CHAPTER 2

Preparing to Install the Cisco CDE110

This chapter contains site requirements and important safety information you should know before working with the Cisco CDE110. 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:

Note Read the *Regulatory Compliance and Safety Information for the Cisco Content Delivery Engine 110* document that came with your device before you begin the installation.

Site Requirements

This section provides site requirements for the Cisco CDE110. You should verify the site power prior to installing the router.

Preventing Electrostatic Discharge Damage

The Cisco CDE110 has no user-serviceable parts inside its chassis. The only field-replaceable units are as follows:

- AC and DC power supplies (field replaceable on all models)
- Hard disk drives (field replaceable on all models except CDE110-1-036TXA-K9 and CDE110-1-036TXD-K9)

Warning **No user-serviceable parts inside. Do not open.** Statement 1073

Electrostatic discharge (ESD) damage, which can occur when disk drives, electronic cards or components are improperly handled, results in complete or intermittent failures. The following are guidelines for preventing ESD damage:

- Always use an ESD wrist or ankle strap and ensure that it makes good skin contact.

- Connect the equipment end of the strap to a bare metal, unpainted surface on the rackmount.
- When removing or installing a component, use any available handles, ejector levers, or captive installation screws. These devices prevent accidental removal, provide proper grounding for the system, and help to ensure that bus connectors are properly seated.

Caution For safety, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 megohm (Mohm).

Environmental, Physical, and Power Specifications

The Cisco CDE110 system is tested to the environmental specifications indicated in Table 2-1. All testing is performed per procedures defined in *Bellcore GR-63-CORE NEBS Physical Protection* and the *Bellcore GR-1089-CORE EMC and Electrical Safety — Generic Criteria for Network Telecommunications Equipment*.

Table 2-1 Environmental Specifications Summary

Environment	Specification
Temperature, operating	+5°C to +40°C (41°F to 104°F)
Temperature, non-operating	-40°C to 70°C (-40°F to 158°F)
Altitude	0 to 900m (2,950 ft.) @ 35°C, temperature derated by 1°C for each additional 300m (985 ft.)
Humidity, non-operating	95%, non-condensing at temperatures of 23°C (73°F) to 40°C (104°F)

Warning **To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of:**
40°C (104°F) Statement 1047

Table 2-2 provides the physical dimensions of the Cisco CDE110 system.

Table 2-2 Physical Dimensions

Height	1.70 inches (43.2 mm)
Width	16.93 inches (430.0 mm)
Depth	20.0 inches (508 mm)
Front clearance	2.0 inches (76 mm)
Side clearance	1.0 inches (25 mm)
Rear clearance	3.6 inches (92 mm)

For information on the power requirements of the Cisco CDE110, see these sections:

- "If AC Power Supplies Are Installed" section on page 2-7
- "If DC Power Supplies Are Installed" section on page 2-7

Safety Warnings

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

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

Warning **Before working on a chassis or working near power supplies, unplug the power cord on AC units.** Statement 246

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 personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.** Statement 1032

Warning **To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3.6 inches (92 mm)** Statement 1076

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

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.** Statement 1021

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 **The covers are an integral part of the safety design of the product. Do not operate the unit without the covers installed.** Statement 1077

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

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

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

Warning **Hazardous voltage or energy may be present on DC power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place.** Statement 1075

Warning **No user-serviceable parts inside. Do not open.** Statement 1073

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

Warning **Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a**

restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security. Statement 1072

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 using and working with your system:

- 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 an authorized service technician.
- 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.
- 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 system 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.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside the device. 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.

Safety Information

This section contains additional important safety information you should know before working with the Cisco CDE110.

Emissions Disclaimer

See *Regulatory Compliance and Safety Information for the Cisco Content Delivery Engine 110* for product safety and EMC regulatory compliance information. This is an FCC (Federal Communications Commission) Class A device.

Intended Uses

This product was evaluated as Information Technology Equipment (ITE), which may be installed in Central Offices, Telecommunication Centers, Network Telecommunication Facilities, offices, schools, computer rooms, and similar commercial type locations where The National Electric Code (NEC) applies. The suitability of this product for other product categories and environments (medical, industrial, telecommunications, residential, alarm systems, test equipment, etc.), other than an ITE application, may require further evaluation.

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

If AC Power Supplies Are Installed

When installing the CDE110, use the provided AC power cords.

Mains AC power disconnect: The AC power cord(s) is considered the mains disconnect for the server and must be readily accessible when installed. If the individual server power cord(s) will not be readily accessible for disconnection then you must install an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire rack, not just to the server(s).

Grounding the rack installation: To avoid the potential for an electrical shock hazard, you must include a third wire safety ground conductor with the rack installation. If the server power cord is plugged into an AC outlet that is part of the rack, then you must provide proper grounding for the rack itself. If the server power cord is plugged into a wall AC outlet, the safety ground conductor in the power cord provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it. This system is intended for connection to a Common Bonding Network (CBN) as defined by NEBS GR-1089.

Overcurrent protection: The server is designed for an AC line voltage source with up to 20 amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 20 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a configured server is less than 6 amperes.

If DC Power Supplies Are Installed

Connection with a DC (Direct Current) source should only be performed by trained service personnel. The server with DC input is to be installed in a Restricted Access Location in accordance with articles 110-16, 110-17, and 110-18 of the National Electric Code, ANSI/NFPA 70. The DC source must be electrically isolated by double or reinforced insulation from any hazardous AC source. The DC source must be capable of providing up to 300 watts of continuous power per feed pair.

Mains DC power disconnect: You are responsible for installing a properly rated DC power disconnect for the server system. This mains disconnect must be readily accessible, and it must be labeled as controlling power to the server. The circuit breaker of a centralized DC power system may be used as a disconnect device when easily accessible and should be rated no more than 10 amps.

Grounding the server: This server is intended for installation with an isolated DC return (DC-I) and is to be installed in a Common Bonding Network (CBN) per NEBS GR-1089. To avoid the potential for an electrical shock hazard, you must reliably connect an earth grounding conductor to the server. The earth grounding conductor must be #14 to #10 AWG connected to the earth ground stud(s) on the rear of the server. The safety ground conductor should be connected to the chassis stud with a Listed closed two-hole crimp terminal having 5/8-inch pitch. The nuts on the chassis earth ground studs should be installed with a 10 in-lb torque. The safety ground conductor provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

Overcurrent protection: Overcurrent protection circuit breakers must be provided as part of each host equipment rack and must be incorporated in the field wiring between the DC source and the server. The branch circuit protection shall be rated minimum 75Vdc, 10 A maximum per feed pair. If the DC power system for the equipment rack is installed with more than 10 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a maximum configured server is 8 amperes.

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than:**
10 Amps Statement 1005

Warning **When stranded wiring is required, use approved wiring terminations, such as closed-loop or spade-type with upturned lugs. These terminations should be the appropriate size for the wires and should clamp both the insulation and conductor.** Statement 1002

Temperature and Ventilation

Caution Temperature: The temperature, in which the server operates when installed in an equipment rack, must not go below 5°C (41°F) or rise above 40°C (104° F). Extreme fluctuations in temperature can cause a variety of problems in your server.

Caution Ventilation: The equipment rack must provide sufficient airflow to the front of the server to maintain proper cooling. The rack must also include ventilation sufficient to exhaust a maximum of 1023 BTUs (British Thermal Units) per hour for the server. The rack selected and the ventilation provided must be suitable to the environment in which the server will be used.