CHAPTER 2

Preparing for Router Installation

This chapter describes the site requirements and equipment needed to install your Cisco 1900 series integrated services router.

Note To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information for Cisco 1900 Series Routers* document that accompanies your router.

Safety Recommendations

General Guidelines

Follow these guidelines to ensure general safety:

- Keep the chassis area clear and dust-free during and after installation.
- If you remove the chassis cover, put it in a safe place.
- 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.

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

Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

Warning **To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.** Statement 1032

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

Safety with Electricity

Follow these guidelines when working on equipment powered by electricity.

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

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

Warning **When installing or replacing the unit, the ground connection must always be made first and disconnected last.** Statement 1046

- Locate the emergency power-off switch in the room in which you are working. Then, 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
  - Removing the top cover of a chassis
- 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 whether the person needs rescue breathing or external cardiac compressions; then take appropriate action.

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

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for it.
- Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD 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 that 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.

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 **The device is designed for connection to TN and IT power systems.** Statement 1007

The AC power supply includes the following features:

- Autoselects either 110 V or 220 V operation.
- All units include a 6-foot (1.8-meter) electrical power cord. (A label near the power cord indicates the correct voltage, frequency, current draw, and power dissipation for the unit.)

Site Environment

The Cisco 1900 series router is designed for placement on a desktop, rack-mounted or wall mounted.

The location of your router is an extremely important consideration for proper operation. Equipment placed too close together, inadequate ventilation, and inaccessible panels can cause malfunctions and shutdowns, and can also make maintenance difficult. Plan for access to both front and back panels of the router.

When planning your site layout and equipment locations, remember the precautions described in the "Site Configuration" section on page 2-4 to help avoid equipment failures and reduce the possibility of environmentally caused shutdowns. If you are currently experiencing shutdowns or an unusually high number of errors with your existing equipment, these precautions may help you isolate the cause of the failures and prevent future problems.

Site Configuration

The following precautions will help you plan an acceptable operating environment for your router and will help you avoid environmentally caused equipment failures:

- Make sure that the room where your router operates has adequate circulation. Electrical equipment generates heat. Without adequate circulation, ambient air temperature may not cool equipment to acceptable operating temperatures. See the "Chassis Airflow Diagram" section on page 4-3.
- Always follow the ESD-prevention procedures described in the "Preventing Electrostatic Discharge Damage" section on page 2-3 to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.
- Make sure that the chassis cover and module back panels are secure. All empty interface card slots must have filler panels installed. The chassis is designed to allow cooling air to flow within it, through specially designed cooling slots. A chassis with uncovered openings creates air leaks, which may interrupt and reduce the flow of air across internal components.

Wireless LAN Considerations

Wireless communication depends upon the propagation of radio waves. Many environmental factors influence radio waves. The *Cisco Multiband Swivel-Mount Dipole Antenna Installation Notes* describes factors affecting this. We recommend that you review these factors before you determine a location for the router.

The type of antenna used with your wireless router and its location greatly impact the quality of wireless connections to the router. Cisco 1900 series wireless routers are compatible with three different antenna types—swivel-mount dipole antennas that mounts on the back panel of the router, a wall-mount antenna, and a ceiling-mount antenna.

For more information about antenna coverage and optimal usage, see the following documents:

- *Cisco Multiband Swivel-Mount Dipole Antenna*
- *Cisco Multiband Diversity Omnidirectional Ceiling-Mount Antenna*

Inspecting the Router

Do not unpack the router until you are ready to install it. If the final installation site will not be ready for some time, keep the chassis in its shipping container to prevent accidental damage. When you are ready to install the router, proceed with unpacking it.

The router, cables, publications, and any optional equipment that you ordered may be shipped in more than one container.

Inspect all items for shipping damage. If anything appears to be damaged, or if you encounter problems installing or configuring your router, contact customer service. Warranty, service, and support information is in the quick start guide that shipped with your router.

Installation Checklist

The sample installation checklist lists items and procedures for installing a new router. Make a copy of this checklist, and mark each item when you complete it. Include a copy of the checklist for each router in your Site Log (described in the "Site Log" section on page 2-6).

Installation Checklist for Site_____

Router Name_____

Task	Verified by	Date
Installation Checklist copied		
Background information placed in Site Log		
Site power voltages verified		
Installation site power check completed		
Required tools available		
Additional equipment available		
Router received		

Installation Checklist for Site_____

Router Name_____

Task	Verified by	Date
Router quick start guide received		
Cisco Regulatory Compliance and Safety Information Roadmap document received		
Product registration card received		
Chassis components verified		
Initial electrical connections established		
ASCII terminal (for local configuration) or modem (for remote configuration) available		
Signal distance limits verified		
Startup sequence steps completed		
Initial operation verified		
Software image verified		

Site Log

The Site Log is a record of all actions related to the router. Keep it in an accessible place near the chassis so that anyone who performs tasks has easy access to it. Use the Installation Checklist to verify steps in installation and maintenance of the router. Site Log entries might include the following information:

- Installation progress—Make a copy of the Installation Checklist, and insert it into the Site Log. Record the pertinent information as each procedure is completed.
- Upgrade and maintenance procedures—Use the Site Log as a record of ongoing router maintenance and expansion history. A Site Log might include the following events:
  - Installation of network modules
  - Removal or replacement of network modules and other upgrades
  - Configuration changes
  - Maintenance schedules and requirements
  - Maintenance procedures performed
  - Intermittent problems
  - Comments and notes

Required Tools and Equipment for Installation and Maintenance

You need the following tools and equipment for installing and upgrading the router and its components:

- ESD-preventive cord and wrist strap
- Number 2 Phillips screwdriver for installing or removing modules, and a flat-blade screwdriver for removing Compact Flash cover, upgrading memory, or other components: small, 3/16-inch (0.48 centimeter) and medium, 1/4-inch (0.63 centimeter).
- A 1/4-inch (0.63 centimeter) nut driver
- Wire crimper
- AWG 14 wire for connecting the router chassis to earth ground

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

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

  Note For more information on cable specifications, refer to *Cisco Modular Access Router Cable Specifications*.

- Ethernet hub or PC with a network interface card for connection to Ethernet (LAN) ports
- Console terminal (an ASCII terminal or a PC running terminal emulation software) configured for 9600 baud, 8 data bits, no parity, and 1 stop bit
- Modem for connection to the auxiliary port for remote administrative access
- 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
- NT1 device for ISDN BRI S/T interfaces (if not supplied by your service provider)