



## Safety Warnings

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This handout lists the safety warnings necessary for handling this chassis. Before you install or service the chassis, review these safety warnings to avoid injuring yourself or damaging the equipment.

For a complete list of translated safety warnings, see the [Regulatory Compliance and Safety Information — Cisco NCS 500 Series Routers document](#).

The safety warnings are grouped under the following sections:

- [Standard Warning Statements, on page 1](#)
- [Safety Guidelines for Personal Safety and Equipment Protection, on page 2](#)
- [Safety with Electricity, on page 3](#)
- [Cautions and Regulatory Compliance Statements for NEBS, on page 4](#)
- [Power Supply Considerations, on page 5](#)
- [Preventing ESD Damage, on page 6](#)

## Standard Warning Statements



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**Warning** IMPORTANT SAFETY INSTRUCTIONS

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. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

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

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

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**Warning** To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of  $-40^{\circ}\text{C}$  to  $+65^{\circ}\text{C}$ . Statement 1047



**Warning** Mount the device on a rack that is permanently affixed to the building. Statement 1049



**Warning** This device is a Class A Device and is registered for EMC requirements for industrial use. You must be aware. If sold or purchased by mistake, do replace with a residential-use type. Statement 294



**Warning** This equipment needs to be grounded. Use a green and yellow 6AWG ground wire to connect the host to earth ground during normal use. Statement 383



**Warning** Do not stare into the beam or view it directly with optical instruments. Statement 1011



**Warning** Invisible laser radiation present. Statement 1016



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

## Safety Guidelines for Personal Safety and Equipment Protection

The following guidelines ensure your safety and protect the equipment. This list does not include all the potentially hazardous situations. Therefore, you must be alert.

- Before moving the system, always disconnect all power cords and interface cables.
- Never assume that power is disconnected from a circuit; always check.
- Before and after installation, keep the chassis area clean and dust free.
- Keep tools and assembly components away from walk areas where you or others can trip over them.
- Do not work alone if potentially hazardous conditions exist.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Do not wear loose clothing that may get caught in the chassis.
- When working under conditions that may be hazardous to your eyes, wear safety glasses.

# Safety with Electricity



**Warning** Before working on a chassis or with power supplies, unplug the power cord on AC units. Disconnect the power at the circuit breaker on DC units. Statement 12



**Warning** Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals. Statement 43



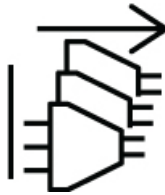
**Warning** Read the installation instructions before connecting the system to the power source. Statement 1004



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



**Warning**



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



**Warning** When installing or replacing the unit, ensure the ground connection first and disconnected last. Statement 1046



**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

When working on equipment that is powered by electricity, follow these guidelines:

- Locate the room's emergency power-off switch. If an electrical accident occurs, you know where to quickly turn off the power.
- Before starting work on the system, turn off the DC main circuit breaker and disconnect the power terminal block cable.
- Disconnect all power when:
  - Working on or near power supplies
  - Installing or removing a device chassis or network processor module
  - Performing most hardware upgrades
- Never install equipment that appears damaged.
- Carefully examine your work area for possible hazards, such as moist floors, ungrounded power extension cables, and missing safety grounds.
- Never assume that power is disconnected from a circuit; always check.
- Never perform any action that creates a potential hazard to people or makes the equipment unsafe.
- If an electrical accident occurs and you are uninjured:
  - Use caution to avoid injuring yourself.
  - Turn off power to the device.
  - Seek medical attention, if necessary.

Use the following guidelines when working with any equipment that is disconnected from a power source, but connected to telephone wiring or network cabling:

- When installing or modifying telephone lines, use caution.
- Never install telephone jacks in wet locations unless the jack is designed to handle such locations.
- Never install telephone wiring during a lightning storm.

## Cautions and Regulatory Compliance Statements for NEBS

The NEBS-GR-1089-CORE regulatory compliance statements and requirements are discussed in this section.



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**Warning**

The intrabuilding port(s) of the equipment or subassembly, which is the management Ethernet port, must use shielded intrabuilding cabling/wiring that is grounded at both ends. Statement 7003

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**Warning**

The intrabuilding port(s) of the equipment or subassembly, which is the management Ethernet port, must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring. Statement 7005

**Warning**

This equipment shall be connected to AC mains provided with a surge protective device (SPD) at the service equipment complying with NFPA 70, the National Electrical Code (NEC). Statement 7012

**Warning**

This equipment is suitable for installations utilizing the Common Bonding Network (CBN). Statement 7013

**Warning**

The battery return conductor of this equipment shall be treated as (DC-I). Statement 7016

**Warning**

This equipment is suitable for installation in Network Telecommunications Facilities. Statement 8015

**Warning**

This equipment is suitable for installation in locations where the NEC applies. Statement 8016

## Power Supply Considerations

Check the power at your site to ensure that you are receiving clean power (free of spikes and noise). If necessary, install a power conditioner.

## Power Connection Guidelines

This section provides guidelines for connecting the device power supplies to the site power source.

**Warning**

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**

The plug-socket combination must be accessible always because it serves as the main disconnecting device. Statement 1019

**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

## Guidelines for DC-Powered Systems

Basic guidelines for DC-powered systems include the following:

- Each chassis power supply has its own dedicated input power source. The source must comply with the safety extra-low voltage (SELV) requirements in the UL 60950, CSA 60950, EN 60950, and IEC 60950 standards.
- Protect the circuit by a dedicated two-pole circuit breaker. Ensure that the circuit breaker is 12A rated.
- The circuit breaker is considered as the disconnect device and is easily accessible.
- The system ground is the power supply and chassis ground.
- Use the grounding lug to attach a wrist strap for ESD protection during servicing.
- Do not connect the DC return wire to the system frame or to the system-grounding equipment.
- Ensure that the DC return is grounded at the source side.

## Guidelines for AC-Powered Systems

Basic guidelines for AC-powered systems include the following:

- Each chassis power supply has its own dedicated branch circuit.
- Ensure that the circuit breaker is 7A rated.
- The AC power receptacles that are used to plug in the chassis must be the grounding type. The grounding conductors that connect to the receptacles must connect to protective earth ground at the service equipment.

## Preventing ESD Damage

Electrostatic Discharge (ESD) can damage equipment and impair electrical circuitry. ESD may occur when electronic printed circuit cards are improperly handled and can cause complete or intermittent failures. When removing and replacing modules, always follow these ESD prevention procedures:

- Ensure that the device chassis is electrically connected to earth ground.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. To channel unwanted ESD voltages safely to ground, connect the clip to an unpainted surface of the chassis frame. To guard against ESD damage and shocks, the wrist strap and cord must operate effectively.
- If no wrist strap is available, ground yourself by touching a metal part of the chassis.
- When installing a component, use any available ejector levers or captive installation screws to properly seat the bus connectors in the backplane or midplane. These devices prevent accidental removal, provide proper grounding for the system, and help to ensure that bus connectors are properly seated.
- When removing a component, use available ejector levers or captive installation screws, if any, to release the bus connectors from the backplane or midplane.
- Handle components by only their handles or edges; do not touch the printed circuit boards or connectors.

- Place a removed component board side up on an antistatic surface or in a static-shielding container. If you plan to return the component to the factory, immediately place it in a static-shielding container.
- Avoid contact between the printed circuit boards and clothing. The wrist strap only protects components from ESD voltages on the body; ESD voltages on clothing can still cause damage.
- Never attempt to remove the printed circuit board from the metal carrier.

For the safety of your equipment, periodically check the resistance value of the antistatic wrist strap. Maintain the value between 1 and 10 Mohm.

