li>• Provide guest access to end users using CMX Connect and CMX for Facebook Wi-Fi</li> <li>• Develop custom applications to engage users with an open-location API</li> <li>• Visualize interferer zone of impact</li> </ul> <p><b>CMX Advanced License</b></p> <ul style="list-style-type: none"> <li>• All CMX Base license features</li> <li>• Analyze onsite customer behavior using CMX Analytics</li> <li>• Export analyzed data using the CMX Analytics API</li> </ul> <p><b>Wireless Intrusion Prevention System (wIPS) License (available in an upcoming release of CMX 10)</b></p> <ul style="list-style-type: none"> <li>• Monitor, mitigate, and report security threats to the wireless network</li> <li>• Enhance the security and regulatory compliance features of the wireless network with location intelligence</li> </ul>
<b>Platform</b>	<ul style="list-style-type: none"> <li>• Virtual appliance: Cisco MSE Virtual Appliance (vMSE)</li> <li>• Physical appliance: Cisco MSE 3365</li> </ul>

Feature	Benefits
<b>Location technologies</b>	<ul style="list-style-type: none"> <li>• Hyperlocation - Precise location of connected Wi-Fi devices within one meter using advanced Angle-of-Arrival (AoA) technology</li> <li>• FastLocate: Locate connected Wi-Fi devices by RSSI triangulation of probing signals as well as network data packets for faster refresh and more location detail</li> <li>• RSSI triangulation: Locate connected and unconnected Wi-Fi devices, clients, rogues, and tags. With Cisco CleanAir™ technology, non-Wi-Fi interferers and Bluetooth Low Energy (BLE) beacons can be decoded and identified.</li> <li>• Presence: Locate a Wi-Fi device by gauging the nearest access point to that device. This method provides less granular location accuracy than triangulation; however, it can be deployed in venues with fewer access points.</li> </ul>

## Product Benefits

Companies of all kinds can unlock value from their WLAN with Cisco CMX (Table 2).

**Table 2.** Benefits for Various Industries

Industry	Benefit
<b>Retail</b>	<ul style="list-style-type: none"> <li>• Engage shoppers with compelling mobile services such as retail apps with wayfinding services</li> <li>• Combat show-rooming and close more sales with context-sensitive campaigns</li> <li>• Track online, onsite, and social customer trends and identify high-value shoppers</li> </ul>
<b>Healthcare</b>	<ul style="list-style-type: none"> <li>• Increase patient satisfaction with wayfinding apps and mobile location services</li> <li>• Locate staff, track equipment, and get notified when asset moves in/out of a defined perimeter</li> </ul>
<b>Transportation</b>	<ul style="list-style-type: none"> <li>• Understand aggregate traveler trends and serve them with tracking and location analytics</li> <li>• Captivate passengers with augmented reality applications such as interactive maps and wayfinding services</li> </ul>
<b>Hospitality</b>	<ul style="list-style-type: none"> <li>• Improve the guest experience with business-friendly Wi-Fi and location-based visitor services</li> <li>• Learn more about guests with location and social analytics for better planning and efficiency</li> </ul>

## Product Functionality

### Cisco CleanAir Advanced Spectrum Capabilities

Cisco CleanAir technology makes it easy to monitor and manage your network's RF conditions (Table 3). CleanAir is available on CMX without requiring any licenses.

**Table 3.** CleanAir with CMX Functions

Function	CleanAir Access Points with Wireless LAN Controller (WLC)	CleanAir Access Points with WLC and CMX
<b>Detect, classify, and mitigate interferers</b>	Yes	Yes
<b>Provide system-wide interferer and event correlation</b>	No	Yes
<b>Perform zone-of-impact analysis</b>	No	Yes
<b>Locate interferers on a map</b>	No	Yes

### CMX Base License

The CMX Base license includes:

- **Location:** Get real-time location tracking of Wi-Fi devices (including smartphones and tablets), rogue access points, interferers, BLE beacons, and RFID tags.
- **CMX Connect:** This business-to-consumer (B2C) guest access solution is designed for flexible, easy onboarding to the guest Wi-Fi network. It provides a location-aware captive portal, optimized for mobile devices. CMX Connect helps venue owners monetize their guest Wi-Fi networks.
- **CMX for Facebook Wi-Fi** allows venues to extend a seamless Wi-Fi sign-on experience using a Facebook sign-in page.

- **Location representational state transfer (REST) API:** Customers and partners can tightly integrate CMX location information into applications. Among the applications are location-aware equipment tracking, guest access, device-based services, browser-based services, mobile apps, online and onsite analytics, social analytics, and ads and offers.

### CMX Advanced License

In addition to the features of the Base license, the CMX Advanced license includes:

- **CMX Analytics:** This feature analyzes location data and delivers meaningful insights to the venue owner about how the venue is being used. It includes advanced reporting capabilities to determine which parts of a venue are visited more frequently, customer loyalty, correlation between different venues, and dwell time spent within a venue.
- **CMX Analytics APIs:** Expose the analyzed data from CMX Analytics to third-party data platforms and applications.

### MSE Virtual Appliance Product Specifications

All listed server resources should be reserved or dedicated for the virtual machine running the MSE virtual appliance. For hard-drive configuration, a thick configuration should be used.

All listed specifications are minimum requirements (Table 4).

**Table 4.** Cisco MSE Virtual Appliance Product Specifications

Feature	Cisco MSE Virtual Appliance
<b>Virtual appliance versions (virtual appliance on a customer-supplied server)</b>	VMware ESX or ESXi version 5.1 or higher
<b>Minimum server requirements</b>	<b>Cisco High-End Virtual MSE</b> <ul style="list-style-type: none"> <li>• CMX Base/Advanced license: 10,000 access points</li> <li>• Maximum number of tracked devices: 100,000 (regardless of the number of access point licenses). Note that the end device scaling guidelines differ if using Hyperlocation and/or FastLocate as a method for determining device location. See the <a href="#">MSE ordering and licensing guide</a> for more details.</li> <li>• Minimum RAM: 64 GB</li> <li>• Minimum hard disk space: 1 TB SAS HD or SSD (in RAID configuration)</li> <li>• Processors: 20 vCPUs (equivalent to Intel® E5-2650-V3 CPU or higher)</li> </ul>
	<b>Cisco Standard Virtual MSE</b> <ul style="list-style-type: none"> <li>• CMX Base/Advanced license: 5000 access points</li> <li>• Maximum number of tracked devices: 50,000 (regardless of number of access point licenses). Note that the end device scaling guidelines differ if using FastLocate as a method for determining device location. See the <a href="#">MSE ordering and licensing guide</a> for more details. Hyperlocation is not supported as a method for determining device location on Standard Virtual MSE</li> <li>• Minimum RAM: 48 GB</li> <li>• Minimum hard disk space: 500 GB SAS HD or SSD (in RAID configuration)</li> <li>• Processors: 16 vCPUs (equivalent to Intel E5-2650-V3 CPU or higher)</li> </ul>
	<b>Cisco Low-End Virtual MSE</b> <ul style="list-style-type: none"> <li>• CMX Base/Advanced license: 2000 access points</li> <li>• Maximum number of tracked devices: 25,000 (regardless of number of access point licenses). Note that the end device scaling guidelines differ if using FastLocate as a method for determining device location. See the <a href="#">MSE ordering and licensing guide</a> for more details. Hyperlocation is not supported as a method for determining device location on Low-End Virtual MSE</li> <li>• Minimum RAM: 24 GB</li> <li>• Minimum hard disk space: 500 GB SAS HD or SSD (in RAID configuration)</li> <li>• Processors: 8 vCPUs (equivalent to Intel E5-2650-V3 CPU or higher)</li> </ul>

## Cisco MSE 3365 Physical Appliance Product Specifications

The MSE 3355 will not ship with CMX 10 as it has reached end of life; however, customers will have the option of installing CMX 10 software on the MSE 3355. Some features, such as Hyperlocation, are not supported on the MSE 3355 appliance.

Table 5 provides the specifications of the physical Cisco MSE 3365 appliance.

**Table 5.** Cisco MSE 3365 Product Specifications

Feature	Cisco 3365 MSE
<b>Supported services</b>	<ul style="list-style-type: none"> <li>• CMX Base/Advanced License: 10,000 access points</li> <li>• Maximum number of tracked devices: 150,000 (regardless of number of access point licenses). Note that the end device scaling guidelines differ if using Hyperlocation/FastLocate as a method for determining device location. See the <a href="#">MSE ordering and licensing guide</a> for more details.</li> </ul>
<b>Evaluation support</b>	<ul style="list-style-type: none"> <li>• MSE: The physical or virtual appliance ships with a 120-day evaluation license for all services, with no limitation on the number of access points or tracked clients.</li> </ul>
<b>Processor</b>	<ul style="list-style-type: none"> <li>• 10 core Intel e5-2650 2.4 GHz</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>• Four 16 GB DDR4 2133 MHz</li> </ul>
<b>Hard disk</b>	<ul style="list-style-type: none"> <li>• Four hot-swappable 600-GB SAS drives</li> </ul>
<b>Removable media</b>	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>Ports</b>	<ul style="list-style-type: none"> <li>• One RJ-45 management port for out-of-band management</li> <li>• RJ-45: Two rear RJ-45 connectors for connection to two Gigabit Ethernet network adapters</li> </ul>
<b>Connectivity</b>	<ul style="list-style-type: none"> <li>• Network: Two embedded multifunction Gigabit Ethernet network adapters with a TCP/IP offload engine</li> </ul>
<b>Management</b>	<ul style="list-style-type: none"> <li>• Simple Network Management Protocol (SNMP) v1, v2c, and v3</li> </ul>
<b>Management interface</b>	<ul style="list-style-type: none"> <li>• Cisco Prime™ Infrastructure</li> </ul>
<b>Network devices</b>	<ul style="list-style-type: none"> <li>• See MSE release notes for software interoperability with Cisco wireless controllers and access points</li> </ul>
<b>System specifications</b>	<ul style="list-style-type: none"> <li>• Number of MSEs per Cisco Prime Infrastructure: 20</li> </ul>
<b>Programming interfaces</b>	<ul style="list-style-type: none"> <li>• REST APIs</li> </ul>
<b>Form factor</b>	<ul style="list-style-type: none"> <li>• 1 rack unit (1RU)</li> </ul>
<b>Physical dimensions</b>	<ul style="list-style-type: none"> <li>• Height: 1.7 in. (4.3 cm)</li> <li>• Width: 16.89 in. (43.0 cm) Including handles: 18.98 in. (48.2 cm)</li> <li>• Depth: 29.8 in. (75.6 cm) Including handles: 30.98 in. (78.7 cm)</li> <li>• Weight: 38 lb (17.2 kg).</li> </ul>
<b>Power</b>	<ul style="list-style-type: none"> <li>• AC power supply wattage: 770 W</li> <li>• AC power supply voltage: 100 to 120 V at 50 to 60 Hz; 200 to 240 V at 50 to 60 Hz</li> <li>• 92% efficient</li> <li>• Autoswitching, hot-swappable</li> <li>• Redundant power supplies</li> </ul>
<b>Cooling fans</b>	<ul style="list-style-type: none"> <li>• Six dual-redundant hot-swappable fans for front-to-rear cooling</li> </ul>
<b>Environmental</b>	<ul style="list-style-type: none"> <li>• Operating temperature: <ul style="list-style-type: none"> <li>◦ 41° to 95°F (5° to 35°C)</li> <li>◦ Decrease the maximum temperature by 1°C per 1000 ft. (305 m) of altitude above sea level</li> </ul> </li> <li>• Nonoperating temperature: <ul style="list-style-type: none"> <li>◦ -40° to 149°F (-40° to 65°C)</li> </ul> </li> </ul>

Feature	Cisco 3365 MSE	
	<ul style="list-style-type: none"> <li>• Nonoperating temperature:               <ul style="list-style-type: none"> <li>◦ -40° to 149°F (-40° to 65°C)</li> <li>◦ Humidity (RH) operating</li> <li>◦ Humidity (RH) nonoperating</li> <li>◦ Altitude operating</li> <li>◦ Altitude nonoperating</li> <li>◦ Sound Power level, Measure A: weighted per ISO7779 LWAd (Bels) Operation at 73°F (23°C)</li> <li>◦ Sound Pressure level, Measure A: weighted per ISO7779 LpAm (dBA) Operation at 73°F (23°C)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>◦ 10% to 90%, noncondensing at 82°F (28°C)</li> <li>◦ 5% to 93% at 82°F (28°C)</li> <li>◦ 0 to 3000 m (0 to 10,000 ft.)</li> <li>◦ 0 to 12,192 m (0 to 40,000 ft.)</li> <li>◦ 5.4</li> <li>◦ 37</li> </ul>
<b>Approvals and compliance</b>	Safety	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition AS/NZS 60950-1GB4943 2001
	EMC - Emissions	47CFR Part 15 (CFR 47) Class A AS/NZS CISPR22 Class A CISPR22 Class AEN55022 Class A ICES003 Class A VCCI Class A EN61000-3-2EN61000-3-3KN22 Class A CNS13438 Class A
	EMC - Immunity	EN55024CISPR24EN300386KN24

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### For More Information

- To learn more about how the Cisco Mobility Services Engine can help you unleash the potential of mobility, visit <http://www.cisco.com/go/mse>.
- For details regarding the MSE with software version 8.0 or older, see the MSE 8.0 data sheet.
- As of June 2015, the Cisco MSE 3355 is end of sale. CMX 10.2 supports MSE 3355.
- For more information about Cisco Connected Mobile Experiences, visit <http://www.cisco.com/go/cmxe>.



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