



Installation

This chapter provides information on the following topics:

- [Preparing for Installation](#)
- [Preventing Damage to the Router](#)
- [Installing the Router](#)
- [Verifying Router Operation](#)
- [Mounting the Router](#)
- [Connecting to a Website](#)
- [What to Do If You Cannot Connect to a Website](#)

Preparing for Installation

This section provides information on safety, mounting of the router, and unpacking the router box.

Safety

This section provides the safety warnings and information about electrostatic and router damage that are applicable to the Cisco 831 and SOHO 91 routers.

Warnings

Before installing the router, read the following warnings:



Read the installation instructions before you connect the system to its power source.



Only trained and qualified personnel should be allowed to install, replace, or service this equipment.



No operator serviceable parts inside. Refer servicing to qualified personnel.



Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.



This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.



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).



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.

**Warning**

The ports labeled "10BaseT", "100BaseTX", and "10/100" are safety extra-low voltage (SELV) circuits. SELV circuits should only be connected to other SELV circuits. Avoid connecting these circuits to telephone network voltage (TNV) circuits.

**Warning**

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.

**Warning**

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

**Warning**

This equipment is not designed for making emergency telephony calls when the power fails. Alternative arrangements should be made for access to emergency services. Access to emergency services can be affected by any call-barring function of this equipment.

**Warning**

If the symbol of suitability with an overlaid cross (⊗) appears above a port, you must not connect the port to a public network that follows the European Union standards. Connecting the port to this type of public network can cause severe injury or damage your router.

**Warning**

Before working on a system that has a standby/off switch, turn off the power by pressing the power switch to standby and unplug the power cord.

**Warning**

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

**Warning**

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

**Warning**

This equipment contains a ring signal generator (ringer), which is a source of hazardous voltage. Do not touch the RJ-11 (phone) port wires (conductors), the conductors of a cable connected to the RJ-11 port, or the associated circuit-board when the ringer is active. The ringer is activated by an incoming call.

**Warning**

During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) is a transfer of electrostatic charge between bodies of different electrostatic potentials, such as an operator and a piece of electrical equipment. It occurs when electronic components are improperly handled, and it can damage equipment and impair electrical circuitry. Electrostatic discharge is more likely to occur in the presence of synthetic fibers and dry atmosphere.

Always use the following ESD-prevention procedures when removing and replacing components:

Step 1

Wear an ESD-preventive wrist strap that you provide, ensuring that it makes good skin contact.

**Caution**

To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. Always follow the guidelines in the preceding section, [“Warnings.”](#)

Step 2

Do not touch any exposed contact pins or connector shells of interface ports that do not have a cable attached.

If cables are connected at one end only, do not touch the exposed pins at the unconnected end of the cable. This device is intended for use in residential and commercial environments only.

**Caution**

Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

Unpacking the Box

[Table 2-1](#) lists the items that come with your router. All these items are in the accessory kit that is inside the box that your router came in. If any of the items is missing or damaged, contact your customer service representative.

Table 2-1 Router Box Contents

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- Power cord (black)
 - Desktop power supply
 - Console cable, RJ-45-to-DB-9 (light blue)
 - Async modem cable for dial backup and remote management, RJ-45-to-DB-25 (light blue) (ORDERED SEPARATELY)
 - Two Ethernet cables (yellow)
 - Product documentation
-

To prepare for installation, follow these steps:

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- Step 1** Obtain a broadband or Ethernet connection from your service provider.
- Step 2** Remove the yellow Ethernet cables, light blue console cable, and product documentation from the plastic bag. Remove the desktop power supply and the black power cord from the accessory kit. Gather the Ethernet devices to be connected to the router: hub, servers, workstations, or PCs.
- Step 3** If you plan to configure the software using IOS commands via the console port, provide a terminal or PC to connect to the console port.

- Step 4** If you plan to use the cable-lock feature, provide a Kensington or equivalent locking cable.
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Preventing Damage to the Router

Follow these guidelines when connecting devices to your router:

- Connect the color-coded cables supplied by Cisco Systems to the color-coded ports on the back panel.
- If you must supply your own cable, see [Appendix A](#) for cabling specifications. If this appendix does not provide specifications for a particular cable, we strongly recommend ordering the cable from Cisco Systems.

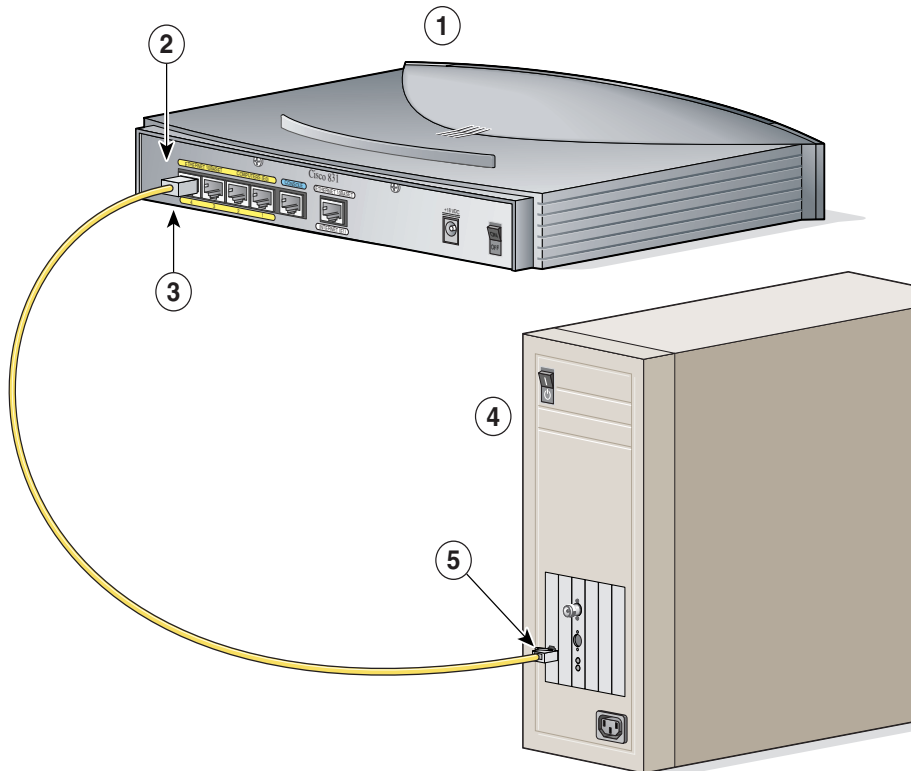
Installing the Router

To install the router, you need to perform these tasks in the following order:

1. Connect the Ethernet devices to the router.
2. Connect the router to a broadband modem or Ethernet switch.
3. Connect a terminal or PC to the router (for software configuration using the command-line interface [CLI] or troubleshooting).
4. Connect the router to the power source.
5. Verify the router installation.
6. Mount the router.

Connecting a Server, PC, or Workstation

[Figure 2-1](#) shows a Cisco 831 router connecting to a PC. ([Figure 2-1](#) shows a Cisco 831 router, but it also applies to a SOHO 91 router.) To connect one of these devices to built-in Ethernet switch port 4, follow the steps given after [Figure 2-1](#). (The connection procedure applies to both the Cisco 831 router and the SOHO 91 router.)

Figure 2-1 Connecting a Server, PC, or Workstation

1	Cisco 831 router	4	PC
2	Yellow Ethernet cable	5	RJ-45 port on the network interface card (NIC)
3	Built-in Ethernet switch port 4 on the router		

Perform the following steps to connect the PC to port number 4 of the built-in switch:

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- Step 1** Connect one end of the yellow Ethernet cable to built-in Ethernet switch port 4 on the router.
- Step 2** Connect the other end of the cable to the RJ-45 port on the NIC installed in the PC, server, or workstation.
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**Note**

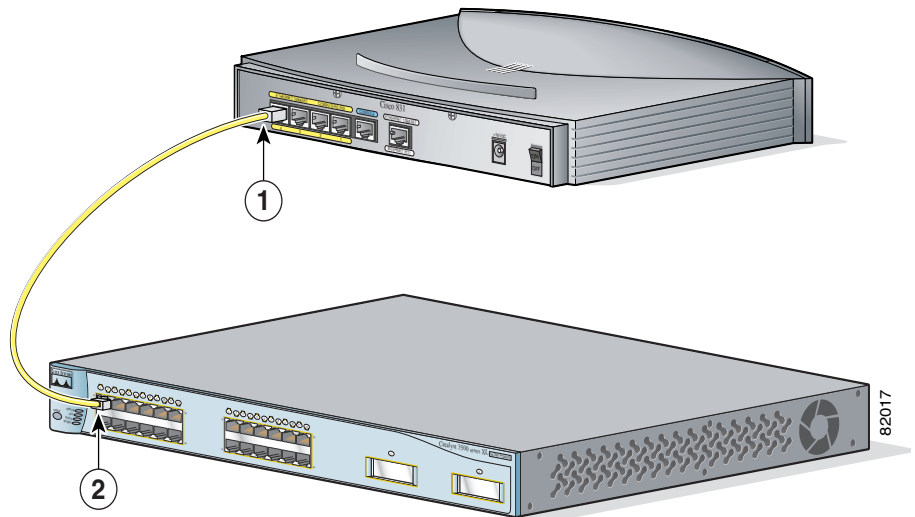
Leave the PCs that you are connecting to the router turned off until after you complete the router installation.

You can connect additional servers, PCs, or workstations to built-in Ethernet switch ports 1, 2, and 3.

Connecting an External Ethernet Switch (Optional)

If more than four PCs need to be connected to each other in an office, you may connect an external Ethernet switch to the router's built-in switch to add additional Ethernet connections to the router. To connect an external Ethernet switch to a built-in Ethernet switch port on the router, follow the steps given after [Figure 2-2](#). ([Figure 2-2](#) shows a Cisco 831 router, but it also applies to a SOHO 91 router. The connection procedure applies to both the Cisco 831 router and the SOHO 91 router.)

Figure 2-2 Connecting to an Ethernet Switch



1	Built-in Ethernet switch port 4 on the router	2	An available port on the external Ethernet switch
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Perform the following steps to connect the router to an external Ethernet switch:

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- Step 1** Connect one end of the yellow cable to built-in Ethernet switch port 4 on the router.
- Step 2** Connect the other end of cable to the available port on the Ethernet switch to add additional Ethernet connections.
-

Turn on the Ethernet switch if it is not already turned on.

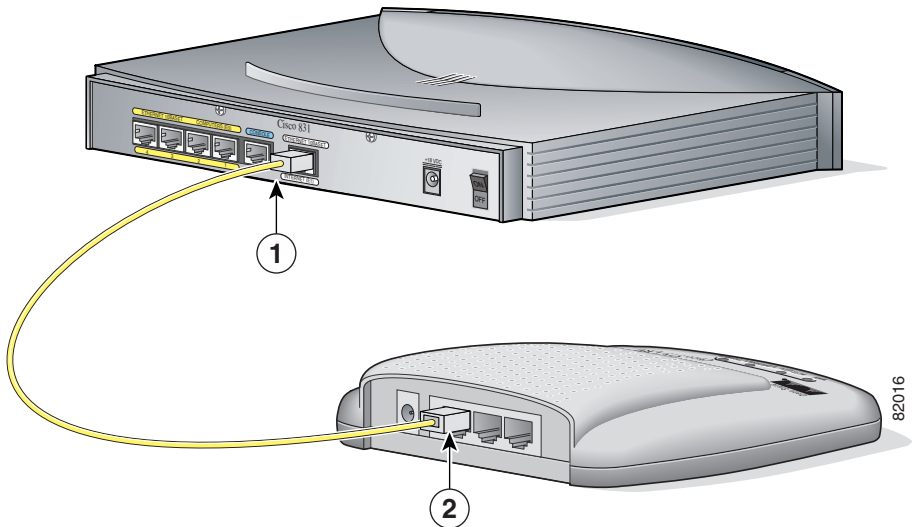
Connecting to the Internet

You can use an installed broadband modem to connect to the Internet.

Connecting a Broadband Modem

To connect to an installed DSL, cable, or long-reach Ethernet modem, follow the steps given after [Figure 2-3](#). ([Figure 2-3](#) shows a Cisco 831 router, but it also applies to a SOHO 91 router. The connection procedure applies to both the Cisco 831 router and the SOHO 91 router.)

Figure 2-3 Connecting to a Broadband Modem



1	Cisco 831 router's Ethernet Internet port	2	An available port on the modem
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Perform the following steps to connect the router to an installed DSL, cable, or long-reach Ethernet modem:

Step 1 Connect one end of the yellow cable to the router's Ethernet Internet port.

Step 2 Connect the other end of cable to the available port on the modem.

Follow the instructions provided with your broadband modem to determine which port on the modem to connect to. Turn on the broadband modem if it is not already turned on.

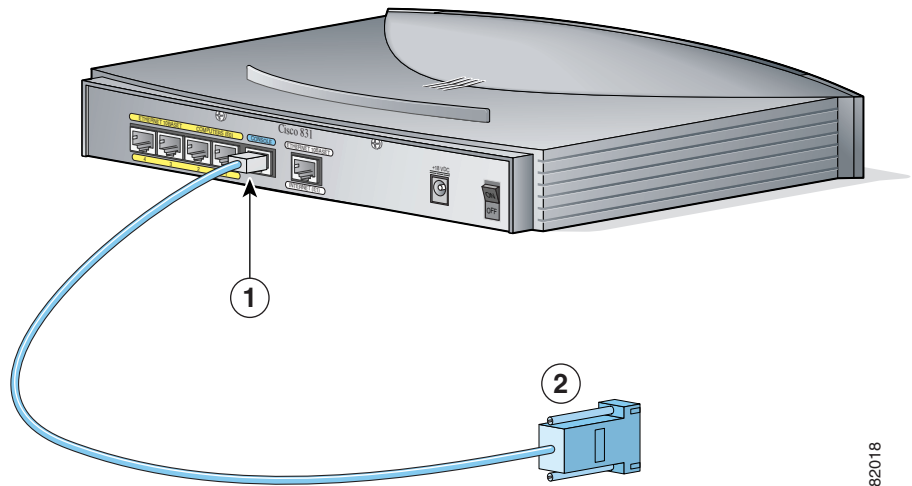
**Note**

If the factory default configuration does not allow you to connect to the Internet, it is recommended that you configure your router using the Cisco Router Web Setup (CRWS) software. The CRWS software is installed on your router at the factory. See the [“What to Do If You Cannot Connect to a Website”](#) section on page 2-22 for instructions on starting the CRWS software.

Connecting a Terminal or PC to the Console Port

The console port is a service port to which you can connect a terminal or PC in order to configure the software by using the command-line interface (CLI) or to troubleshoot problems with the router. To connect a terminal or PC to the console port, follow the steps given after [Figure 2-4](#). ([Figure 2-4](#) shows a Cisco 831 router, but it also applies to a SOHO 91 router. The connection procedure applies to both the Cisco 831 router and the SOHO 91 router.)

Figure 2-4 Connecting a Terminal or PC to the Console Port



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1	Console port on the router	2	DB-9 connector
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Perform the following steps to connect the router's console port to a terminal or PC:

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- Step 1** Connect the RJ-45 connector on the light blue cable to the router console port.
- Step 2** Connect the DB-9 connector to a terminal or PC.
-

Connecting the AC Adapter

To connect the AC adapter, follow the steps given after [Figure 2-5](#). ([Figure 2-5](#) shows a Cisco 831 router, but it also applies to a SOHO 91 router. The connection procedure applies to both the Cisco 831 router and the SOHO 91 router.)



Warning

The device is designed to work with TN power systems.

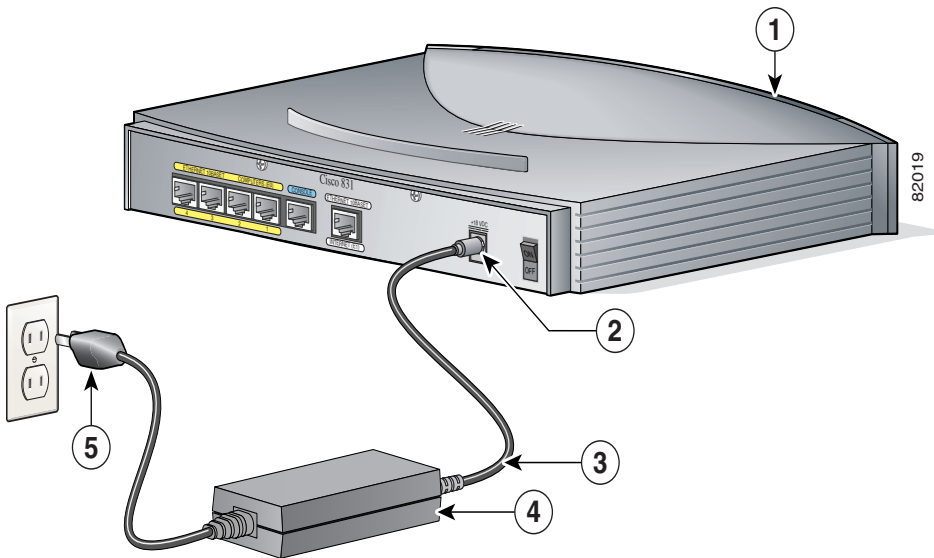
**Warning**

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, 16A international) is used on the phase conductors (all current-carrying conductors).

**Warning**

This equipment is designed to be grounded. Ensure that the host is connected to earth ground during normal use.

Figure 2-5 Connecting the AC adapter



1	Cisco 831 router	4	Desktop power adapter
2	Router input jack	5	Power cord plug
3	Power cord		

Perform the following steps to connect the router to the AC adapter:

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- Step 1** Connect one end of the power supply cable to the router's input jack.
 - Step 2** Connect the other end of the power supply cable to the desktop power adapter.
 - Step 3** Plug the power cord of the desktop power adapter into an electrical outlet.
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Connecting the Console Port to an Async Modem

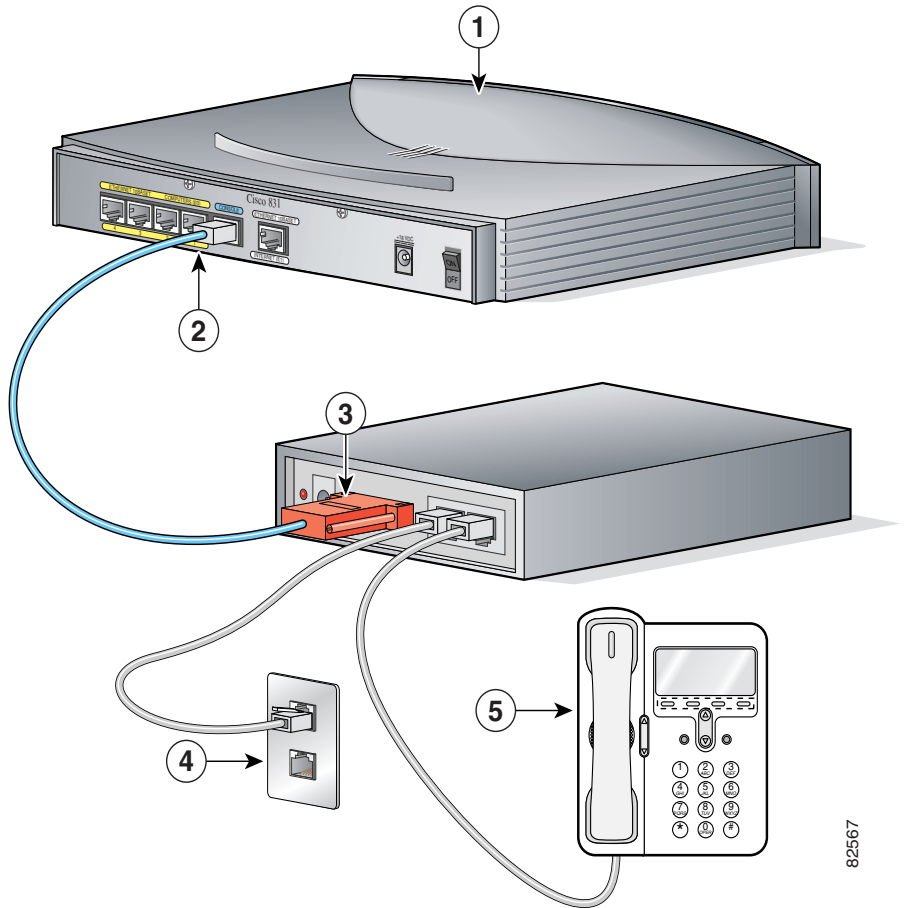
The Cisco 831 router is designed with the dial backup function, which allows the user to connect an analog modem to the console port as a backup link to the WAN port in case the ADSL service goes down. The Cisco 831 router supports the dial backup and remote management features; the SOHO 91 router supports only the remote management function.

**Note**

To connect an analog modem to the console port, you will need an optional SOHO/800 Series Router Modem Cable. Contact your router vendor to order this cable.

To connect the Cisco 831 router's console port to an async modem, follow the steps given after [Figure 2-6](#). The connection procedure applies only to a Cisco 831 router.

Figure 2-6 Connect Console Port to an Async Modem



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1	Cisco 831 router's console port	4	Wall jack
2	Router's console port	5	Telephone
3	An available port on an async modem		

Perform the following steps to connect the Cisco 831 router's console port to an async modem:

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- Step 1** Connect the RJ-45 end of the SOHO/800 Series Router Modem Cable to the Cisco 831 router's console port.
 - Step 2** Connect the DB-25 connector end of the SOHO/800 Series Router Modem Cable to an available port on the async modem.
 - Step 3** Connect one end of the RJ-11 cable to a wall jack.
 - Step 4** Connect the other end of the RJ-11 cable to a telephone line.
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Checking the PC Configuration

Each PC that is connected to the router must be configured to use TCP/IP and to use DHCP automatically to obtain its IP address. Follow these steps to configure each PC that is running Microsoft Windows NT or Microsoft Windows 95, 98, or 2000. If the PC is running a different version of Microsoft Windows, refer to the documentation that came with the PC.

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- Step 1** Start the PC, and open the Control Panel.
 - Step 2** Click the **Network** icon to display the Network window.
 - Step 3** Verify that TCP/IP has been added and associated with the Ethernet adapter. TCP/IP is shown as a cable icon in the Configuration window on Microsoft Windows 95, 98 and 2000, and as a cable icon in the Protocol window on Microsoft Windows NT. If the icon is not visible, click **Add**, and add Microsoft TCP/IP.
 - Step 4** To verify that the PC is configured to obtain an IP address automatically, click the TCP/IP cable icon, and select the **IP address** tab in the TCP/IP Properties window. If it is unchecked, check **Obtain an IP address from a DHCP server**. The IP address and Subnet mask fields should be grayed out.
 - Step 5** To accept all changes and exit this window, click **OK**. Then click **OK** in the Network window.

Step 6 If you are prompted, click **Yes** to reboot the PC.

For more information on how to configure TCP/IP, refer to the *Cisco Router Web Setup Troubleshooting Guide*, which is available on Cisco.com.

Verifying Router Operation

To verify that all PCs are properly connected to the router and that the router is properly connected to the broadband modem or Ethernet switch, turn on all connected devices, and then use [Table 2-2](#) on page 19 to help you verify correct router operation by checking the LEDs.

Table 2-2 Verifying Router Operation

Power/Link	LEDs to Check	Normal Patterns
Power	OK	On when power is supplied to router
To servers, PCs, or workstations connected to port 1, 2, 3, or 4 of the built-in Ethernet switch	COMPUTERS 1, 2, 3 or 4 INTERNET RXD INTERNET TXD	<ul style="list-style-type: none"> COMPUTERS 1, 2, 3 or 4 is on when the LAN port is physically connected to a server, PC, or workstation. INTERNET RXD blinks when a port on the built-in Ethernet switch receives an Ethernet packet. INTERNET TXD blinks when a port on the built-in Ethernet switch sends an Ethernet packet.
To broadband modem or external Ethernet switch	ETHERNET WAN WAN RXD WAN TXD	<ul style="list-style-type: none"> ETHERNET WAN is on when the ETHERNET WAN port is physically connected to a broadband modem or external Ethernet switch. WAN RXD blinks when the ETHERNET WAN port receives an Ethernet packet. WAN TXD blinks when the ETHERNET WAN port sends an Ethernet packet.

Mounting the Router

You can mount your router on one of the following surfaces:

- Table or other horizontal surface
- Wall or other vertical surface

Mounting on a Table

Place the router on a table firmly, and perform the procedure in the “[Installing the Router](#)” section on page 2-6. Do not cover or obstruct the router vents, which are located on the router sides.

**Caution**

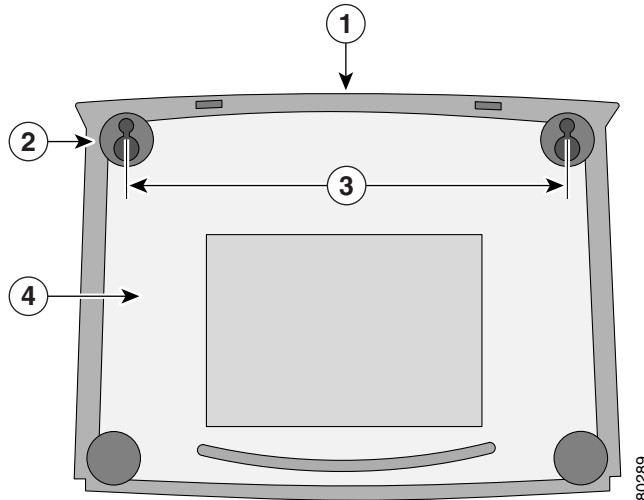
The router vents cannot be covered or obstructed, otherwise overheating could occur and cause damage to the router.

Mounting on a Wall

You can mount the router on a wall or other vertical surface by using the molded mounting brackets on the bottom of the router and two number-six, 3/4-in. (M3.5 x 20 mm) screws. You must provide the screws. [Figure 2-7](#) shows the mounting brackets.

**Caution**

If you are mounting the router on drywall, use two hollow-wall anchors (1/8 in. with 5/16-in. drill bit, or M3 with 8-mm drill bit) to secure the screws. If the screws are not properly anchored, the strain of the network cable connections could pull the router from the wall.

Figure 2-7 Wall-Mounting Brackets (Bottom of Router)

1	Front panel of router	3	Distance between two mounting brackets (7 5/8 inches or 19.35 cm)
2	Mounting bracket	4	Bottom of router

The following conditions must be met when you mount the router:

Because you will use the LEDs as status and problem indicators, the front panel must face upward and be easily visible.

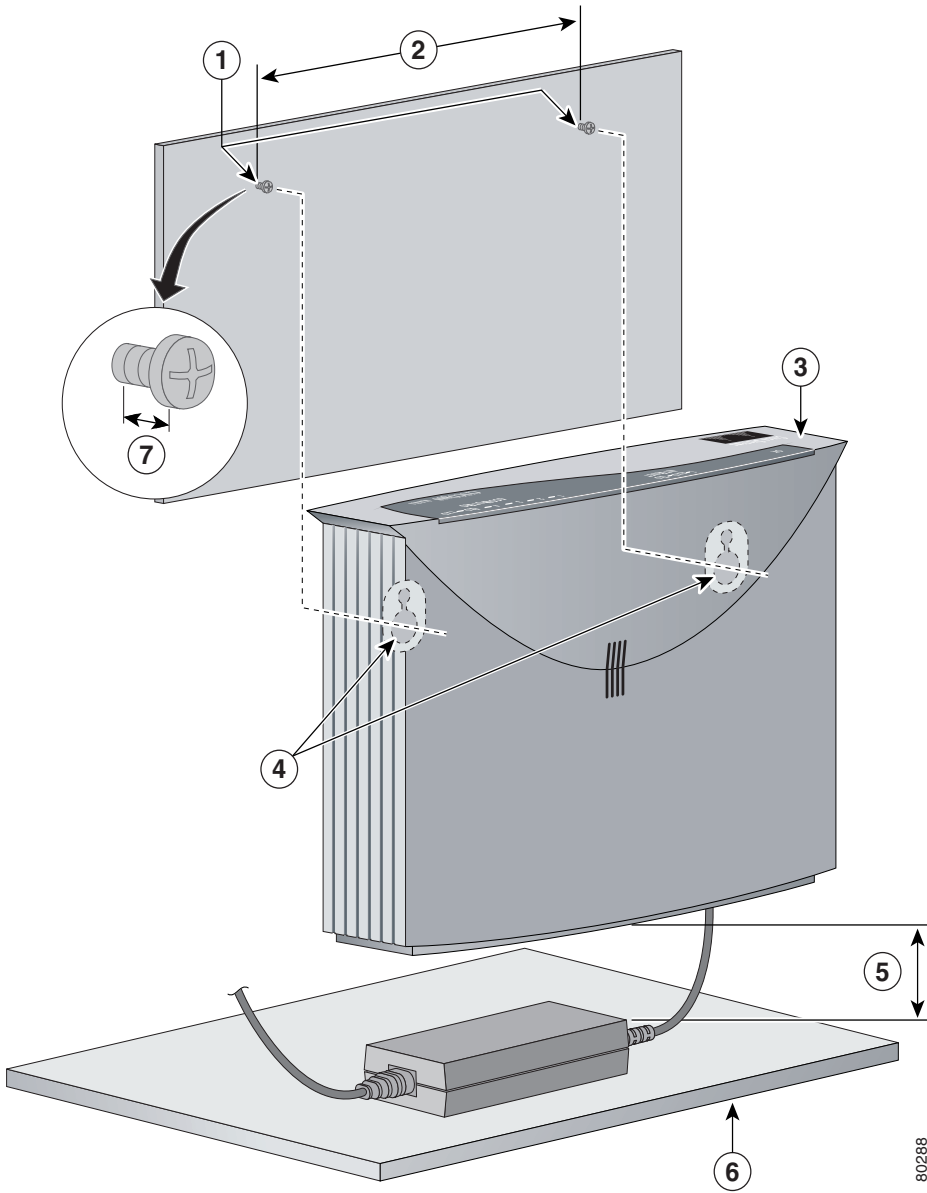
The router must be mounted low enough for you to see the LEDs in case you need to troubleshoot a problem.

The power supply must rest on a horizontal surface such as the floor or a table. If the power supply is not supported, it might place strain on the power supply cable and cause it to disconnect from the connector on the router back panel.

To mount the router, follow the steps given after [Figure 2-8](#). [Figure 2-9](#) shows a Cisco 831 router, but it also applies to the SOHO 91 router. The mounting procedure applies to both the Cisco 831 router and the SOHO 91 router.

Mounting the Router

Figure 2-8 Mounting Router on Wall



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1	Two number-six, 3/4 in. screws	5	Maximum distance between the router and the power supply (6 ft [1.8m])
2	Distance between the two screws on the wall (7 5/8 in. [19.35 cm])	6	Horizontal surface on which to place the power supply
3	Cisco 831 router	7	Distance between the screw and the wall (1/8 in. [0.32 cm])
4	Mounting brackets		

Perform the following steps to mount the router on the wall:

-
- Step 1** Secure two screws 7 5/8 inches (19.35 cm) apart into a wall and 1/8 inch (0.32 cm) from the wall.
- Step 2** Hang the router on the screws as shown in Figure 2-9.
- Step 3** Place the power supply on a horizontal surface.
-

Connecting to a Website

The router has been configured to work for the most common type of installation. Log on to a PC that is connected to the router, open a web browser, and connect to a website. If you connected to a website, you have completed setup and can continue to use the router.

If you cannot display a website, make sure that the broadband modem or Ethernet switch that the router is connected to is operating, and try again. If you still cannot connect to a website, you must follow the steps in the [“What to Do If You Cannot Connect to a Website”](#) section on page 2-22.

What to Do If You Cannot Connect to a Website

If you cannot connect to the Internet, using the factory configuration, or if you have loaded new Cisco IOS software on the router since you installed it, you can configure the router, using the Cisco Router Web Setup (CRWS) software. The CRWS software is already loaded on the router. This software is run from a PC connected to the router.

Starting the CRWS Software

Follow these steps to start the CRWS software:

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- Step 1** Start, or restart, a PC that is connected to one of the router's built-in Ethernet switch ports (1, 2, 3, or 4).
- Step 2** Open a web browser. Make sure that the browser is set to work in online mode.
- In Internet Explorer, click the **File** menu, and verify that the “work offline” option is unchecked.
 - In Netscape, the default selection in the File menu is set to work online.
- Step 3** Enter the following universal resource locator (URL):
- http://10.10.10.1**

**Tip**

If the CRWS home page does not appear when you enter the URL **http://10.10.10.1**, test the connection between the PC and the router by doing the following:

1. Check that the OK LED on the router is on, and check the cable connection between the router and the PC.
2. If the CRWS home page still does not appear, verify that the web browser's “work offline” option is disabled.
3. If the web page still does not appear, verify that the PC is automatically configured to receive an IP address. Follow the instructions in the *Cisco Router Web Setup User Guide*, which is available on Cisco.com.

4. If the PC is configured to automatically receive an IP address, but the web page still does not appear, select **Start/Run**, type **winiipcfg** in the Run window, and examine the address in the IP address field. The address should be in the format 10.10.10.X, in which X is a number that is 2 or greater; for example, 10.10.10.2 or 10.10.10.3. If the IP address is not in this format, verify that an Ethernet adapter name is visible in the Adapter field. If it is not, return to Step 3 in the [“Checking the PC Configuration” section on page 2-16](#) and add TCP to the list of protocols. Then return to the beginning of the [“Starting the CRWS Software” section on page 2-22](#), and complete the procedure.
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- Step 4** Click the **Router Setup** link in the Cisco Router Web Setup home page, and follow the instructions that appear in the page that is displayed.
- Step 5** When you complete setup using CRWS, connect to another website, using the connected PC. If you successfully connect to the website, then setup is complete, and you can continue using the router.
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■ What to Do If You Cannot Connect to a Website