Release Notes for Cisco Mobility Services Engine, Release 7.6.120.0

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These release notes describe the requirements, features, limitations, restrictions (caveats), and related information for release 7.6.120.0 of the Cisco mobility services engine and its services.

- Location Service
- Wireless Intrusion Protection System (wIPS)
- Mobile Concierge Service
- CMX Analytics Service
- CMX Browser Engage
- CMX HTTP Proxy Service

Note   Before installing this software, see the "Upgrading the MSE" section on page 11 for details on compatibility with the Cisco wireless LAN controllers (WLC) and the Cisco Prime Infrastructure.

Note   You need licenses to run all the services. For ordering information, see the "Licensing Information for MSE" section on page 15.

Note   Cisco 3310 and Cisco 3350 mobility services engines are not supported from Release 7.4 onwards.

Contents

These release notes contain the following sections:

Cisco Systems, Inc.
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Introduction

This section introduces the Cisco mobility services engine (MSE) and the various services that it supports.

Cisco Mobility Services Engine and Services

The Cisco mobility services engine supports various services within the overall Cisco Unified Wireless Network (CUWN).

The Cisco mobility services engine currently supports the following services in Release 7.6.120.0:

- Location Service—Allows a mobility services engine to simultaneously track thousands of mobile assets and clients by retrieving contextual information such as presence, location, telemetry data, and historical information.

- Wireless Intrusion Protection Service—Provides wireless-specific network threat detection and mitigation against malicious attacks, security vulnerabilities, and sources of performance disruption within the CUWN infrastructure. wIPS visualizes, analyzes, and identifies wireless threats, and centrally manages mitigation and resolution of security and performance issues using Cisco monitor mode and Enhanced Local Mode (ELM) Access Points. Proactive threat prevention is also supported to create a hardened wireless network core that is impenetrable by most wireless attacks.

- Mobile Concierge—Mobile Concierge enables the Cisco Mobility Services Advertisement Protocol (MSAP). This protocol enables direct communication between the MSE and mobile devices, allowing content to be pushed directly to the mobile device pre-association. This functionality is dependent on the mobile device supporting 802.11u and MSAP.

- CMX Analytics Service—The CMX Analytics service analyzes wireless device location information in a particular network. The CMX Analytics service uses the data provided by the Cisco Mobility Services Engine (MSE) to calculate the location of Wi-Fi devices in the Wireless Local Area Network (WLAN). When a wireless device is enabled in a network, it transmits probe request packets to identify the wireless network in its neighborhood. Even after connecting to the access point in the WLAN, the client devices continue to transmit probe request packets to identify other access points for better quality of service. The access points gather these request and the associated RSSI from the various wireless devices and forwards them to the Wireless LAN Controller (WLC). The controller then forwards this information to the MSE.

  The basic data that is collected from various APs, when analyzed, produces information and knowledge about the movement and behavior patterns of people who are using Wi-Fi devices in the building. For example, the building can be an airport, shopping mall, city center, and so on. The

CMX Analytics service helps the airport authorities or the building owners to understand the movement of passengers or customer within their building. This helps them improve the signage, make changes to the under utilized areas, and so on.

- CMX Browser Engage Service—The CMX Browser Engage is a new way to transform the in-venue experience through browser engagement. This enables organizations to communicate with opt-in mobile users - shoppers, guests, and visitors - through their mobile browser. The CMX Dashboard is the back-end tool designed for administrative users to manage the CMX Browser engage experience. It allows the admin users to configure venue-specific menus, banners, and icons as well as content-aware search.

Note Consult your Cisco account team before deploying CMX Browser Engage.

- HTTP Proxy Service—Currently, CMX Dashboard relies on HTTP traffic flows to provide value added services and messages to the customers at the venue. The router intercepts the HTTP traffic and CMX Dashboard inserts a script at the end of the HTTP traffic. The HTTP Proxy is enabled on the MSE. The HTTP Proxy on the MSE terminates all HTTP traffic intercepted using Policy Based Routing (PBR) and acts as a forward proxy by pulling contents on behalf of wireless clients.

Note From Release 7.5 onwards, Cisco engine is used to track clients and tags. If AeroScout engine is detected when you are upgrading from Release 7.2 and later Releases to Release 7.5, then a warning message is displayed about removing the AeroScout license and engine. If you accept, then it removes all the partner engine sub services. If you do not accept the removal of partner engine, then the installation will exit.

Note For ordering information, see the "Licensing Information for MSE" section on page 15.

Note Starting from Release 7.4, the evaluation licenses for 100 clients, 100 tags, and 10 wIPS monitor mode access points come standard on each mobility services engine installed for 120 days, which earlier from Release 6.0 till Release 7.3 was installed for 60 days.

Note From Release 7.4 onwards, licensing is going to be AP based and supports 100 AP evaluation license for Connected Mobile Experiences which is limited to 100 elements (clients, tags, interferers, etc combined).

Software Compatibility Matrix

Table 1 lists the MSE converged access solution release compatibility matrix.

Table 2 lists the Cisco MSE and Cisco Wireless Release compatibility matrix.

Note Upgrade from MSE Release 7.5.102.0 to Release 7.6.120.0 is supported.

Cisco MSE and Cisco Converged Access Solution Compatibility Matrix

Table 1 lists the Cisco MSE and Converged Access Solution compatibility matrix.

Table 1 **Cisco MSE and Converged Access Solution Compatibility Matrix**

MSE 3355	MSE Virtual Appliance	PI	WLC	Converged Access	Remarks
7.6.120.0	7.6.120.0	2.1** 1.4.2	7.6.120.0 7.6.110.0* 7.6.100.0* 7.5.102.0 7.4.121.0 7.4.110.0 7.4.100.60 7.4.100.0 7.3.112.0 7.3.101.0 7.2.111.3 7.2.110.0 7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	—	**Prime Infrastructure 2.1 allows you to manage Cisco MSE Releases 7.5.102.101 and 7.6.120.0 with feature compatibility of Cisco MSE Release 7.4.121.0. Prime Infrastructure 2.1 does not support any new features introduced in Cisco MSE Releases 7.5.102.101 and 7.6.120.0.

Table 1 **Cisco MSE and Converged Access Solution Compatibility Matrix (continued)**

MSE 3355	MSE Virtual Appliance	PI	WLC	Converged Access	Remarks
7.6.100.0	7.6.100.0	Update 1 for 1.4.0.45*	7.6.110.0* 7.6.100.0* 7.5.102.0 7.4.121.0 7.4.110.0 7.4.100.60 7.4.100.0 7.3.112.0 7.3.101.0 7.2.111.3 7.2.110.0 7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	—	*The Update 1 for Cisco Prime Infrastructure 1.4.0.45 enables you to manage Cisco WLC 7.6.x with the features of Cisco WLC 7.5.102.0 and earlier releases. This release does not support any new features of Cisco WLC 7.6.x including the new access point platforms. **Note** The wIPS profile cannot be applied to Cisco Wireless LAN Controller (WLC) Version 7.5 or prior using the Prime Infrastructure 1.4.x or 2.x with MSE 7.6 Release.

Table 1   ***Cisco MSE and Converged Access Solution Compatibility Matrix (continued)***

MSE 3355	MSE Virtual Appliance	PI	WLC	Converged Access	Remarks
7.6.100.0	7.6.100.0	2.0*	7.6.110.0** 7.6.100.0** 7.5.102.0** 7.4.121.0 7.4.110.0 7.4.100.60 7.4.100.0 7.3.112.0 7.3.101.0 7.2.111.3 7.2.110.0 7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	3.2.2** 3.3.2**	*Cisco Prime Infrastructure 2.0 enables you to manage Cisco WLC 7.5.102.0 with the features of Cisco WLC 7.4.110.0 and earlier releases. Prime Infrastructure 2.0 does not support any features that are introduced in Cisco WLC 7.5.102.0 or later releases including the new access point platforms. **Supports 7.4 MSE feature parity—CAS, wIPS, and CMX Analytics service. **Note** wIPS profile cannot be pushed to Cisco Wireless LAN Controller (WLC) Version 7.5 or prior using the Prime Infrastructure 1.4.x or 2.x with MSE 7.6 Release.
7.5.102.101	7.5.102.101	Update 1 for 1.4.0.45 1.4.0.45	7.5.102.0 7.4.121.0 7.4.110.0 7.4.100.60 7.4.100.0 7.3.112.0 7.3.101.0 7.2.111.3 7.2.110.0 7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	—	—

Table 1   *Cisco MSE and Converged Access Solution Compatibility Matrix (continued)*

MSE 3355	MSE Virtual Appliance	PI	WLC	Converged Access	Remarks
7.5.102.101	7.5.102.101	2.0*	7.5.102.0 7.4.121.0 7.4.110.0 7.4.100.60 7.4.100.0 7.3.112.0 7.3.101.0 7.2.111.3 7.2.110.0 7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	3.2.2** 3.3.2**	*Cisco Prime Infrastructure 2.0 enables you to manage Cisco WLC 7.5.102.0 with the features of Cisco WLC 7.4.110.0 and earlier releases. Prime Infrastructure 2.0 does not support any features that are introduced in Cisco WLC 7.5.102.0 or later releases including the new access point platforms. **Supports 7.4 MSE feature parity—CAS, wIPS, and CMX Analytics service.

Note   AeroScout CLE is no longer bundled with MSE starting from Release 7.5 Release. However, AeroScout CLE is compatible with MSE Release 7.5 and above using the API interface.

Note   Cisco MSE 3310 and 3350 are supported only till Release 7.3.

Note   This compatibility matrix lists only the compatibility information of Cisco MSE with other Cisco wireless products. This matrix does not reflect compatibility information between Cisco WLC and Cisco Prime Infrastructure or Cisco NCS. For compatibility information about Cisco Prime Infrastructure with Cisco WLC and other wireless products, see the Cisco Prime Infrastructure Release Notes.

Table 2   ***Cisco MSE Compatibility Matrix***

MSE 3355	MSE 3350	MSE Virtual Appliance	AeroScout CLE	WCS	WLC	Prime Infrastructure / NCS
7.4.121.0	—	7.4.121.0	4.5.2.16 4.4.2.11	—	7.4.121.0 7.4.110.0 7.4.100.60 7.4.100.0 7.3.112.0 7.3.101.0 7.2.111.3 7.2.110.0 7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	2.0 Update 1 for 1.4.0.45 1.4.0.45 Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20
7.4.110.0	—	7.4.110.0	4.5.2.16 4.4.2.11	—	7.4.110.0 7.4.100.60 7.4.100.0 7.3.112.0 7.3.101.0 7.2.111.3 7.2.110.0 7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	2.0 Update 1 for 1.4.0.45 1.4.0.45 Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20

Table 2   Cisco MSE Compatibility Matrix (continued)

MSE 3355	MSE 3350	MSE Virtual Appliance	AeroScout CLE	WCS	WLC	Prime Infrastructure / NCS
7.4.100.0	—	7.4.100.0	4.5.2.16 4.4.2.11 4.4.2.7	—	7.4.100.0 7.3.112.0 7.3.101.0 7.2.111.3 7.2.110.0 7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	Update 1 for 1.4.0.45 1.4.0.45 Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20
7.3.101.0	7.3.101.0	7.3.101.0	4.4.2.4	—	7.3.112.0 7.3.101.0 7.2.111.3 7.2.110.0 7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20 1.2.1.12
7.2.110.0	7.2.110.0	7.2.110.0	4.4.2.4	—	7.2.111.3 7.2.110.0 7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20 1.2.1.12 1.1.1.24 1.1.0.58

Table 2   ***Cisco MSE Compatibility Matrix (continued)***

MSE 3355	MSE 3350	MSE Virtual Appliance	AeroScout CLE	WCS	WLC	Prime Infrastructure / NCS
7.2.103.0	7.2.103.0	7.2.103.0	4.4.1.4	—	7.2.103.0 7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20 1.2.1.12 1.1.124 1.1.0.58
7.0.240.0	7.0.240.0	—	4.3.1.10	7.0.240.0	7.0.240.0 7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20 1.2.1.12 1.1.1.24 1.1.0.58 1.0.2.29
7.0.230.0	7.0.230.0	—	4.3.1.19	7.0.230.0	7.0.235.3 7.0.235.0 7.0.230.0 7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20 1.2.1.12 1.1.1.24 1.1.0.58 1.0.2.29
7.0.220.0	7.0.220.0	—	4.3.1.19	7.0.220.0	7.1.91.0 7.0.220.0 7.0.116.0 7.0.98.218 7.0.98.0	Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20 1.2.1.12 1.1.1.24 1.1.0.58 1.0.2.29 1.0.1.4

Table 2 Cisco MSE Compatibility Matrix (continued)

MSE 3355	MSE 3350	MSE Virtual Appliance	AeroScout CLE	WCS	WLC	Prime Infrastructure / NCS
7.0.201.204	7.0.201.204	—	4.2.4.4	7.0.172.0	7.0.116.0 7.0.98.218 7.0.98.0	Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20 1.2.1.12 1.1.1.24 1.1.0.58 1.0.2.29 1.0.1.4 1.0.0.96
7.0.112.0	7.0.112.0	—	4.2.4.4	7.0.164.3 7.0.164.0	7.0.98.218 7.0.98.0	Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20 1.2.1.12 1.1.1.24 1.1.0.58 1.0.2.29 1.0.1.4 1.0.0.96
7.0.105.0	7.0.105.0	—	4.2.4.4	7.0.164.3	7.0.98.218	Update 4 for 1.3.0.20 Update 1 for 1.3.0.20 1.3.0.20 1.2.1.12 1.1.1.24 1.1.0.58 1.0.2.29 1.0.1.4 1.0.0.96

Upgrading the MSE

For instructions on automatically downloading the software using the Prime Infrastructure or for manually downloading the software using a local or remote connection, see the "Updating Mobility Services Engine Software" section in Chapter 2 of the *Cisco Mobility Services Engine Getting Started Guide.*

You can find these documents at the following URL:

http://www.cisco.com/en/US/products/ps9742/prod_installation_guides_list.html

This section contains the following topics:

Upgrade Scenarios

The following scenarios are available to upgrade MSE to 7.6.120.0 from 7.x releases:

✎
Note Do not run uninstall on the 7.4 or 7.5 Release, instead stop the MSE and directly run the installer.

Upgrading the MSE to 7.6.120.0 from 7.x Release Without Data Migration

To upgrade from 7.x release to 7.6.120.0. without data migration, follow these steps:

Step 1 Back up the existing database using the Prime Infrastructure. (We recommended this).

All data existing on the system will be lost and a fresh blank database will be created.

Step 2 To download software to a mobility services engine, choose **Services** > **Mobility Services Engine** from the Prime Infrastructure UI.

Step 3 Click the name of the mobility services engine to which you want to download software.

Step 4 Choose **System** > **Maintenance** > **Download Software** from the left sidebar menu.

Step 5 To download software, do one of the following:

- To download software listed in the Prime Infrastructure directory, select the **Select from uploaded images to transfer into the Server** radio button. Choose a binary image from the drop-down list.

  Prime Infrastructure downloads the binary image to the FTP server directory you specified during the Prime Infrastructure installation.

- To use download software available locally or over the network, select the **Browse a new software image to transfer into the Server** radio button, and click **Choose File**. Locate the file, and click **Open**.

Step 6 Click **Download** to send the software to the /opt/installers directory on the mobility services engine.

Step 7 Choose **System** > **Maintenance** > **Download Software** from the left sidebar menu.

Step 8 Select the file and click **Download.**

Step 9 Browse to your local directory where you have downloaded the file and send the software to the **/opt/installers** directory on the mobility services engine.

Step 10 Untar the file: `tar -xvf CISCO-MSE-K9-7-6-120-0-64.bit-db.tar`
This gives you the following:

- 5 files

- 4 zips

  - database_installer_part1of4.zip

  - database_installer_part2Of4.zip

  - database_installer_part3of4.zip

  - database_installer_part4of4.zip

- 1 Cisco-MSE-L-K9-7-6-120-0-64bit.gz

Step 11 To decompress (unzip) the file, execute: gunzip CISCO-MSE-L-K9-7-6-100-0-0-64bit.gz.

Step 12 Enter the following command:

`chmod +x CISCO-MSE-L-K9-7-6-120-0-64bit`

Step 13 Stop the MSE service using the following command:

`service msed stop`

Step 14 Uninstall the existing MSE software. Choose **deletion of database** when prompted.

Step 15 Invoke the MSE installer.

Doing so installs the new database using the four .zip files for the database along with the MSE software.

Initial database installation can take a long time (20 minutes at least -or- approximately). Do not cancel the installer midway through the installation process.

Once installed, follow the regular procedure to start, stop, or add an MSE to the Prime Infrastructure.

✎
Note The MSE appliance needs to be rebooted using the "reboot" command before starting the MSE services

Upgrading the MSE to 7.6.120.0 from 7.x Release

To upgrade the MSE to 7.6.120.0 from 7.x release, follow these steps:

✎
Note Complete database installation is not required if you are upgrading from 7.0.201.204

Step 1 To download software to a mobility services engine, choose **Services > Mobility Services Engine** from the Prime Infrastructure UI.

Step 2 Click the name of the mobility services engine to which you want to download software.

Step 3 Choose **System > Maintenance > Download Software** from the left sidebar menu.

Step 4 Choose **System > Maintenance > Download Software** from the left sidebar menu.

Step 5 To download software, do one of the following:

- To download software listed in the Prime Infrastructure directory, select the **Select from uploaded images to transfer into the Server** radio button. Choose a binary image from the drop-down list.

Prime Infrastructure downloads the binary image to the FTP server directory you specified during the Prime Infrastructure installation.

- To use download software available locally or over the network, select the **Browse a new software image to transfer into the Server** radio button, and click **Choose File**. Locate the file, and click **Open**.

Step 6 Click **Download** to send the software to the /opt/installers directory on the mobility services engine.

Step 7 Choose **System** > **Maintenance** > **Download Software** from the left sidebar menu.

Step 8 Select the file and click **Download** to send the software to the /opt/installers directory on the mobility services engine.

Step 9 After the image is transferred to the mobility services engine, log into the mobility services engine command-line interface and change the directory to `cd/opt/installers`

Step 10 To install the new mobility services engine, enter the following command:
`chmod +x CISCO-MSE-L-K9-7-6-120-0-64bit`

Step 11 Stop the MSE using the following command:
`/etc/init.d/msed stop`

Step 12 Start the new mobility services engine software by entering the following command:
`/etc/init.d/msed start`

Step 13 Begin installation using the following command:
`./CISCO-MSE-K9-7-6-120-0-64bit`

The installer automatically detects if there is an old database present and asks the relevant questions.

Restoring an Old Database to 7.6.120.0

To restore an old database, follow these steps:

Note The regular Restore option on the Prime Infrastructure cannot be used to restore an older database of older releases such as 6.0, 7.0.105.0, or 7.0.110.0 onto 7.6.120.0.

Step 1 Stop the running MSE 7.6.120.0.

Step 2 Uninstall the software. Delete the database.

Step 3 Based on backed up data that you want to restore, follow the matrix in Table 3 to install a relevant version of MSE.

Table 3   Release Matrix

Version of Database to be restored	New Version that Should be Installed
5.2.0	6.0, 7.0
6.0	6.0, 7.0

Step 4 Once you have installed the software, restore the desired database backup onto this using the regular procedure from the Prime Infrastructure.

Step 5 To migrate data to 7.x.x.x, follow the steps in the "Upgrading the MSE to 7.6.120.0 from 7.x Release" section on page 13.

Compressed Software Image

If you download the mobility services engine image *.gz file using the Prime Infrastructure, the mobility services engine automatically decompresses (unzips) it, and you can proceed with the installation as before.

If you manually download the compressed *.gz file using FTP, you must decompress the files before running the installer. These files are compressed under the LINUX operating system and must be decompressed using the *gunzip* utility program. The unzip method you use is defined by the filename you are trying to unzip.

To make the bin file executable, use the **chmod +x filename.bin** command.

The MSE virtual appliance software is distributed as an Open Virtualization Archive (OVA) file. You can install the MSE virtual appliance using any of the methods for deploying an OVF. For more information on deploying the MSE virtual appliance, see the *Cisco MSE Virtual Appliance Configuration Guide, Release 7.6*.

Updated Software Version Shown in the Prime Infrastructure After Polling

After a software update, the new mobility services engine software version does not immediately appear in mobility services engine queries on the Prime Infrastructure. Up to 5 minutes is required for the new version to appear. Prime Infrastructure, by default, queries the mobility services engine for status every 5 minutes.

Base Location, CMX, and wIPS License Requirements

Client and wIPS licenses are installed from the Prime Infrastructure UI (Administration > License Center). See, Chapter 2: "Adding and Deleting Mobility Services Engines and Licenses" in the *Cisco Connected Mobile Experiences Configuration Guide, Release 7.6, Cisco Wireless Intrusion Prevention System, Release 7.6*, and *Cisco Location Analytics Configuration Guide, Release 7.6* respectively.

For complete details on ordering and downloading licenses, see the *Cisco Mobility Services Engine Licensing and Ordering Guide* at the following URL:
http://www.cisco.com/en/US/prod/collateral/wireless/ps9733/ps9742/data_sheet_c07-473865.html

Licensing Information for MSE

The Cisco MSE is a platform that enables the wireless network to deliver mobility services in a centralized and scalable way. The MSE delivers the following mobility services:

Note From Release 7.4 onwards, licensing is going to be AP based and not end point based. To accommodate this, new L-LS-licenses are introduced in this release.

- Base Location license: Provides advanced spectrum capability and the ability to detect presence and track rogue device, interferers, Wi-Fi clients and RFID tags. Cisco Base Location also enables third-party solutions that use the MSE API.

- Connected Mobile Experiences (CMX) license: Provides CMX Analytics, CMX Engage, and CMX Connect, as well as all the capabilities of the Base Location license.

- Wireless intrusion prevention system (WIPS): Protects the network from wireless threats, rogue wireless devices, and denial-of-service (DoS) attacks to improve security and meet compliance objectives and has two options:

  - Monitor Mode licenses are based on the number of full-time monitoring access points deployed in the network.

  - Enhanced Local Mode licenses are based on the number of local mode (data serving) access points deployed in the network.

Licensing is based on the number of access points in the environment. The licenses are additive.

Note Connected Mobile Experiences licenses will be End of Life with standard 6 months of End of Sales and until then both Connected Mobile Experiences and LS licenses will co-exist.

- Cisco MSE 3355 supports up to 2,500 access points for Base Location/CMX or 6000 access points for wIPS.

- Cisco MSE virtual appliance supports up to 5,000 access points, depending on the server resources for Base Location/CMX or 10,000 access points for wIPS. All licenses are additive. The new scaling numbers for Base Location and CMX licenses are as follows:

  - For Low End VA—200APs. Low end VA does not support CMX licenses.

  - For 3355 MSE and Standard VA—2500APs

  - For High End VA—5000APs

- There is no change to endpoint support and MSE 3355 supports 25,000 endpoints and high end virtual appliance supports 50000.

SKUs for Cisco MSE Location Services

Table 4 lists the Cisco MSE Location Services software licenses.

Note You must select L-MSE-PAK to order these licenses.

Table 4   Cisco MSE License SKUs

Base Location Services License SKU	CMX License SKU	Upgrade from Base Location License to CMX License	wIPS Monitor Mode SKUs	wIPS Enhanced Local Mode SKUs	Description
L-LS-1AP	L-AD-LS-1AP	L-UPG-LS-1AP	L-WIPS-MM-1AP	L-WIPS-ELM-1AP	Supports 1 access point
L-LS-100AP	L-AD-LS-100AP	N/A	L-WIPS-MM-100AP	L-WIPS-ELM-100AP	Supports 100 access points
L-LS-1000AP	L-AD-LS-1000AP	N/A	L-WIPS-MM-1000AP	L-WIPS-ELM-1000AP	Supports 1000 access points

Cisco Mobility Services Licenses for High Availability

No separate license is required for high availability. To enable high availability, you need to deploy a primary Cisco MSE appliance with Cisco Connected Mobile Experiences and wIPS licenses, and a secondary Cisco MSE appliance without any Cisco Connected Mobile Experiences or wIPS license.

Table 5 lists the ordering support for physical and virtual appliance.

Table 5   Ordering Support for Physical and Virtual Appliance

MSE Model	SKU	Service SKU	Description
MSE 3355 (Physical Appliance)	AIR-MSE-3355-K9	CON-SNT-MSE3355	Hardware and licenses support
MSE Virtual Appliance	L-MSE-7.0-K9	CON-SAU-LMSE7K	Software and licenses support

What's New in This Release

Support for these two APs are introduced in 7.6.120.0 Release:

- 2700 AP
- 720W AP

Important Notes

This section describes the operational notes and navigation changes for Connected Mobile Experiences, wIPS, and the mobility services engine for Release 6.0.103.0 and later releases.

Features and operational notes are summarized separately for the mobility services engine, Connected Mobile Experiences, and wIPS.

This section contains the following topics:

Operational Notes for a Mobility Services Engine

This section lists the operational notes for the mobility services engine and contains the following topics:

How and When to Use the db.tar installer

> ✎ **Note** You can use the db.tar installer file when you want to install the MSE newly along with the fresh DB installation. The recommended method is to follow the usual Upgrade process unless you want a fresh installation.

- Stop the MSE software (`/etc/init.d/msed stop`).
- You must delete the following directories if you want to reinstall again:
  - `/opt/mse`
  - `/opt/data`
  - `/opt/oracle`
  - `/opt/ORCLfmap`
  - `/opt/installers/*`
- Scp the db.tar file to `/opt/installers` directory and untar it at that location.
- Run the MSE installer.

Reboot MSE After Fresh Installation or Upgrade

After a new installation or upgrade of the MSE software, you must reboot the MSE using the "reboot" command.

Automatic Installation Script for Initial Setup

An automatic setup wizard is available to help you initially set up the mobility services engine.

An example of the complete automatic setup script is provided in the *Cisco Mobility Services Engine Getting Started Guide.*

You can find these documents at the following URL:

http://www.cisco.com/en/US/products/ps9742/prod_installation_guides_list.html

Parameter Changes During Upgrade from 6.0.x to 7.0.x

You will notice a change in the tracking limits when you do the following:

1. Configure tracking limits in 6.0.x.

2. Upgrade to 7.0.x.

   If limits are greater than licensed counts, limits are removed and licensed counts are enforced instead.

Controller and Associated Mobility Services Engine Must be Mapped to the Same NTP and Prime Infrastructure Server

Communication between the mobility services engine, the Prime Infrastructure, and the controller are in Coordinated Universal Time (UTC). Configuring the Network Time Protocol (NTP) on each system provides devices with the UTC time. An NTP server is required to automatically synchronize time between the controller, Prime Infrastructure, and the mobility services engine.

The mobility services engine and its associated controllers must be mapped to the same NTP server and the same Prime Infrastructure server.

Local time zones can be configured on a mobility services engine to assist network operations center personnel in locating events within logs.

Note You can configure NTP server settings while running the automatic installation script. See the *Cisco Mobility Services Engine Getting Started Guide Started Guide* for details on the automatic installation script at the following URL:
http://www.cisco.com/en/US/products/ps9742/prod_installation_guides_list.html

Mandatory Default Root Password Change

You must change the default root password of the mobility services engine while running the automatic installation script to ensure optimum network security.

You can also change the password using the Linux **passwd** command.

Note For the initial login, even if you choose Skip (S), you will be prompted to enter the password. This is because it is mandatory to change the root password at the initial login.

Configuring the Prime Infrastructure Communication Username and Password Using MSE setup.sh

You can configure the Prime Infrastructure Communication username and password using the MSE setup.sh script file.

Scenarios which you might encounter while configuring the Prime Infrastructure username and password are as follows:

- If you configure a new Prime Infrastructure username and password, the password provided is applicable for the new Prime Infrastructure username created.

- If you only configure the Prime Infrastructure username without configuring the Prime Infrastructure password, then the default password admin is applied to the configured username.

- If you only configure the Prime Infrastructure password without configuring the Prime Infrastructure username, then the password for the admin user is changed.

- If you configure an existing username for the Prime Infrastructure username and also configure the password, then the password for that existing user is changed.

Note   These users are API users, and they do not have corresponding OS users on the MSE appliance.

Configuration Changes for Greater Location Accuracy

In some RF environments, where location accuracy is around 60 to 70% or where incorrect client or tag floor location map placements occur, you might need to modify the moment RSSI thresholds in the Context Aware Service > Advanced > Location Parameters page on the Prime Infrastructure.

The following RSSI parameters might require modification:

- locp-individual-rssi-change-threshold
- locp-aggregated-rssi-change-threshold
- locp-many-new-rssi-threshold-in-percent
- locp-many-missing-rssi-threshold-in-percent

Caution   Contact Cisco TAC for assistance in modifying these parameters.

WSSI Module with 3600 AP

If you are attempting to deploy WSSI module with 3600 APs, then APs should be placed in monitor mode with submode wIPS and advanced wIPS engine enabled on the Prime Infrastructure.

AeroScout Engine Module Changes

Starting Release 7.5, the AeroScout engine module is removed from both the Connected Mobile Experiences setup and location code. During installation, if you are upgrading from Release 7.2 and later to Release 7.5, then you will be prompted to remove the AeroScout engine. If you agree to remove, the it removes the AeroScout engine and by default, the Cisco Tag Engine is started as part of Connected Mobile Experiences. If you do not agree to remove the AeroScout engine, then installation will exit.

Ports to be Opened for High Availability Between MSEs

The following is the list of ports to be opened for High Availability between MSEs:

- tcp 22
- tcp 80
- tcp 443
- tcp 1411
- tcp 1521
- tcp 1522
- tcp 1523
- tcp 1524
- tcp 1525
- tcp 1621
- tcp 1622
- tcp 1623
- tcp 1624
- tcp 1625
- tcp 8001
- tcp 8080
- tcp 8081
- tcp 9006
- tcp 15080
- tcp 59000
- tcp 61617
- udp 12091

wIPS Profile

wIPS profile cannot be pushed to Cisco Wireless LAN Controller (WLC) Version 7.5 or prior using the Prime Infrastructure 1.4.x or 2.x with MSE 7.6 Release.

Synchronizing Floor Maps in Location Service

While synchronizing floor maps in location service, we recommend that you synchronize floor maps in batches of 1000 access points at a time.

Operational Notes for Connected Mobile Experiences

This section lists the operational notes for a mobility services engine and contains the following topics:

- Synchronization Required When Upgrading to Release 7.6.120.0 or Importing CAD Floor Images, page 22

Synchronization Required When Upgrading to Release 7.6.120.0 or Importing CAD Floor Images

When upgrading to Release 7.6.120.0 from Release 7.x, you must synchronize after the software upgrade and also when CAD-generated floor images are imported into the Prime Infrastructure.

Floor Change or Minimum Distance Required for Location Transitions to Post to the History Log

When history logging is enabled for any or all elements (client stations, asset tags, rogue clients, and access points), a location transition for an element is posted only if it changes floors or the new location of the element is at least 30 feet (10 meters) from its original location.

Note The other conditions for history logging are as follows:

- Clients: Association, authentication, re-association, re-authentication, or disassociation.
- Tags: Tag Emergency button.
- Interferers: Interferer severity change, cluster center change, or merge.

See Services > Mobility Services > Device Name > Context Aware Service > Administration > History Parameters.

Logs can be viewed at Services > Mobility Services > Device Name > Systems > Log.

Non-Cisco Compatible Extensions Tags Not Supported

The mobility services engine does not support non-Cisco CX Wi-Fi tags. Additionally, these non-compliant tags are not used in location calculations or shown on the Prime Infrastructure maps.

Cisco Compatible Extensions Version 1 Tags Required at a Minimum

Only Cisco CX Version 1 (or later) tags are used in location calculations and mapped in the Prime Infrastructure.

Monitoring Information Varies for Clients and Tags

In the Monitor > Clients page (when Location Debug is enabled), you can view information on the last heard access point and its corresponding Received Signal Strength Indicator (RSSI) reading.

Calibration Models and Data

Calibration models always applies to Wireless clients, Interferers, Rogue APs, and Rogue Clients.

See Chapter 7, "Context-Aware Planning and Verification" in the *Cisco Connected Mobile Experiences Configuration Guide, Release 7.6* for more details on client calibration.

Advanced Location Parameters

Settings for advanced location parameters related to RSSI, chokepoint usage, location smoothing, and assignment of outside walls on floors, are not applicable to tags.

See the "Editing Advanced Location Parameters" section in Chapter 7 of the *Cisco Connected Mobile Experiences Configuration Guide, Release 7.6*.

See Services > Mobility Services > Device Name > Context Aware Service > Advanced > Location Parameters.

Location History Time stamps Match Browser Location

The Prime Infrastructure time stamp is based on the browser location and not on the mobility services engine settings. Changing the time zone on the Prime Infrastructure or on the mobility services engine does not change the time stamp for the location history.

PDAs and Smartphone with Limited Probe Requests Might Affect Location

Many PDAs like smartphones and other Wi-Fi devices with power save mode do not continuously send out probe requests after an initial association to the CUWN. Therefore, calculating the location accuracy of such PDAs using RSSI readings is not always optimal.

Operational Notes for CMX Analytics

This section lists the operational notes for CMX Analytics service and contains the following topics:

WebGL Compatibility

The CMX Analytics in Release 7.5 provides ability to view the analytic results in both 2D (Open Street Maps) and 3D (WebGL) environments. This provides improved understanding of results on multiple floor paths or when dwell times are calculated throughout a multi-storey building. The 3D environment presents the same information as the 2D environment.

WebGL is an advanced feature that provides graphic capabilities. All browsers do not support WebGL on a particular hardware. Verify your browser compatibility in the Get WebGL website. If your browser supports WebGL, then you must see a spinning cube.

If your browser does not support WebGL, you must do the following:

- Update your latest drivers for video card.
- For Google Chrome, follow the instructions given for WebGL and 3D Graphics in the Google Chrome support website.

- For Firefox, follow these steps to enable WebGL:
  - Download the latest build of Firefox browser and launch Firefox on your computer.
  - In the browser address line, enter **about:config**
  - In the Search text box, enter webgl to filter the settings
  - Double click **webgl.enabled_for_all_sites**
  - Set the **webgl.enabled_for_all_sites=true**
- For Safari, follow these steps to enable WebGL:
  - Choose **Safari > Preferences**.
  - Click the **Advanced** tab.
  - Select the **Show Develop menu in menu bar** check box.
  - Choose **Enable WebGL** from the Develop menu.

> **Note** If your system does not support 3D, then the analytic results are displayed only in 2D Open Street Maps view.

- Internet Explorer 10 does not have the built-in support for WebGL and Microsoft has not announced any plans for implementing it in the future. WebGL support can be manually added to Internet Explorer using third-party plugins. For more information, see the WebGL for Internet Explorer website.

Jboss Issue

Sometimes CMX Analytics service does not start up because of a stray Jboss process that runs as a root user. If Analytics engine does not start and if you notice a stray Jboss process with root permissions running, then you must to do the following:

- Stop CMX Analytics service from the Prime Infrastructure.
- Kill the Jboss process. command
- Run the `chown -R nobody:nobody /opt/mse/analytics` command.
- Start CMX Analytics service from the Prime Infrastructure.

Caveats

This section lists the open caveats in 7.6.120.0 for Windows and Linux. For your convenience in locating caveats in Cisco's Bug Toolkit, the caveat titles listed in this section are taken directly from the Bug Toolkit database. These caveat titles are not intended to be read as complete sentences because the title field length is limited. In the caveat titles, some truncation of wording or punctuation might be necessary to provide the most complete and concise description. The only modifications made to these titles are as follows:

- Commands are in **boldface** type.
- Product names and acronyms may be standardized.
- Spelling errors and typos may be corrected.

If you are a registered cisco.com user, view Bug Toolkit on cisco.com at the following website: http://tools.cisco.com/Support/BugToolKit/.

To become a registered cisco.com user, go to the following website: http://tools.cisco.com/RPF/register/register.do

This section contains of the following topics:

- Open Caveats, page 26
- Resolved Caveats, page 28

Open Caveats

Table 6 lists the caveats resolved in the 7.6.120.0 MSE software release.

Table 6   *Open Caveats*

ID Number	Caveat Title
CSCun77290	**Headline**: MSE loses NMSP after HA failover with only wIPS enabled but not CAS. **Symptom**: MSE loses NMSP after HA failover with only wIPS enabled but not CAS. **Condition**: Problem is not applicable on MSE where CAS service is enabled. **Workaround**: • Workaround is to enable CAS on the MSE HA box. This may involve a small CAS license. • Restart MSE secondary after a failver. The nmsp will be up after a MSE service restart
CSCum98071	**Headline**: AP 3600 wIPS module (WSSI) needs submode wIPS enabled. **Symptom**: When deploying the Cisco Aironet Access Point Module for Wireless Security and Spectrum Intelligence (WSSI) with 3600 Series access points, it does not utilize the MSE wIPs monitor mode license as viewed on the Prime Infrastructure if the AP is not configured as mode: monitor, submode: wips, and advanced wips engine enabled. **Condition**: wIPS on WSSI module APs. **Workaround**: None.
CSCuo48727	**Headline**: Context-Aware notification "Outside Notification" missing trigger is sent regardless of the trigger frequency. **Symptom**: Upon configuration of Event Definition Condition, Condition Type "IN/OUT", Trigger Frequency "some value", Trigger If "Outside of", Select Area "some area", multiple out notifications are sent regardless of Trigger Frequency value. **Condition**: When device notification is set to OUT condition, and trigger frequency is set to high value, continuous notifications are sent. **Workaround**: None.

Table 6   ***Open Caveats (continued)***

ID Number	Caveat Title
CSCun93328	**Headline**: Suspicious after-hour traffic is detected during the working hours. **Symptom**: Suspicious after-hour traffic is detected during the configured working hours. **Condition**: wIPS alarm ID 87 is enabled in wIPS profile configuration. **Workaround**: None.
CSCuo12704	**Headline**: With 5700+ APs synchronized in one sync, the MSE heatmap compute freezes. **Symptom**: When synchronizing floor maps containing 5700+ APs in one network design sync, the client tracking stops. **Condition**: This is applicable for MSE location service only. **Workaround**: Synchronize the floor maps in batches of 2000 access points at a time.

Resolved Caveats

Table 7 lists the caveats resolved in the 7.6.120.0 MSE software release.

Table 7   Resolved Caveats

ID Number	Caveat Title
CSCuh32619	**Headline:** CVE-2013-1862 patch inclusion into the MSE.
CSCuj74131	**Headline:** MSE locserver OutOfMemoryError in Heap space.
CSCuc12438	**Headline:** Probing Clients RSSI filtering—Add a filtering parameter to filter probing clients below specified RSSI threshold.
CSCul81140	**Headline:** MSE license is tracking client count based on ratio of 10 clients per installed AP.
CSCum01311	**Headline:** Tracking of some clients does not happen after some time.
CSCum01457	**Headline:** SSL Server Certificate import fails under certain condition.
CSCum03697	**Headline:** Services are enabled on the secondary on fallback to primary.
CSCum77341	**Headline:** The getserverinfo on mse is not returning the server status.
CSCum96311	**Headline:** Apostrophe in zone name causes the SQL parse error.
CSCun16423	**Headline:** Traveling through too many zones causes no data to be placed in to the database.
CSCun28630	**Headline:** MSE becomes unreachable from Prime Infrastructure even if it is up and running.
CSCun28889	**Headline:** Add script to monitor hourly MSE statistics.
CSCun54449	**Headline:** MSE writes the following error message: Floor ID is not found in DB when Loading Floor Location Cache for floor (id, external): 0 false.
CSCun57742	**Headline:** The MSE Data on PI floormap does not match with the analytics report.
CSCun63241	**Headline:** Periodic SOAP messages with AesPing from PI to MSE optimization.
CSCun69728	**Headline:** MSE8.0: Support for 700w and 2700 APs.
CSCun71813	**Headline:** Scale improvements for wIPS.
CSCun72759	**Headline:** Need tool to create backup from MSE CLI.
CSCun74020	**Headline:** GetNetworkDesignList returns floor map images.
CSCun74656	**Headline:** MSE Analytics using the same user as PI causes session ID thrashing.
CSCun75426	**Headline:** Multiple vulnerabilities are found on the MSE appliance.

Table 7   Resolved Caveats (continued)

ID Number	Caveat Title
CSCun77413	**Headline:** OutofMemoryHeap error on the MSE.
CSCun77428	**Headline:** Long password does not on the Analytics login.
CSCun77442	**Headline:** Cannot login to Analytics UI with 200 buildings with three to four floors.
CSCun87594	**Headline:** After upgrading MSE to 7.6.120.0, cannot add the MSE back to PI 1.4.1.
CSCun90212	**Headline:** Not upgrading from 7.5 with large database to 7.7.1.35.
CSCun92859	**Headline:** MSE has Out of Memory Heap Dump error.
CSCun97798	**Headline:** Archive log clean up fails - permissions for user nobody issue.
CSCuo02795	**Headline:** Splash Template setting is not preserved after floor maps update from the Prime Infrastructure.
CSCuo02878	**Headline:** Splash page rendering fails when there is no value assigned for a list field.
CSCuo03948	**Headline:** 8.0 MSE Analytics UI login is slow.
CSCuo12429	**Headline:** Clients are still seen on the PI Maps (from MSE) even after moving out of network.
CSCuo20413	**Headline:** Location Service OOM should trigger MSE restart.
CSCuo20622	**Headline:** Cisco MSE, Cisco WLA are vulnerable to CVE-2014-0160.
CSCuo22735	**Headline:** Splash page redirection fails for a repeated user when location info is missing.
CSCuo22747	**Headline:** Splash page redirection fails with URLs having parameters.
CSCuo24809	**Headline:** Need mouse over for long Zone/floor names in the Analytics.
CSCuo29692	**Headline:** Unknown exception error pop-up.
CSCuo35211	**Headline:** Prime Infrastructure password that was configured using the MSE setup script does not work.

If You Need More Information

If you need information about a specific caveat that does not appear in these release notes, you can use the Cisco Bug Toolkit to find caveats of any severity. Click this URL to browse to the Bug Toolkit:

http://tools.cisco.com/Support/BugToolKit/

(If you request a defect that cannot be displayed, the defect number might not exist, the defect might not yet have a customer-visible description, or the defect might be marked Cisco Confidential.)

Troubleshooting

For the most up-to-date, detailed troubleshooting information, see the Cisco TAC website at the following URL:

http://www.cisco.com/cisco/web/support/index.html

Click **Troubleshooting**, choose your product, and then click the **Troubleshoot and Alerts** heading on the product page to find information on the problem you are experiencing and other service advisories.

Related Documentation

The following documents are related to the mobility services engine:

- *Cisco Connected Mobile Experiences Configuration Guide, Release 7.6*

  http://www.cisco.com/en/US/products/ps9742/tsd_products_support_series_home.html

- *Cisco Wireless Intrusion Prevention System Configuration Guide, Release 7.6*

  http://www.cisco.com/en/US/products/ps9817/products_installation_and_configuration_guides_list.html

- *Cisco CMX Analytics Configuration Guide, Release 7.6*

  http://www.cisco.com/en/US/products/ps9742/products_installation_and_configuration_guides_list.html

- *Cisco CMX Dashboard Configuration Guide, Release 7.6*

  http://www.cisco.com/en/US/products/ps9742/products_installation_and_configuration_guides_list.html

- Cisco Virtual Appliance Configuration Guide, Release 7.6

  http://www.cisco.com/en/US/products/ps9742/products_installation_and_configuration_guides_list.html

- *Cisco Mobility Services Engine Getting Started Guide*

  http://www.cisco.com/en/US/products/ps9742/prod_installation_guides_list.html

- The Prime Infrastructure Online Help is available with the Prime Infrastructure product.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

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