



## Preparing to Install

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This chapter describes the tasks you must perform before you begin to install the universal gateway and includes the following sections:

- [Safety Recommendations, page 2-1](#)
- [Required Tools and Equipment, page 2-3](#)
- [Preparing to Connect to a Network, page 2-3](#)



### Note

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Unless specifically noted, all references to the Cisco AS5400 also apply to the Cisco AS5400HPX.

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## Safety Recommendations

Any device that uses electricity must be handled carefully; follow these guidelines to ensure general safety:

- Keep the chassis area clear and dust-free during and after installation.
- Put the removed chassis cover in a safe place.
- Keep tools away from walk areas where you and others could fall over them.
- Do not wear loose clothing that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.



### Warning

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**Ultimate disposal of this product should be handled according to all national laws and regulations. To see translations of the warnings that appear in the publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**

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## Maintaining Safety with Electricity

**Warning**

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**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 can weld the metal object to the terminals. To see translations of the warnings that appear in the publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**

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Follow these guidelines when you work on equipment powered by electricity.

- Locate the emergency power-OFF switch for the room in which you are working. Then, if an electrical accident occurs, you can act quickly to turn OFF the power.
- Before working on the system, unplug the power cord.
- Disconnect all power before doing the following:
  - Installing or removing a chassis
  - Working near power supplies

**Warning**

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**When installing the unit, the ground connection must always be made first and disconnected last. Do not work alone if potentially hazardous conditions exist. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**

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- Never assume that power is disconnected from a circuit. Always check.

**Warning**

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**Read the installation instructions before you connect the system to its power source. To see translations of the warnings that appear in the publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**

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- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, frayed power cords, and missing safety grounds.
- If an electrical accident occurs, proceed as follows:
  - Use caution; do not become a victim yourself.
  - Turn OFF power to the system.
  - If possible, send another person to get medical aid. Otherwise, assess the condition of the victim and then call for help.
  - Determine if the person needs rescue breathing or external cardiac compressions; then take appropriate action.

**Warning**

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**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). To see translations of the warnings that appear in the publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**

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## Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures.

Always follow ESD-prevention procedures when you remove and replace components. Ensure that the chassis is electrically connected to earth ground. Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the grounding clip to an unpainted surface of the chassis frame to safely ground unwanted ESD voltages. To guard against ESD damage and shocks, the wrist strap and cord must operate properly. If no wrist strap is available, ground yourself by touching the metal part of the chassis.

**Caution**

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

## Required Tools and Equipment

The following items are included with the universal gateway:

- 19- and 24-inch rack-mount kits
- Rubber feet for desktop installation
- RJ-45-to-DB-9 female DTE adapter (labeled TERMINAL)
- RJ-45-to-DB-25 female DTE adapter (labeled TERMINAL)
- RJ-45-to-DB-25 male DCE adapter (labeled MODEM)
- RJ-45-to-RJ-45 rollover console cable
- ESD-preventive wrist strap
- Nylon cable tie
- Cable tie holder
- Grounding lug

You might need the following equipment, which is not included:

- Straight-through RJ-45-to-RJ-45 cable for an Ethernet connection
- Ethernet hub or PC with a network interface card for Ethernet LAN connections
- One breakout cable consisting of a 36-pin connector connected to eight RJ-45 adapters for CT1/CE1 connections
- 75-ohm coaxial cable for a CT3 connection
- PC running terminal emulation software for local administrative access
- Modem for remote administrative access

## Preparing to Connect to a Network

When you set up the chassis, consider distance limitations and potential electromagnetic interference (EMI) as defined by the Electronic Industries Association (EIA).

**Warning**

Hazardous network voltages are present in WAN ports regardless of whether power to the router is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the router first. To see translations of the warnings that appear in the publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.

**Warning**

The ISDN connection is regarded as a source of voltage that should be inaccessible to user contact. Do not attempt to tamper with or open any public telephone operator (PTO)-provided equipment or connection hardware. Any hardwired connection (other than by a nonremovable, connect-one-time-only plug) must be made only by PTO staff or suitably trained engineers. To see translations of the warnings that appear in the publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.

## Network Specifications

Table 2-1 lists the network specifications to consider before connecting a T1 DFC to a network.

**Table 2-1 T1 Network Specifications**

Description	Specification
Line rate	1.544 Mbps
Data rates (per port)	<i>number</i> x 56 or <i>number</i> x 64 kbps, where <i>number</i> = 1 to 24
Standards	AT&T Pub. 62411, 54016, and 43081, and ANSI T1.403
Input impedance	100-ohms per port

Table 2-2 lists the network specifications to consider before connecting an E1 DFC to a network.

**Table 2-2 E1 Network Specifications**


Description	Specification
Line rate	2.048 Mbps
Data rate (per port)	<i>number</i> x 56 or <i>number</i> x 64 kbps, where <i>number</i> = 1 to 31.
Input impedance	75 or 120-ohms per port
	 <p><b>Note</b> The factory default setting for the E1 ports is 120 ohm. Use a software command to change the impedance.</p>

Table 2-3 lists the network specifications to consider before connecting a T3 DFC to a network.

**Table 2-3 T3 Network Specifications**

Description	Specification
Line rate	44.736 Mbps
Data rates	672 DS0 channels at 64 Kbps



**Note** For information on installing and removing dial feature cards, refer to the *Cisco AS5350 and Cisco AS5400 Universal Gateway Card Installation Guide*.

## Ethernet Connections

Two Fast Ethernet (FE) ports are RJ-45 ports located on the rear panel of the chassis: FE0 and FE1 (selectable). To configure the Ethernet ports, refer to the *Cisco AS5350 and Cisco AS5400 Universal Gateway Software Configuration Guide*. Both ports use unshielded twisted-pair (UTP) cable and require Category 5 cable. The maximum segment distance is 328 feet (100 meters). UTP cables look like the cables used for ordinary telephones; however, UTP cables meet certain electrical standards that telephone cables do not. Cables are not included.

## Console and Auxiliary Ports

The chassis includes an asynchronous serial console port and an auxiliary port. The console and auxiliary ports provide access either locally (with a console terminal) or remotely (with a modem). This section discusses important cabling information to consider before connecting a console terminal (an ASCII terminal or PC running terminal emulation software) to the console port or modem to the auxiliary port.

### Console Port

The chassis includes an EIA/TIA-232 asynchronous serial console port (RJ-45). Depending on the cable and the adapter used, this port appears as a data terminal equipment (DTE) or data communications equipment (DCE) device at the end of the cable. Your chassis arrives with cables and adapters to connect a console terminal (an ASCII terminal or PC running terminal emulation software) to the console port. To connect an ASCII terminal to the console port, use the RJ-45 rollover cable with the female RJ-45-to-DB-25 adapter (labeled TERMINAL).

To connect a PC running terminal emulation software to the console port, use the RJ-45 rollover cable with the female RJ-45-to-DB-9 adapter (labeled TERMINAL). The default parameters for the console port are 9600 baud, 8 data bits, no parity, and 2 stop bits. The console port does not support hardware flow control.

For detailed information about installing a console terminal, see Chapter 3, “[Installing the Cisco AS5400 and Cisco AS5400HPX Universal Gateways](#).” See Appendix C, “[Cabling Specifications](#)” for cable and port pinouts.

## Auxiliary Port

The chassis includes an EIA/TIA-232 asynchronous serial auxiliary port (RJ-45) that supports flow control. Depending on the cable and the adapter used, this port will appear as a DTE or DCE device at the end of the cable. Your chassis arrives with a cable and an adapter to connect a modem to the auxiliary port. To connect a modem to the auxiliary port, use the RJ-45 rollover cable with the male RJ-45-to-DB-25 adapter (labeled MODEM).

For detailed information about connecting devices to the auxiliary port, see Chapter 3, “[Installing the Cisco AS5400 and Cisco AS5400HPX Universal Gateways](#).” See Appendix C “[Cabling Specifications](#)” for cable and port pinouts.

## 2T Serial Ports

Two high-speed 12-in-1 serial ports on the rear panel of the chassis provide backhaul WAN and IP support.

The following types of serial interface standards (in DTE/DCE) are supported:

- EIA/TIA-232
- EIA/TIA-449
- EIA/TIA-530
- EIA/TIA-530A
- EIA/TIA-X.21
- CCITT V.35

Each port supports up to 8 Mbps.

For detailed information about connecting devices to the serial ports, see Chapter 3, “[Installing the Cisco AS5400 and Cisco AS5400HPX Universal Gateways](#).” See Appendix C “[Cabling Specifications](#)” for cable and port pinouts.

## Alarm Port

The three pins on the alarm port are connected to the output of a relay. This relay is controlled by system software. With the alarm ports connected and configured, Cisco IOS software polls every one second to detect the failure events that are configured and turns ON the alarm when it detects any failure event.

For detailed information about connecting devices to the alarm port, see Chapter 3, “[Installing the Cisco AS5400 and Cisco AS5400HPX Universal Gateways](#).” See Appendix C “[Cabling Specifications](#)” for cable and port pinouts.

## BITS Port

The BITS port is a coaxial interface that provides external synchronized clocking through a Timing Signal Generator (TSG).

For detailed information about connecting devices to the BITS port, see Chapter 3, “[Installing the Cisco AS5400 and Cisco AS5400HPX Universal Gateways](#).” See Appendix C “[Cabling Specifications](#)” for cable and port pinouts.

## Power Supply Considerations

Check the power at your site to ensure that you are receiving “clean” power (free of spikes and noise). Install a power conditioner if necessary.

**Warning**

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**The device is designed to work with TN power systems. To see translations of the warnings that appear in the publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**

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The universal gateway AC power supply includes the following features:

- Full range operation—100 to 240 VAC.
- All units include a 6-foot (1.8-m) electrical power cord. (A label near the power cord indicates the correct voltage, frequency, and current draw for the unit.)

For detailed information about connecting power, see Chapter 3, “[Installing the Cisco AS5400 and Cisco AS5400HPX Universal Gateways](#).” For information on replacing the power supply see [Appendix B, “Replacing the Power Supply”](#)

**Warning**

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**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). To see translations of the warnings that appear in the publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**

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**Caution**

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In a DC power supply installation, do not connect the 48 VDC Return to chassis ground at the Cisco AS5400. A single-point ground is recommended at the power distribution rack.

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