



## Cisco 3310 Mobility Services Engine Getting Started Guide

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## Preface

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This preface describes the purpose of the *Cisco 3310 Mobility Services Engine Getting Started Guide*, who should read it, how it is organized, and its document conventions.

This preface contains the following sections:

- [Purpose, page vii](#)
- [Audience, page vii](#)
- [Organization, page viii](#)
- [Conventions, page viii](#)
- [Obtaining Documentation and Submitting a Service Request, page xi](#)
- [Obtaining Documentation and Submitting a Service Request, page xi](#)
- [Related Documentation, page x](#)

## Purpose

This guide explains how to prepare your site for installation, how to install a Cisco 3310 Mobility Services Engine (hereafter called the *mobility services engine*) in an equipment rack, and power up the mobility services engine.

Details on running the automatic installation script and the required information for that installation script are also provided.

After installation, power up, and initial configuration are complete, refer to the following documents:

- For detailed software configuration information, refer to the *Cisco Context Aware Software Configuration Guide* (see the “[Related Documentation](#)” section).
- For feature support and compatibility information, refer to the latest release notes for the mobility services engine (see the “[Related Documentation](#)” section).

## Audience

This manual is written for system technicians who are responsible for installing, configuring, and troubleshooting the mobility services engine.

# Organization

This guide includes the following sections:

[Chapter 1, “Cisco 3310 Mobility Services Engine Overview,”](#) provides a basic functional overview of the mobility services engine and describes the hardware, major components, and the front and back panel indicators and controls.

[Chapter 2, “Preparing for Installation,”](#) contains important safety information you should know before working with the mobility services engine.

[Chapter 4, “Rack Mounting,”](#) provides procedures for installing rail hardware on the mobility services engine and mounting the unit in a four-post rack.

[Chapter 5, “Initial Configuration,”](#) This chapter provides procedures to power up and initially configure the mobility services engine.

[Chapter A, “System Specifications,”](#) provides information about cabling, power supply voltages, and environmental specifications for the mobility services engine.

[Appendix B, “Troubleshooting,”](#) provides information to help you identify and solve problems that might occur while you are using the mobility services engine.

# Conventions

This publication uses these conventions to convey instructions and information:

Command descriptions use these conventions:

- Commands and keywords are in boldface text.
- Arguments for which you supply values are in italic.
- Square brackets ([ ]) mean optional elements.
- Braces ({ }) group required choices, and vertical bars (|) separate the alternative elements.
- Braces and vertical bars within square brackets ({ | }) mean a required choice within an optional element.

Interactive examples use these conventions:

- Terminal sessions and system displays are in `screen` font.
- Information you enter is in **boldface screen** font.
- Non-printing characters, such as passwords or tabs, are in angle brackets (< >).

Notes, cautions, and timesavers use these conventions and symbols:



Tip

---

Means the following will help you solve a problem. The tips information might not be troubleshooting or even an action, but could be useful information.

---



Note

---

Means reader take note. Notes contain helpful suggestions or references to materials not contained in this manual.

---



**Caution**

Means reader be careful. In this situation, you might do something that could result equipment damage or loss of data.

**Warning**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. (To see translations of the warnings that appear in this publication, refer to the appendix "Translated Safety Warnings.")

**Waarschuwing**

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen. (Voor vertalingen van de waarschuwingen die in deze publicatie verschijnen, kunt u het aanhangsel "Translated Safety Warnings" (Vertalingen van veiligheidsvoorschriften) raadplegen.)

**Varoitus**

Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. (Tässä julkaisussa esiintyvien varoitusten käännökset löydät liitteestä "Translated Safety Warnings" (käännetyt turvallisuutta koskevat varoitukset).)

**Attention**

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures. Avant d'accéder à cet équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures courantes de prévention des accidents. Pour obtenir les traductions des mises en garde figurant dans cette publication, veuillez consulter l'annexe intitulée « Translated Safety Warnings » (Traduction des avis de sécurité).

**Warnung**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt. (Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise finden Sie im Anhang mit dem Titel "Translated Safety Warnings" (Übersetzung der Warnhinweise).)

**Avvertenza**

Questo simbolo di avvertenza indica un pericolo. Si è in una situazione che può causare infortuni. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nell'appendice, "Translated Safety Warnings" (Traduzione delle avvertenze di sicurezza).

**Advarsel**

Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du være oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. (Hvis du vil se oversettelser av de advarslene som finnes i denne publikasjonen, kan du se i vedlegget "Translated Safety Warnings" [Oversatte sikkerhetsadvarsler].)

Aviso	Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. (Para ver as traduções dos avisos que constam desta publicação, consulte o apêndice “Translated Safety Warnings” - “Traduções dos Avisos de Segurança”).
¡Advertencia!	Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes. (Para ver traducciones de las advertencias que aparecen en esta publicación, consultar el apéndice titulado “Translated Safety Warnings.”)
Varning!	Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador. (Se förklaringar av de varningar som förekommer i denna publikation i appendix “Translated Safety Warnings” [Översatta säkerhetsvarningar].)

## Related Documentation

The mobility services engine documentation set includes the following documents:

- *Cisco 3310 Mobility Services Engine Getting Started Guide*
- *Regulatory Safety and Compliance Information for the Cisco 3310 Mobility Services Engine*
- *Release Notes for the Cisco 3310 Mobility Services Engine*
- *Cisco Context Aware Software Configuration Guide*
- *Cisco Mobile Intelligent Roaming Configuration Guide*
- *Cisco Wireless Intrusion Protection Service Configuration Guide*

Follow these steps to find these documents on Cisco.com:

- 
- Step 1** Browse to <http://www.cisco.com>.
  - Step 2** Click **Support**. A new window appears.
  - Step 3** Click **Wireless** under View Information by Product Type. The Select Your Product or Technology page appears.
  - Step 4** In the Search for a Specific Product field, enter **Cisco 3300** and click **Go**.
  - Step 5** Click the link displayed. The Cisco 3300 Introduction page appears.
  - Step 6** Choose the appropriate link for the documentation you want to view or download.
-

# 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>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.





# CHAPTER 1

## Cisco 3310 Mobility Services Engine Overview

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This chapter provides a basic functional overview of the mobility services engine and describes the hardware, major components, and front and back panel components.

This chapter contains the following sections:

- [Introduction, page 1-1](#)
- [Identifying Chassis Components, page 1-2](#)
- [DB-9 Serial Connector Pin Assignments, page 1-4](#)

### Introduction

This section briefly describes the main features of the mobility services engine, provides illustrations of the product, and diagrams showing the location of important components and connections on the system. [Figure 1-1](#) shows the mobility services engine unit.

**Figure 1-1**      *Mobility Services Engine Unit*

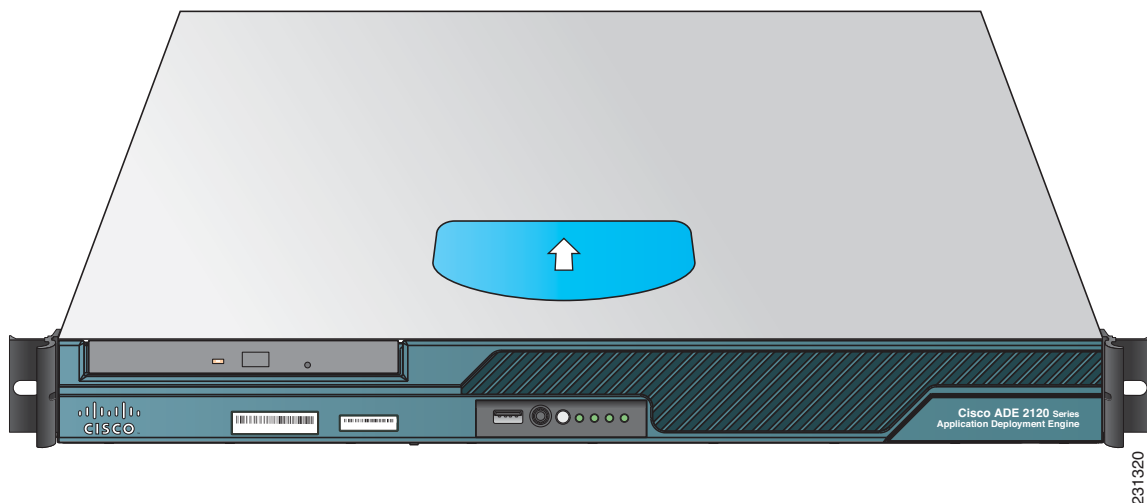


Table 1-1 summarizes the features of the mobility services engine.

**Table 1-1 Mobility Services Engine Feature Summary**

Feature	Description
Processor	Processor and Front Side Bus (FSB) support Supports the Core 2 Duo E4300 (1.80GHz) Intel® processor
Memory	4 GB (two 2 GB DIMM cards) ECC installed
Video	On-board video controller with DB-15 port
LAN	Two 10/100/1000 Gigabit Ethernet RJ45 ports
Hard drives	Two SATA drives (250 GB each)
Peripherals	One slimline optical DVD-ROM drive
Power supply	One 350-W power supply module
Serial ports	Three USB 2.0 ports (1 front, 2 rear) DB-9 serial console port
Keyboard and mouse ports	PS/2 ports for keyboard and mouse

## Identifying Chassis Components

This section helps you identify the components of your mobility services engine. If you are near the unit, you can also use the Quick Reference Label on the inside of the cover to help identify components.

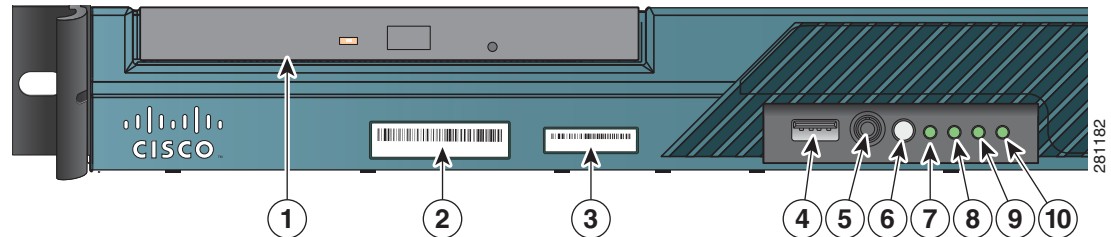
This section includes the following topics:

- [Front Panel Components, page 1-3](#)
- [Rear Panel Components, page 1-3](#)
- [Ethernet LED Indicators, page 1-4](#)
- [DB-9 Serial Connector Pin Assignments, page 1-4](#)

## Front Panel Components

Figure 1-2 indicates the mobility services engine front panel components.

**Figure 1-2 Labels, LEDs, and Buttons on the Mobility Services Engine Front Panel**

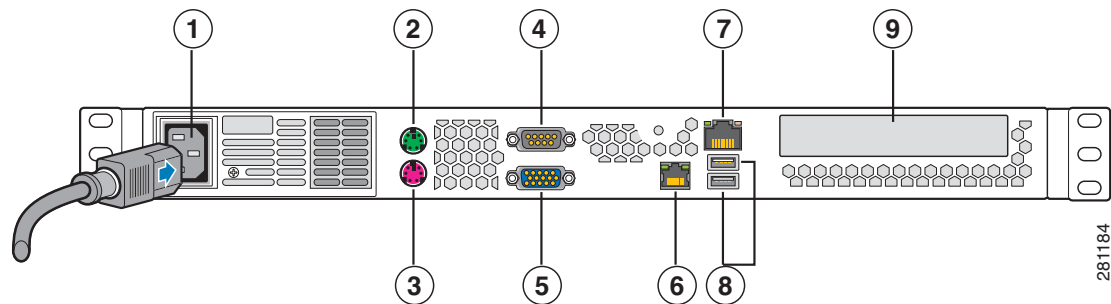


1	DVD-ROM drive	6	System power LED
2	Product ID (PID) label	7	Not used
3	Serial number label	8	Hard disk drive activity LED
4	USB port	9	NIC1 LED (Ethernet port 0)
5	Power button	10	NIC2 LED (Ethernet port 1)

## Rear Panel Components

Figure 1-3 indicates the mobility services engine rear panel components.

**Figure 1-3 Mobility Services Engine Rear Panel Components**

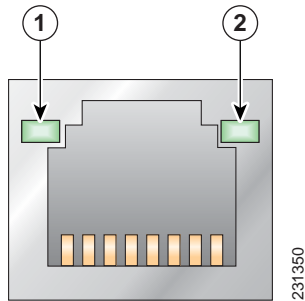


1	AC power connector	6	Ethernet port 1 (NIC 2)—10/100/1000 Mb/s
2	Mouse (PS/2 connector)	7	Ethernet port 0 (NIC 1)—10/100/1000 Mb/s
3	Keyboard (PS/2 connector)	8	USB port 0 and port 1
4	Serial console port (DB-9 connector)	9	Not used
5	Video port (DB-15 connector)		

## Ethernet LED Indicators

The Ethernet port (NIC) includes LEDs that indicate the activity and speed of connection (Items 1 and 2 in [Figure 1-4](#)).

**Figure 1-4 Ethernet Port LEDs**



Item	LED State	Description
1—Left LED	Off	No network connection
	Amber	Network connection in place
	Blinking amber	Transmit and receive activity
2—Right LED	Off	10 Mb/s connection (if left LED is on or blinking)
	Green	100 Mb/s connection
	Amber	1000 Mb/s connection

## DB-9 Serial Connector Pin Assignments

[Table 1-2](#) lists the DB-9 serial console port pin assignments.

**Table 1-2 DB-9 Serial Connector Pin Assignments**

Pin	Assignment	Description
1	DCD	Data carrier detect
2	RD	Receive data
3	TD	Transmit data
4	DTR	Data terminal ready
5	SG	Signal ground
6	DSR	Data set ready
7	RTS	Request to send
8	CTS	Clear to send
9	Ring	Ring indicator





## CHAPTER 2

# Preparing for Installation

---

This chapter contains important safety information you should know before working with the mobility services engine. Use the guidelines in this chapter to ensure your own personal safety and to help protect your device from potential damage.

This chapter contains the following sections:

- [Safety Warnings, page 2-1](#)
- [Safety Guidelines, page 2-3](#)
- [Choosing a Physical Location for the Mobility Services Engine, page 2-5](#)



Note

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Read the *Regulatory Safety and Compliance Information for the Cisco 3310 Mobility Services Engine* document that came with your device before you begin the installation.

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## Safety Warnings

Before you install the device, observe the safety warnings in this section.



Warning

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**Before working on a system that has an on/off switch, turn OFF the power and unplug the power cord.** Statement 1

---



Warning

---

**This is a Class A Information Product, when used in residential environment, it may cause radio frequency interference, under such circumstances, the user may be requested to take appropriate countermeasures.** Statement 257

---



Warning

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**Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

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Warning

---

**Read the installation instructions before connecting the system to the power source.** Statement 1004

---

**Warning**

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack. Statement 1006

**Warning**

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. Statement 1015

**Warning**

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. Statement 1017

**Warning**

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord. Statement 1023

**Warning**

This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024

**Warning**

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place. Statement 1029

**Warning**

Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

**Warning**

This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations. Statement 1045

**Warning**

To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of:

**35° C**

Statement 1047

**Warning**

**Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.** Statement 1048

**Warning**

**The chassis should be mounted on a rack that is permanently affixed to the building.** Statement 1049

**Warning**

**This equipment is intended to be grounded to comply with emission and immunity requirements. Ensure that the switch functional ground lug is connected to earth ground during normal use.**

Statement 1064

**Warning**

**Installation of the equipment must comply with local and national electrical codes.** Statement 1074

**Caution**

There are no user-serviceable parts inside the power supply; contact Cisco when servicing is required.

## Safety Guidelines

To reduce the risk of bodily injury, electrical shock, fire, and damage to the equipment, observe the precautions in this section.

### General Precautions

Observe the following general precautions for working with your system:

- To reduce risk of injury from electric shock hazards, do not open the product enclosure.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your authorized service provider:
  - The power cable or plug is damaged.
  - An object has fallen into the product.
  - The product has been exposed to water.
  - The product has been dropped or damaged.
  - The product does not operate correctly when you follow the operating instructions.
- Keep your system components away from radiators and heat sources. Also, do not block cooling vents.

- Do not spill food or liquids on your system components, and never operate the product in a wet environment.
- Do not push any objects into the openings of your system components. Doing so can cause fire or electric shock by shorting out interior components.
- Use the product only with other Cisco-approved equipment.
- Use the correct external power source. Operate the product only from the type of power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service representative or local power company.
- Use only Cisco approved power cables.
- To help prevent electric shock, plug the system components and peripheral power cables into properly grounded electrical outlets. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable.
- Observe power strip ratings. Make sure that the total ampere rating of all products plugged into the power strip does not exceed 80 percent of the power strip ampere ratings limit.
- To help protect your system components from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position cables and power cords carefully; route cables and the power cord and plug so that they cannot be stepped on or tripped over. Be sure that nothing rests on your system components' cables or power cord.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local or national wiring rules.

## Laser Devices

The DVD of the mobility services engine contains laser devices. The DVD has no defined use on the customer site.

To reduce the risk of exposure to hazardous radiation:

- Do not try to open the product enclosure. There are no user-serviceable components inside.
- Do not operate controls, make adjustments, or perform procedures on the laser device.
- Allow only Cisco authorized service technicians to repair the laser device.

## Rack Installation Safety Guidelines

Before installing your device in a rack, review the following guidelines:

- Two or more people are required to install the device in a rack.
- Ensure that the room air temperature is below 95°F (35°C).
- Do not block any air vents; usually 6 inches (15 cm) of space provides proper airflow.
- Plan the device installation starting from the bottom of the rack.
- Install the heaviest device in the bottom of the rack.
- Do not extend more than one device out of the rack at the same time.
- Remove the rack doors and side panels to provide easier access during installation.
- Connect the device to a properly grounded outlet.

- Do not overload the power outlet when installing multiple devices in the rack.
- Do not place any object weighing more than 110 lb (50 kg) on top of rack-mounted devices.

## Choosing a Physical Location for the Mobility Services Engine

For maximum safety and reliability, mount the mobility services engine using the following guidelines.

### Space and Airflow Requirements

Install the mobility services engine in an EIA-standard rack. One rack unit is required for each mobility services engine.

Ensure that the mobility services engine and all cables can reach appropriate connection points.

- The mobility services engine must be located within 328 ft (100 m) of any equipment connected to the 10/100/1000BASE-T ports.
- The power cord must be able to reach a 110 or 220 VAC grounded electrical outlet.

Ensure that there is sufficient room at the back of the mobility services engine for all cables and connectors.

- Leave a minimum clearance of 25 in. (63.5 cm) in front of the rack.
- Leave a minimum clearance of 30 in. (76.2 cm) behind the rack.
- Leave a minimum clearance of 48 in. (121.9 cm) from the back of the rack to the back of another rack or row of racks.



**Caution**

---

To prevent inadequate cooling and damage to the equipment, do not block the ventilation openings.

---



**Caution**

---

Always use blanking panels to fill empty vertical spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels can lead to thermal damage.

---



**Caution**

---

When selecting a rack to use, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment: (1) Front and rear doors—If the rack includes closing front and rear doors, you must allow 5,350 sq. cm (830 sq. in.) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation). (2) Side—The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 in. (7 cm).

---

## Temperature Requirements

To ensure continued safe and reliable equipment operation, install or position the system in a well ventilated, climate-controlled environment.

Ensure that the ambient operating temperature remains between 50 to 95°F (10 to 35°C), taking into account the elevated temperatures that occur when equipment is installed in a rack.



Caution

---

Do not permit third party equipment to impede airflow around the mobility services engine or to increase the internal rack temperature beyond the allowable limits. Do not exceed the manufacturer's temporal multi-resolution analysis (TMRA) limits.

---

## Power Requirements

Installation of this equipment must comply with local and regional electrical regulations governing the installation of information technology equipment by licensed electricians. This equipment is designed to operate in installations covered by NFPA 70, 1999 Edition (National Electric Code) and NFPA-75, 1992 (code for Protection of Electronic Computer/Data Processing Equipment). For electrical power ratings on options, refer to the product rating label or the user documentation supplied with that option.



Caution

---

Protect the mobility services engine from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

---

## Mobility Services Engine Power Supply

The mobility services engine has one power supply.



Caution

---

Verify that the external power source connected to the mobility services engine matches the type of power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your Cisco authorized reseller or local power company.

---

## Batteries

The mobility services engine might include a real-time clock battery or coin cell battery that contains perchlorate. If so, it might require special handling when recycled or disposed of in California.

Refer to the following link for disposal information.

<http://www.dtsc.ca.gov/HazardousWaste/Perchlorate/index.cfm>



Caution

---

Do not dispose of batteries with general household waste. Recycle them using the public collection system.

---

## Electrical Grounding Requirements

The mobility services engine must be grounded properly for proper operation and safety. In the United States, you must install the equipment in accordance with NFPA 70, 1999 Edition (National Electric Code), Article 250, as well as any local and regional building codes. In Canada, you must install the equipment in accordance with Canadian Standards Association, CSA C22.1, Canadian Electrical Code. In all other countries, you must install the equipment in accordance with any regional or national electrical wiring codes, such as the International Electrotechnical Commission (IEC) Code 364, parts 1 through 7.

Furthermore, you must verify that all power distribution devices used in the installation, such as branch wiring and receptacles, are listed or certified grounding-type devices. Because of the high ground-leakage currents associated with multiple systems connected to the same power source, Cisco recommends the use of a PDU that is either permanently wired to the building's branch circuit or includes a nondetachable cord that is wired to an industrial-style plug. NEMA locking-style plugs or those complying with IEC 60309 are considered suitable for this purpose. Using common power outlet strips for the mobility services engine is not recommended.







# CHAPTER 3

## Hardware Installation

---

This chapter includes procedures for installing and removing the rack handles of the mobility services engine system.



Note

---

The mobility services engine does not contain user serviceable internal components.

---

This chapter contains the following sections:

- [Before You Begin, page 3-1](#)
- [Installing and Removing the Rack Handles, page 3-2](#)

## Before You Begin

Before you begin the installation, read the *Regulatory Safety and Compliance Information for the Cisco 3310 Mobility Services Engine* document that shipped with your device.

This section contains the following topics:

- [Tools and Supplies Needed, page 3-1](#)
- [System References, page 3-1](#)



Warning

---

Read the installation instructions before connecting the system to the power source. Statement 1004

---

## Tools and Supplies Needed

- Phillips\* (cross head) screwdriver, #1 bit and #2 bit
- Antistatic wrist strap and conductive foam pad

## System References

All references to left, right, front, top, and bottom assume the reader is facing the front of the mobility services engine system as it would be positioned for normal operation.

# Installing and Removing the Rack Handles

The mobility services engine is shipped with rack handles pre-installed, so that the product can be easily affixed to an equipment rack. This section includes procedures for removing and reinstalling the rack handles.

This section contains the following topics:

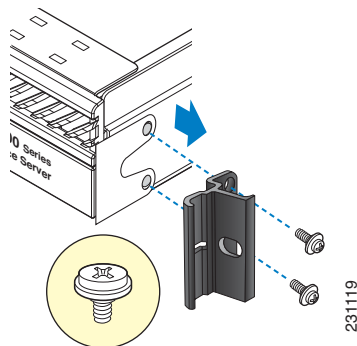
- [Removing the Rack Handles](#)
- [Installing the Rack Handles](#)

## Removing the Rack Handles

To remove rack handles from a mobility services engine:

- 
- Step 1 Review the information in the [“Safety Warnings”](#) section on page 2-1 and the [“Safety Guidelines”](#) section on page 2-3.
  - Step 2 Power down the mobility services engine and unplug all peripheral devices and the AC power cable.
  - Step 3 Remove the two screws that hold the rack handle and the bezel in place, and remove the rack handle from the mobility services engine as shown in [Figure 3-1](#).
  - Step 4 Reattach the bezel with the screws.

**Figure 3-1** Removing the Rack Handle



- Step 5 Repeat [Step 3](#) and [Step 4](#) on the opposite side of the system.
  - Step 6 Plug all peripheral devices and the AC power cable into the mobility services engine.
- 

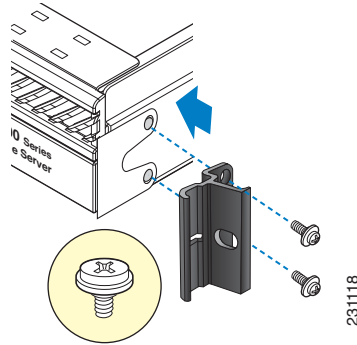
## Installing the Rack Handles

To reinstall the rack handles on a mobility services engine:

- 
- Step 1 Review the information in the [“Safety Warnings”](#) section on page 2-1 and the [“Safety Guidelines”](#) section on page 2-3.
  - Step 2 Power down the device and all attached devices. Disconnect the power cord and all external cables.

- Step 3** Remove the two screws that attach the bezel to the chassis.
- Step 4** Attach the rack handle to the mobility services engine with the two screws as shown in [Figure 3-2](#).

**Figure 3-2** *Installing the Rack Handle*



- Step 5** Repeat [Step 3](#) and [Step 4](#) on the opposite side of the mobility services engine.
- Step 6** Plug all peripheral devices and the AC power cable into the mobility services engine.
-





## CHAPTER 4

# Rack Mounting

---

This chapter provides procedures for installing rail hardware on the mobility services engine and for mounting the product on a four-post rack.

This chapter contains the following sections:

- [Before You Begin, page 4-1](#)
- [Unpacking the Mobility Services Engine, page 4-2](#)
- [Installation Precautions, page 4-2](#)
- [Removing and Reinstalling the Rack Handles, page 4-3](#)
- [Mounting the Mobility Services Engine in a Four-Post Rack, page 4-4](#)

## Before You Begin

Before you begin the installation, read the *Regulatory Safety and Compliance Information for the Cisco 3310 Mobility Services Engine* document that shipped with your device.

## Tools Needed

You need to have the following tools to complete the rack mounting procedure:

- A Phillips screwdriver (#1 bit and #2 bit)
- Four (4) rack screws

# Unpacking the Mobility Services Engine

Follow these steps to unpack the mobility services engine.

- 
- Step 1 Open the shipping container and carefully remove the contents.
  - Step 2 Return all packing materials to the shipping container and save it.
  - Step 3 Ensure that all items listed in the “[Package Contents](#)” section are included in the shipment.
  - Step 4 Examine each item for damage. If any item is damaged or missing, notify your authorized Cisco sales representative.
- 

## Package Contents

Each mobility services engine package contains the following items:

- One Cisco 3310 Mobility Services Engine
- AC power cord
- DB-9 serial cable for console connection with an RJ-45 to DB-9 adapter
- This guide, the *Cisco 3310 Mobility Services Engine Getting Started Guide*
- Four-post installation kit (optional)



Note

---

A two-post installation kit is not offered for this product.

---

## Installation Precautions

Before you begin the installation, review the warnings and cautions in this section.



Caution

---

There are no user-serviceable parts inside the power supply; contact Cisco when servicing is required.

---



Caution

---

The operating temperature of the mobility services engine, when installed in an equipment rack, must not go below 50°F (10°C) or rise above 95°F (30°C). Extreme fluctuations in temperature can cause a variety of problems in your mobility services engine.

---



Caution

---

The equipment rack must provide sufficient airflow to the front of the mobility services engine to maintain proper cooling.

---

# Removing and Reinstalling the Rack Handles

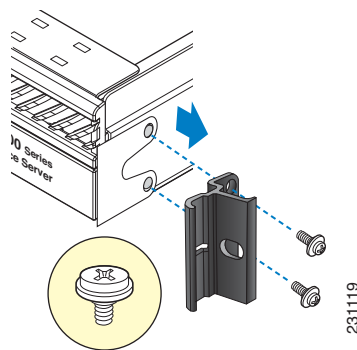
The mobility services engine is shipped with rack handles already installed, so the product can be easily affixed to an equipment rack. This section includes procedures for removing and reinstalling the rack handles.

## Removing the Rack Handles

To remove rack handles from a mobility services engine:

- Step 1** Review the information in the [“Safety Warnings” section on page 2-1](#) and the [“Safety Guidelines” section on page 2-3](#).
- Step 2** Power off the mobility services engine and unplug all peripheral devices and the AC power cable.
- Step 3** Remove the two screws that hold the rack handle and the bezel in place, and remove the rack handle from the mobility services engine as shown in [Figure 4-1](#).
- Step 4** Reattach the bezel with the screws.

**Figure 4-1** Removing the Rack Handle



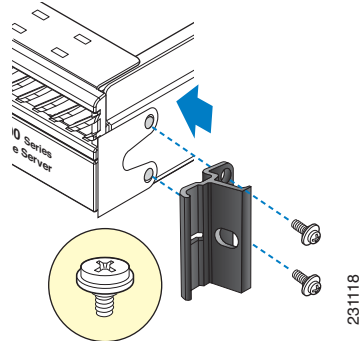
- Step 5** Repeat [Step 3](#) and [Step 4](#) on the opposite side of the system.
- Step 6** Plug all peripheral devices and the AC power cable into the mobility services engine.

## Reinstalling the Rack Handles

To reinstall the rack handles on a mobility services engine:

- Step 1** Review the information in the [“Safety Warnings” section on page 2-1](#) and the [“Safety Guidelines” section on page 2-3](#).
- Step 2** Power off the device and all attached devices. Disconnect the power cord and all external cables.
- Step 3** Remove the two screws that attach the bezel to the chassis.
- Step 4** Attach the rack handle to the mobility services engine with the two screws as shown in [Figure 4-2](#).

**Figure 4-2** Installing the Rack Handle



- Step 5** Repeat [Step 3](#) and [Step 4](#) on the opposite side of the mobility services engine.
- Step 6** Plug all peripheral devices and the AC power cable into the mobility services engine.

## Mounting the Mobility Services Engine in a Four-Post Rack



**Warning**

**Stability hazard.** The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over. Statement 1048



**Warning**

**The chassis should be mounted on a rack that is permanently affixed to the building.** Statement 1049

This section contains the following topics:

- [Contents of the Four-Post Installation Kit, page 4-4](#)
- [Attaching Chassis Brackets to the Chassis, page 4-6](#)
- [Attaching the Rail Hardware to the Rack, page 4-6](#)
- [Installing the Chassis into the Rack, page 4-7](#)

## Contents of the Four-Post Installation Kit

The four-post installation kit includes individual left and right slide rail assemblies and chassis brackets. [Figure 4-3](#) shows the details of the four-post hardware kit.



**Note**

Each slide rail assembly consists of three pieces that slide to extend the rail to its full length. To reach the features of the innermost piece, such as the release buttons, you must grasp the end of the innermost piece and pull it firmly out of the piece that contains it (the slide rail assembly is the top item displayed in [Figure 4-3](#)).



Figure 4-3 Four-Post Hardware Kit

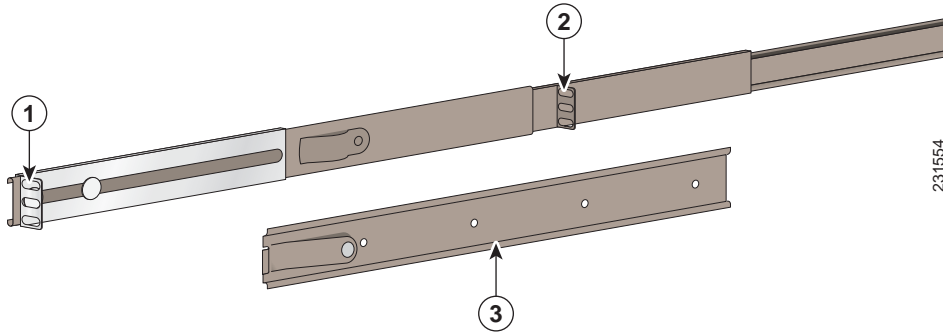
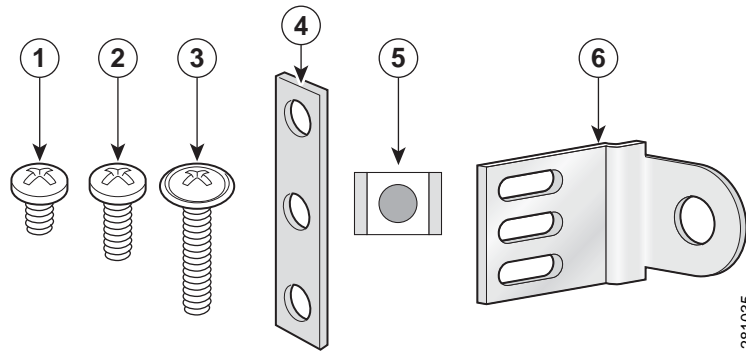


Table 4-1 Four-Post Hardware Kit

1	Rear bracket portion of the slide rail assembly	3	Chassis bracket
2	Front bracket portion of the slide rail assembly		

Figure 4-4 illustrates the fasteners for the four-post rack installation.

Figure 4-4 Fasteners for Four-Post Rack Installations



Item	Description	Quantity
1	Screw, #10-32 x 1/4-inch	8
2	Screw, #10-32 x 1/2-inch (rack screws)	10
3	Screw, #10-32 x 7/8-inch	8
4	Nut bar (not used)	4
5	Cage nut <sup>1</sup>	12
6	Ear bracket	2

1. Cage nuts are only required when you must accommodate square holes in a rack.

## Attaching Chassis Brackets to the Chassis

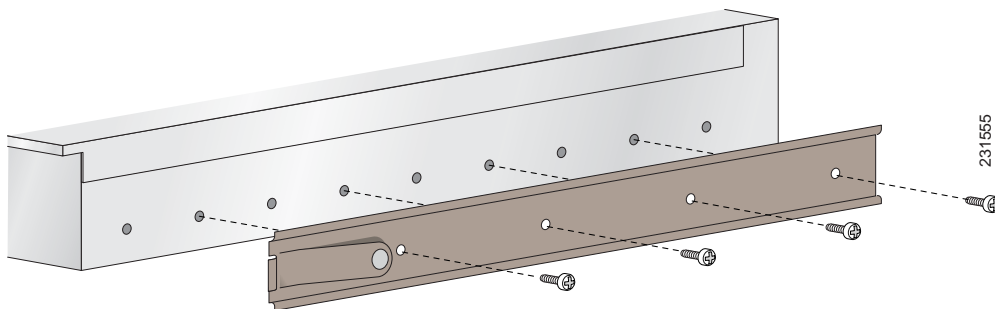
You need the following components in order to attach the chassis brackets to the chassis:

- Chassis brackets
- Screws, 1/4-inch

To attach the hardware to the chassis, follow these steps:

- 
- Step 1** Align the chassis bracket holes with the horizontal holes on the side of the chassis, beginning with the second hole. The release spring on the chassis bracket must point toward the rear of the mobility services engine and face away from the chassis (see [Figure 4-5](#)).

**Figure 4-5** Attaching the Chassis Bracket to the Mobility Services Engine Chassis



- Step 2** Attach the chassis bracket to the chassis with the 1/4-inch screws.
- Step 3** Attach a chassis bracket to the other side of the chassis in the same manner.
- 

## Attaching the Rail Hardware to the Rack

You need the following components in order to attach the rail hardware to a four-post rack:

- Slide rail assembly
- Rack screws



**Note**

This procedure describes the installation of slide rail assembly in a four-post threaded-hole rack. If your four-post rack uses rectangular holes, ensure that you have the proper adapters in place to securely attach the slide rail assembly to the posts.

---

To attach the hardware to the chassis, follow these steps:

- 
- Step 1** Determine the position on the rack where you will mount the chassis.
- Step 2** Position the rear (adjustable) bracket on the outer side of the rear post. Attach the bracket to the post with rack screws.

- Step 3** Align the other end of the slide rail assembly to the corresponding hole on the front post. Attach the front bracket to the front side of the front post with rack screws.
- Step 4** Install the other slide rail assembly on the opposite side of the rack in the same manner. Ensure that the two rails are aligned and that the ends of the rails are level.

## Installing the Chassis into the Rack



### Caution

If you mount the slide rail in holes that are not vertically aligned from front to back, you can damage the slide rail.



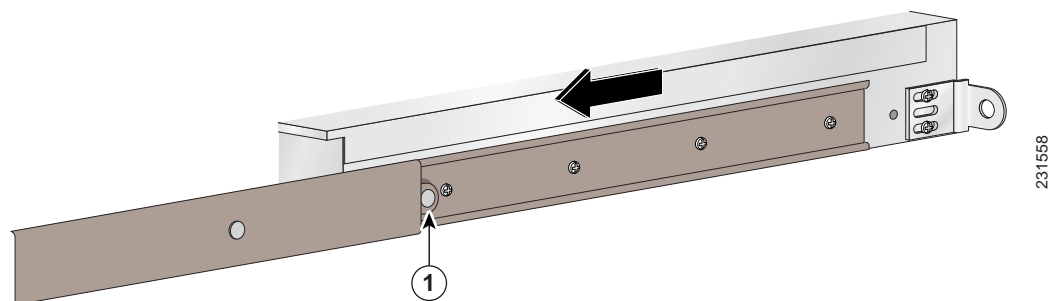
### Note

Lifting the chassis and attaching it to the rack is a two-person job. One person must be able to lift and support the mobility services engine, which weighs approximately 20.0 lbs. (9 kg).

To install the chassis into the rack, follow these steps:

- Step 1** Extend the inner rail portion of the rack-mounted slide rail assembly until it locks into place.
- Step 2** Position the chassis so that the rear ends of the chassis bracket align with the front ends of the rail hardware.
- Step 3** Slide the chassis brackets into the slide rail assembly. (You may need to press on the release spring (item 1 in [Figure 4-6](#)).

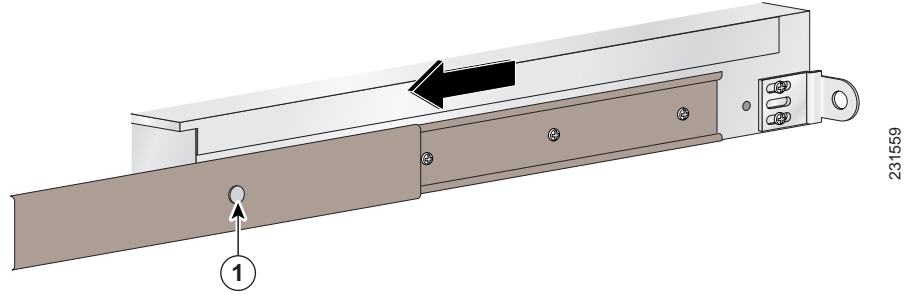
**Figure 4-6** Sliding the Chassis Bracket into the Slide Rail Assembly



1	Spring release
---	----------------

- Step 4** Slide the chassis bracket until the release spring clicks into place. The slide rail assembly should now support the weight of the chassis.
- Step 5** To push the chassis into the rack, press the spring release buttons on the extended slide rail assembly (item 1 in [Figure 4-7](#)). Then, slide the chassis in until the brackets on the chassis meet the front posts of the rack.

Figure 4-7 Sliding the Chassis into the Rack



1	Spring release	
---	----------------	--



# CHAPTER 5

## Initial Configuration

---

This chapter describes how to initially configure your mobility services engine. This chapter contains these sections:

- [Requirements, page 5-1](#)
- [Connecting and Using the CLI Console, page 5-3](#)
- [Powering On the Mobility Services Engine, page 5-3](#)
- [Configuring the Mobility Services Engine, page 5-4](#)
- [Configuring an NTP Server, page 5-12](#)
- [Launching the Mobility Services Engine, page 5-12](#)
- [Verifying the Mobility Services Engine Software State, page 5-13](#)
- [Manually Stopping Mobility Services Engine Software, page 5-14](#)
- [Updating Mobility Services Engine Software, page 5-14](#)
- [Downloading Software Using Cisco WCS, page 5-15](#)
- [Manually Downloading Software, page 5-15](#)
- [Recovering a Lost Root Password, page 5-17](#)



**Note**

For configuration details beyond initial installation, refer to the *Cisco Context Aware Software Configuration Guide* on Cisco.com at the following link:

[http://www.cisco.com/en/US/products/ps9806/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps9806/tsd_products_support_series_home.html)

---

## Requirements

### CLI Console Requirements

You need this equipment in order to connect to the mobility services engine console:

- VT-100 terminal emulator on a CLI console laptop, desktop, or palmtop
- A serial cable that provides a connection to the laptop, desktop, or palmtop

## Cisco WCS Requirements

Cisco WCS 5.1 (or later) or an external FTP server is required for mobility services engine software updates.



Note

---

Cisco WCS uses an internal FTP server. Third-party FTP servers cannot run on the same workstation as the Cisco WCS because they use the same communication port.

---

## Cisco Controller Requirements

Cisco wireless LAN controllers installed with releases 5.1 (or later) or 4.2.130 (or later) can communicate with the mobility services engine.



Note

---

Please refer to the *Release Notes for the Cisco 3310 Mobility Services Engine* for software release 5.1.26.0 for compatibility by release between the mobility services engine and Cisco WCS and controller releases at the following link:

[http://www.cisco.com/en/US/products/ps9742/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps9742/tsd_products_support_series_home.html)

---

## System Configuration Parameters

Obtain these parameters from your network administrator:

- A host name for the mobility services engine
- A broadcast address for the mobility services engine
- An IP address for the Ethernet-0 (eth0) port (located on the mobility services engine back panel)
- A net mask for the Ethernet-0 IP address
- An IP address for the Ethernet-0 default gateway
- An IP address for the Ethernet-1 (eth1) port (mobility services engine back panel) (installation optional)
- A net mask for the Ethernet-1 IP address (only required if the port is used)
- An IP address for the Ethernet-1 default gateway (only required if the port is used)



Note

---

Either the Ethernet-0 or Ethernet-1 port can be used to transmit location updates to Cisco WCS. However, the Ethernet-0 port is generally configured to communicate with Cisco WCS and the Ethernet-1 port is generally used for out-of-band management. Both ports are configured as part of the installation script described in the “[Configuring the Mobility Services Engine](#)” section.

---

## Connecting and Using the CLI Console

For initial system configuration, use a terminal emulator program to access the command-line interface (CLI) console. The serial console cable connects to the mobility services engine back-panel DB-9 console port. Refer to [Figure 1-3 on page 1-3](#) for the location of the serial console port. For console port pinouts, refer to the “[DB-9 Serial Connector Pin Assignments](#)” section on [page 1-4](#).

Use these terminal emulator settings for the CLI console session:

- 9600 baud
- 8 data bits
- No flow control
- 1 stop bit
- No parity

## Powering On the Mobility Services Engine

When you apply AC power to a mobility services engine, the bootup script initializes the operating system and its stored configurations. You are prompted to enter a user ID and password and enter key configuration details.

Follow these steps to power on the mobility services engine.

- 
- Step 1** Plug an AC power cord into the back of the power supplies of the mobility services engine ([Figure 1-3 on page 1-3](#)), and connect the other end to a grounded 100 to 240 VAC 50/60 Hz electrical outlet. The end of the power cord that plugs into the mobility services engine conforms with the IEC 320 standard.
- Step 2** Press the front-panel power button to turn on the mobility services engine (refer to [Figure 1-2 on page 1-3](#)).
- Step 3** At the login prompt, enter the mobility services engine operating username and password. The default username is *root* and the default password is *password*. The username and password are case sensitive. You are now logged into the mobility services engine operating system. Continue to the “[Configuring the Mobility Services Engine](#)” section.
-

# Configuring the Mobility Services Engine

As part of the initial installation, you only need to minimally configure the mobility services engine using the console port. The mobility services engine provides a setup wizard to help prompt you for configuration information. All configuration beyond the initial setup using the setup wizard can be done with Cisco WCS.

**Note**

You must change the default root password during the initial configuration of the mobility services engine to ensure optimum network security.

- You are prompted to change the password during the initial setup using the setup wizard.
- You can also change the password using the Linux command, *passwd*.

## Using the Setup Wizard

The Setup Wizard provides a convenient script to guide you through the initial configuration settings for the mobility services engine. You can activate the Setup Wizard when using the console port.

**Note**

Cisco recommends that you configure all relevant items during initial setup to ensure optimum operation of the mobility services engine in your network. The hostname and either the Ethernet-0 (eth0) or the Ethernet-1 (eth1) port **MUST** always be configured during the automatic installation.

**Note**

You can rerun the Setup Wizard at any time to add or change parameters. There is no need to reenter values that you do not want changed during one of these updates.

**Note**

If you do not want to configure an item, enter **S** or **skip** and you are prompted for the next configuration step. Skipped settings are retained and not modified.

**Note**

If you want to use the default setting of an option, enter **U**, **use**, or press **Enter** and you are prompted for the next configuration step.

To activate and use the Setup Wizard to help configure the initial configuration settings for the mobility services engine, follow these steps:

- Step 1** Connect your PC to the console port on the rear of the unit using a serial cable.
- Step 2** Activate your terminal emulator program.
- Step 3** Configure your terminal emulator for the serial port settings (see the [“Connecting and Using the CLI Console”](#) section).
- Step 4** Activate the unit by pressing the **Power** button (on the front of the unit).
- Step 5** Enter the login (default is *root*) at the prompt.



**Step 6** Enter the password (default is *password*) at the prompt.

**Step 7** The Setup Wizard prompt appears.

```
Setup parameters via Setup Wizard (yes/no) [yes]:
```



**Note** The option in square brackets is the default. You can press **Enter** to choose that default.

a. Enter *No* if you want to manually set the configuration parameters (not described in this section).



**Note** Only experienced Linux system administrators should choose to manually configure the system because Linux commands are used.

b. Enter **yes** or press **Enter** if you want to activate and use the Setup Wizard. The following text appears on the console.

```
Welcome to the mobility services engine setup.
Please enter the requested information. At any prompt,
enter ^ to go back to the previous prompt. You may exit at
any time by typing <Ctrl+C>.
```

```
You will be prompted to choose whether you wish to configure a
parameter, skip it, or reset it to its initial default value.
Skipping a parameter will leave it unchanged from its current
value.
```

```
Changes made will only be applied to the system once all the
information is entered and verified.
```

```
Current hostname=[localhost]
Configure hostname? (Y)es/(S)kip/(U)se default [Yes]:Y
```

**Step 8** To configure a hostname, enter **Y**.

**Step 9** Enter a hostname at the prompt. The hostname should be a unique name that can identify the device on the network. The hostname should start with a letter, end with a letter or number, and contain only letters, numbers, and dashes; such as *mse-nyc*.

**Step 10** To configure the domain name, enter **Y** at the prompt.

**Step 11** Enter a domain name for the network domain to which the mobility services engine belongs. The domain name should start with a letter, and it should end with a valid domain name suffix such as *.com*. It must contain only letters, numbers, dashes, and dots; such as *cisco.com*. The following text appears.

```
Current IP address=[10.0.132.233]
Current eth0 netmask=[255.255.254.0]
Current gateway address=[10.0.132.1]
Enter eth0 IP address [10.0.132.233]:
Configure eth0 interface parameters? (Y)es/(S)kip/(U)se default [Skip]:
```

**Step 12** Enter **Yes** if you want to provide information for the Ethernet-0 (eth0) interface.



**Note** A network administrator can provide the IP address, network mask, and default gateway address for the Ethernet settings.

**Step 13** Enter the Ethernet-0 settings for the following prompts:

```

Enter an IP address for the first ethernet interface of this machine.
Enter eth0 IP address [10.0.132.233]:
Enter the network mask for IP address 10.0.132.233:
Enter network mask [255.255.254.0]:
Enter a default gateway address for this machine.
Note that the default gateway must be reachable from the first ethernet interface

Enter default gateway address [10.0.132.1]:

```

```

The second ethernet interface is currently disabled for this machine.
Configure eth1 interface parameters? (Y)es/(S)kip/(U)se default [Skip]:

```

**Step 14** If you want to provide information for a second Ethernet (eth1) interface, enter **Y** or **yes**.**Step 15** Enter an IP address and network mask for the second Ethernet (eth1) interface at these prompts:

```

Enter eth1 IP address [none]:
Enter network mask [255.0.0.0]:

```

**Step 16** If you entered an IP address and mask for the second Ethernet interface (eth1) of this machine, you can define up to two static routing entries for that interface. Static routes are typically used in lab environments to mimic out-of-band networks and are not recommended for use within your network unless you have extensive experience with them. For the following prompts, enter the network address, network mask, and gateway address for the static route:

```

Enter network [none]:
Enter network mask [255.0.0.0]:
Enter gateway address:

```




---

**Note** If you do not want to configure any static routes, enter **none** at the first network address prompt. You will not be prompted for the network mask and gateway address.

---




---

**Note** If you want to configure only one route, you can enter **none** when you are prompted for the second network address. You will not be prompted for the network mask and gateway address for the second route.

---

**Step 17** If you want to configure DNS settings, enter **Y** at the prompt shown below:

```

Domain Name Service (DNS) Setup
DNS is currently enabled.
No DNS servers currently defined
Configure DNS related parameters? (Y)es/(S)kip/(U)se default [Skip]:Y

```

**Step 18** Enter the DNS settings for the prompts shown below:

```

Enable DNS (yes/no) [yes]:
Enter primary DNS server IP address:
Enter backup DNS server IP address (or none) [none]:

```

- Step 19** To configure the current time zone, enter the appropriate settings at the prompts shown below:

```
Current timezone=[America/Los_Angeles]
Configure timezone? (Y)es/(S)kip/(U)se default [Skip]:
```



**Note** Communications between the mobility services engine, Cisco WCS, and the controller are in universal time code (UTC). Local time zones are configured on the mobility services engine to assist network operations center personnel in locating events within logs. Configuring NTP on each system provides devices with the UTC time.

- Step 20** To configure the network time protocol (NTP) server settings, enter appropriate settings at the following prompts:



**Note** The mobility services engine and its associated controllers must be mapped to the same NTP server and the same Cisco WCS server. An NTP server is required in order to automatically synchronize time between the controller, Cisco WCS, and the mobility services engine.

Network Time Protocol (NTP) Setup.

If you choose to enable NTP, the system time will be configured from NTP servers that you select. Otherwise, you will be prompted to enter the current date and time.

NTP is currently disabled.

```
Configure NTP related parameters? (Y)es/(S)kip/(U)se default [Skip]:
```

```
Enable NTP (yes/no) [no]:
```

```
Enter NTP server name or address:
```

```
Enter another NTP server IP address (or none) [none]:
```

- Step 21** To change the text in the login banner that appears when a user logs in through the console port or a remote connection using the secure shell (SSH) protocol, enter appropriate settings in the prompts shown below:



**Note** The banner is usually used to warn users that they are entering a private system.

```
Current Login Banner = [Warning!]
```

```
Configure login banner (Y)es/(S)kip/(U)se default [Skip]:
```

Enter text to be displayed as login banner. Enter a single period on a line to terminate.

```
Login banner [Warning!]:
```

- Step 22** To configure and enable remote root login (access), enter **Y** in the prompt shown below:



**Note** If you enable remote root access, serial and SSH connections are supported. Local monitor and keyboard access is disabled.



**Note** If you disable remote root access, then both the local monitor and keyboard work along with the serial connection. SSH access is disabled.

```
Configure remote root access? (Y)es/(S)kip/(U)se default [Skip]:
```

**Step 23** Enter appropriate settings for the following prompts:

Enter whether or not you would like to allow remote root login via secure shell for this machine.

Enable remote root login (yes/no) [no]:

SSH root access is currently enabled.

Configure ssh access for root (Y)es/(S)kip/(U)se default [Skip]:

Enter whether or not you would like to enable ssh root login. If you disable this option, only console root login will be possible.

**Step 24** For the following prompt, enter the desired setting:

a. Enter **yes** to allow remote login through SSH v2 (ssh root login) in addition to console login.

a. Enter **no** to allow root login only from the console.

Enable ssh root access (yes/no):




---

**Note** If you forget the ssh root login password, you can enter into single-user mode and change the password. To prevent unauthorized access, you can define a password for single user mode.

---

**Step 25** To configure single user mode settings, enter the desired settings for the prompts shown below:

Single user mode password check is currently enabled.

Configure single user mode password check (Y)es/(S)kip/(U)se default [Skip]:

The single user mode is usually used for recovery operations. For example, when the root password is forgotten, you can log into single user mode and reset the root password.

\*\*\*\*\*

!!WARNING!!

-----

If single user mode password check is enabled and the root password is forgotten, the appliance will be unusable as it cannot be logged into successfully. Do not enable this option unless it is required. (Press ^ to go back to previous step.)

\*\*\*\*\*

**Caution**


---

If you forget the single-user mode password, you cannot log in and you will need to return your unit to Cisco for repair. Contact Cisco Technical Assistance Center (TAC) to arrange for a return material authorization (RMA) number.

---

Enable password check for single user mode login (yes/no) [yes]:

**Step 26** In the enter login and password related parameter prompts shown below, enter the desired settings or press **Enter** to accept the displayed value.


---

**Note** These parameter settings apply to ALL passwords that you enable and set while using the Setup Wizard.

---

Login and password strength related parameter setup

Maximum number of days a password may be used : 60

Minimum number of days allowed between password changes : 1

Minimum acceptable password length : 9

Login delay after failed login : 5

Checking for strong passwords is currently enabled.

Configure login/password related parameters? (Y)es/(S)kip/(U)se default [Skip]: Y

Enter login and password related parameters.

Maximum number of days a password may be used(1-99999, 99999 means no expiry) [60]:

Minimum number of days a password may be used(0-99999, 0 means no minimum) [1]:

Minimum acceptable password length(8-10) [9]:

Login delay in seconds after failed login(0-15) [5]

Enable strong password checking? [yes/no] [yes]:

- Step 27** To configure and define a root (superuser) password, follow these steps:
- Enter **Y** or **yes** to enable a root password or press **Enter** to skip this step.
  - Enter a password for the superuser and confirm it by typing it again. Your typing is not visible.
- Step 28** You can also configure a strong (GRand Unified Bootloader (GRUB)) password. A strong password must have a minimum of 9 characters and must include: two lowercase letters, two numbers, and two special characters (such as \$ and #). An error message displays if you enter an inadequate password.



**Caution**

If you forget the GRUB password, you cannot login and you need to return your unit to Cisco for repair. You must contact Cisco TAC to arrange for an RMA number.



**Note** If a *strong* password is not enabled, a password can be of any length.



**Note** Passwords defined *before* a strong password is set are not affected by the *strong* password setting. Only those passwords that are set *after* the strong password is set are affected. For example, *strong* passwords will be required for passwords set later in this script such as the Cisco WCS communication password and as passwords expire.

To configure a strong GRUB password, enter the appropriate responses to the prompts shown below:

```
GRUB password is not currently configured.
Configure GRUB password (Y)es/(D)isable/(S)kip/(U)se default [Skip]:
GRUB is the Linux bootloader. Setting a password for
the GRUB loader means that each time the appliance is
powered up, you will be prompted for the GRUB password
you configure here.
*****
!!WARNING!!
-----
If the GRUB password is forgotten, the appliance
will be unusable as it cannot be booted up
successfully. Do not configure this option unless it
is required. (Press ^ to go back to previous step.)
*****

Enter a password for the grub menu.

Enter GRUB Password:
Verify GRUB Password:

Password must be 9 characters long. Try again.
```

```

Enter GRUB Password:
Verify GRUB Password:
UP = 2, LO = 6, DIGIT = 3, PUNCT = 0
Password must contain 2 uppercase, 2 lowercase letters,
2 digits and 2 special characters. Try again.

```

```

Enter GRUB Password:
Verify GRUB Password:

```

**Step 29** Enter **Y** to enable and define a *Cisco WCS communication* password.




---

**Note** This password does not define an individual user password for access to the Cisco WCS GUI. This password is used for SOAP/XML authentication between systems (such as mobility services engines) and Cisco WCS.

---

```

Configure WCS communication password? (Y)es/(S)kip/(U)se default [Skip]:
Enter a password for the admin user.
The admin user is used by the WCS and other northbound systems
to authenticate their SOAP/XML session with the server.
Once this password is updated, it must correspondingly be updated
on the WCS page for MSE General Parameters so that the WCS can
communicate with the MSE.

```

**Step 30** At the prompts shown below, enter a password for Cisco WCS communication and confirm it by typing it again. What you type is not visible.

```

Enter WCS communication password:
Confirm WCS communication password:

```




---

**Note** It is recommended that you set a BIOS password to prevent unauthorized BIOS access.

---

**Step 31** All of the information that was entered using the Setup Wizard appears on the screen. After the script configuration appears on the screen, you must verify that all the setup information is correct. At the following prompt, enter **Yes** to proceed with the configuration, **No** to make more changes, or **^** to go back to the previous step.

```

Is the above information correct (yes, no, or ^):

```

If you enter yes, the configuration information is applied.




---

**Note** The text below illustrates an example of the settings displayed.

---

```

Please verify the following setup information.
-----

```

```

Host name= mse-nyc
Domain=cisco.com
Eth0 IP address=10.71.132.233, Eth0 network mask=255.255.254.0
Default gateway=10.71.132.1
Enable DNS=yes, DNS servers=10.68.226.120
Enable NTP=yes, NTP servers=1.ntp.es1.cisco.com
Login banner =
Cisco Mobility Service Engine.
Enable Remote Root Login=no
Enable SSH root access=yes
Enable Single User Mode Password Check=no
Password/Login parameters :

```

```

Password min length=9
Password min days =1
Password max days =60
Failed login delay =5
Strong password checking=yes
Root password is changed.
GRUB password is changed.
WCS password is changed.
-----

You may enter "yes" to proceed with configuration, "no" to make
more changes, or "^" to go back to the previous step.
Is the above information correct (yes, no, or ^):
-----

Setup will now attempt to apply the configuration.
Applying hostname related parameters...
Generating /etc/hosts
Running hostname mse-nyc.cisco.com
Generating /etc/sysconfig/network
Updating /proc/sys/kernel/hostname
Applying eth0 related parameters...
Generating /etc/sysconfig/network-scripts/ifcfg-eth0
Applying DNS related parameters...
Generating /etc/resolv.conf
Restarting network services with new settings.
Shutting down interface eth0:
Shutting down loopback interface:
Setting network parameters:
Bringing up loopback interface:
Bringing up interface eth0:
Applying NTP related parameters...
Generating /etc/ntp.conf and /etc/ntp/step-tickers
Setting system clock from NTP.
11 Apr 15:56:59 ntpdate[15176]: step time server 10.68.10.80 offset -37.556823 sec
Synchronizing hardware clock
Generating /etc/sysconfig/clock
Applying remote root login related parameters...
Disabling single user mode login password check...

Setting password/login parameters....
Setting root password.
Changing password for user root.
passwd: all authentication tokens updated successfully.
Setting grub password...
Setting wcs password.
***Configuration successful***
We recommend you reboot the system to ensure changes are operational.
Reboot now? (yes/no) [yes]: yes
Some of your changes will only take effect after the next reboot.
Exiting setup script...
[root@sanity-lbs setup]#
Script done on Fri 11 Apr 2008 03:58:12 PM PDT

```



**Note** The message “\*\*\*Configuration successful\*\*\*” appears on the screen when the configuration is complete.

**Step 32** Reboot the unit. Cisco recommends that you reboot the unit to ensure the settings are applied.



**Note** The next time you log in as root, only the Linux shell prompt appears and not the setup script. You can rerun the Setup Wizard at any time to change settings by logging in as root and entering the following: **/opt/mse/setup/setup.sh**.

The Setup Wizard generates a log file (*setup.log*) that can be found at this location on the mobility services engine's hard drive in this folder: */opt/mse/setup/*.

## Configuring an NTP Server

You can configure NTP servers to set up the time and date of the mobility services engine.



**Note** You are automatically prompted to enable NTP and enter NTP server IP addresses as part of the automatic installation script. For more details on the automatic installation script, refer to the [“Configuring the Mobility Services Engine” section on page 5-4](#).



**Note** If you need to add or change an NTP server installation after a mobility services engine installation, rerun the automatic installation script. You can configure the NTP server without adjusting the other values by just tabbing through the script. To manually rerun the Setup Wizard, log in as root and enter this command: **/opt/mse/setup/setup.sh**.



**Note** For more information on the NTP configuration, consult a Linux configuration guide.

## Launching the Mobility Services Engine

To configure a mobility services engine to automatically launch after bootup enter this command:

```
[root@mse-server1]# chkconfig msed on
```

To start the image manually, enter this command:

```
/etc/init.d/msed start
```



# Verifying the Mobility Services Engine Software State

You can verify the mobility services engine software state at any time. In the mobility services engine CLI interface, enter this command:

```
/etc/init.d/msed status
```

If the mobility services engine is running, the command output looks like this example:

```
-----  
Server Config  
-----  
Product name: Cisco Mobility Service Engine  
Version: 5.1.26.0  
Hw Version: none  
Hw Product Identifier: none  
Hw Serial Number: none  
Use HTTPS: true  
HTTPS Port: 443  
Use HTTP: false  
HTTP Port: 80  
Legacy HTTPS: false  
Legacy Port: 8001  
Session timeout in mins: 30  
DB backup in days: 0  
  
-----  
Server Monitor  
-----  
Start time: Fri May 23 15:24:36 EDT 2008  
Server current time: Fri May 30 19:08:15 EDT 2008  
Server timezone: America/New_York  
Server timezone offset: -18000000  
-----  
Service Engine (1):  
-----  
NAME: Location Service  
VERSION: 5.1.26.0  
-----  
Location Service Monitor  
-----  
Log Modules: 262143  
Log Level: INFO  
Days to keep events: 2  
Keep absent data in mins: 1440  
Restarts: 1  
Used Memory (bytes): 129851856  
Allocated Memory (bytes): 3087007744  
Max Memory (bytes): 3087007744  
DB virtual memory (kbytes): 0  
DB virtual memory limit (bytes): 256000000  
DB disk memory (bytes): 4128768  
DB free size (kbytes): 2856  
Active Elements: 0  
Active Clients: 0  
Active Tags: 0  
Active Rogues: 0  
Active Elements Limit: 18000  
Active Sessions: 0  
Clients Not Tracked due to the limiting: 0  
Tags Not Tracked due to the limiting: 0  
Rogues Not Tracked due to the limiting: 0  
Total Elements Not Tracked due to the limiting: 0
```

If the mobility services engine is not running, the command output looks like this example:

```
com.aes.common.util.AesException: Failed to connect to server: http://localhost:8001
  at com.aes.client.AesClient.connect(AesClient.java:218)
  at com.aes.location.test.AesAbstractTest.init(AesAbstractTest.java:181)
  at
com.aes.location.test.admin.AesTestGetServerInfo.main(AesTestGetServerInfo.java:75)
  at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
  at sun.reflect.NativeMethodAccessorImpl.invoke(Unknown Source)
  at sun.reflect.DelegatingMethodAccessorImpl.invoke(Unknown Source)
  at java.lang.reflect.Method.invoke(Unknown Source)
  at com.zerog.lax.LAX.launch(DashoA8113)
  at com.zerog.lax.LAX.main(DashoA8113)
#
```

## Manually Stopping Mobility Services Engine Software

The mobility services engine software automatically runs after initial configuration and after each reboot.

Follow these steps to manually stop and restart the software:

- 
- Step 1 To stop the software, enter **etc/init.d/msed stop**.
  - Step 2 To verify status, enter **etc/init.d/msed status**.
  - Step 3 To start the software, enter **etc/init.d/msed start**.
- 

## Updating Mobility Services Engine Software

You can update the mobility services engine using the Cisco WCS or manually download the software using a console port connected to the mobility services engine.



### Note

For the latest Cisco WCS and mobility services engine compatibility and installation notes for a given release, refer to the appropriate release note at the following link:

[http://www.cisco.com/en/US/products/ps9742/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps9742/tsd_products_support_series_home.html)

Before downloading and updating software on the mobility services engine, note the following:

- The mobility services engine (server) image is compressed. The software image automatically decompresses while downloading from the Cisco WCS.
- Approximately 5 minutes are required for the newly loaded mobility services engine software version to appear on the Cisco WCS Mobility > Mobility Service Engines window.



### Note

The Cisco WCS queries for mobility services engine connectivity and database updates every 5 minutes by default.

# Downloading Software Using Cisco WCS

To download software to a mobility services engine using Cisco WCS, follow these steps:

- 
- Step 1** Verify that you can ping the mobility services engine from Cisco WCS or an external FTP server, whichever you are going to use for the image download.
- Step 2** In Cisco WCS, click **Mobility > Mobility Service Engines**.
- Step 3** Click the name of the mobility services engine to which you want to download software.
- Step 4** Click **Maintenance** (left panel).
- Step 5** Click **Download Software**.
- Step 6** To download software, do one of the following:
- To download software listed in the Cisco WCS directory, select from the uploaded images to transfer into the server. Then, choose a binary image from the drop-down menu.  
  
Cisco WCS downloads the binary images listed in the drop-down menu into the FTP server directory you have specified during the Cisco WCS installation.
  - To use downloaded software available locally or over the network, select **Browse a new software image** to transfer into the server and click **Browse**. Find the file and click **Open**.
- Step 7** Enter the time in seconds (between 1 and 1800) after which software download times out.



---

**Note** This time-out setting represents the total time allowed before a software download to a mobility services engine expires. It is not an FTP packet time-out setting.

---

- Step 8** Click **Download** to send the software to the `/opt/installers` directory on the mobility services engine.
- Step 9** After the image has been transferred to the mobility services engine, log into the mobility services engine CLI and run the installer image from the `/opt/installers` directory by entering the `./bin mse` image command.
- Step 10** To start running the software, enter `/etc/init.d/msed start`.



---

**Note** To stop running the software, enter `/etc/init.d/msed stop`. To check the status, enter `/etc/init.d/msed status`.

---

## Manually Downloading Software

If you do not want to automatically update the mobility services engine software using Cisco WCS, follow these steps to upgrade the software manually using a local (console) or remote (SSH) connection.

- 
- Step 1** Transfer the new mobility services engine image onto the hard drive.
- a. Log in as **root**, and use the binary setting to send the software image from an external FTP server root directory.

A software image filename example is *CISCO-MSE-L-K9-x-x-x-x-64bit.bin.gz* and it changes with each release.




---

**Note** The mobility services engine image is compressed at this point.

---




---

**Note** The default login name for the FTP server is *ftp-user*.

---

Your entries should look like this example:

```
# cd /opt/installers
# ftp <FTP Server IP address>
Name: <login>
Password: <password>
binary
get CISCO-MSE-L-K9-5-1-28-0-64bit.bin.gz
<CTRL-Z>
#
```

- b. Verify that the image (*CISCO-MSE-L-K9-x-x-x-x-64bit.bin.gz*) is in the mobility services engine /opt/installers directory.
- c. To decompress (unzip) the image file enter:
 

```
gunzip CISCO-MSE-L-K9-x-x-x-x-64bit.bin.gz
```

 The decompression yields a bin file.
- d. Make sure that the *CISCO-MSE-L-K9-x-x-x-x.bin* file has execute permissions for the root user. If not, enter:
 

```
chmod 755 CISCO-MSE-L-K9-x-x-x-x.bin
```

**Step 2** To manually stop the mobility services engine, login as root and enter:

```
/etc/init.d/msed stop
```

**Step 3** To install the new mobility services engine image, enter:

```
/opt/installers/CISCO-MSE-L-K9-x-x-x-x.bin
```

**Step 4** To start the new mobility services software, enter:

```
/etc/init.d/msed start
```



**Caution**

---

Do not complete the next step, which uninstalls the script files, unless the system instructs you to do so. Removing the files unnecessarily erases your historical data.

---



**Note**

---

To uninstall the mobility services engine's script files, enter:

```
/opt/mse/uninstall
```

---

# Recovering a Lost Root Password

If you lose or forget the root password for a mobility services engine, follow these steps:

---

**Step 1** When the GRUB screen appears, press **Esc** to enter the boot menu.



**Caution**

If you forget the GRUB password, you cannot log in and you will need to return your unit to Cisco for repair. Contact Cisco TAC to arrange for an RMA number.

**Step 2** Press **e** to edit.

**Step 3** Navigate to the line beginning with **kernel** and press **e**.

At the end of the line enter a space and the number one (**1**). Press **Enter** to save this change.

**Step 4** Press **b** to begin boot sequence.

At the end of the boot sequence, a shell prompt appears.



---

**Note** The shell prompt does not appear if you have set up a single-user mode password.

**Step 5** You can change the root password by entering the **passwd** command.

**Step 6** Enter and confirm the new password.

**Step 7** Restart the machine.

---





# APPENDIX A

## System Specifications

Table A-1 describes the system specifications for the mobility services engine.

**Table A-1**      *Specifications*

Dimensions	1.7 in. high (4.3 cm) 17 in. wide (43.2 cm) 20 in. deep (50.8 cm)	
Weight	20 lbs (9 kg)	
Power consumption	540 W (maximum input, power supply rating) 350 W (maximum output, power supply rating) Power factor correction	
Voltage	Input low range—90 to 127 (nominal) VAC; 47 to 63 Hz Input high range—180 to 264 (nominal) VAC; 47 to 63 Hz	
Temperature	Non-operating	–40 to 158°F (–40° to 70°C)
	Operating	50 to 95 °F (10° to 35°C), with the maximum rate of change not to exceed 50°F (10° C) per hour
Humidity	Non-operating—90% relative humidity, non-condensing at 95°F (35°C )	
Altitude	2000 m at 104°F (40°C)	
Shock	Operating—2.0 g, 11 msec, 1/2 sine	
	Packaged—Operational after a 24-inch free fall	
Acoustic noise	7 Bels in sound power for a typical office ambient temperature of 65 to 75°F (18 to 24°C)	
	<b>Note</b> Peripheral operation might change the noise level	
Electrostatic discharge (ESD)	Tested to 15 kilovolts (kV) with no component damage	
Hard disk	Quantity—Two drives	
	Interface type—Serial-ATA (SATA300)	
	Capacity—250 GB (each)	
DVD-ROM	8X DVD read, 24X CD read	
Ethernet NIC	Two 10/100/1000BASE-T Ethernet (NIC) ports	
	Two RJ-45 connectors	
Serial port	DB-9 connector for console port and serial communications	
Video port	DB-15 connector	







# APPENDIX B

## Troubleshooting

---

If your system is not working as expected, begin troubleshooting by following the procedures in this appendix. This appendix guides you through some initial checks and procedures that can help you solve some basic system problems.

This appendix contains the following sections:

- [Checking the Basics, page B-1](#)
- [Checking Connections and Switches, page B-2](#)

## Checking the Basics

To solve some basic system problems, follow these steps:

---

- Step 1** Was an alert message issued by the system software?
- Yes*—Check the component named in the alert message.
- No*—Go to [Step 2](#).
- Step 2** Visually inspect the chassis. Is the system wet or damaged?
- Yes*—Liquid spills, splashes, and excessive humidity can cause damage to the system. If an external device such as an external drive gets wet, contact your service representative for instructions.
- If the chassis was dropped or damaged while being moved, you should check the system to see if it functions properly. If an external device attached to the system is dropped or damaged, contact your service representative for instructions (refer to the [“Obtaining Documentation and Submitting a Service Request”](#) section on page xi).
- No*—Go to [Step 3](#).
- Step 3** Perform the steps in [Checking Connections and Switches, page B-2](#)
- Is the problem resolved?
- Yes*—The power to the system was faulty, or the connections to the system were loose. You have fixed the problem.
- No*—Go to [Step 4](#).

- Step 4** Verify the settings in the system setup program. For details, refer to the software configuration guide or user guide that corresponds to the version of software you are running on your system (see the [“Related Documentation”](#) section on page x).

Did the system complete the boot routine?

*Yes*—The system configuration information was incorrect. You have fixed the problem.

*No*—Call your service representative (refer to the [“Obtaining Documentation and Submitting a Service Request”](#) section on page xi).

## Checking Connections and Switches

Improperly set switches and controls and loose or improperly connected cables are the most likely source of problems for the chassis or other external equipment. A quick check of all the switches, controls, and cable connections can easily solve these problems. (Refer to [Figure 1-2 on page 1-3](#) for the location of front panel controls and indicators. Refer to [Figure 1-3 on page 1-3](#) for the location of back panel connections on the system.)

To check all the connections and switches, follow these steps:

- 
- Step 1** Power down the system, including any attached peripherals such as external drives. Disconnect the power cable from the electrical outlet.
- Step 2** If the system is connected to a power strip (or power distribution unit), turn the power strip off and then on again.
- Is the power strip receiving power?
- Yes*. Go to [Step 5](#).
- No*. Go to [Step 3](#).
- Step 3** Plug the power strip into another electrical outlet.
- Is the power strip receiving power?
- Yes*. The original electrical outlet probably does not function. Use a different electrical outlet.
- No*. Go to [Step 4](#).
- Step 4** Plug a system that you know works into the electrical outlet.
- Does the system receive power?
- Yes*. The power strip is probably not functioning properly. Use another power strip.
- No*. Go to [Step 5](#).
- Step 5** Reconnect the system to the electrical outlet or power strip.
- Make sure that all connections fit tightly together.
- Step 6** Power up the system.
- Is the problem resolved?
- Yes*. The connections were loose. You have fixed the problem.
- No*. Call your service representative. (Refer to the [“Obtaining Documentation and Submitting a Service Request”](#) section on page xi.)



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