



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](#)
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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.

Safety Warnings

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



Warning

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

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



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.

Safety Guidelines

- 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.

■ Choosing a Physical Location for the Mobility Services Engine