



CHAPTER 2

Preparing to Install the WAVE-294

This chapter contains important safety information that you should know before you work with the WAVE-294. Use the guidelines in this chapter to ensure your own personal safety and to help protect your appliance from potential damage.

This chapter contains the following sections:

- [Safety Warnings and Cautions, page 2-1](#)
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Note

Read the *Regulatory Compliance and Safety Information for Cisco Wide Area Virtualization Engines* document and the *Site Preparation and Safety Guide* that came with your appliance before you begin the installation.

Safety Warnings and Cautions

Before you install the WAVE-294, observe the following safety warnings and cautions:



Warning

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



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

The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device. Statement 1019

**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**

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

**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**

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

**Caution**

To properly ventilate the system, you must provide at least 7.6 cm (3.0 in) of clearance at the front and back of the WAVE appliance.

**Caution**

To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from the power supply to disconnect power to the equipment.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the WAVE appliance.

**Caution**

To reduce the risk of personal injury or damage to the equipment:

- Observe local occupation health and safety requirements and guidelines for manual handling.
- Obtain adequate assistance to lift and stabilize the chassis during installation or removal. The WAVE appliance is unstable when not fastened to the rails. When mounting the WAVE appliance in a rack, remove the power supplies and any other removable module to reduce the overall weight of the product.

Safety Guidelines

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

This section contains the following topics:

- [General Precautions, page 2-4](#)

- [System Reliability Considerations, page 2-5](#)
- [Protecting Against Electrostatic Discharge, page 2-5](#)

General Precautions

Observe the following general precautions for using and working with the WAVE-294:

- Observe and follow service markings. Do not service any Cisco product except as explained in your system documentation. Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose you to electrical shock. Components inside these compartments should be serviced only by a trained and qualified service technician.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your customer service representative:
 - 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.
- Allow the product to cool before removing covers or touching internal components.
- 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 approved power cables. If you have not been provided with a power cable for your WAVE appliance or for any AC-powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.
- 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.
- Do not use appliance or voltage converters or kits sold for appliances with your product.
- 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.

System Reliability Considerations

To help ensure proper cooling and system reliability, make sure that the following occurs:

- For rack configurations, make sure that space is available around the appliance to enable the cooling system to work properly. See the documentation that comes with the rack for additional information.
- The Interface Module bay has either a Cisco Interface Module or a filler panel installed.
- Cables for optional adapters are routed according to the instructions provided with the adapters.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside the appliance. To prevent static damage, discharge static electricity from your body before you touch any of your system's electronic components. You can do so by touching an unpainted metal surface on the chassis.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your system. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.
- Handle the appliance carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the appliance where others can handle and possibly damage the appliance.
- Take additional care when handling appliances during cold weather, because heating reduces indoor humidity and increases static electricity.

Understanding the Environmental Requirements

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

For details about the WAVE-294 environmental requirements, see [Appendix A, "WAVE-294 Hardware Specifications"](#) and the ["Temperature"](#) section on page B-2.

Understanding the 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).



Warning

Take care when connecting units to the supply circuit so that wiring is not overloaded. Statement 1018

**Caution**

Protect the WAVE appliance 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.

When installing more than one WAVE appliance, you may need to use additional power distribution devices to safely provide power to all devices. Observe the following guidelines:

- Balance the WAVE appliance power load between available AC supply branch circuits.
- Do not allow the overall system AC current load to exceed 80 percent of the branch circuit AC current rating.
- Do not use common power outlet strips for this equipment.
- Provide a separate electrical circuit for the WAVE appliance.

For details about the WAVE-294 power requirements, see [Appendix A, “WAVE-294 Hardware Specifications.”](#)

Understanding the Grounding Requirements

To ensure proper operation and safety, you must properly ground the WAVE appliance. In the United States, 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 be sure 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 WAVE appliances connected to the same power source, we recommend 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 WAVE appliance is not recommended.