

Preparing for Router Installation

This section provides preinstallation information such as recommendations and requirements to review prior to installing your router.

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Safety Recommendations

Follow these guidelines to ensure general safety:

- Keep the chassis area clear and dust-free during and after installation.
- Keep tools and chassis components away from walk areas.
- 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 conditions that might be hazardous to your eyes.
- Do not perform any action that creates a hazard to people or makes the equipment unsafe.

Safety with Electricity

Follow these guidelines when working on equipment powered by electricity:

- Locate the emergency power-off switch in the room in which you are working. If an electrical accident occurs, you can quickly turn off the power.
- Disconnect all power before doing the following:
  - Installing or removing a chassis
  - Working near power supplies
- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, frayed power cords, and missing safety grounds.

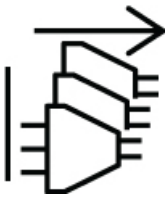
- Do not work alone if hazardous conditions exist.
- Never assume that power is disconnected from a circuit. Always check.
- Never open the enclosure of the router's internal power supply.
- If an electrical accident occurs, proceed as follows:
  - Use caution; do not become a victim yourself.
  - Turn off power to the device.
  - If possible, send another person to get medical aid. Otherwise, assess the victim's condition and then call for help.
  - Determine if the person needs rescue breathing or external cardiac compressions; then take appropriate action.

Statement 1028—More Than One Power Supply



Warning **Statement 1028—**More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It can occur if electronic printed circuit cards are improperly handled and can cause complete or intermittent failures. Always follow ESD prevention procedures when removing and replacing modules:

- Ensure that the router 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 surface of the chassis frame to channel unwanted ESD voltages safely to ground. 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.



Caution For the safety of your equipment, periodically check the resistance value of the antistatic strap. It should be between 1 and 10 megohms (Mohm).

General Site Requirements

This section describes the requirements your site must meet for safe installation and operation of your router. Ensure that the site is properly prepared before beginning installation. If you are experiencing shutdowns or unusually high errors with your existing equipment, this section can also help you isolate the cause of failures and prevent future problems.

Rack Requirements

The following information will help you plan your equipment rack configuration:

- Allow clearance around the rack for maintenance.
- Allow at least one rack unit of vertical space between routers.
- Enclosed racks must have adequate ventilation. Ensure that the rack is not congested, because each router generates heat. An enclosed rack should have louvered sides and a fan to provide cooling air. Heat generated by equipment near the bottom of the rack can be drawn upward into the intake ports of the equipment above.

Router Environmental Requirements

Mount the Cisco IR8340 routers in a rack. The location of your router and the layout of your equipment rack or wiring room are extremely important considerations for proper operation. Equipment placed too close together, inadequate ventilation, and inaccessible panels can cause malfunctions and shutdowns, and can make maintenance difficult. Plan for access to both power supply side and cable side panels of the router.



Note Allow at least one rack unit of vertical space above the router.

When planning your site layout and equipment locations, refer to General Site Requirements, on page 3. If you are currently experiencing shutdowns or an unusually high number of errors with your existing equipment, these precautions and recommendations may help you isolate the cause of failure and prevent future problems.

- Ensure that the room where your router operates has adequate air circulation. Electrical equipment generates heat. Without adequate air circulation, ambient air temperature may not cool equipment to acceptable operating temperatures.
- Always follow ESD-prevention procedures described in Preventing Electrostatic Discharge Damage, on page 2 to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.
- Ensure that the chassis cover and module cable side panels are secure. All empty interface card slots and power supply bays must have filler panels installed.
- When equipment installed in a rack (particularly in an enclosed rack) fails, try operating the equipment by itself, if possible. Power off other equipment in the rack (and in adjacent racks) to allow the router under test a maximum of cooling air and clean power.

Power Guidelines and Requirements

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.

The AC power supply includes the autoselect feature for either 110 V or 220 V operation.

Caution Two types of power supplies are supported on the Cisco IR8340: a low-voltage DC power supply and a high-voltage DC/AC power supply. Take caution when selecting the correct input voltage for the power supply installed or damage will result.

Network Cabling Specifications

The following sections describe the cables needed to install your Cisco IR8340 router:

Console Port Connection

The Cisco IR8340 router includes an EIA/TIA-232 asynchronous (RJ-45) console port. The console port provides access to the router locally using a console terminal connected to the console port. This section discusses important cabling information to consider before connecting the router to a console terminal.

Depending on the cable and the adapter used, this port appears as a DTE or DCE device at the end of the cable. Only one port can be used at the same time.

The default parameters for the console port are 9600 baud, 8 data bits, no parity, and 1 stop bit. The console port does not support hardware flow control.

Preparing for Network Connections

When setting up your router, consider distance limitations and potential electromagnetic interference (EMI) as defined by the applicable local and international regulations.

Network connection considerations are provided for several types of network interfaces and are described in the following sections:

Ethernet Connections

The IEEE has established Ethernet as standard IEEE 802.3. The Cisco IR8340 router supports 10/100/1000 STP Ethernet connection and 100/1000 SFP connection.

Serial Connections

Serial connections are provided by the RS232 serial Network Interface Module (NIM) . Before you connect a device to a serial port, you need to know the following:

- Type of device, data terminal equipment (DTE) or data communications equipment (DCE), you are connecting to the synchronous serial interface
- Type of connector, male or female, required to connect to the device

- Signaling standard required by the device

Serial Connection Cables

The serial ports on the asynchronous/synchronous serial network modules use the following cables. Serial ports can be configured as DTE or DCE, depending on the serial cable used.

Table 1: Interface Cables for 68-pin Connector

Interface Type and description	Cisco Product Number
4-port ELA-232 DTE, 10ft, Male DB-25	CAB-HD4-232MT
4-port EIA-232 DCE, 10ft, Female DB-25	CAB-HD4-232FC
4-port EIA-232 DTE, 10ft, Female RJ-45	CAB-QUAD-ASYNC-F
4-port ELA-232 DTE, 10ft, Male RJ-45	CAB-QUAD-ASYNC-M
4-port ELA-232 DTE, 10ft, Male DB-9	CAB-9AS-M

Serial DTE or DCE Devices

A device that communicates over a synchronous or asynchronous serial interface is either a DCE or DTE device. A DCE device provides a clock signal that paces the communications between the device and the router. A DTE device does not provide a clock signal. DTE devices usually connect to DCE devices. The documentation that accompanied the device should indicate whether it is a DTE or DCE device. (Some devices have a jumper to select either DTE or DCE mode.) The following table lists typical DTE and DCE devices.

Device Type	Gender	Typical Devices
DTE	Male [1]	Terminal PC
DCE	Female [2]	Modem CSU/DSU Multiplexer

1 If pins protrude from the base of the connector, the connector is male.
2 If the connector has holes to accept pins, the connector is female.

Signaling Standards Supported

The serial ports available for the router support the following signaling standards: EIA/TIA-232 (EIA-323). You can order a shielded serial transition cable that has the appropriate connector for the standard you specify. The documentation for the device should indicate the standard used for that device. The router end of the shielded serial transition cable has a VHDCI 68 pin connector. The other end of the serial transition cable is available with a connector appropriate for the standard you specify.

The serial port can be configured as DTE or DCE, depending on the attached cable.

All serial ports configured as DTE require external clocking from a CSU/DSU or other DCE device.

Distance Limitations

Serial signals can travel a limited distance at any given bit rate; generally, the slower the data rate, the greater the distance. All serial signals are subject to distance limits, beyond which a signal significantly degrades or is completely lost.

The following table lists the recommended maximum speeds and distances for each serial interface type; however, you might get good results at speeds and distances greater than those listed, if you understand the electrical problems that might arise and can compensate for them.

Table 2: Serial Signal Transmission Speeds and Distances

Rate (bps)	Distance for EIA/TIA-232	
	Feet	Meters
2400	200	60
4800	100	30
9600	50	15
19200	25	7.6
38400	12	3.7
56000	8.6	2.6
1544000 (T1)	—	—

Asynchronous/Synchronous Serial Module Baud Rates

The following baud-rate limitations apply to the slow-speed serial interfaces found in the asynchronous/synchronous serial modules:

- Asynchronous interface—Maximum baud rate is 230 kbps.
- Synchronous interface—Maximum baud rate is 256 kbps full duplex.

Required Tools and Equipment for Installation and Maintenance

You need the following tools and equipment to install and upgrade the router and its components:

- ESD-preventive cord and wrist strap
- Number 2 Phillips screwdriver
- Phillips screwdrivers: small, 3/16-in. (4 to 5 mm) and medium, 1/4-in. (6 to 7 mm)
- Screws that fit your rack

In addition, depending on the type of modules you plan to use, you might need the following equipment to connect a port to an external network:

- Cables for connection to the WAN and LAN ports (dependent on configuration).

Ethernet hub or PC with a network interface card for connection to an Ethernet (LAN) port.

Console terminal (an ASCII terminal or a PC running HyperTerminal or similar terminal emulation software) configured for 9600 baud, 8 data bits, 1 stop bit, no flow control, and no parity.

Data service unit (DSU) or channel service unit/data service unit (CSU/DSU) as appropriate for serial interfaces.

External CSU for any CT1/PRI modules without a built-in CSU.