Preparing to Install the Content Engine

This chapter contains important safety information you should know before working with the Content Engine. Use the following guidelines to ensure your own personal safety and to help protect your Content Engine from potential damage.

Read the *Regulatory Compliance and Safety Information for the Cisco Content Networking Product Series* document and the *Site Preparation and Safety Guide* that came with your Content Engine before you begin the installation.

Safety Warnings

Before you install the Content Engine, observe the following safety warnings.

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

Warning **Read the installation instructions before you connect the system to its power source.**

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

Warning **The device is designed to work with TN power systems.**

Warning **This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.**

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.**

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).**

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.**

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

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.**

Warning **When installing the unit, always make the ground connection first and disconnect it last.**

Warning **The safety cover is an integral part of the product. Do not operate the unit without the safety cover installed. Operating the unit without the cover in place will invalidate the safety approvals and pose a risk of fire and electrical hazards.**

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.**

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.**

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

Safety Guidelines

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

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, extension cord, 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 Content Engine 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. If you must use an extension cord, use a three-wire cord with properly grounded plugs.
- Observe extension cord and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cord or power strip does not exceed 80 percent of the extension cord or 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.

DC Power Installation Precautions

To ensure proper installation and safety of the DC Content Engine models (CE-7305-DC-K9 and CE-7325-DC-K9), observe the following precautions:

- Ensure that the equipment is connected to a branch circuit rated at 25A.
- Ensure that the circuit breaker switch remains free of obstructions so that it is always available to users and service technicians as a mains disconnect device.
- Use 12 AWG copper wire (or 2.5 square millimeter minimum cross section conductor) for the wiring from the building installation to the terminal blocks on the DC device.
- When assembling the installation wiring to the terminals of the DC device, use a torque setting of 12 inch-pounds to ensure a good electrical connection.
- Connect only to a mains supply that is rated at –48 to –60V DC. The mains supply should be rated as Safety Extra Low Voltage (SELV). A SELV source is a secondary circuit that is designed so that normal and single fault conditions do not cause the voltages to exceed a safe level (60V direct current).

System Reliability Considerations

To help ensure proper cooling and system reliability, make sure of the following points:

- Each of the drive bays has either a drive or a filler panel installed.
- Each of the power-supply bays has a power supply or a power supply filler panel installed.
- For rack configurations, make sure that space is available around the Content Engine to enable the Content Engine cooling system to work properly. See the documentation that comes with the rack for additional information.
- The Content Engine cover is in place during normal operation.
- The air baffle cover over the microprocessors remains closed during normal operation.
- The air baffle is installed between the fans and the power supply.

- A removed hot-swappable drive is replaced within 2 minutes of removal.
- Cables for optional adapters are routed according to the instructions provided with the adapters.
- A failed fan is replaced within 48 hours.
- The Content Engine is turned off and the power cords are disconnected before you open the air baffle cover.
- The air baffle assembly is always installed in the Content Engine except when you are installing or removing the components that are located under the air baffle cover.
- When the air baffle assembly is installed in the Content Engine, the air baffle cover is always closed.
- Microprocessor socket 2 always contains either a microprocessor baffle or a microprocessor.

Working Inside the Content Engine with the Power On

The Content Engine is designed to operate safely with the cover removed for short periods (less than 30 minutes). You might need to remove the cover while the power is on, for example, to observe the Light Path diagnostic LEDs when troubleshooting. When you work inside a Content Engine that is powered on, follow these guidelines:

- Avoid loose-fitting clothing on your forearms. Button long-sleeved shirts before working inside the Content Engine; do not wear cuff links while you are working inside the Content Engine.
- Do not allow your necktie or scarf to hang inside the Content Engine.
- Remove jewelry, such as bracelets, necklaces, rings, and loose-fitting wristwatches.
- Remove items from your shirt pocket (such as pens or pencils) that could fall into the Content Engine as you lean over it.
- Avoid dropping any metallic objects, such as paper clips, hairpins, or screws, into the Content Engine.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside the Content Engine. 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 all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the device where others can handle and possibly damage the device.
- Take additional care when handling devices during cold weather, because heating reduces indoor humidity and increases static electricity.