CHAPTER 1

Getting Started

This chapter contains information about safety, system specifications, inspecting the system, preventing electrostatic discharge (ESD) damage, and required tools and parts. For international regulatory compliance information, refer to the appendix “Regulatory Compliance.”

Caution If you plan to place the router on a desk or table, do not place anything on top of the router that weighs in excess of 10 pounds (4.5 kg). Excessive weight on top could damage the chassis.

Safety Recommendations

Follow these guidelines to ensure general safety:

- Keep the work 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 when 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 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.

- 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 shut off power.
- Before working on the system, turn off the power and unplug the power cord.
- Disconnect all power before doing the following:
  - Installing or removing a chassis
  - Working near power supplies
  - Performing a software upgrade
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power is disconnected from a circuit. Always check.
- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, 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.

System Specifications

Table 1-1 shows the specifications for the product.

Table 1-1 System Specifications

Description	Design Specification
Dimensions H x W x D	1.75"[1] x 17.5" x 10.56" (4.44 cm x 44.45 cm x 26.82 cm)
Weight	10 lb (4.5 kg)
Input voltage, AC Power Supply Frequency Power dissipation	 100 to 240 volts alternating current (VAC) 50 to 60 hertz (Hz) 40W (max.) 135.5 British thermal units (Btus)/hr
Input voltage, DC Power Supply Current Power dissipation	 40W, -40 to -72 volts direct current (VDC) 1.0 to 0.5 (A) 40W (max.), 135.5 British thermal units (Btus)/hr
Processor	20-MHz Motorola 68EC030
Router Network interface options	1 Ethernet and 2 synchronous serial (2501) 1 Token Ring and 2 synchronous serial (2502) 1 Ethernet, 2 synchronous serial, and 1 BRI (2503) 1 Token Ring, 2 synchronous serial, and 1 BRI (2504) 1 Ethernet, 1 Token Ring, 2 synchronous serial (2513) 2 Ethernet, 2 synchronous serial (2514) 2 Token Ring, 2 synchronous serial (2515)
Hub Network interface options	2 synchronous serial, 8 hub (2505) 2 synchronous serial, 16 hub (2507) 2 synchronous serial, 14 hub, 1 BRI (2516)
Access Server Network interface options	1 Ethernet, 2 synchronous serial, 8 asynchronous serial (2509) 1 Token Ring, 2 synchronous serial, 8 asynchronous serial (2510) 1 Ethernet, 2 synchronous serial, 16 asynchronous serial (2511) 1 Token Ring, 2 synchronous serial, 16 asynchronous serial (2512)

Description	Design Specification
Ethernet interface	Attachment unit interface (AUI) IEEE 802.3 (DB-15)
Hub interface	8, 14, or 16 RJ-45 (10BaseT)
Token Ring interface	IEEE 802.5 (DB-9), 8 or 16 RJ-45
Synchronous serial interfaces	EIA/TIA-232[2], EIA/TIA-449, V.35, X.21 (NRZ/NRZI[3] and DTE/DCE[4]) EIA-530 (NRZ/NRZI and DTE) All serial cables use a DB-60 chassis connector.
Asynchronous serial interfaces	EIA/TIA-232, EIA/TIA-449, with hardware flow control support Asynchronous serial interfaces use the breakout cable (RJ-45)
BRI	ISDN Basic Rate S/T (RJ-45) (2503, 2504, and 2516 only)
Console and auxiliary ports	Asynchronous serial (RJ-45)
Operating environment	32 to 104°F (0 to 40°C)
Nonoperating temperature	-40 to 185°F (-40 to 85°C)
Operating humidity	5 to 95%, noncondensing
Noise level	34 dBa @ 3' (0.914 m)
Agency approvals	Safety: UL 1950, CSA 950, EN60950, TUV-GS-mark EMI: FCC Class A, VCE Class B, Canadian DOC Class A, EN55022 Class B (CISPR22 Class B), VCCI Class 2

1. 1.75" = One rack unit.
2. EIA/TIA-232 and EIA/TIA-449 were known as recommended standards RS-232 and RS-449 before their acceptance as standards by the Electronic Industries Association (EIA) and Telecommunications Industry Association (TIA).
3. NRZ = Nonreturn to zero. NRZI = Nonreturn to zero inverted.
4. DTE = Data terminal equipment. DCE = Data communications equipment.

Inspecting the System

Do not unpack the system until you are prepared to install it. If the final installation site is not ready, keep the chassis in the shipping container to prevent accidental damage. When you have determined where you want the router installed, proceed with the unpacking. Check the packing list to ensure that you received the following items:

- Router
- 6-foot (1.8-meter) power cord
- Rubber feet for desktop installation
- Ethernet jackscrews (model 2501 and 2503)
- Console cable (RJ-45) with RJ-45-to-DB-25 and RJ-45-to-DB-9 adapters
- Warranty package
- Optional equipment (network connection cables, auxiliary cable, and so forth)
- Optional UniverCD or printed companion publications as specified by your order

Inspect all items for shipping damage. If anything appears damaged, contact a customer service representative.

Note To order UniverCD, Cisco's library of product information in CD-ROM format, or printed documentation, refer to *Ordering Cisco Documentation*, which is in your warranty package.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It occurs when electronic components are improperly handled and can result in complete or intermittent failures. Always follow ESD-prevention procedures when removing and replacing 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 clip to an unpainted chassis frame surface to safely channel unwanted ESD voltages to

ground. To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. 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 within the range of 1 and 10 megohm.

Tools and Parts Required

Following are the tools and parts required to install the router:

- Small, 3/16-inch (0.476 cm), and medium, 1/4-inch (0.625 cm), flat-blade screwdrivers
- ESD-preventive wrist strap
- Rubber feet for desktop installation
- Rack-mount brackets for rack- or wall-mount installation (screws not included)
- One interface cable for each interface you require

In addition, you might need the following external equipment:

- Channel service unit/digital service unit (CSU/DSU) for the serial interfaces
- Ethernet transceiver (models 2501, 2503, 2509, 2511, 2513, and 2514)
- Token Ring media attachment unit (MAU) (models 2502, 2504, 2510, 2512, 2513, and 2515)
- For the Basic Rate Interface (BRI)—Access to an Integrated Services Digital Network (ISDN) through the NT1

  The common carrier will provide the NT1 connection worldwide, except in North America, where the NT1 is customer owned.
- Modem for remote configuration (if required)
- Modem for remote network access on access servers
- Console terminal (configured for 9600 baud, 8 data bits, no parity, and 2 stop bits) if future reconfiguration is expected