

# Cisco 805 Router Hardware Installation Guide

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# About This Guide

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This preface discusses the audience, organization, conventions, and terms and acronyms used in this guide. It also discusses related documentation and how to access electronic documentation.

## Audience

This guide is intended for service technicians who have no experience installing routers. The goal of these technicians is to connect the router to the network as quickly as possible.

This guide provides conceptual information on topics, such as serial cables, that you need to understand to successfully install your router. Conceptual information is usually in a separate section or appendix, such as Appendix A, “Selecting a Serial Cable,” so that technicians who are not interested or already understand the topic can skip this information.

## Organization

This guide contains the following information:

- **Product Overview**—Describes the Cisco 805 router and its features.
- **Installing the Cisco 805 Router**—Provides information on safety, required equipment, unpacking the box, connecting and mounting the router, and verifying the router connections.
- **Troubleshooting**—Describes problems with the router and how to identify and solve them.

- **Selecting a Serial Cable**—Explains how to select a serial cable to connect your serial device to the router serial port. It also provides Cisco part numbers for cables that you can order.
- **Technical Specifications**—Provides physical dimensions, environmental operating ranges, and power specifications for the router.
- **Connector and Cable Specifications**—Contains port connector pinouts and specifications for cables that you might need to provide.
- A wall-mount template is provided at the back of this manual. For more information, see the “Mounting the Router on a Wall” section in Chapter 2, “Installing the Cisco 805 Router.”

## Conventions

This section describes the conventions used in this guide.

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**Note** Means *reader take note*. Notes contain helpful suggestions or references to additional information and material.

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**Caution** This symbol means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.



**Warning** 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. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.

**Waarschuwing** Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen. Voor vertalingen

van de waarschuwingen die in deze publicatie verschijnen, kunt u het document *Regulatory Compliance and Safety Information* (Informatie over naleving van veiligheids- en andere voorschriften) raadplegen dat bij dit toestel is ingesloten.

**Varoitus** Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. Tässä julkaisussa esiintyvien varoitusten käännökset löydät laitteen mukana olevasta *Regulatory Compliance and Safety Information* -kirjasesta (määräysten noudattaminen ja tietoa turvallisuudesta).

**Attention** Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions d'avertissements figurant dans cette publication, consultez le document *Regulatory Compliance and Safety Information* (Conformité aux règlements et consignes de sécurité) qui accompagne cet appareil.

**Warnung** Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt. Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise finden Sie im Dokument *Regulatory Compliance and Safety Information* (Informationen zu behördlichen Vorschriften und Sicherheit), das zusammen mit diesem Gerät geliefert wurde.

**Avvertenza** Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nel documento *Regulatory Compliance and Safety Information* (Conformità alle norme e informazioni sulla sicurezza) che accompagna questo dispositivo.

**Advarsel** Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du være oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. Hvis du vil se oversettelser av de advarslene som finnes i denne publikasjonen, kan du se i dokumentet *Regulatory Compliance and Safety Information* (Overholdelse av forskrifter og sikkerhetsinformasjon) som ble levert med denne enheten.

**Aviso** Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. Para ver as traduções dos avisos que constam desta publicação, consulte o documento *Regulatory Compliance and Safety Information* (Informação de Segurança e Disposições Reguladoras) que acompanha este dispositivo.

**¡Advertencia!** Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes. Para ver una traducción de las advertencias que aparecen en esta publicación, consultar el documento titulado *Regulatory Compliance and Safety Information* (Información sobre seguridad y conformidad con las disposiciones reglamentarias) que se acompaña con este dispositivo.

**Varning!** Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador. Se förklaringar av de varningar som förekommer i denna publikation i dokumentet *Regulatory Compliance and Safety Information* (Efterrättelse av föreskrifter och säkerhetsinformation), vilket medföljer denna anordning.

## Terms and Acronyms

This section describes terms and acronyms that are used in this guide.

### **10BaseT**

The 10-Mbps baseband Ethernet specification that uses two pairs of twisted-pair cabling (Category 3, 4, or 5): one pair for transmitting data and the other for receiving data.

### **asynchronous modem**

Connect this device to router serial port for dial-up connection.

### **carrier detect**

Signal that indicates whether the serial interface is active.

### **crossover Ethernet cable**

A cable that wires a pin to its opposite pin; for example, *Receive+* is wired to *Transmit+*. This cable connects two similar devices, such as a data terminal equipment (DTE) and data communications equipment (DCE) device.

### **CSU/DSU**

Channel service unit/data service unit. Connect this type of device to router serial port for synchronous leased-line, Frame Relay, or X.25 connection.

### **DCE**

Data communications equipment. This type of equipment provides a physical connection to the network and forwards traffic. A synchronous DCE also provides a clocking signal used to synchronize data transmission between DCE and DTE devices, while an asynchronous DCE does not provide a clocking signal. For more information, see the “DTE or DCE” section in Appendix A, “Selecting a Serial Cable.”

### **DTE**

Data terminal equipment. This type of equipment connects to a data network through a DCE device, such as a modem, and typically uses clocking signals generated by the DCE. For more information, see the “DTE or DCE” section in Appendix A, “Selecting a Serial Cable.”

### **DRAM**

Dynamic RAM. Dynamic RAM that stores information that must be refreshed periodically in capacitors.

### **Flash memory**

The nonvolatile storage that can be electrically erased and reprogrammed so that data can be stored, booted, and rewritten as necessary.

### **HUB/NO HUB button**

With this button, you can connect hubs, servers, PCs, and workstations using the yellow Ethernet (straight-through) cable instead of using a crossover Ethernet cable, which you would need to supply. This button identifies the device that you connect to the router Ethernet port using the yellow Ethernet cable. Setting the button to HUB (in) indicates that you are connecting a hub; setting the button to NO HUB (out) indicates that you are connecting a server, PC, or workstation. For information on how the setting of an

equivalent hub button can affect the setting of this router button, refer to the “Connecting an Ethernet Device” section in Chapter 2, “Installing the Cisco 805 Router.”

**link**

Indicates that a connection between the router and an Ethernet device exists.

**MDI**

Media-dependent interface. A port on a Ethernet network device used to connect the device to the Ethernet network, usually through a hub or switch.

**MDI-X**

Media-dependent interface, crossover. A port on an Ethernet hub, such as the Cisco 1528 Micro Hub 10/100, that connects the Ethernet network devices through the MDI port to create a network.

**NIC**

Network interface card. A board that provides network communication capabilities to and from a computer system. Also called an *adapter*.

**SELV**

Safety extra-low voltage. A secondary circuit that under normal conditions has a voltage less than 42.4V peak or 42 Vdc. Under a single fault condition, this circuit should not exceed these values for longer than 0.2 seconds and should not exceed 71V peak or 120 Vdc.

**straight-through Ethernet cable**

A cable that wires a pin to its equivalent pin. This cable typically connects a router to a hub. A straight-through Ethernet cable is the most common cable used.

**TNV**

Telecommunications network voltage. A secondary circuit that under normal operating conditions, carries telecommunication signals. Telecommunications signals are a steady state, varying amplitude, or intermittent voltage or current intended for use on a telecommunications network. A telecommunications network is considered a metallicly terminated circuit intended to carry telecommunication signals for voice,

data, or other communication. These networks might be publicly or privately owned. They might be subjected to overvoltages due to atmospheric discharges or power line failures.

## Related Documentation

In addition to this *Cisco 805 Router Hardware Installation Guide*, the Cisco 805 documentation set includes the following:

- *Quick Start Guide—Setting Up the Cisco 805 Router*
- *Cisco 805 Router Software Configuration Guide*

## Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

### Cisco.com

You can access the most current Cisco documentation at this URL:

<http://www.cisco.com/univercd/home/home.htm>

You can access the Cisco website at this URL:

<http://www.cisco.com>

You can access international Cisco websites at this URL:

[http://www.cisco.com/public/countries\\_languages.shtml](http://www.cisco.com/public/countries_languages.shtml)

# Documentation DVD

Cisco documentation and additional literature are available in a Documentation DVD package, which may have shipped with your product. The Documentation DVD is updated regularly and may be more current than printed documentation. The Documentation DVD package is available as a single unit.

Registered Cisco.com users (Cisco direct customers) can order a Cisco Documentation DVD (product number DOC-DOCDVD=) from the Ordering tool or Cisco Marketplace.

Cisco Ordering tool:

<http://www.cisco.com/en/US/partner/ordering/>

Cisco Marketplace:

<http://www.cisco.com/go/marketplace/>

# Ordering Documentation

You can find instructions for ordering documentation at this URL:

[http://www.cisco.com/univercd/cc/td/doc/es\\_inpk/pdi.htm](http://www.cisco.com/univercd/cc/td/doc/es_inpk/pdi.htm)

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- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 1 800 553-NETS (6387).

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Cisco Systems  
Attn: Customer Document Ordering  
170 West Tasman Drive  
San Jose, CA 95134-9883

We appreciate your comments.

## Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

[http://www.cisco.com/en/US/products/products\\_security\\_vulnerability\\_policy.html](http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html)

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

<http://www.cisco.com/go/psirt>

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

[http://www.cisco.com/en/US/products/products\\_psirt\\_rss\\_feed.html](http://www.cisco.com/en/US/products/products_psirt_rss_feed.html)

## Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- Emergencies—[security-alert@cisco.com](mailto:security-alert@cisco.com)
- Nonemergencies—[psirt@cisco.com](mailto:psirt@cisco.com)

**Tip** We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.x through 8.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one that has the most recent creation date in this public key server list:

<http://pgp.mit.edu:11371/pks/lookup?search=psirt%40cisco.com&op=index&exact=on>

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

## Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

## Cisco Technical Support Website

The Cisco Technical Support Website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, 365 days a year, at this URL:

<http://www.cisco.com/techsupport>

Access to all tools on the Cisco Technical Support Website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

<http://tools.cisco.com/RPF/register/register.do>

Note Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support Website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

## Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

<http://www.cisco.com/techsupport/servicerequest>

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/techsupport/contacts>

# Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—Your network is “down,” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

# Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:  
<http://www.cisco.com/go/marketplace/>
- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:  
<http://www.ciscopress.com>
- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and

troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

<http://www.cisco.com/packet>

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

<http://www.cisco.com/go/iqmagazine>

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

<http://www.cisco.com/ipj>

- World-class networking training is available from Cisco. You can view current offerings at this URL:

<http://www.cisco.com/en/US/learning/index.html>

**Related Documentation**

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# Product Overview

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The Cisco 805 router can connect a remote office to a corporate office or a small professional office to an Internet service provider (ISP).

In the remote-office-to-corporate-office network, the remote office is typically a small professional office that is part of a larger corporation, such as a real estate office. Although a majority of its data might exist at the remote office itself, the remote office might also need to exchange data with its larger corporate office. As a result, the remote office needs a connection to the corporate office.

In the small-office-to-ISP network, the small office is typically a small, independent professional office, such as a small architectural firm that needs to access information from the Internet.

## Features

Table 1-1 summarizes the features of the Cisco 805 router.

**Table 1-1 Cisco 805 Feature Summary**

<b>Feature</b>	<b>Description</b>
10BaseT Ethernet port	Provides connection to a 10BaseT (10 Mbps) Ethernet network. Compatible with a 10/100-Mbps device.
Serial port	Provides connection to EIA/TIA-232, EIA/TIA-449, EIA/TIA-530, EIA/TIA-530A, X.21, and V.35 data terminal equipment (DTE) or data communications equipment (DCE).
RJ-45 Console port	Provides connection to terminal or PC for software configuration and for router troubleshooting.

**Table 1-1 Cisco 805 Feature Summary (continued)**

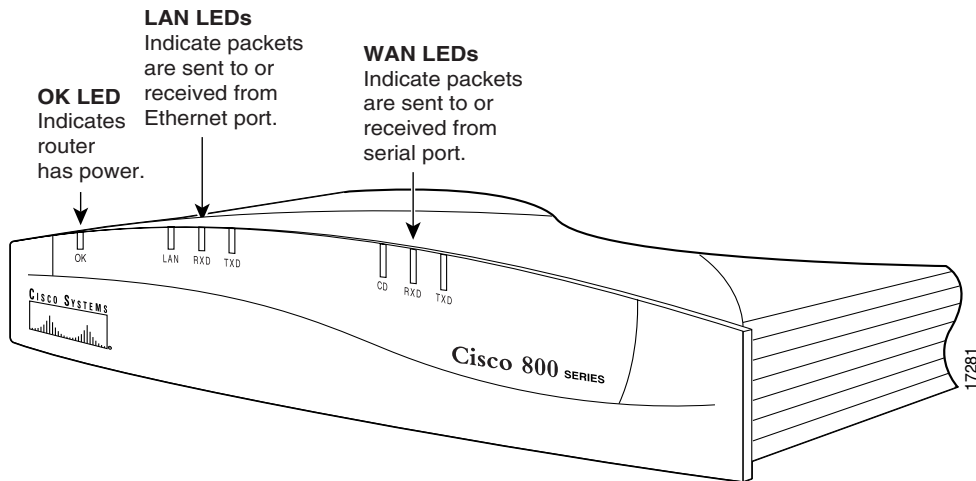
<b>Feature</b>	<b>Description</b>
Flash memory	Router provides 4 MB of Flash memory. <sup>1</sup>
Dynamic RAM (DRAM)	Router provides 8 MB of DRAM. <sup>1</sup>
Ease of installation	Color-coded ports and cables reduce the chance of error.
Cisco IOS software	Router supports a subset of Cisco IOS software.
Cisco 805 Fast Step software	Provides a Windows 95, Windows 98, and Windows NT software tool for basic Cisco 805 configuration.
Cable lock	Provides a way to physically secure router.
Locking power connector	Locks power connector in place.
Wall-mount feature	Brackets on router bottom provide a way to mount router on wall or vertical surface.

- <sup>1</sup> An additional 4 or 8 MB of Flash memory and DRAM can be added at the factory or later. You can order upgrade kits and have qualified personnel add the memory. The Cisco product number for the 4-MB Flash memory upgrade kit is MEM805-4U8F, for the 8-MB Flash memory upgrade kit it is MEM805-4U12F, for the 4-MB DRAM upgrade kit it is MEM805-8U12D, and for the 8-MB DRAM upgrade kit it is MEM805-8U16D. (Because of the height of the actual DRAM component, you must order the additional DRAM from Cisco.)

## Front Panel

Figure 1-1 describes the Cisco 805 front panel.

**Figure 1-1 Cisco 805 Front Panel**



For more details, see the “LEDs” section later in this chapter.

## Back Panel

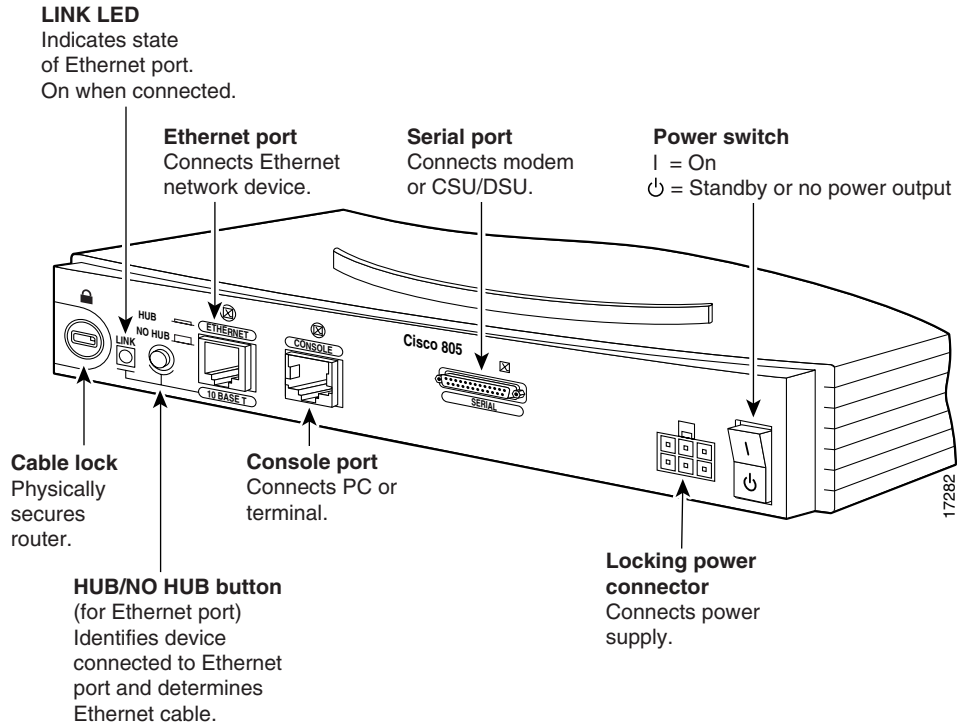
Figure 1-2 describes the Cisco 805 back panel.

If the symbol of suitability (☒) appears above a port, you can connect the port directly to a public network that follows the European Union standards.

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.

Figure 1-2 Cisco 805 Back Panel



With the HUB/NO HUB button, you can connect hubs, servers, PCs, and workstations using the yellow Ethernet (straight-through) cable instead of using a crossover Ethernet cable, which you would need to supply. This button identifies the device that you connect to the router Ethernet port using the yellow Ethernet cable. Setting the button to HUB (in) indicates that you are connecting a hub; setting the button to NO HUB (out) indicates that you are connecting a server, PC, or workstation. The default setting of this button is HUB. If you reset the button to NO HUB, the router Ethernet connector crosses over the signals transmitted to and received from the yellow Ethernet cable. For information on how the setting of an equivalent hub button can affect the setting of this router button, refer to the “Connecting an Ethernet Device” section in Chapter 2, “Installing the Cisco 805 Router.”

## LEDs

Table 1-2 summarizes the function of each LED. All LEDs are on the router front panel except for the LINK LED, which is on the router back panel.

**Table 1-2 LED Functions**

<b>LED</b>	<b>Corresponding Port/Component</b>	<b>Color</b>	<b>Function</b>
OK	Power	Green	On when power is supplied to the router and when the router completes the self-test procedure and begins operating.
LAN	Ethernet	Green	On when the Ethernet interface is up. Off when the Ethernet interface has been shut down.
RXD (Received)	Ethernet	Green	Blinks when the Ethernet port receives a packet.
TXD (Transmitted)	Ethernet	Green	Blinks when the Ethernet port sends a packet.
CD (Carrier detect)	Serial	Orange	On when the serial interface is up and a carrier signal is detected. Off when a carrier signal is not detected.
RXD (Received)	Serial	Orange	Blinks when the serial port receives a packet.
TXD (Transmitted)	Serial	Orange	Blinks when the serial port sends a packet.
LINK	Ethernet	Green	On when Ethernet device is connected. Off when the connection has a problem. Refer to the Chapter 3, "Troubleshooting."



# Installing the Cisco 805 Router

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This chapter provides information on the following topics:

- Safety
- Required Equipment
- Unpacking the Box
- Installing the Router
- Where to Go Next

## Safety

This section contains information on warnings associated with using your router and on electrostatic discharge (ESD).

## Warnings

Before installing the router, read the following warnings:



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



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



**Warning** Before working on a system that has a standby/on switch, turn the power to standby and unplug the power cord.



**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.



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

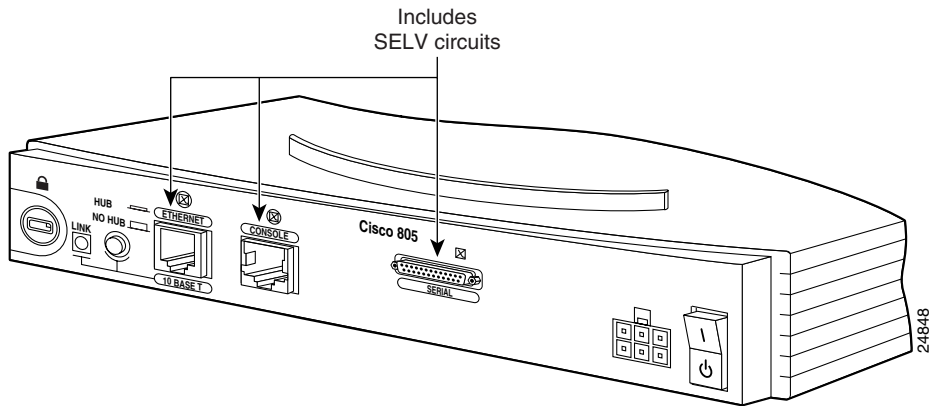


**Warning** If the symbol of suitability with an overlaid cross (ⓧ) appears above a port, you must not connect the port to a public network that follows the European Union standards. Connecting the port to this type of public network can cause severe injury or damage your router.



**Warning** 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.

Figure 2-1 shows the Cisco 805 router ports that include SELV circuits. For a definition of SELV and TNV, see “Terms and Acronyms” in “About this Guide.”

**Figure 2-1 SELV Circuit Ports**

## ESD

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 with the combination of synthetic fibers and dry atmosphere.

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

- Connect the chassis to earth ground with a wire that you provide.
- Wear an ESD-preventive wrist strap that you provide, ensuring that it makes good skin contact.
- Do not touch any exposed contact pins or connector shells of uncabled router ports.
- If cables are connected at one end only, do not touch the exposed pins at the unconnected end of the cable.

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**Note** This device is intended for use in residential and commercial environments only.

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## Required Equipment

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

## Required Equipment

You need to provide the following equipment:

- The hub, server, workstation, or PC that you plan to connect to the Ethernet port. The server, workstation, or PC must have a 10- or 10/100-Mbps network interface card (NIC).
- The asynchronous modem or channel service unit/data service unit (CSU/DSU) that you plan to connect to the serial port.
- The serial cable that connects the router to the serial device. For information on selecting and ordering the serial cable, refer to Appendix A, “Selecting a Serial Cable.”
- The terminal or PC with which you plan to configure the software or troubleshoot the router.
- If you plan to mount your router on a wall or other vertical surface, two number-six, 3/4-inch (M3.5 x 20 mm) screws. If the wall to which you plan to mount your router is drywall, you must also provide two hollow wall-anchors (1/8 inch with 5/16-inch drill bit or M3 with 8-mm drill bit) to secure the screws.

## Unpacking the Box

The items that come with your router are listed below. 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.

- Power cord (black)
- Desktop power supply
- Console cable (light blue)
- DB-9-to-RJ-45 adapter for use with light blue console cable
- DB-25-to-RJ-45 adapter for use with light blue console cable
- Ethernet cable (yellow)
- Product documentation

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**Note** A serial cable does not ship with the router. For information on selecting and ordering the serial cable, refer to Appendix A, “Selecting a Serial Cable.”

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# Installing the Router

To install the router, perform the following tasks in the following order:

- 1 Connect an Ethernet device.
- 2 Connect a serial device.
- 3 Connect a terminal or PC (for software configuration or router troubleshooting).
- 4 Connect the power supply.
- 5 Mount the router.
- 6 Verify the router installation.

## Connecting an Ethernet Device

You can connect the following devices to the Ethernet port:

- A hub
- A server, PC, or workstation with a 10- or 10/100-Mbps NIC

Table 2-1 lists the Ethernet devices you can connect to the router with the yellow Ethernet cable and the appropriate settings of the router HUB/NO HUB button and the hub equivalent of the HUB/NO HUB button. The default setting of the router HUB/NO HUB button is HUB (in).

**Table 2-1 Connecting Ethernet Devices**

<b>Network Device Connected to Router</b>	<b>Router HUB/NO HUB Button Setting</b>	<b>Hub Button Setting<sup>1</sup></b>
Hub with equivalent to router HUB/NO HUB button	HUB (in)	MDI (in)
Hub with equivalent to router HUB/NO HUB button	NO HUB (out)	MDI-X (out)
Hub without equivalent to router HUB/NO HUB button	NO HUB (out)	MDI-X (out)
Server, PC, or workstation	NO HUB (out)	–

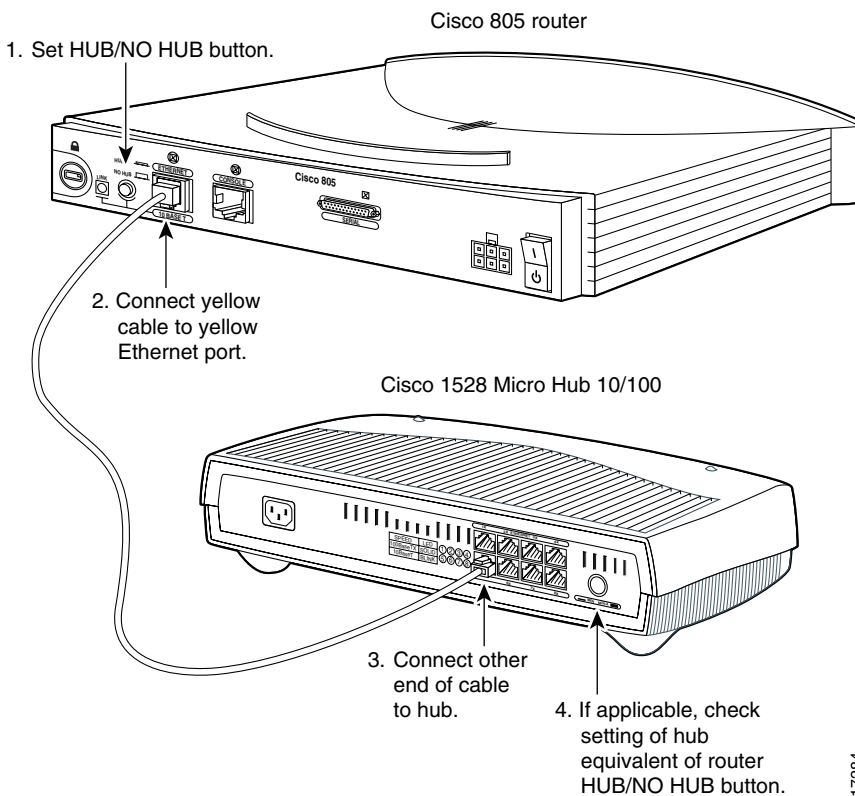
<sup>1</sup> Hub vendors choose different names for the button controlling cable selection. This table uses the Cisco 1528 Micro Hub 10/100 with an MDI/MDI-X button as an example. Determine the button name and setting for your particular hub. Refer to your hub documentation for details.

## Connecting a Hub

Before connecting a hub, refer to Table 2-1 to determine how to set the router HUB/NO HUB button and the hub equivalent of the HUB/NO HUB button if applicable.

Follow the steps in Figure 2-3 to connect a hub.

**Figure 2-2 Connecting a Hub**



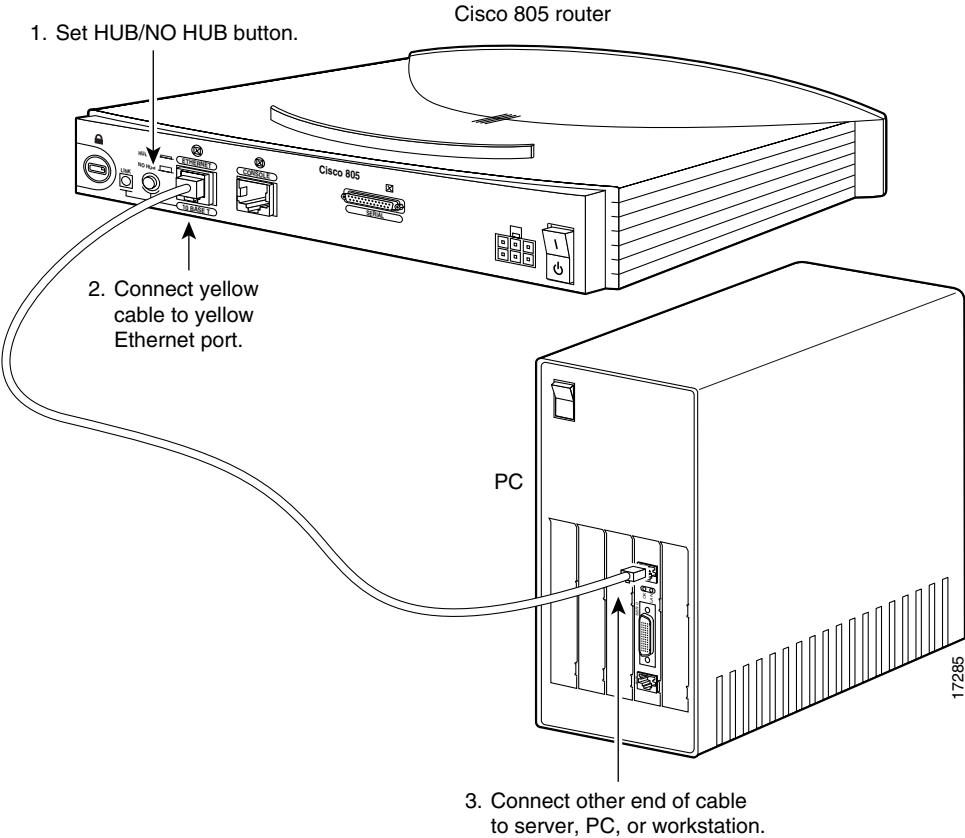
### Connecting a Server, PC, or Workstation

Before connecting the server, PC, or workstation, do the following:

- Make sure that the device has a 10- or 10/100-Mbps NIC.
- Refer to Table 2-1 to determine how to set the router HUB/NO HUB button.

Follow the steps in Figure 2-4 to connect a server, PC, or workstation.

Figure 2-3 Connecting a Server, PC, or Workstation



### Connecting a Serial Device

You can connect any one of several serial devices to the router serial port. For more information, see the “DTE or DCE” section in Appendix A, “Selecting a Serial Cable.”

Table 2-2 describes the devices most commonly connected to the router serial port and how these devices are used.

**Table 2-2 Connecting a Serial Device**

Serial Device	WAN Options	WAN Encapsulation (Framing)	Network Type
Asynchronous modem	Asynchronous dial-up line	Point-to-Point Protocol (PPP)	<ul style="list-style-type: none"><li>• Remote office to corporate office</li><li>• Small office to Internet service provider (ISP)</li></ul>
Channel service unit/data service unit (CSU/DSU)	<ul style="list-style-type: none"><li>• Synchronous leased line</li><li>• Frame Relay</li><li>• X.25</li></ul>	<ul style="list-style-type: none"><li>• For synchronous leased line: High-Level Data Link Control (HDLC) or PPP</li><li>• Frame Relay</li><li>• X.25</li></ul>	<ul style="list-style-type: none"><li>• Remote office to corporate office</li><li>• Small office to ISP</li></ul>

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**Note** A serial cable does not ship with the router. For information on selecting and ordering the serial cable, refer to Appendix A, “Selecting a Serial Cable.”

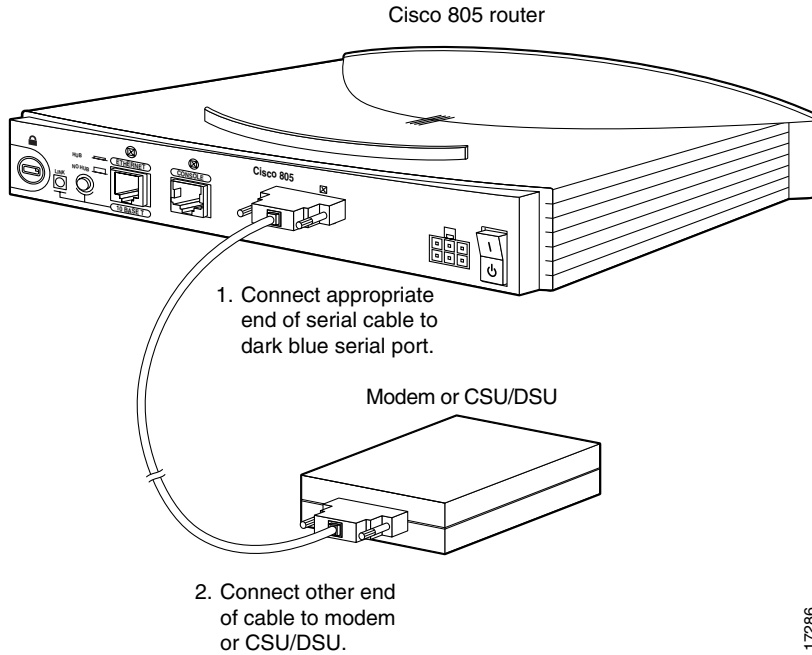
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Follow the steps in Figure 2-5 to connect a modem or CSU/DSU.



**Caution** The Cisco 805 router does not support the Australian IUT requirement, which specifies that the router must communicate for 1/2 hour after a power failure. If a power failure occurs, the Cisco 805 router stops communicating with other devices.

**Figure 2-4 Connecting a Modem or CSU/DSU**

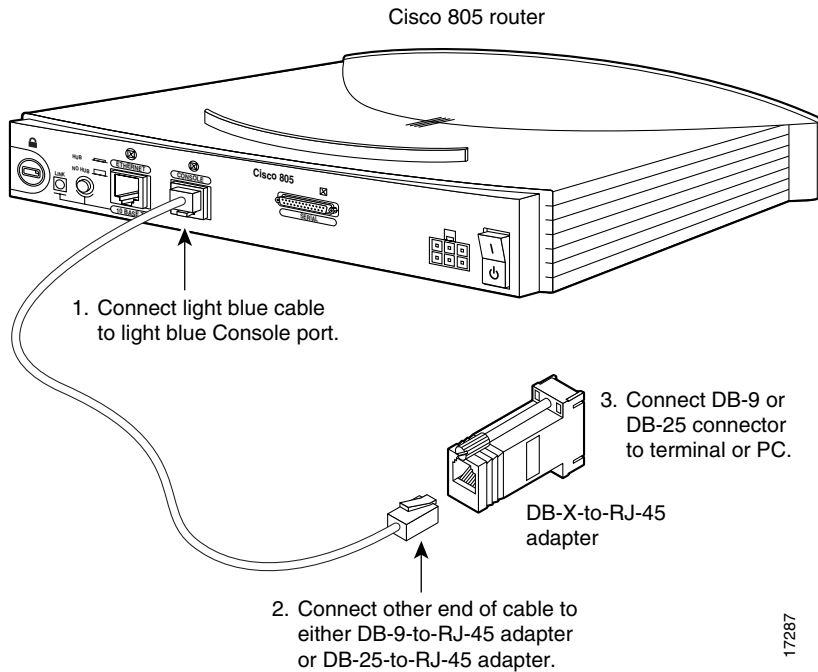


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## Connecting a Terminal or PC

You can connect either a terminal or PC from which you can configure the software or troubleshoot problems with the router. Follow the steps in Figure 2-6.

**Figure 2-5** Connecting Terminal or PC



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## Connecting the Power Supply

Follow the steps in Figure 2-7 to connect the power supply.



**Warning** The device is designed to work with TN power systems.

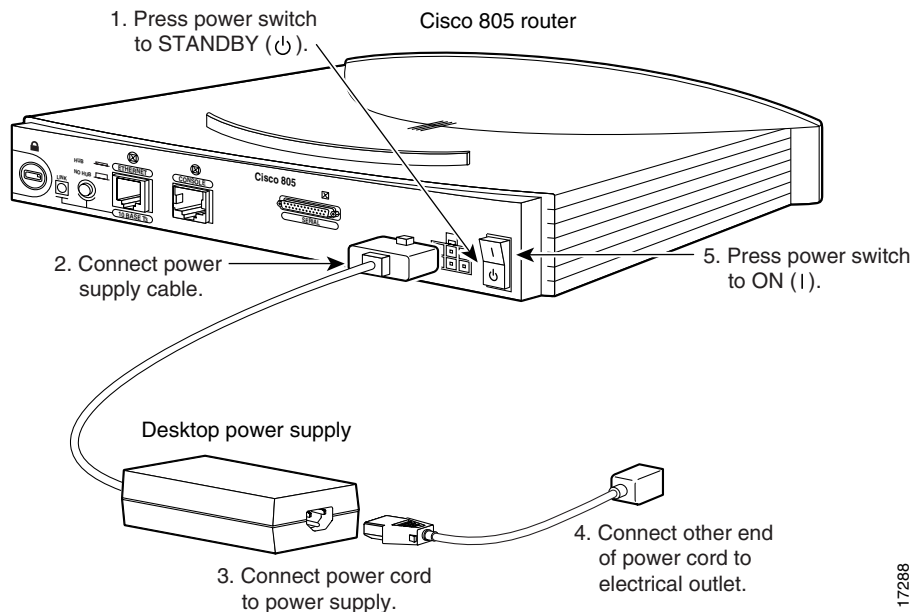


**Warning** This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 16A international) is used on the phase conductors (all current-carrying conductors).



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

**Figure 2-6 Connecting the Power Supply**



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### Mounting the Router

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

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

#### Mounting the Router on a Table

You can mount your router on a table or other horizontal surface. Use the following guidelines:

- Do not cover or obstruct the router vents, which are located on the router sides.
- You can stack a maximum of five routers on top of one another. (The router has a curved ridge on the enclosure top that mates with a curved indentation on the enclosure bottom. When stacking one of these routers on top of another, this mating feature ensures that the routers are securely stacked.)

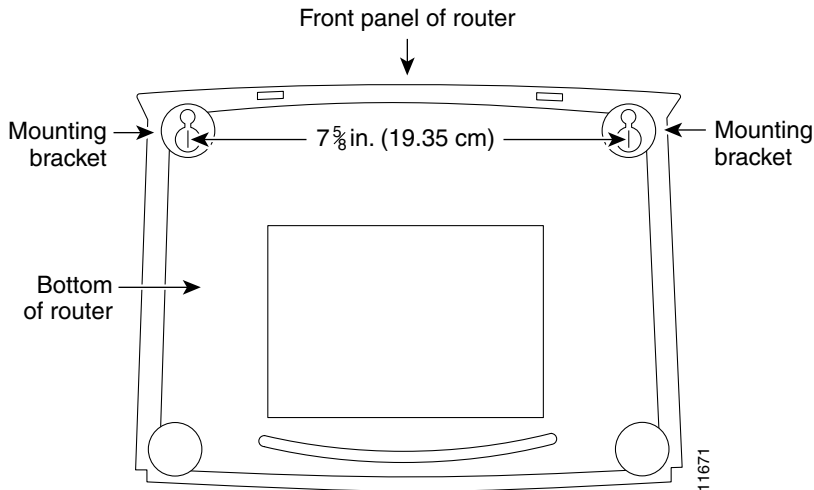
#### Mounting the Router on a Wall

You can mount your router on a wall or other vertical surface by using the molded mounting brackets on the router bottom and two number-six, 3/4-inch (M3.5 x 20 mm) screws. You must provide the screws. Figure 2-8 shows the mounting brackets.



**Caution** If the wall to which you mount your router is drywall, use two hollow wall-anchors (1/8 inch with 5/16-inch 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)**



When mounting the router, the following conditions must be met:

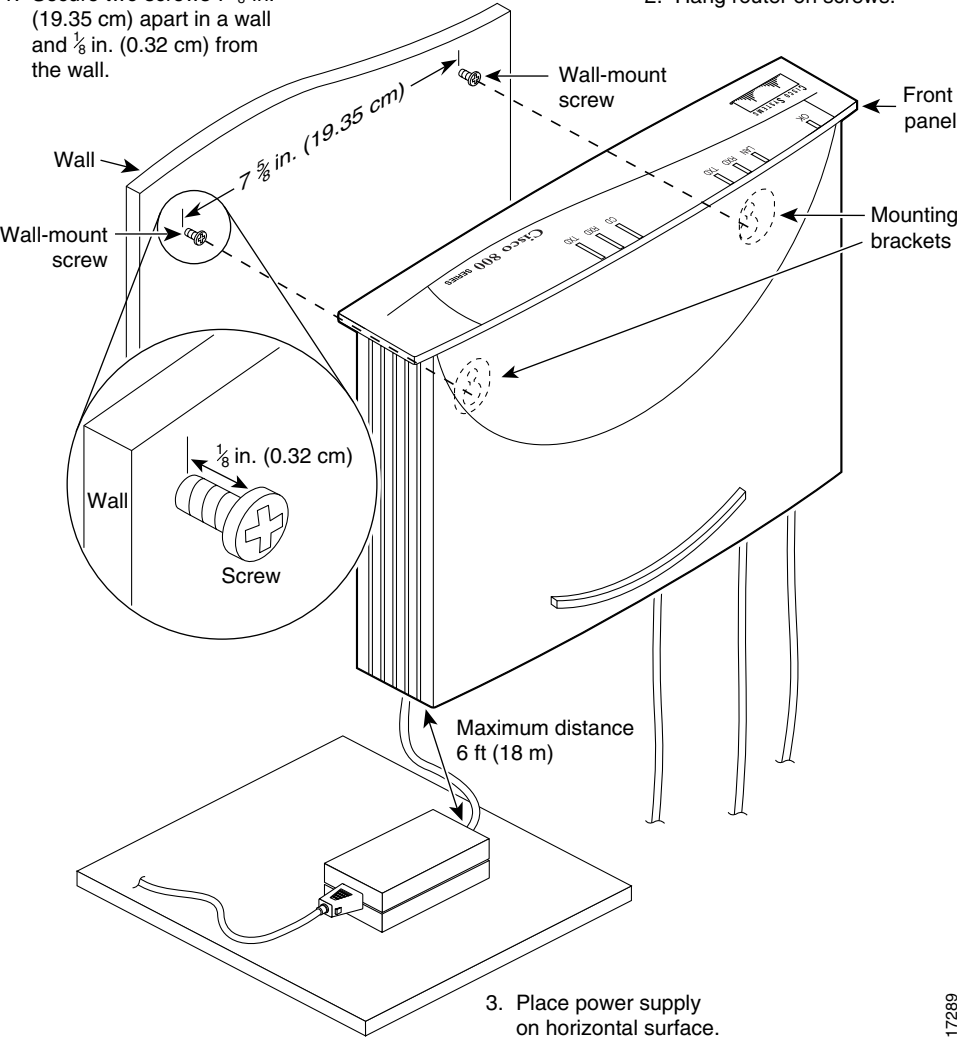
- Because you will use the front panel LEDs as status and problem indicators, the router front panel must face upward and be easily visible.
- The back panel must face downward to reduce strain on the cable connections.
- The power supply must rest on a horizontal surface, such as the floor or a table. 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 in Figure 2-9. The last page of this manual provides a template for measuring the distance between the screws.

Figure 2-8 Mounting the Router on a Wall

1. Secure two screws  $7\frac{5}{8}$  in. (19.35 cm) apart in a wall and  $\frac{1}{8}$  in. (0.32 cm) from the wall.

2. Hang router on screws.



3. Place power supply on horizontal surface.

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## Verifying Installation

Verify the power, Ethernet, and serial connections by checking the LEDs. Table 2-3 describes the normal pattern for each LED and what to do if you get an abnormal pattern.

**Table 2-3 Verifying Installation**

LED	Normal Pattern	Explanation	If Abnormal Pattern
OK	On	Power is supplied to the router. Router completes self-test procedure and begins operating.	If off, refer to Chapter 3, “Troubleshooting.”
LINK	On	(LINK LED is located on router back panel.) Ethernet device is connected.	If off, toggle the HUB/NO HUB button (if set to HUB [in], reset to NO HUB [out] or vice versa). <sup>1</sup> If still off, refer to Chapter 3, “Troubleshooting.”
CD (Carrier detect)	On	Serial interface is up, and carrier signal is detected. <sup>2</sup>	If off for a long time, refer to Chapter 3, “Troubleshooting.”

<sup>1</sup> For information on how the setting of the router HUB/NO HUB button might be affected by the setting of an equivalent hub button, see the “Connecting an Ethernet Device” section earlier in this chapter.

<sup>2</sup> You must configure the serial interface before this LED turns on. For more information on configuring the serial interface, see the *Cyclone 805 Router Software Configuration Guide*.

## Where to Go Next

You have completed the hardware installation and are ready to configure the software. Cisco strongly recommends that you use the Cisco 805 Fast Step software. Use the Cisco 805 Fast Step CD-ROM that ships with the Cisco 805 router and Cisco 805 Fast Step online help. If you decide to use the command-line interface (CLI) to configure the software, refer to the *Cisco 805 Router Software Configuration Guide*.



# Troubleshooting

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This chapter describes problems that could occur with the Cisco 805 router hardware, reasons for the problems, and steps to solve the problems. The problems are grouped into the following states:

- During first startup
- After first startup
- After router has been up and running

For more information on problems that could occur with the software, refer to the *Cisco 805 Router Software Configuration Guide*.

## Problems During First Startup

Table 3-1 lists problems that could occur the first time you turn on the power switch.

**Table 3-1 Problems During First Startup**

Symptom	Problem	Solutions
All LEDs, including OK LED, are off.	No power to router.	<p>Perform the following tasks in the following order:</p> <ol style="list-style-type: none"> <li><b>1</b> Make sure that the power switch is set to ON.</li> <li><b>2</b> Make sure that all connections to and from the power supply are secure.</li> <li><b>3</b> Make sure that the power outlet has power.</li> <li><b>4</b> If the problem continues after these checks, the power supply might be faulty. Contact your Cisco reseller.</li> </ol>
No connection to Ethernet device. (The LINK LED on the back panel is off.)	<ul style="list-style-type: none"> <li>• A cable-related problem:                             <ul style="list-style-type: none"> <li>— Improperly connected cable.</li> <li>— Damaged cable.</li> </ul> </li> </ul>	<p>Perform the following tasks in the following order:</p> <ol style="list-style-type: none"> <li><b>1</b> To make sure you have cabled the device correctly, refer to Figure 2-3 or Figure 2-4 in Chapter 2, “Installing the Cisco 805 Router.”</li> <li><b>2</b> Make sure the connectors at both ends of the cable are securely seated.</li> <li><b>3</b> Make sure the cable is not physically damaged. If it is, order another cable from Cisco or replace it with a similar cable.</li> </ol>
	<ul style="list-style-type: none"> <li>• Improperly set router HUB/NO HUB button or hub equivalent of HUB/NO HUB button.</li> </ul>	<ul style="list-style-type: none"> <li>• To make sure you have set buttons correctly, refer to Table 2-1 in Chapter 2, “Installing the Cisco 805 Router.”</li> </ul>
	<ul style="list-style-type: none"> <li>• Improperly functioning network interface card (NIC) on server, PC, or workstation.</li> </ul>	<ul style="list-style-type: none"> <li>• Run the NIC diagnostic supplied by the vendor to make sure it is functioning properly. If it is not, replace it.</li> <li>• If the problem continues after these checks, call your Cisco reseller.</li> </ul>
No connection to serial device. (The CD LED on the front panel is off for a long time.)	<ul style="list-style-type: none"> <li>• Wrong cable.</li> </ul>	<ul style="list-style-type: none"> <li>• To make sure you are using the correct cable, refer to Appendix A, “Selecting a Serial Cable.”</li> </ul>

**Table 3-1 Problems During First Startup (continued)**

Symptom	Problem	Solutions
	<ul style="list-style-type: none"> <li>Improperly connected cable.</li> </ul>	<ul style="list-style-type: none"> <li>To make sure that you have cabled properly, refer to Figure 2-5 in Chapter 2, “Installing the Cisco 805 Router.”</li> <li>Make sure the connectors at both ends of the cable are securely seated.</li> </ul>
	<ul style="list-style-type: none"> <li>Improperly functioning modem or channel service unit/data service unit (CSU/DSU).</li> </ul>	<ul style="list-style-type: none"> <li>Refer to the documentation that accompanies your modem or CSU/DSU.</li> </ul>
	<ul style="list-style-type: none"> <li>Router improperly configured as a DTE or DCE.</li> </ul>	<ul style="list-style-type: none"> <li>By default, the router is configured as a DTE. Check the setting of the <b>clock rate</b> command to determine if it is set properly. If a clock rate speed is not specified, the router is configured as a DTE. If a clock rate speed is specified, the router is configured as a DCE.</li> </ul>

## Problems After Router is Running

Table 3-2 lists problems that could occur after the router has been up and running.

**Table 3-2 Problems After Router is Running**

Symptom	Problem	Solutions
Problems with Ethernet connection. (The LINK LED on the back panel is off.)	<ul style="list-style-type: none"> <li>A cable-related problem:                             <ul style="list-style-type: none"> <li>— Disconnected cable.</li> <li>— Damaged cable.</li> </ul> </li> </ul>	<p>Perform the following tasks in the following order:</p> <ol style="list-style-type: none"> <li>1 Make sure the connectors at both ends of the cable are secure.</li> <li>2 Make sure the cable is not physically damaged. If it is damaged, order another cable from Cisco or replace it with a similar cable.</li> </ol>

## Problems After Router is Running

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**Table 3-2**      **Problems After Router is Running (continued)**

Symptom	Problem	Solutions
	<ul style="list-style-type: none"><li>• Improperly functioning NIC on server, PC, or workstation.</li></ul>	<ul style="list-style-type: none"><li>• Run the NIC diagnostic supplied by the vendor to make sure it is functioning properly. If it is not, replace it.</li><li>• If the problem continues after these checks, call your Cisco reseller.</li></ul>
Connection to the serial device is intermittent or lost. (The CD LED on the front panel is off.)	<ul style="list-style-type: none"><li>• A cable-related problem:<ul style="list-style-type: none"><li>— Disconnected cable.</li><li>— Damaged cable.</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Make sure the connectors at both ends of the cable are secure.</li><li>• Make sure the cable is not physically damaged. If it is damaged, order another cable from Cisco or replace it with a similar cable.</li></ul>
	<ul style="list-style-type: none"><li>• CSU/DSU configuration has been lost or changed.</li></ul>	<ul style="list-style-type: none"><li>• Check CSU/DSU configuration. If necessary, reconfigure CSU/DSU so that its settings match original provisioning parameters provided by your WAN service provider.</li></ul>
	<ul style="list-style-type: none"><li>• Problem with serial line or WAN service.</li></ul>	<ul style="list-style-type: none"><li>• Contact your serial line or WAN service provider to determine if there is a problem.</li></ul>
	<ul style="list-style-type: none"><li>• Serial interface has been shut down.</li></ul>	<ul style="list-style-type: none"><li>• Check router configuration to determine if the serial interface has been shut down. If this applies, enter the <b>no shutdown</b> command in serial interface configuration mode to bring the serial interface up. For information on the software command modes, refer to Chapter 2, “Cisco IOS Basic Skills” in the <i>Cisco 805 Router Software Configuration Guide</i>.</li></ul>

## Before You Call Your Cisco Reseller

Some of the solutions in this chapter instruct you to contact your Cisco reseller. Before you do so, have the following information ready:

- Router model and serial number (on the back panel)
- Maintenance agreement or warranty information
- Date you received your router
- Brief description of the problem
- Brief description of the steps you have taken to solve the problem



# Selecting a Serial Cable

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This appendix provides the following information:

- How to select a serial cable to connect your serial device
- Cisco part numbers for serial cables that you can order

## How to Select a Serial Cable

To select a serial cable, you must answer the following questions about the serial device that you plan to connect to the router serial port:

- Is this device a data terminal equipment (DTE) or data communications equipment (DCE) device?
- What signaling standard does the serial connector on the device require?
- Is the serial connector on the device male or female?

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**Note** The Cisco 805 Router serial interface is a basic serial interface.

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The following sections provide information to help you answer these questions.

### DTE or DCE

There are two types of devices that can communicate over a serial interface: DCE and DTE. A DCE provides a physical connection to a network and forwards traffic. A DTE connects to a network through a DCE device. Typically, a DTE device is connected to a DCE device (or vice versa) rather than another DTE device.

Check the documentation that ships with your serial device to determine if it is a DTE or DCE device. If you cannot find the information in the serial device documentation, refer to Table A-1. This table summarizes serial devices that can be connected to the router serial port and whether the device is considered a DTE or DCE device. The Cisco 805 router is a DTE device by default. Table A-2 describes the type of cable needed to connect a DTE or DCE device to your router.

**Table A-1 DTE and DCE Devices**

<b>Serial Device</b>	<b>DTE</b>	<b>DCE</b>	<b>Selectable DTE or DCE<sup>1</sup></b>
Modems (asynchronous and synchronous)		X	
Channel service unit/data service unit (CSU/DSU)		X	
Multiplexers		X	
Terminals	X		
Routers			X
Hubs			X
Switches			X
Access server			X

<sup>1</sup> These serial devices usually have a jumper, switch, or software command that selects the DTE or DCE mode.

**Table A-2 Cable Type Needed to Connect Serial Devices**

<b>Serial Device Type</b>	<b>Cable Type Needed</b>
DTE	DCE

**Table A-2      Cable Type Needed to Connect Serial Devices**

<b>Serial Device Type</b>	<b>Cable Type Needed</b>
DCE	DTE

### Signaling Standards

Several standards define the signaling over the serial connectors on the router and serial device, the serial cable, and the cable connectors. You can connect a serial device with the following types of connectors to the router serial port:

- EIA/TIA-232
- EIA/TIA-449
- EIA/TIA-530
- EIA/TIA-530A
- X.21
- V.35

Check the documentation that ships with your serial device to determine the type of serial connector on your serial device.

### Connector Gender

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

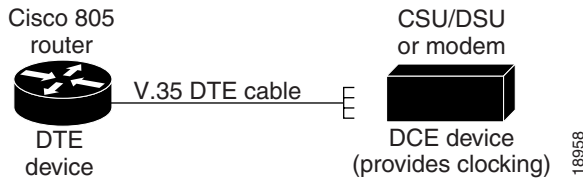
A DTE device typically has a male connector, while a DCE device typically has a female connector.

Examine the serial connector on your serial device to determine its gender.

## Serial Connection Example

Figure A-1 shows a typical serial connection for the Cisco 805 router. In this example, the router, which is a DTE device, is connected to a CSU/DSU or modem, which are DCE devices.

**Figure A-1 Serial Connection Example**



The CSU/DSU or modem and its serial connector have the following characteristics:

- DCE device
- V.35
- Female

Because the serial devices are DCE, you should use a DTE cable to connect the router and the CSU/DSU or modem. (For more information on the cable type needed to connect a serial device, refer to Table A-2.)

Given these characteristics, the appropriate serial cable to connect the router and the CSU/DSU or modem is a DTE V.35 male cable.

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**Note** Some CSU/DSUs have a proprietary serial connector that will not mate with a Cisco serial cable. If this situation occurs, you must provide an adapter (pigtail) cable that makes the proprietary serial connector compatible with the Cisco serial connector. The gender of the adapter cable should match the gender of the proprietary serial connector.

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## Serial Cable Part Numbers

Table A-3 summarizes serial cables that you can order from Cisco.

**Table A-3 Cisco Serial Cables**

<b>Mode</b>	<b>Signaling</b>	<b>Gender</b>	<b>Part Number</b>
DCE	EIA/TIA-232	Female	CAB-SS-232FC
DTE	EIA/TIA-232	Male	CAB-SS-232MT
DCE	EIA/TIA-449	Female	CAB-SS-449FC
DTE	EIA/TIA-449	Male	CAB-SS-449MT
DCE	EIA/TIA-530	Female	CAB-SS-530FC
DTE	EIA/TIA-530	Male	CAB-SS-530MT
DCE	EIA/TIA-530A	Female	CAB-SS-530AFC
DTE	EIA/TIA-530A	Male	CAB-SS-530AMT
DCE	X.21	Female	CAB-SS-X21FC
DTE	X.21	Male	CAB-SS-X21MT
DCE	V.35	Female	CAB-SS-V35FC
DTE	V.35	Female	CAB-SS-V35FT
DCE	V.35	Male	CAB-SS-V35MC
DTE	V.35	Male	CAB-SS-V35MT

# Technical Specifications

Table B-1 outlines the technical specifications for the Cisco 805 router.

**Table B-1      Technical Specifications**

<b>Description</b>	<b>Design Specification</b>
<b>Physical Dimensions</b>	
Dimensions (H x W x D)	2.0 x 9.7 x 8.3 in. (5.1 x 24.6 x 21.1 cm)
Weight (does not include desktop power supply)	1.5 lbs (0.66 kg)
<b>Environmental Operating Ranges</b>	
Nonoperating temperature	-4 to 149°F (-20 to 65°C)
Nonoperating humidity	5 to 95%, relative humidity
Nonoperating altitude	0 to 15,000 ft (4570 m)
Operating temperature	32 to 104°F (0 to 40°C)
Operating humidity	10 to 85%, relative humidity
Operating altitude	0 to 10,000 ft (3000 m)
<b>Power</b>	
AC input voltage	100 to 240 VAC
Frequency	50 to 60 Hz
Power consumption	20W

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For information on regulatory compliance, refer to the *Regulatory Compliance and Safety Information for the Cisco 805 Router* document that shipped with your router.



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

# Connector and Cable Specifications

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This appendix provides connector and cable specifications for the Cisco 805 router.

## Connector Specifications

This section provides pinouts for the following connectors:

- Ethernet—Table C-1
- Console—Table C-2
- Serial (basic)—Table C-3
- Power—Table C-4

Function 1 in Table C-1 describes how the connector functions when the HUB/NO HUB button is in the HUB (in) position. Function 2 describes how the connector functions when the HUB/NO HUB button is in the NO HUB (out) position.

**Table C-1 Ethernet Connector Pinouts (RJ-45)**

Pin	Function 1	Function 2
1	Transmit+	Receive+
2	Transmit-	Receive-
3	Receive+	Transmit+
4	Unused	Unused
5	Unused	Unused
6	Receive-	Transmit-

**Table C-1 Ethernet Connector Pinouts (RJ-45) (continued)**

<b>Pin</b>	<b>Function 1</b>	<b>Function 2</b>
7	Unused	Unused
8	Unused	Unused

**Table C-2 Console Connector Pinouts (RJ-45)**

<b>Pin</b>	<b>Function</b>
1	Request to send
2	Data terminal ready
3	Transmit
4	Ground
5	Ground
6	Receive
7	Data set ready
8	Clear to send

**Table C-3 Serial Connector Pinouts (SCSI)**

Pin	Function	Pin	Function
1	O_Transmit/receive+	14	O_Transmit/receive-
2	O_Transmit clock echo/receive clock+	15	O_Transmit clock echo/receive clock-
3	B_Transmit clock/transmit clock+	16	B_Transmit clock/transmit clock-
4	I_Receive clock/transmit clock echo+	17	I_Receive clock/transmit clock echo-
5	I_Receive/transmit+	18	I_Receive/transmit-
6	B_Data carrier detect/data carrier detect+	19	B_Data carrier detect/data carrier detect-
7	O_Data terminal ready/data set ready+	20	O_Data terminal ready/data set ready-
8	O_Request to send/clear to send+	21	MODE2
9	O_Request to send/clear to send-	22	MODE1
10	I_Clear to send/request to send-	23	MODE0
11	I_Clear to send/request to send+	24	MODEDC E
12	I_Data set ready/data terminal ready+	25	I_Data set ready/data terminal ready-
13	B_Local loopback/local loopback+	26	Ground

**Table C-4 Power Connector Pinouts**

Pin	Function
1	+5V
2	+12V
3	-12V
4	Return
5	Remote on/off control
6	Return

## Cable Specifications

Table C-5 provides Ethernet cable specifications.

**Table C-5 Ethernet Cable Specifications**

Type	Category	Shielding
10BaseT	3, 4, or 5	Unshielded twisted-pair (UTP)

The maximum distance for the Ethernet cable is 328 ft (100 m).

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