



## Prepare for Router Installation

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Before you install the Cisco 1000 Series Integrated Services Routers, you must prepare your site for the installation. This chapter provides pre-installation information, such as recommendations and requirements that should be considered before installing your router.

See the following sections to prepare for installation:

- [Safety Recommendations, on page 1](#)
- [General Site Requirements, on page 2](#)
- [Rack Requirements, on page 3](#)
- [Safety Recommendations, on page 4](#)
- [Power Guidelines and Requirements, on page 4](#)
- [Network Cabling Specifications, on page 5](#)
- [Required Tools and Equipment for Installation and Maintenance, on page 7](#)

## Safety Recommendations



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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**

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

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## Safety With Electricity



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**Warning** Only trained and qualified personnel should be allowed to install or replace this equipment Statement 1030

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**Warning** Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, as they may cause serious injury or death. For proper installation and grounding of the antenna, please refer to national and local codes (for example, U.S.:NFPA 70, National Electrical Code, Article 810, Canada:Canadian Electrical Code, Section 54). Statement 1052

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## Prevent 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 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.



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

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## General Site Requirements

This section describes the requirements your site must meet for the 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, the guidelines provided in this section can also help you isolate the cause of failures and prevent future problems.



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**Warning** **Statement 1005**—Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 20 A

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**Warning**

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

**Warning****Statement 1044—Port Connections**

To reduce the risk of electric shock, the following ports must be connected through an approved network termination unit with integral circuit protection if the port cabling is routed outdoors:

**Warning****Statement 1047—Overheating Prevention**

To reduce the risk of fire or bodily injury, do not operate the unit in an area that exceeds the maximum recommended ambient temperature of:

**Warning****Statement 1076—Clearance Around the Ventilation Openings**

To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 1.75 in. (4.4 cm)

## Site Selection Guidelines

The Cisco 1000 Series Integrated Services Routers require specific environmental operating conditions. Temperature, humidity, altitude, and vibration can affect the performance and reliability of the router. The following sections provide specific information to help you plan for the proper operating environment.

The Cisco 1000 Series Integrated Services Routers are designed to meet the industry EMC, safety, and environmental standards described in the Regulatory Compliance and Safety Information for the Cisco 1000 Series Integrated Services Routers document.

## Rack Requirements

For the Cisco 1000 Series Integrated Services Router, use brackets with a 19-inch rack.

**Note**

Rack requirements is applicable only for Cisco 1000 Series Integrated Services Routers.

The following information can 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; more clearance is required when stacking multiple Cisco 1000 Series Integrated Services Routers. Provide adequate heat removal mechanism to keep the surrounding air temperature well within the specified operating temperature condition.



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**Note** More spacing may be required depending on the installation environment.

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- 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. The heat generated by the equipment near the bottom of the rack can be drawn upward into the intake ports of the equipment above it.
- When mounting a chassis in an open rack, ensure that the rack frame does not block the intake or exhaust ports. If the chassis is installed on slides, check the position of the chassis when it is seated in the rack.

## Safety Recommendations



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SAVE THESE INSTRUCTIONS

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## Power Guidelines and Requirements

Check the power at your site to ensure that you are receiving power that is free of spikes and noise. Install a power conditioner, if necessary.

This section lists the power requirements for the Cisco 1000 Series Integrated Services Router.

**Table 1: Power Requirements for Cisco 1000 Series Integrated Services Router**

Power Source	Input Rated	Output Rated
66W AC Power Adapter (PWR-66W-AC-V2)	100-240V, <=2A	12 VDC, 5.5A
115W AC Power Adapter (PWR-115W-AC)	100-240VAC, 1.8A	12V, 4.6A, -53.5V 1.12A
30W AC Power Adapter (PWR-30W-AC)	100-240 VAC, 1A	12V , 2.5A
150W AC Power Adapter (PWR-150W-AC)	100-240 VAC, 2.5A	12V 6.0A, -53.5V 1.55A
66W DC Power Adapter (PWR-66W-I-DC)	24 V DC Nominal (19.7V DC to 30 V DC input range)	12 VDC, 5.5A

## Network Cabling Specifications

The following sections describe the cables and the specifications required to install Cisco 1000 Series Integrated Services Router:

### Console Port Considerations

The router includes an asynchronous serial console port. The console ports provide access to the router 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 or modem.

Console terminals send data at speeds slower than modems do; therefore, the console port is ideally suited for use with console terminals.

### EIA/TIA-232

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, 1 stop bit, and no parity. The console port does not support hardware flow control. For detailed information about installing a console terminal, see the Connecting to a Console Terminal or Modem section.

For cable and port pinouts, see the Cisco Modular Access Router Cable Specifications document located on Cisco.com.

## USB Serial Console

The USB serial console port connects directly to the USB connector of a PC using a USB Type A to 5-pin micro USB Type-B cable. The USB Console supports full speed (12Mb/s) operation. The console port does not support hardware flow control.



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**Note** Always use shielded USB cables with a properly terminated shield.

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### USB Console OS Compatibility

- Windows 10, Windows 8, Windows 7, Windows 2000, Window XP 32 bit, Windows Vista 32 bit
- Mac OS X version 10.5.4
- Redhat / Fedora Core 10 with kernel 2.6.27.5-117
- Ubuntu 8.10 with kernel 2.6.27-11
- Debian 5.0 with kernel 2.6
- Suse 11.1 with kernel 2.6.27.7-9

The default parameters for the console port are 9600 baud, 8 data bits, no parity, and 1 stop bit. For detailed information about installing a console terminal, see the Connecting to a Console Terminal or Modem section on page 3-19.

For operation with a Microsoft Windows OS version older than Windows 7, the Cisco Windows USB Console Driver must be installed on any PC connected to the console port. If the driver is not installed, the prompts guide you through a simple installation process.

The Cisco Windows USB Console Driver allows plugging and unplugging the USB cable from the console port without affecting Windows HyperTerminal operations. No special drivers are needed for Mac OS X or Linux.

Only one console port can be active at a time. When a cable is plugged into the USB console port, the RJ-45 port becomes inactive. Conversely, when the USB cable is removed from the USB port, the RJ-45 port becomes active.

Baud rates for the USB console port are 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bps.



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**Note** Only the 5-pin micro USB Type-B is supported.

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See the following sections to prepare for installation:

### Ethernet Connections

The IEEE has established Ethernet as standard IEEE 802.3. The routers support the following Ethernet implementations:

1000BASE-T—1000 Mb/s full-duplex transmission over a Category 5 or better unshielded twisted-pair (UTP) cable.	Supports the Ethernet maximum length of 328 feet (100 meters).
100BASE-T—100 Mb/s full-duplex transmission over a Category 5 or better unshielded twisted-pair (UTP) cable.	Supports the Ethernet maximum length of 328 feet (100 meters).
10BASE-T—10 Mb/s full-duplex transmission over a Category 5 or better unshielded twisted-pair (UTP) cable.	Supports the Ethernet maximum length of 328 feet (100 meters).

See the Cisco Modular Access Router Cable Specifications document at [Cisco.com](http://Cisco.com) for information about Ethernet cables, connectors, and pinouts.

## Required Tools and Equipment for Installation and Maintenance

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

- An ESD-preventive cord and a wrist strap
- A number 2 Phillips screwdriver
- Phillips screwdrivers: small, 3/16-in. (4 to 5 mm) and medium 1/4-in. (6 to 7 mm). You might need these when you install or remove modules, and when you remove the cover (when you upgrade the memory or other components)
- Screws that fit your rack
- A wire crimper
- A wire for connecting the chassis to an earth ground: AWG 14 (2 mm<sup>2</sup>) or larger wire
- An appropriate user-supplied UL or a CSA-certified ring terminal with an inner diameter of 1/4 in. (5 to 7 mm)

