

HP ProCurve Switches and Hubs

HP ProCurve

HP ProCurve 10/100 Hubs Installation Guide



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HP ProCurve 10/100 Hubs

Installation Guide

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Applicable Products

HP ProCurve 10/100 Hub 12 (HP J3294A)
HP ProCurve 10/100 Hub 24 (HP J3295A)
HP ProCurve 10/100 Hub 12M (HP J3288A)
HP ProCurve 10/100 Hub 24M (HP J3289A)

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Safety

Before installing and operating these products, please read the "Installation Precautions" in chapter 2, "Installing the HP 10/100 Hubs", and the safety statements in appendix C, "Safety and EMC Regulatory Statements".

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Introducing the HP ProCurve 10/100 Hubs

The HP ProCurve 10/100 hubs are low-cost multiport, dual-speed (10- and 100-Mbps) repeaters that can be used to build high-performance workgroup networks. These hubs are autosensing and autonegotiating devices that provide the flexibility of adjusting to different network connection speed settings. The hub ports always operate at half-duplex.

There are four hub models. Two are managed:

- HP ProCurve 10/100 Hub 12M (HP J3288A)
- HP ProCurve 10/100 Hub 24M (HP J3289A)

and two are unmanaged:

- HP ProCurve 10/100 Hub 12 (HP J3294A)
- HP ProCurve 10/100 Hub 24 (HP J3295A)

Throughout this manual, these hubs will be abbreviated as the HP 10/100 hubs, or they may be described as the Hub 12, Hub 24, Hub 12M, and Hub 24M.

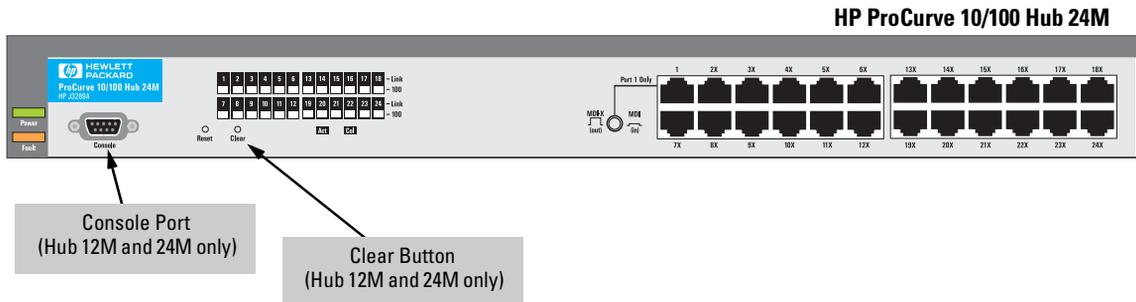
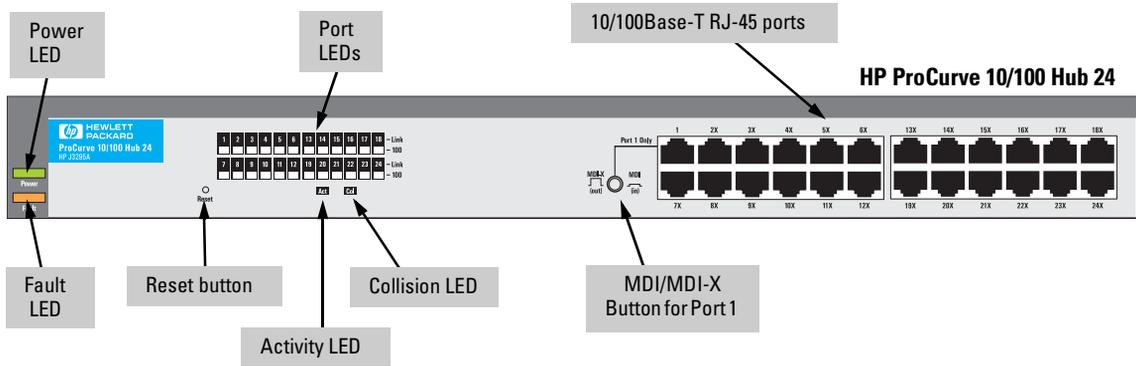
With these hubs you can build a network infrastructure by connecting the hubs to other hubs, switches, or routers, or you can directly connect computers, printers, and servers to these hubs to provide shared 10- or 100-Mbps bandwidth to those devices.

This chapter describes your HP 10/100 hubs:

- Front and back of the hubs
- Network Ports
- Port and Hub LEDs
- Features
- Hub operation overview

Front of the Hubs

These illustrations show the Hub 24 and Hub 24M. The Hub 12 and Hub 12M have the same physical characteristics with 12 fewer 10/100 ports.



Network Ports

The HP 10/100 hubs have 12 or 24 RJ-45 ports that can be used for either 10Base-T or 100Base-TX connections.

Ports 2 through 12 or 24 are wired as MDI-X. Therefore, to connect end nodes or other MDI-type devices to these ports, use “straight-through” twisted-pair cable; to connect hubs, switches, or other MDI-X-type devices to these ports, use “crossover” twisted-pair cable. See Appendix B, “Cables and Connectors” for descriptions of these cables.

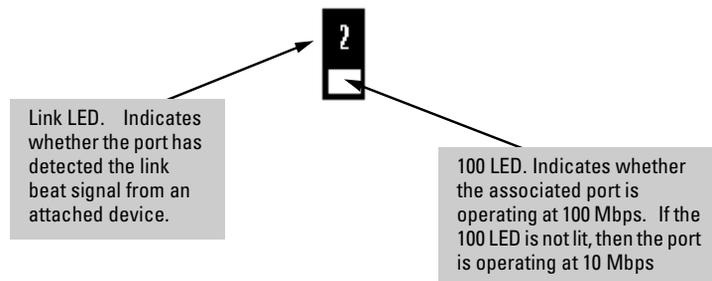
Port 1 can operate as either an MDI-X or MDI port, controlled by the MDI-X/MDI button on the front of the hub. If you have only straight-through cable, you can use Port 1 with the button in the MDI position to connect the hub to switches, other hubs, and other MDI-X devices. In the MDI position, the button crosses the cable pairs on Port 1 so that the Transmit and Receive pins on connecting devices exchange signals correctly when using straight-through cable. With the button in the MDI-X position, Port 1 operates the same as the other ports.

Port LEDs

For each network port on the hub, there are two LEDs:

Link. This LED highlights the port number, and when lit, indicates the port has detected a valid link with a connected device.

100. This LED when lit, indicates that the port is connected to an attached device operating at 100 Mbps. If the 100 LED is not lit, and the Link LED indicates a valid connection, then the port is operating at 10 Mbps. See the following sections for more details on the LEDs.



LEDs for the 10/100Base-T Hubs

The following table describes the hub's LED displays.

Hub Status LED	State	Meaning
Power (Green)	On	The hub is receiving power.
	Off	The hub is NOT receiving power.
Fault (Orange)	Off	The normal state. Indicates that there are no fault conditions on the hub.
	On	The hub is in self test after being powered on or reset. If on for a prolonged time, the hub has failed its self test. See "Diagnosing with the LEDs" in chapter 3, "Troubleshooting" for more information.
Act (activity - Green)	On/ Flickering	The hub is receiving packets on at least one of its ports. If it appears to be on continuously, network traffic is excessive.
	Off	The hub is not receiving packets from any attached device.
Col (collision - Orange)	On/ Flickering	A network collision has been detected on any of the hub ports. If the LED is on solid, a heavy collision rate is occurring.
	Off	Collisions are not occurring on the network.
Link LEDs		
Link	On	The port detects an attached device.
	Off	The port has not detected another device.
	Slow Blink*	The port has been autopartitioned due to excessive collisions.
	Fast Blink†	A security violation has been detected on the port (Hub 12M and Hub 24M only)
* The slow blink behavior is a regular pulse, once every 1.6 seconds, approximately. † The fast blink behavior is a regular pulse, once every 0.8 seconds, approximately.		
100 LEDs		
100 Mbps Indicator LED	On	The port is operating at 100 Mbps.
	Off	The port is operating at 10 Mbps. (This LED is meaningful only if the Link LED is lit for the port.)

Console Port (Hub 12M and Hub 24M)

This port is used to connect a console to the hub by using the serial cable supplied with the hub. This connection is described under “connect a Console to the Hub” in chapter 2, “Installing the 10/100 Hubs”. The console can be a PC or workstation running an ASCII (TTY) or VT-100 terminal emulator, or an actual ASCII or VT-100 terminal.

Reset Button

This button is used to reset the hub while it is powered on. This action clears any temporary error conditions that may have occurred, restarts the hub and executes the hub self test. A typical instance of where you might use the Reset button is in the event of a hub malfunction or error condition.

Clear Button (Hub 12M and Hub 24M)

This button is used for deleting any hub console and web browser interface passwords that you have configured for the hub. When pressed for at least ten seconds, the button deletes the passwords. Use this feature if you have misplaced the password and need console access.

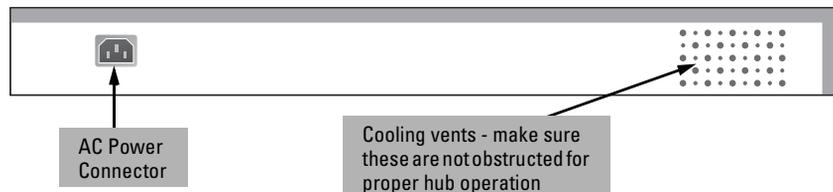
Note

This button is provided for your convenience, but its presence means that if you are concerned with the security of the hub configuration and operation, you should make sure the hub is installed in a secure location, such as a locked wiring closet.

Back of the Hubs

Power Connector

The 10/100 hubs do not have a power switch; they are powered on when connected to an active AC power source. The hubs automatically adjust to various voltages (depending on the country) between 100-127 and 200-240 volts and either 50 or 60 Hz. There are no voltage range settings required.



Features

The features of the HP ProCurve 10/100 hubs include:

- 12 or 24 Ethernet 10/100Base-T ports with RJ-45 connectors
- plug-and-play networking—all ports are enabled—just connect the network cables to active Ethernet or Fast Ethernet network devices and your network is operational
- all ports can autonegotiate the connection speed (10 or 100 Mbps) with the connected device
- a built-in bridge connects 10 Mbps and 100 Mbps devices automatically, with nothing else to buy
- per port LEDs showing link status and whether the port is operating at 100 Mbps or 10 Mbps
- Activity and Collision LEDs showing general levels of network activity and collisions on the hub
- push-button MDI/MDI-X selection on Port 1 to allow a straight-through cable to be used for cascading to another hub or switch
- rack- or wall-mountable with mounting hardware included
- additional management features such as per-port security, and hub control through a full-featured hub console, through the built-in web browser interface, and through HP TopTools for Hubs & Switches is available for the Hub 12M and Hub 24M

Installing the HP 10/100 Hubs

The HP 10/100 hubs are easy-to-install. Each comes with an accessory kit that includes the brackets for mounting the hub in a standard 19-inch telco rack or equipment cabinet, or on a wall, and also includes rubber feet that can be attached to the hub so it can be securely located on a horizontal surface. The brackets are designed to allow mounting the hubs in a variety of orientations.

This chapter shows you how to install your HP 10/100 hub.

Included Parts

The HP 10/100 hubs have the following components shipped with them:

- *HP ProCurve 10/100 Hubs Installation Guide* (5967-9934), this manual
- *Connectivity Rules for 100T Networks* (5967-2281)
- *HP ProCurve 10/100 Hub 12M and Hub 24M Management and Configuration Guide* (5967-9933) – for Hub 12M and Hub 24M only
- *HP TopTools for Hub & Switches* - CD-ROM and booklet – for Hub 12M and Hub 24M only
- Customer Support/Warranty booklet
- Accessory kit (5064-2085):
 - two mounting brackets
 - four 8 mm M4 screws to attach the mounting brackets to the hub
 - four 5/8-inch number 12-24 screws to attach the brackets to a rack
 - four rubber feet
- Console cable – Hub 12M and Hub 24M only
- Power cord, one of the following:

Australia/New Zealand	8120-6803
China	8120-8377
Continental Europe	8120-6802
Denmark	8120-6806
Japan	8120-6804
Switzerland	8120-6807
United Kingdom/Hong Kong/Singapore	8120-8709
United States/Canada/Mexico	8120-6805

Installation Procedures

Summary

Follow these easy steps to install your hub. The rest of this chapter provides details on these steps.

1. **Prepare the installation site (page 2-4).** Make sure that the physical environment into which you will be installing the hub is properly prepared including having the correct network cabling ready to connect to the hub, and having a good location for the hub. *Please see page 2-3 for some installation precautions.*
2. **Verify that the hub passes self test (page 2-5).** This is a simple process of plugging the hub into a power source and observing that the LEDs on the hub's front panel show correct operation.
3. **Mount the hub (page 2-6).** The hub can be mounted in a 19-inch telco rack, in an equipment cabinet, on a wall, or on a horizontal surface.
4. **Connect power to the hub (page 2-9).** Once the hub is mounted, plug it in to the nearby main power source.
5. **Connect the network devices (page 2-10).** Using the appropriate network cables, connect other hubs, switches, routers, computers, servers, printers, and other network devices to the hub ports.
6. **Connect a console to the hub (optional on Hub 12M and Hub 24M only—page 2-11).** You may wish to modify the hub's configuration, for example to configure an IP address on the hub so it can be managed using a web browser, from an SNMP network management station, or through a telnet session to the hub console. Configuration changes can be made easily by using the included console cable to connect a PC to the hub's console port.

At this point, the hub is fully installed and your network should be up and running. See the rest of this chapter if you need more detailed information on any of these installation steps.

Installation Precautions

Follow these precautions when installing your HP 10/100 hub.

Warning

The rack or cabinet should be adequately secured to prevent it from becoming unstable and/or falling over. The hub should be mounted in a position toward the bottom of the rack for stability and to make it easier to place the other hubs on top.

Cautions

- Make sure that the power source circuits are properly grounded, then use the power cord supplied with the hub to connect it to the power source.

If your installation requires a different power cord than the one supplied with the hub, be sure to use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the hub.
- Make sure that the HP 10/100 hub does not overload the power circuits, wiring, and over-current protection at your site. To determine the possibility of overloading the supply circuits, add together the amperage ratings from all of the equipment installed on the same circuit as the hub and compare the total with the rating limits for the supply circuit. The maximum amperage ratings are usually printed on the devices near the AC power connectors.
- When installing the hub, note that the AC outlet must be installed near the equipment and should be easily accessible.
- Do not install the hub in an environment where the operating ambient temperature might exceed 55°C (131°F).
- Do not block airflow around the sides and the back of the hub.

1. Prepare the Installation Site

- **Cabling Infrastructure** - Ensure that the cabling infrastructure meets the necessary network specifications. See the following table for cable types and lengths, and see Appendix B, “Cables and Connectors” for more information:

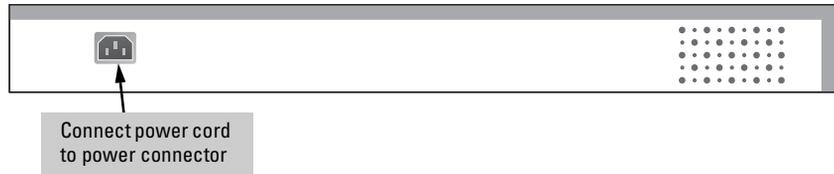
Connection Type	Cable Type	Length Limits
10Base-T	category 3, 4, or 5, four-pair, 100 ohm UTP (unshielded twisted-pair)	Up to 100 meters.
100Base-TX	category 5, 100-ohm UTP	Connections are typically up to 100 meters to end nodes and to switches, and 5 meters for the single cascade connection to another (Class II repeater) hub, as allowed by the 100Base-T topology rules. See the section covering twisted pair cabling in Appendix B, “Cables and Connectors” for more information.

- **Installation Location** - Before mounting a hub, plan its location and orientation relative to other devices and equipment. Also consider the cabling that will be attached to the hub and the ports that will be used. Allow at least 2.54 cm (1 inch) in the front of the hub for the twisted-pair cabling. In the back of the hub, allow at least 3.8 cm (1 1/2 inches) of space for the power cord.

2. Verify the Hub Passes Its Self Test

Before mounting the hub in its network location, you should first verify that it is working properly by plugging it into a power source and verifying that it passes its self test.

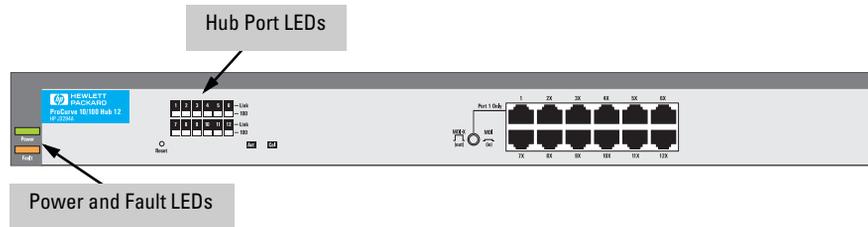
1. Connect the power cord supplied with the hub to the power connector on the back of the hub, and then into a properly grounded electrical outlet.



Note

The HP 10/100 hubs do not have a power switch. They are powered on when the power cord is connected to the hub and to a power source.

2. Check the LEDs on the hub.



When the hub is powered on, it performs its diagnostic self test. The self-test takes approximately three seconds to complete for the Hub 12 and Hub 24, and approximately 30 seconds for the Hub 12M and Hub 24M.

LED Behavior:

During the self test: Initially, all the hub and port LEDs are on. After approximately three seconds, the “100” LEDs for all the ports, and the Activity and Collision LEDs go off.

When the self test completes successfully:

- The Power LED stays on.
- The Fault LED goes off.
- The port LEDs and Act and Col LEDs go into their normal operational mode.

If the LED display is different than what is described above especially if the Fault LED stays on for more than 5 seconds for the Hub 12 and Hub 24, and more than 35 seconds for the Hub 12M and Hub 24M, or the Fault LED flashes, the self test has not completed correctly. Refer to chapter 3, “Troubleshooting” for diagnostic help.

3. Mount the Hub

After you have verified that the hub passes self test, it is ready to be mounted in the location you have prepared. The hub can be mounted in these ways:

- in a rack or cabinet
- on a wall
- on a horizontal surface

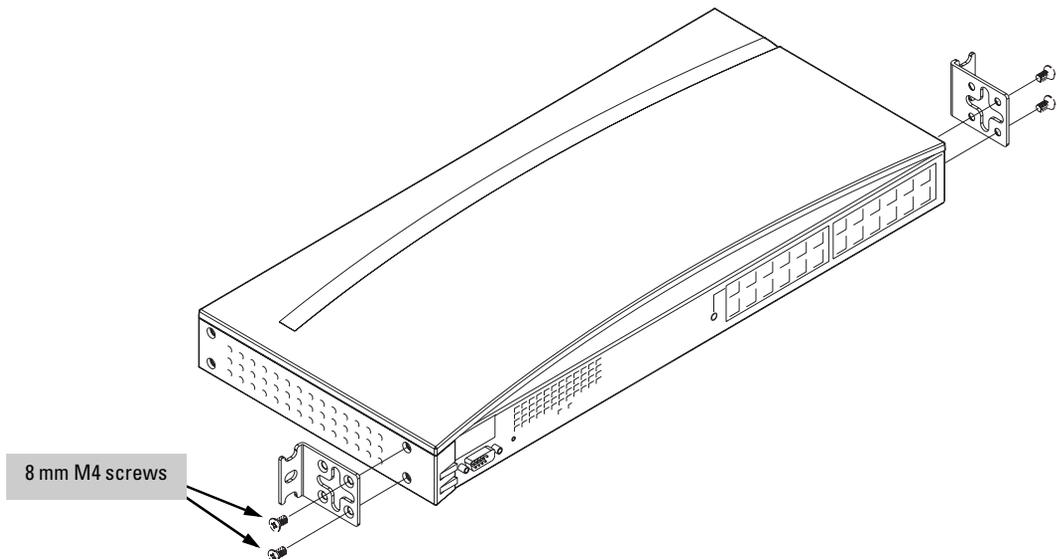
Rack or Cabinet Mounting

The HP 10/100 hubs are designed to be mounted in any EIA-standard 19-inch telco rack or in an equipment cabinet such as a server cabinet.

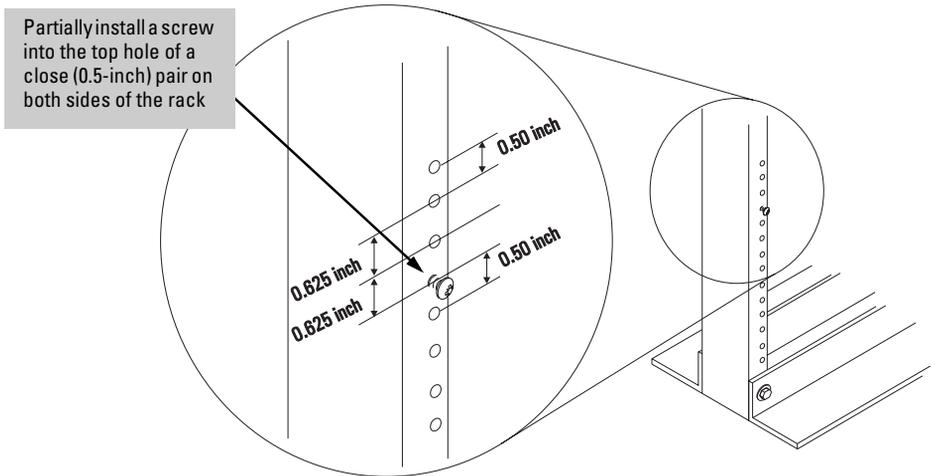
Caution

For safe operation, please read the mounting precautions in the section, “Installation Precautions” earlier in this chapter before mounting a hub.

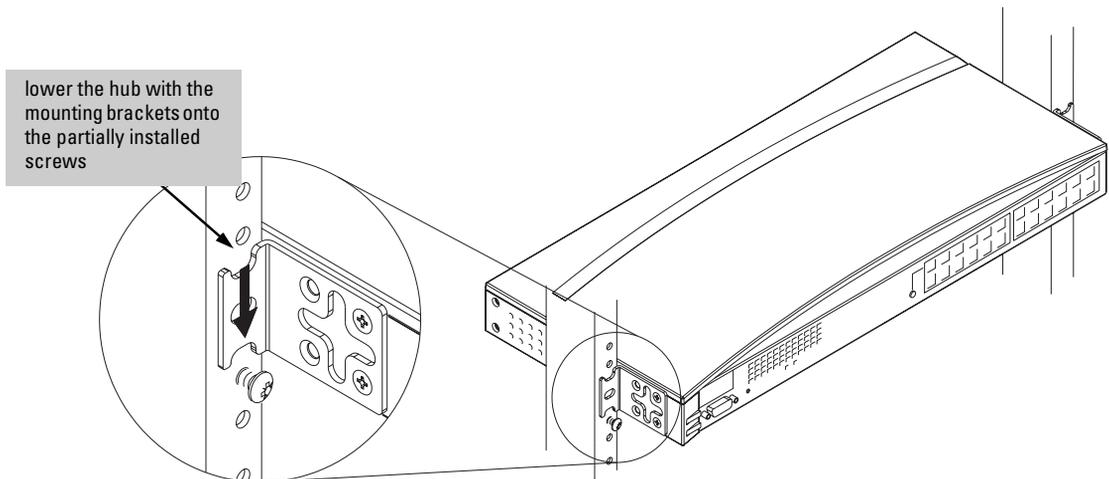
1. Use a #1 Phillips (cross-head) screwdriver and attach the mounting brackets to the hub with the included 8-mm M4 screws.



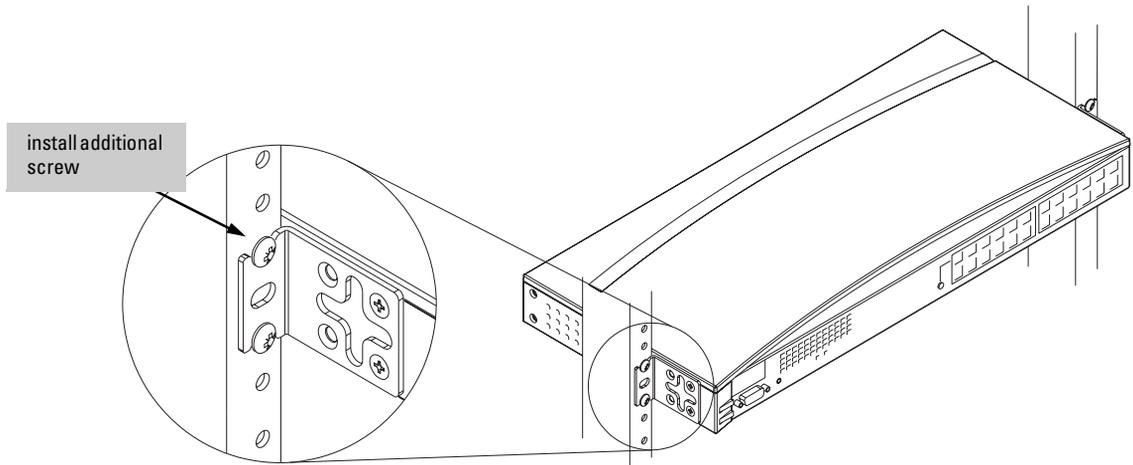
2. Partially install a screw (5/8-inch number 12-24) into the top hole of a pair of holes that are 0.5 inches apart in each rack/cabinet upright as shown in the illustration below. Ensure that the screws are at the same level in each upright.



3. Place the hub in the rack and lower it so the notches in the bottom of the bracket slide onto the screws, then tighten these screws.



4. Install the other number 12-24 screw into the upper hole in each bracket. Tighten these screws.



Horizontal Surface Mounting

Place the hub on a table or other horizontal surface. Use a sturdy surface in an uncluttered area. You may want to secure the networking cables and hub power cord to the table leg or other part of the surface structure to help prevent people from tripping over the cords.

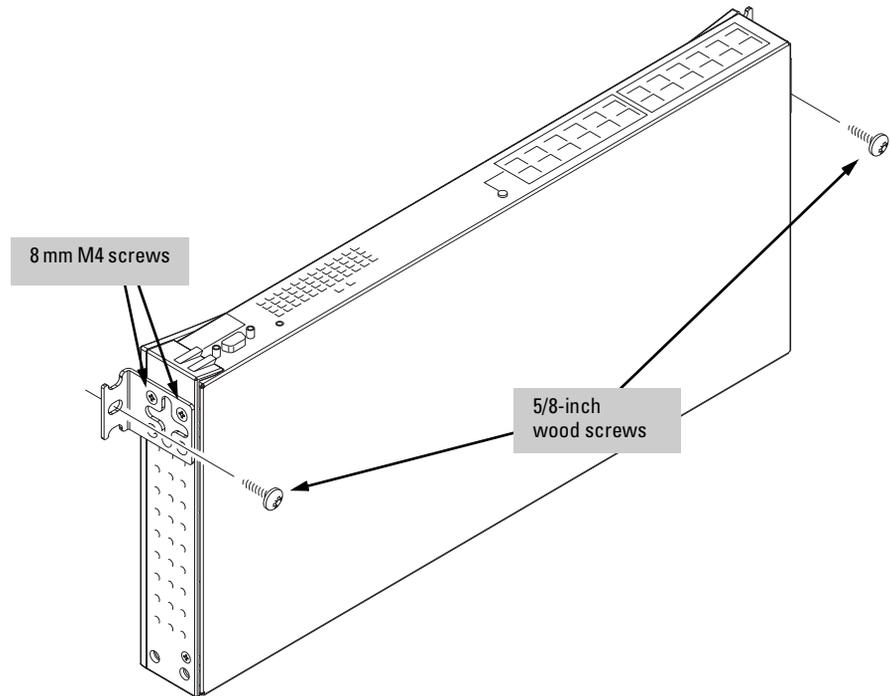
Note

Make sure the air flow is not restricted around the sides and back of the hub.

Wall Mounting

You can mount the hub on a wall. Note that the hub should be mounted only to a wall or wood surface that is at least 1/2-inch plywood or its equivalent.

1. Use a #1 Phillips (cross-head) screwdriver and attach the mounting brackets to the hub with the included 8-mm M4 screws as shown in the illustration below.
2. Attach the hub to the wall or wood surface with two 5/8-inch number 12 wood screws (not included).



4. Connect the Hub to a Power Source

1. Plug the included power cord into the hub's power connector and into a nearby AC power source.
2. Re-check the LEDs during self test. See "LED Behavior" on page 2-5.

For power precautions, see the section, "Installation Precautions" earlier in this chapter. The HP 10/100 hubs do not have a power switch. They are powered on when the power cord is connected to the hub and to a power source.

5. Connect the Network Cables

Connect the network cables, described under “Cabling Infrastructure” (page 2-4), from the network devices or your patch panels to the RJ-45 ports on the hub.

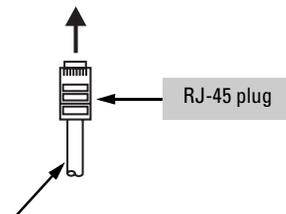
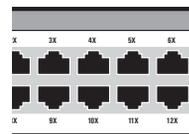
To connect the cables:

Push the RJ-45 plug into the RJ-45 jack until the tab on the plug clicks into place. When power is on for the hub and for the connected device, the Link LED for the port should light to confirm a powered-on device (for example, an end node) is at the other end of the cable.

If the Link LED does *not* go on when the network cable is connected to the port, see “Diagnosing With the LEDs” in chapter 3, “Troubleshooting”.

To disconnect:

Press the small tab on the plug and pull the plug out of the jack.



Unshielded twisted-pair cable:
• Category 3, 4, or 5 for 10 Mbps ports
• Category 5 only for 100 Mbps ports
Maximum distance: 100 meters

6. (Optional) Connect a Console to the Hub (Hub 12M and Hub 24M only)

The Hub 12M and Hub 24M have a full-featured, easy to use console interface for performing the following tasks:

- Monitor hub and port status and observe network activity counters
- Modify the hub's configuration
- Access diagnostic tools to help in troubleshooting
- Download new software to the hub
- Add passwords to control console, web browser interface, and network management access to the hub

The console can be accessed through these methods:

- **Out-of-band:** The Hub 12M and Hub 24M come with a serial cable for connecting a PC, or ASCII or VT-100 terminal to be used as a console directly to the hub. If the PC or terminal has a 25-pin serial connector, you can use a readily available 9-pin to 25-pin serial cable, or attach a 9-to-25 pin adapter to the end of the supplied cable.
- **In-Band:** Access the console using Telnet from a PC or UNIX station on the network, and an ASCII or VT-100 terminal emulator. This method requires that you first configure the hub with an IP address and subnet mask by using either out-of-band console access or through DHCP/Bootp.

The hub 12M and Hub 24M can, at any given time, support one console session through the Console Port or one Telnet console session. There is no restriction on the number of web browser interface sessions with the hub.

Terminal Configuration

To connect a console to the hub, configure the PC terminal emulator as an ASCII (TTY) or VT-100 (ANSI) terminal or use an ASCII or VT-100 terminal and configure it to operate with these settings:

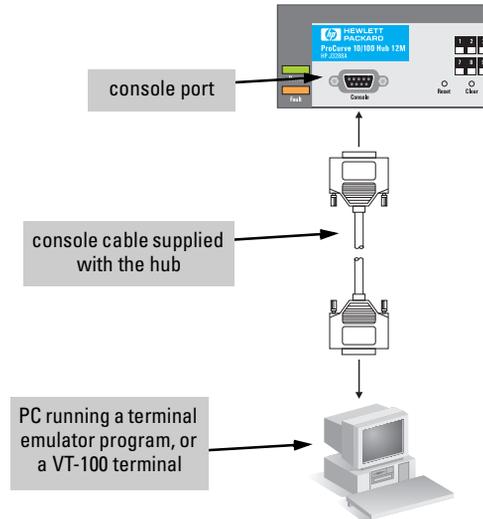
- any baud rate from 2400 to 115200 (the hub senses the speed)
- 8 data bits, 1 stop bit, no parity, XON/XOFF flow control
- For Windows Terminal program, also disable (uncheck) the "Use Function, Arrow, and Ctrl Keys for Windows" option.
- For the Hilgrave HyperTerminal program, select the "Windows keys" option for the "Function, arrow, and ctrl keys act as" parameter.

If you want to operate the console using a different configuration, make sure you change the settings on both the terminal and on the hub. Change the hub settings first, then change the terminal settings, and reestablish the console session.

Direct Console Access

To connect a console to the hub, follow these steps:

1. Connect the PC or terminal to the hub's Console Port using the console cable included with the hub. (If your PC or terminal has a 25-pin serial connector, first attach a 9-pin to 25-pin adapter at one end of the console cable.)
2. Turn on the terminal or PC's power and, if using a PC, start the PC terminal program.
3. Press **Enter** two or three times and you will see the hub identification information and the message "Press any key to continue". Press a key, and you will then see the hub console commands.



Telnet Console Access

To access the hub through a telnet session, follow these steps:

1. Make sure the hub is configured with an IP address and that the hub is reachable from the telnet workstation (for example by using a Ping command to the hub's IP address)
2. Start the telnet program and connect to the hub's IP address.
3. You will see the hub identification information and the message "Press any key to continue". Press a key, and you will then see the hub console commands.

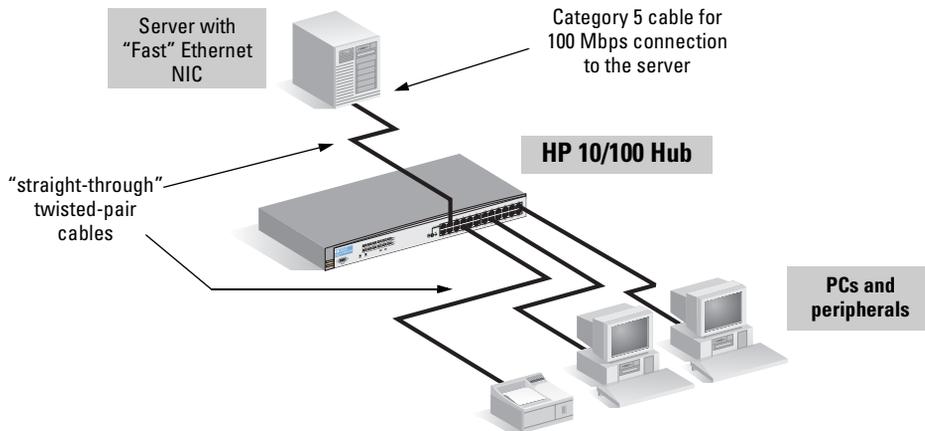
If you want to continue with console management of the hub at this time, refer to the *HP ProCurve 10/100 Hub 12M and Hub 24M Management and Configuration Guide* that came with your hub.

Sample Network Topologies

This section shows you a few sample network topologies in which the HP 10/100 Hubs are implemented. For more topology information, see the document *Designing HP AdvanceStack Workgroup Networks*, which can be found on the HP network products World Wide Web site, <http://www.hp.com/go/procurve>.

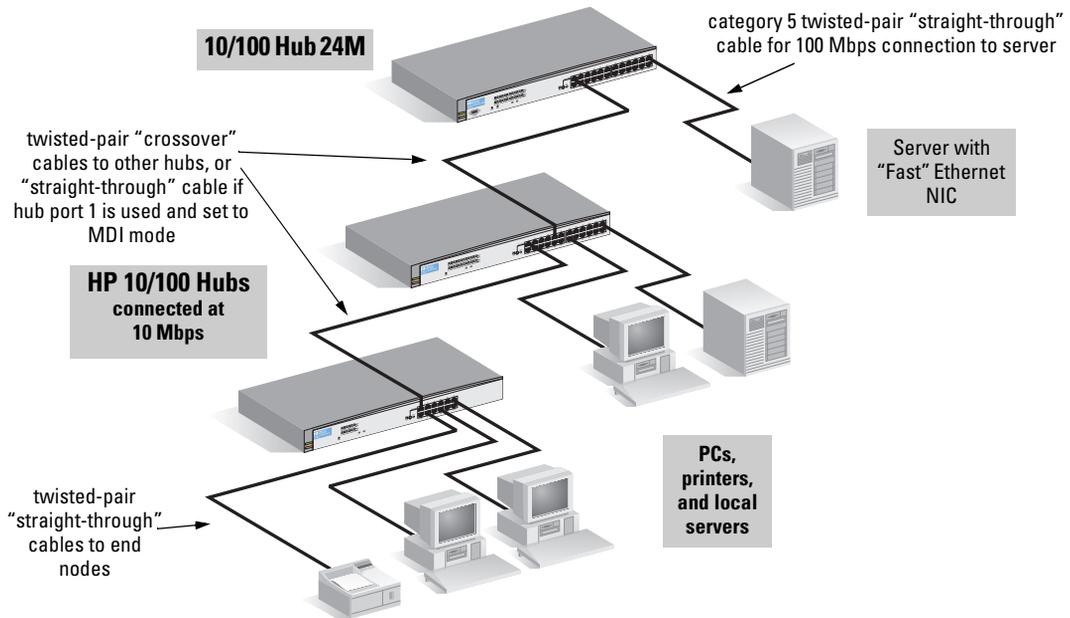
For information on 100Base-T network topology rules, see the card “Connectivity Rules for 100T Networks” that is included with your hub.

Connecting End Nodes to HP 10/100 Hubs



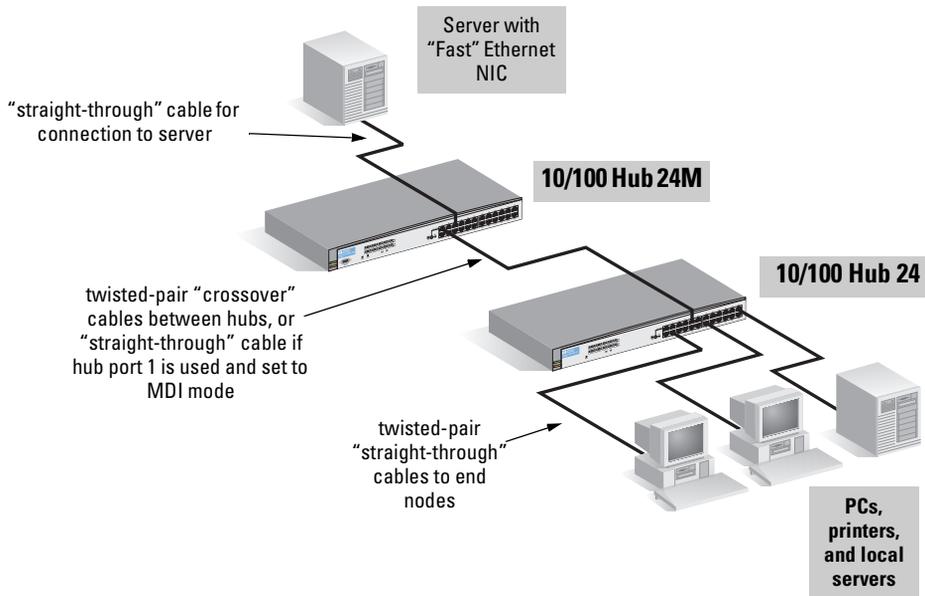
Description	Connect end nodes (PCs, workstations, servers, printers and other peripherals) to the HP 10/100 hubs by using "straight-through" twisted-pair cables, as shown in the above illustration. The server should be connected at 100 Mbps to reduce bottlenecks as multiple users attempt to access the server.
Cables Used	10 Mbps connections: Category 3, 4, or 5 100-ohm "straight-through" unshielded twisted pair cable 100 Mbps connections: Category 5 "straight-through" unshielded twisted pair cable only
Maximum Connection Lengths	100 meters for both 10 Mbps and 100 Mbps connections to end nodes

Cascading HP 10/100 Hubs – 10Base-T Networks



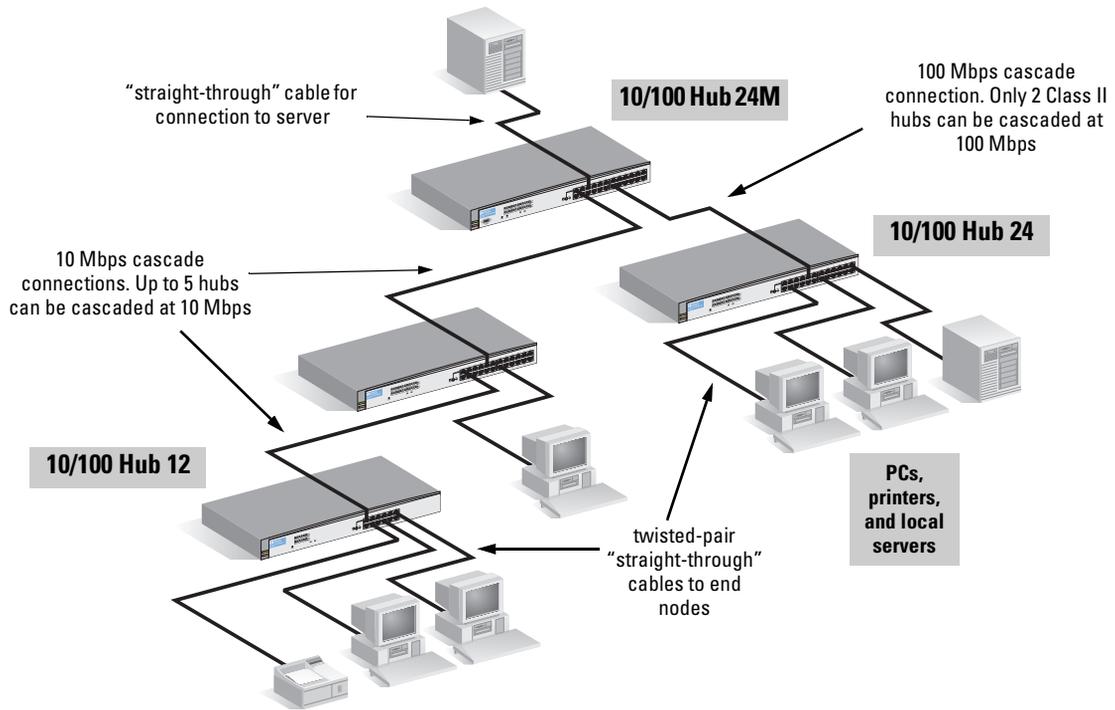
Description	For 10Base-T networks, up to five hubs may be cascaded together. Three hubs are shown in the above illustration. The server should be connected at 100 Mbps to reduce bottlenecks as multiple users attempt to access the server.
Cables Used	10 Mbps connections: Category 3, 4, or 5 "crossover" twisted pair cable for hub-to-hub (MDI-X-to-MDI-X) connections. Use "straight-through" cable if one of the hub ports used in the connection is set to MDI mode. For connections to end nodes (PCs, workstations, servers, printers and other peripherals), use straight-through cable. 100 Mbps connections: Category 5 "straight-through" twisted pair cable only
Maximum Connection Lengths	10 Mbps connections: 100 meters for both hub-to-end node and hub-to-hub connections 100 Mbps connections: 100 meters for connections to end nodes

Cascading HP 10/100 Hubs – 100Base-TX Networks



Description	For 100Base-T networks, only <i>two</i> hubs may be cascaded together, as shown in the above illustration. Connect end nodes (PCs, workstations, servers, printers, and other peripherals) to the HP 10/100 hubs by using "straight-through" twisted-pair cables. The server should be connected at 100 Mbps to reduce bottlenecks as multiple users attempt to access the server.
Cables Used	100 Mbps connections: 100 ohm, Category 5 unshielded twisted pair cable only. For the connection between the hubs, use crossover cable, unless one the hub ports used in the connection is set to MDI mode; then use straight-through cable. For connections to the end nodes, use straight-through cables.
Maximum Connection Lengths	Hub-to-Hub connection: 5 meters for 100 Mbps Hub-to-end node connections: 100 meters

Cascading HP 10/100 Hubs – 10 and 100 Mbps

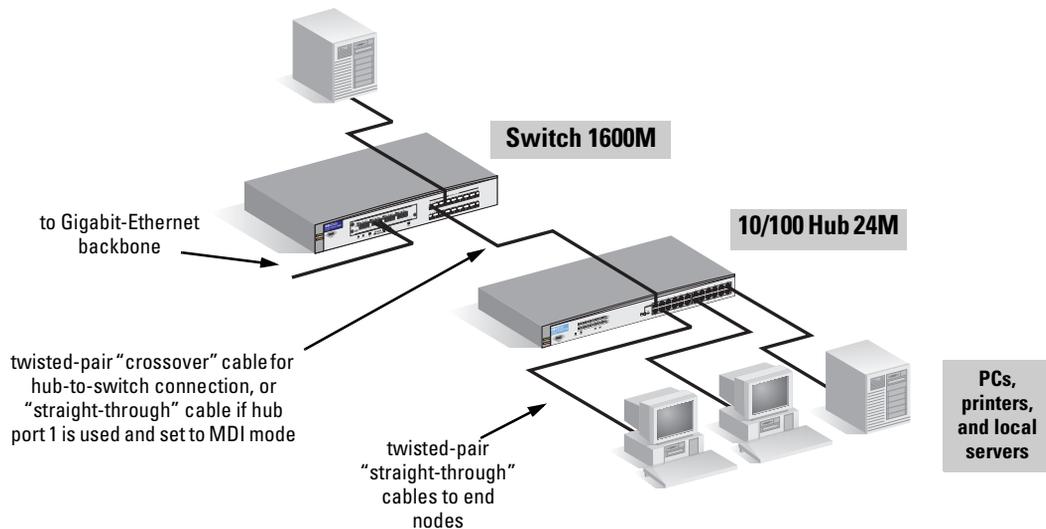


Description The two previous topologies could be combined. Because the HP 10/100 hubs can connect to both 10 Mbps and 100 Mbps devices simultaneously, a topology similar to the one in the above illustration is possible. The 10 Mbps and 100 Mbps end nodes communicate with each other through the "speed matching" bridge that is internal in each of the HP 10/100 hubs.

Cables Used **10 Mbps connections:** category 3, 4, or 5 100 ohm unshielded twisted-pair cable.
100 Mbps connections: 100 ohm, Category 5 unshielded twisted pair cable only. For the connection between the hubs, use crossover cable, unless one the hub ports used in the connection is set to MDI mode; then use straight-through cable. For connections to the end nodes, use straight-through cables.

Maximum Connection Lengths **Hub-to-Hub connections:** 5 meters for 100 Mbps; 100 meters for 10 Mbps
Hub-to-end node connections: 100 meters for 10 or 100 Mbps

Connecting HP 10/100 Hubs to Switches



Description	Most twisted-pair switch ports are wired the same as hub ports: MDI-X, so the type of cable to use is the same as for a hub-to-hub connection. Note: You do not need to use an external switch or bridge to provide communication between the 10 Mbps and 100 Mbps end nodes connected to the hub. The HP 10/100 hubs have an internal bridge that provides that connection. The illustration shows a 10/100 hub connected to a switch as a way to extend your network, and to provide connections to high-speed campus backbones.
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Cables Used	<p>10 Mbps connections: category 3, 4, or 5 100 ohm unshielded twisted-pair cable.</p> <p>100 Mbps connections: 100 ohm, Category 5 unshielded twisted pair cable only. For the connection between the hub and the switch, use crossover cable, unless one the hub ports used in the connection is set to MDI mode; then use straight-through cable. For connections to the end nodes, use straight-through cables.</p>
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Maximum Connection Lengths	<p>Hub-to-switch connection: 100 meters for 10 or 100 Mbps</p> <p>Hub-to-end node connections: 100 meters for 10 or 100 Mbps</p>
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Where to Go From Here

Your hub is now correctly installed and is able to send and receive data between end nodes, servers, and printers.

The HP 10/100 hubs are plug-and-communicate network devices requiring no configuration. The Hub 12M and Hub 24M are managed hubs. If you wish to manage these hubs from an SNMP-based network management station, you will need to configure the IP address on the hubs. See the *HP ProCurve 10/100 Hub 12M and Hub 24M Management and Configuration Guide* that came with your hub for information on how to use the hub console to configure the IP address.

Note

The Hub 12M and Hub 24M can also be managed through a graphical interface that you can access from any PC or workstation on the network by running your web browser and typing in the hub's IP address as the URL. No additional software installation is required to make this interface available; it is included in the hub's onboard software.

Troubleshooting

This chapter describes how to troubleshoot your HP 10/100 hub. This chapter describes the following:

- basic troubleshooting tips (page 3-2)
- diagnosing with the LEDs (page 3-4)
- Proactive Networking tools (page 3-6)
- hardware diagnostic tests (page 3-7)
- HP Customer Support Services (page 3-9)

Basic Troubleshooting Tips

Most problems are caused by the following situations:

- **Incorrect hub-to-switch or hub-to-hub connections.** Check your cable type:
 - The HP 10/100 hub ports as standard Ethernet ports, are wired as MDI-X ports. When connecting to another MDI-X device such as another hub or switch, use a crossover cable. You can also use a straight-through cable connected to Port 1 with the MDI/MDI-X button in the MDI position.
 - When connecting to an MDI device such as network interface cards in computers and other end nodes, and some hub and switch ports, use a straight-through cable.

See Appendix B, “Cables and Connectors” for pinouts and correct cable wiring for crossover and straight-through twisted-pair cables.

- **Non-standard cables.** Non-standard and miswired cables may cause network collisions and noise, and can seriously impair network performance. 100Base-T networks are more sensitive to miswired cables than 10Base-T networks, and they must be cabled with Category 5 UTP cable only. Use a new correctly-wired cable or compare your cable to the cable in Appendix B, “Cables and Connectors” for pinouts and correct cable wiring. A category 5 cable tester is a recommended tool for every 100Base-T network installation.
- **Improper Network Topologies.** It is important to make sure you have a valid network topology. Common topology faults include excessive cable length and excessive numbers of repeaters between nodes. For 10Base-T networking, the standard allows at most five repeaters (hubs) between any two end nodes. For 100Base-T, see the topology rules below.

If you have network problems after recent changes to the network, change back to the previous topology. If you no longer experience the problems, the new topology is probably at fault. Refer to the guide entitled *Designing HP ProCurve Workgroup Networks* for topology configuration guidelines. This guide can be found online at the HP World Wide Web site, <http://www.hp.com/go/procurve>.

In addition, you should make sure that your network topology contains no data path loops. Between any two end nodes, there should be only one active cabling path at any time. Data path loops will cause broadcast storms that will severely impact your network performance.

- **100Base-T topology rules:** Be aware that the topology rules for 100Base-T networks are much more restrictive than for 10Base-T. You may have to redo an existing 10Base-T topology for 100Base-T products.

The HP 10/100 hubs operate as Class II hubs when being used for 100Base-T networking. Some basic Class II 100Base-T Hub rules are as follows:

- The maximum segment length for a hub-to-end node connection is 100 meters.
- At most one hub can be cascaded from any of the hub ports that are operating at 100 Mbps.
- Do not mix Class I and Class II hubs when cascading.
- When cascading two hubs together, the maximum distance separating them is 5 meters.
- You must use 100-ohm Category 5 UTP cable in the 100Base-T installations.

See the card “Connectivity Rules for 100T Networks” included with your hub for illustrations of these rules.

- **Full-duplex link to the hub.** Regular hub ports, including the ports on the HP 10/100 hubs, only operate in half-duplex mode. If the attached device is running in full-duplex mode, it will cause a high number of late collisions on the network, degrading performance for all nodes. The HP 10/100 hubs must not be connected to devices that are configured for full-duplex operation.
- **Non-compatible Speed Configuration.** For the Hub 12M and Hub 24M, make sure that you have not configured any port to operate at a speed that is not compatible with the attached device (10 Mbps or 100 Mbps).
- **Faulty or loose network cables.** Look for loose or obviously faulty connections. If they appear to be OK, try a different cable.

Diagnosing with the LEDs

The following table shows LED patterns on the hubs that indicate problem conditions.

LED patterns indicating problems					Diagnostic Tips
Power	Fault	Link (per port)	Activity	Collision	
OFF	OFF	OFF	–	–	❶
ON	OFF	OFF with a network cable connected	–	–	❷
ON	OFF	Slow Blink [†]	–	–	❸
ON	ON for a prolonged period	Variable, all may be ON	–	–	❹
ON	Off	Fast Blink [‡]	–	–	❺
ON	OFF	ON	ON continuously	ON continuously	❻
[†] The slow blink behavior is an on/off cycle once every 1.6 seconds [‡] The fast blink behavior is an on/off cycle once every 0.8 seconds					

Diagnostic Tips:

Tip	Problem	Solution
❶	The hub is not plugged into an active AC power source, or the hub's power supply may have failed.	<ol style="list-style-type: none"> 1. Verify that the power cord is plugged into an active power source and to the hub. Make sure these connections are snug. 2. Try power cycling the hub by unplugging and plugging the power cord back in. 3. If the Power LED is still not on, verify that the AC power source works by plugging another device into the outlet. Or try plugging the hub into a different outlet or try a different power cord. <p>If the power source and power cord are OK and this condition persists, the hub power supply may have failed. Call your HP-authorized LAN dealer, or use the electronic support services from HP to get assistance. See the Customer Support/Warranty card for more information.</p>

Tip	Problem	Solution
②	The network connection is not working properly.	<p>Try the following procedures:</p> <ul style="list-style-type: none"> • Verify that the connected device and the hub are both powered on and are operating correctly. • Verify that all connections in the cable path between the hub and the connected device are OK. • Verify that you have used the correct cable type for the connection. For twisted-pair connections, in general, for connecting an end node or other MDI device to the hub, use “straight-through” cable; for connecting MDI-X ports on other hubs or switches, use “crossover” cable. • For the 100 Mbps connections, verify that you are using category 5, or better, UTP cable. • For the Hub 12M and Hub 24M: Verify that the port has not been disabled through a configuration change. You can use the hub console interface, or, if you have configured an IP address on the hub, use the web browser interface, or HP TopTools for Hubs & Switches network management software to determine the state of the port and re-enable the port if necessary. • If the other procedures don’t resolve the problem, try using a different port or a different cable.
③	The port has been autopartitioned due to excessive collisions.	This usually occurs because of faulty or improper cabling or a network loop. Or it may occur because of a jabbering end node. When the condition is corrected and the normal network traffic is restored, the port will automatically return to normal operation and the Link LED will stop blinking.
④	A hub hardware failure was detected during self test.	<p>Self test does not complete so the Fault LED will stay on longer than 5 seconds for the Hub 12 and Hub 24, and longer than 35 seconds for the Hub 12M and Hub 24M.</p> <p>Power cycle the hub by unplugging the power cord, waiting several seconds, and then plugging the power cord back in to the hub. If this condition persists, the hub may have to be replaced. Contact your HP-authorized LAN dealer or HP representative for assistance.</p> <p>Try power cycling the hub. If the fault indication reoccurs, the hub may have failed. Call your HP-authorized LAN dealer, or use the electronic support services from HP to get assistance. See the Customer Support/Warranty card for more information.</p>
⑤	A security violation has been detected on the port.	Per port security is configurable on the Hub 12M and Hub 24M only. A network device with an address that is not in the list of authorized addresses for the port has attempted network communication through the hub.
⑥	Hub 12M and Hub 24M only. The 10Base-T functionality of the hub is locked up in a “jabber” condition.	<p>This condition can occur if you have configured a port to operate specifically at only 10 Mbps, and then a 100 Mbps-only device is connected to that port.</p> <p>Locate the port with this speed mismatch condition, and unplug the cable to relieve the condition. You may have to simply unplug cables one at a time until you see the Activity LED go back into normal flickering operation. Then, reconfigure the port for speed compatibility with the device before reconnecting the cable from that device.</p>

Proactive Networking

The Hub 12M and Hub 24M have built-in management capabilities that proactively help you manage your network including:

- finding and helping you fix the most common network error conditions (for example, faulty network cabling, and non-standard network topologies)
- informing you of the problem with clear, easy-to-understand messages
- recommending network configuration changes to enhance the performance of your network
- per-port security to allow you to designate authorized network users

The following interfaces provide tests, indicators, and an event log that can be used to monitor the hub and its network connections and to help you take advantage of these proactive networking features:

- HP TopTools for Hubs & Switches - an SNMP-based network management tool that is included with your hub.
- A graphical web browser interface that you can use to manage your hub from a PC running a supported web browser, for example Microsoft Internet Explorer or Netscape Communicator.
- A full-featured easy-to-use console interface that you can access by merely connecting a standard terminal or PC running a terminal emulator to the hub's console port. The cable to make that connection is provided with your Hub 12M and Hub 24M. The console interface is also accessible through a telnet connection.

See chapter 8, "Troubleshooting", in the *Management and Configuration Guide* that came with your hub for more information on using these software tools to diagnose and manage your hub.

Hardware Diagnostic Tests

Testing the Hub by Resetting It

If you believe that the hub is not operating correctly, you can reset it to test its circuitry and operating code. To reset a hub, either:

- Unplug and plug back in the power cord (power cycle)
- Press the reset button on the front of the hub

Power cycling the hub and pressing the Reset button both cause the hub to perform its power-on self-test, which may resolve any temporary operational problems.

The self-test passes if the Fault LED on the front of the hub goes off after approximately 3 seconds for the Hub 12 and Hub 24, and approximately 30 seconds for the Hub 12M and Hub 24M. If the Fault LED stays on longer than these normal self test times, the hub may have to be replaced. Contact your HP-authorized dealer or HP representative for assistance. See the Customer Support/Warranty booklet that came with your hub for more information.

Testing Twisted-Pair Cabling

If you think the cable should work but still isn't working, it may not be compatible with the IEEE 802.3 Type 10Base-T or IEEE 802.3u 100Base-T standards. The twisted-pair cables attached to the HP 10/100 hub must be compatible with these standards. To verify that your cable is compatible with these standards, use a qualified cable test device.

HP also offers a wire testing service. Contact your HP-authorized LAN dealer or your local HP sales office for more information.

Note

Make sure that you are using the correct cabling type for each connection. The hub ports are all wired as MDI-X. For connecting end nodes and other MDI-type devices, use "straight-through" cable. For connecting switches, other hubs, and other MDI-X devices, use "crossover" cable; or, you can use a straight-through cable by connecting the MDI-X device to Port 1 and change the port setting to MDI by depressing the MDI-X/MDI button on the front of the hub to the MDI position. See Appendix B, "Cables and Connectors" for the pinouts for straight-through and crossover cables.

Testing Hub-to-Device Network Communications (Hub 12M and Hub 24M only)

You can perform the following communication tests to verify that the network is operating correctly between the Hub 12M or Hub 24M and any connected device that can respond correctly to the communication test.

- Link Test – a physical layer test that sends IEEE 802.2 test packets to any device identified by its MAC address
- Ping Test – a network layer test used on IP networks that sends test packets to any device identified by its IP address

These tests can be performed through the hub console interface from a terminal connected to the hub or through a telnet connection, or from the hub's web browser interface. See the *Management and Configuration Guide* that came with your hub for more information.

These tests can also be performed from an SNMP network management station running a program that can manage the hub, for example, HP TopTools for Hubs & Switches.

Testing End-to-End Network Communications

Both the hub and the cabling can be tested by running an end-to-end communications test – a test that sends known data from one network device to another through the hub. For example, if you have two PCs on the network that have LAN adapters between which you can run a link-level test or Ping test through the hub, you can use this test to verify that the entire communication path between the two PCs is functioning correctly. See your LAN adapter (NIC) documentation for more information on running a link test or Ping test.

HP Customer Support Services

If you are still having trouble with your hub, Hewlett-Packard offers support 24 hours a day, seven days a week through the use of a number of automated electronic services. See the Customer Support/Warranty booklet that came with your hub for information on how to use these services to get technical support. The HP networking products World Wide Web site, <http://www.hp.com/go/procurve>, also provides up-to-date support information.

Your HP-authorized network reseller can also provide you with assistance, both with services that they offer and with services offered by HP.

Specifications

Except where otherwise noted, the following specifications apply to all of the HP 10/100 hubs: Hub 12, Hub 24, Hub 12M, and Hub 24M

Physical

Width:	44.2 cm (17.4 in)
Depth:	20.4 cm (8.0 in)
Height:	4.4 cm (1.7 in)
Weight :	2.2 kg (4.8 lbs)

Electrical

The hubs automatically adjust to any voltage between 100-127 and 200-240 volts and either 50 or 60 Hz.

AC voltage:	100–127 volts	200–240 volts
Maximum current:	1.0A	0.5A
Frequency range:	50/60 Hz	50/60 Hz

Environmental

	Operating	Non-Operating
Temperature:	0°C to 55°C (32°F to 131°F)	-40°C to 70°C (-40°F to 158°F)
Relative humidity: (non-condensing)	15% to 95% at 40°C (104°F)	10% to 90% at 65°C (149°F)
Maximum altitude:	4.6 Km (15,000 ft)	4.6 Km (15,000 ft)

Acoustic

Geraeuschemission LwA=51 dB am fiktiven Arbeitsplatz nach DIN 45635 T.19

Connectors

- The 10/100 Mbps RJ-45 twisted-pair ports are compatible with the IEEE 802.3 Type 10Base-T and 802.3u 100Base-TX standards respectively.

Safety

- EN60950 / IEC 950
- CSA 22.2 No. 950
- UL 1950, 3rd edition

Cables and Connectors

This appendix includes hub connector information and network cable information for cables that should be used with the HP 10/100 hubs, including minimum pin-out information for twisted-pair cables.

Note

Incorrectly wired cabling is the most common cause of problems for LAN communications. HP recommends that you work with a qualified LAN cable installer for assistance with your cabling requirements.

Twisted-Pair Cable/Connector Pin-Outs

The RJ-45 10/100Base-T ports on the HP 10/100 hubs are wired as MDI-X ports. Port 1 on each hub can be changed to an MDI port by pressing the MDI-X/MDI switch on the front of the hub to the MDI position. The type of twisted-pair cable you connect to these ports (either “straight-through” or “crossover”) depends on the type of device at the other end of the cable.

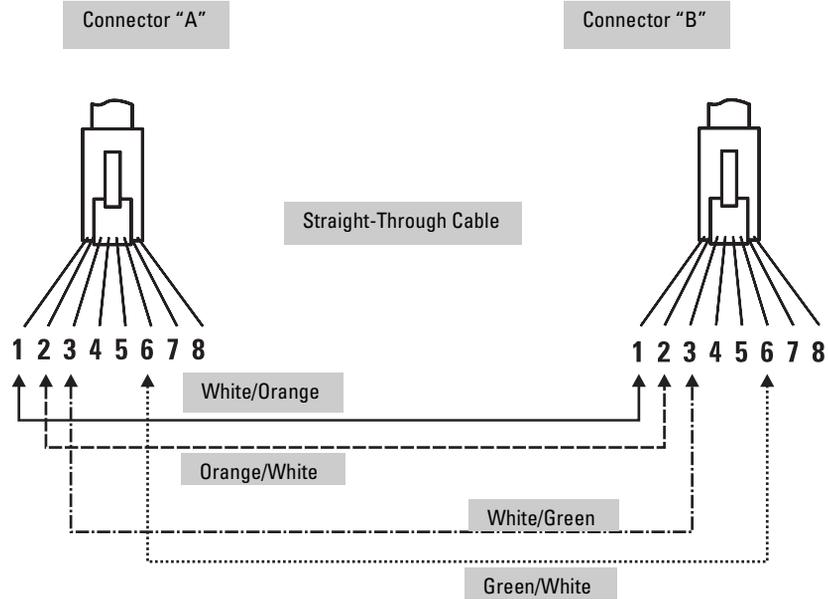
***The basic rule is**, when connecting same-type ports together (for example MDI-X-to-MDI-X), use crossover cable; when connecting opposite-type ports together (for example MDI-X-to-MDI), use straight-through cable.*

These additional rules apply:

- All twisted-pair wires used for 10 Mbps and 100 Mbps operation must be twisted through the entire length of the cable. The wiring sequence must conform to EIA/TIA 568-B (not USOC). See “Twisted-Pair Cable Pin Assignments” later in this appendix for a listing of the signals used on each pin.
- For 10 Mbps connections to the ports, you can use Category 3, 4, or 5 unshielded twisted-pair cable, as supported by the IEEE 802.3 Type 10Base-T standard.
- For 100 Mbps connections to the ports, use 100-ohm Category 5 UTP cable only, as supported by the IEEE 802.3u Type 100Base-TX standard.

Twisted-Pair Cable for Hub (MDI-X) to Computer (MDI) 10 Mbps or 100 Mbps Network Connection

To connect PCs or other MDI network devices to these ports, use a “straight-through” cable.



Note

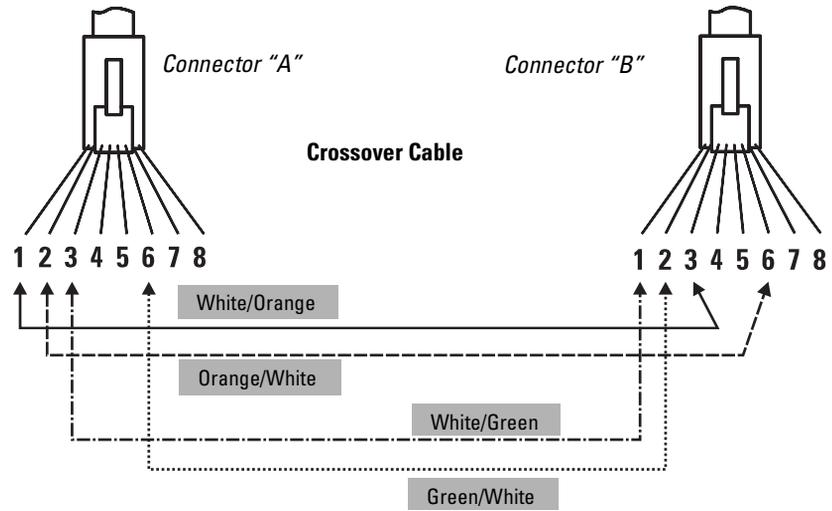
Pins 1 and 2 on connector “A” *must* be wired as a twisted pair to pins 1 and 2 on connector “B”.

Pins 3 and 6 on connector “A” *must* be wired as a twisted pair to pins 3 and 6 on connector “B”.

Pins 4, 5, 7, and 8 are not used in this application, although they may be wired in the cable.

Twisted-Pair Cable for Hub (MDI-X) to Hub (MDI-X) 10 Mbps or 100 Mbps Network Connection

To connect hubs or switches or other MDI-X network devices to these ports, use a “crossover” cable.



Note

Pins 1 and 2 on connector “A” *must* be wired as a twisted pair to pins 3 and 6 on connector “B”.

Pins 3 and 6 on connector “A” *must* be wired as a twisted pair to pins 1 and 2 on connector “B”.

Pins 4, 5, 7, and 8 are not used in this application, although they may be wired in the cable.

Twisted-Pair Cable Pin Assignments

Twisted-Pair Straight-Through Cable

Hub End (MDI-X)		Computer, Transceiver, or Other MDI Port End	
Signal	Pins	Pins	Signal
receive +	1 ←	1	transmit +
receive -	2 ←	2	transmit -
transmit +	3 →	3	receive +
transmit -	6 →	6	receive -

Twisted-Pair Crossover Cable

Hub End (MDI-X)		Hub or Switch Port, or Other MDI-X Port End	
Signal	Pins	Pins	Signal
receive +	1 ←	6	transmit -
receive -	2 ←	3	transmit +
transmit +	3 →	2	receive -
transmit -	6 →	1	receive +

Safety and EMC Regulatory Statements

Safety Information



Documentation reference symbol. If the product is marked with this symbol, refer to the product documentation to get more information about the product.

WARNING

A **WARNING** in the manual denotes a hazard that can cause injury or death.

CAUTION

A **CAUTION** in the manual denotes a hazard that can damage equipment.

Do not proceed beyond a **WARNING** or **CAUTION** notice until you have understood the hazardous conditions and have taken appropriate steps.

Grounding

These are safety class I products and have protective earthing terminals. There must be an uninterruptible safety earth ground from the main power source to the product's input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cord until the ground has been restored.

For LAN cable grounding:

- If your LAN covers an area served by more than one power distribution system, be sure their safety grounds are securely interconnected.
- LAN cables may occasionally be subject to hazardous transient voltages (such as lightning or disturbances in the electrical utilities power grid). Handle exposed metal components of the network with caution.

Servicing

There are no user-serviceable parts inside these products. Any servicing, adjustment, maintenance, or repair must be performed only by service-trained personnel.

These products do not have a power switch; they are powered on when the power cord is plugged in.

Informations concernant la sécurité



Symbole de référence à la documentation. Si le produit est marqué de ce symbole, reportez-vous à la documentation du produit afin d'obtenir des informations plus détaillées.

WARNING

Dans la documentation, un WARNING indique un danger susceptible d'entraîner des dommages corporels ou la mort.

CAUTION

Un texte de mise en garde intitulé CAUTION indique un danger susceptible de causer des dommages à l'équipement.

Ne continuez pas au-delà d'une rubrique WARNING ou CAUTION avant d'avoir bien compris les conditions présentant un danger et pris les mesures appropriées.

Cet appareil est un produit de classe I et possède une borne de mise à la terre. La source d'alimentation principale doit être munie d'une prise de terre de sécurité installée aux bornes du câblage d'entrée, sur le cordon d'alimentation ou le cordon de raccordement fourni avec le produit. Lorsque cette protection semble avoir été endommagée, débrancher le cordon d'alimentation jusqu'à ce que la mise à la terre ait été réparée.

Mise à la terre du câble de réseau local:

- si votre réseau local s'étend sur une zone desservie par plus d'un système de distribution de puissance, assurez-vous que les prises de terre de sécurité soient convenablement interconnectées.
- Les câbles de réseaux locaux peuvent occasionnellement être soumis à des surtensions transitoires dangereuses (telles que la foudre ou des perturbations dans le réseau d'alimentation public). Manipulez les composants métalliques du réseau avec précautions.

Aucune pièce contenue à l'intérieur de ce produit ne peut être réparée par l'utilisateur. Tout dépannage, réglage, entretien ou réparation devra être confié exclusivement à un personnel qualifié.

Cet appareil ne comporte pas de commutateur principal ; la mise sous tension est effectuée par branchement du cordon d'alimentation.

Hinweise zur Sicherheit



Symbol für Dokumentationsverweis. Wenn das Produkt mit diesem Symbol markiert ist, schlagen Sie bitte in der Produktdokumentation nach, um mehr Informationen über das Produkt zu erhalten.

WARNING

Eine WARNING in der Dokumentation symbolisiert eine Gefahr, die Verletzungen oder sogar Todesfälle verursachen kann.

CAUTION

CAUTION in der Dokumentation symbolisiert eine Gefahr, die das Gerät beschädigen kann.

Fahren Sie nach dem Hinweis WARNING oder CAUTION erst fort, nachdem Sie den Gefahrenzustand verstanden und die entsprechenden Maßnahmen ergriffen haben.

Dies ist ein Gerät der Sicherheitsklasse I und verfügt über einen schützenden Erdungsterminal. Der Betrieb des Geräts erfordert eine ununterbrochene Sicherheitserdung von der Hauptstromquelle zu den Geräteingabeterminals, den Netzkabeln oder dem mit Strom belieferten Netzkabelsatz voraus. Sobald Grund zur Annahme besteht, daß der Schutz beeinträchtigt worden ist, das Netzkabel aus der Wandsteckdose herausziehen, bis die Erdung wiederhergestellt ist.

Für LAN-Kabelerdung:

- Wenn Ihr LAN ein Gebiet umfaßt, das von mehr als einem Stromverteilungssystem beliefert wird, müssen Sie sich vergewissern, daß die Sicherheitserdungen fest untereinander verbunden sind.
- LAN-Kabel können gelegentlich gefährlichen Übergangsspannungen ausgesetzt werden (beispielsweise durch Blitz oder Störungen in dem Starkstromnetz des Elektrizitätswerks). Bei der Handhabung exponierter Metallbestandteile des Netzwerkes Vorsicht walten lassen.

Dieses Gerät enthält innen keine durch den Benutzer zu wartenden Teile. Wartungs-, Anpassungs-, Instandhaltungs- oder Reparaturarbeiten dürfen nur von geschultem Bedienungspersonal durchgeführt werden.

Dieses Gerät hat keinen Netzschalter; es wird beim Anschließen des Netzkabels eingeschaltet.

Considerazioni sulla sicurezza



WARNING

Simbolo di riferimento alla documentazione. Se il prodotto è contrassegnato da questo simbolo, fare riferimento alla documentazione sul prodotto per ulteriori informazioni su di esso.

La dicitura **WARNING** denota un pericolo che può causare lesioni o morte.

CAUTION

La dicitura **CAUTION** denota un pericolo che può danneggiare le attrezzature.

Non procedere oltre un avviso di **WARNING** o di **CAUTION** prima di aver compreso le condizioni di rischio e aver provveduto alle misure del caso.

Questo prodotto è omologato nella classe di sicurezza I ed ha un terminale protettivo di collegamento a terra. Dev'essere installato un collegamento a terra di sicurezza, non interrompibile che vada dalla fonte d'alimentazione principale ai terminali d'entrata, al cavo d'alimentazione oppure al set cavo d'alimentazione fornito con il prodotto. Ogniqualvolta vi sia probabilità di danneggiamento della protezione, disinserite il cavo d'alimentazione fino a quando il collegamento a terra non sia stato ripristinato.

Per la messa a terra dei cavi LAN:

- se la vostra LAN copre un'area servita da più di un sistema di distribuzione elettrica, accertatevi che i collegamenti a terra di sicurezza siano ben collegati fra loro;
- i cavi LAN possono occasionalmente andare soggetti a pericolose tensioni transitorie (ad esempio, provocate da lampi o disturbi nella griglia d'alimentazione della società elettrica); siate cauti nel toccare parti esposte in metallo della rete.

Nessun componente di questo prodotto può essere riparato dall'utente. Qualsiasi lavoro di riparazione, messa a punto, manutenzione o assistenza va effettuato esclusivamente da personale specializzato.

Questo apparato non possiede un commutatore principale; si mette scotto tensione all'inserirsi il cavo d'alimentazione.

Consideraciones sobre seguridad



Símbolo de referencia a la documentación. Si el producto va marcado con este símbolo, consultar la documentación del producto a fin de obtener mayor información sobre el producto.

WARNING

Una WARNING en la documentación señala un riesgo que podría resultar en lesiones o la muerte.

CAUTION

Una CAUTION en la documentación señala un riesgo que podría resultar en averías al equipo.

No proseguir después de un símbolo de WARNING o CAUTION hasta no haber entendido las condiciones peligrosas y haber tomado las medidas apropiadas.

Este aparato se enmarca dentro de la clase I de seguridad y se encuentra protegido por una borna de puesta a tierra. Es preciso que exista una puesta a tierra continua desde la toma de alimentación eléctrica hasta las bornas de los cables de entrada del aparato, el cable de alimentación o el juego de cable de alimentación suministrado. Si existe la probabilidad de que la protección a tierra haya sufrido desperfectos, desenchufar el cable de alimentación hasta haberse subsanado el problema.

Puesta a tierra del cable de la red local (LAN):

- Si la LAN abarca un área cuyo suministro eléctrico proviene de más de una red de distribución de electricidad, cerciorarse de que las puestas a tierra estén conectadas entre sí de modo seguro.
- Es posible que los cables de la LAN se vean sometidos de vez en cuando a voltajes momentáneos que entrañen peligro (rayos o alteraciones en la red de energía eléctrica). Manejar con precaución los componentes de metal de la LAN que estén al descubierto.

Este aparato no contiene pieza alguna susceptible de reparación por parte del usuario. Todas las reparaciones, ajustes o servicio de mantenimiento debe realizarlos solamente el técnico.

Este producto no tiene interruptor de potencia; se activa cuando se enchufa el cable de alimentación.

Safety Information (Japan)

安全性の考慮

安全記号



マニュアル参照記号。製品にこの記号がついている場合はマニュアルを参照し、注意事項等をご確認ください。

WARNING マニュアル中の「WARNING」は人身事故の原因となる危険を示します。

CAUTION マニュアル中の「CAUTION」は装置破損の原因となる危険を示します。

「WARNING」や「CAUTION」の項は飛ばさないで必ずお読みください。危険性に関する記載事項をよく読み、正しい手順に従った上で次の事項に進んでください。

これは安全性クラス I の製品で保護用接地端子を備えています。主電源から製品の入力配線端子、電源コード、または添付の電源コード・セットまでの間、切れ目のない安全接地が存在することが必要です。もしこの保護回路が損なわれたことが推測されるときは、接地が修復されるまで電源コードを外しておいてください。

LAN ケーブルの接地に関して:

- もし貴社の LAN が複数の配電システムにより電力を受けている領域をカバーしている場合には、それらのシステムの安全接地が確実に相互に結合されていることを確認してください。
- LAN ケーブルは時として危険な過度電圧（例えば雷や、配電設備の電力網での障害）にさらされることがあります。露出した金属部分の取扱いには十分な注意をはらってください。

本製品の内部にはユーザーが修理できる部品はありません。サービス、調整、保守および修理はサービス訓練を受けた専門家におまかせください。

本製品には電源スイッチがありません。電源コードを接続したとき電源入となります。

Safety Information (China)

HP 网络产品使用安全手册

使用须知

欢迎使用惠普网络产品，为了您及仪器的安全，请您务必注意如下事项：

1. 仪器要和地线相接，要使用有正确接地插头的电源线，使用中国国家规定的220V电源。
2. 避免高温和尘土多的地方，否则易引起仪器内部部件的损坏。
3. 避免接近高温，避免接近直接热源，如直射太阳光、暖气等其它发热体。
4. 不要有异物或液体落入机内，以免部件短路。
5. 不要将磁体放置于仪器附近。

警告

为防止火灾或触电事故，请不要将该机放置于淋雨或潮湿处。

安装

安装辅助管理模块，请参看安装指南。

保修及技术支持

如果您按照以上步骤操作时遇到了困难，或想了解其它产品性能，请按以下方式与我们联系。

如是硬件故障：

1. 与售出单位或当地维修机构联系。
2. 中国惠普有限公司维修中心地址：
北京市海淀区知春路49号希格玛大厦
联系电话：010-62623888 转 6101
邮政编码：100080

如是软件问题：

1. 惠普用户响应中心热线电话：010-65645959
2. 传真自动回复系统：010-65645735

EMC Regulatory Statements

U.S.A.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. Operation of this equipment in a residential area may cause interference in which case the user will be required to correct the interference at his own expense.

Canada

This product complies with Class A Canadian EMC requirements.

Australia/New Zealand



This product complies with Australia/New Zealand EMC Class A requirements.

Japan

VCCI Class A

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Korea

사용자 안내문 : A 급기기

이기는 업무용으로 전자파 적합등록을 받은 기기 이오니, 판매자 또는 사용자는 이점을 주의하시기 바라며, 만약 잘못 구입하셨을 때에는 구입한 곳에서 비업무용으로 교환하시기 바랍니다.

Taiwan

警告使用者：這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

European Community

Declaration for Hub 12M and Hub 24M

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN45014

Manufacturer's Name: Hewlett-Packard Company

Manufacturer's Address: 8000 Foothills Blvd.
Roseville, CA 95747-5502
U.S.A.

declares that the product:

Product Name: HP ProCurve 10/100 Hub 12M
HP ProCurve 10/100 Hub 24M

Model Number: HP J3288A
HP J3289A

conforms to the following Product Specifications:

Safety: EN60950 (1992) +A1,A2,A3,A4 / IEC 950 (1991) +A1,A2,A3,A4
EN60825-1 (1993) / IEC 825-1 (1993), Class 1
GB 4943 (1995)

EMC: EN 55022 (1994) / CISPR-22 (1993) Class A
GB 9254 (1988)
EN50082-1 (1992)
IEC 1000-4-2 (1995), 4 kV CD, 8 kV AD
IEC 1000-4-3 (1995), 3 V/m
IEC 1000-4-4 (1995), 1 kV-(power line)
0.5 kV-(signal line)
ENV 50141 (1993), 3Vrms

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carries the CE marking accordingly.

Tested with Hewlett-Packard Co. products only.

Roseville, November 10, 1998



Mike Avery, Regulatory Engineering Manager

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH,
Department TRE, Herrenberger Strasse 130, D-71034 Böblingen (FAX:+49-7031-14-3143).

Declaration for Hub 12 and Hub 24

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN45014

Manufacturer's Name: Hewlett-Packard Company

Manufacturer's Address: 8000 Foothills Blvd.
Roseville, CA 95747-5502
U.S.A.

declares that the product:

Product Name: HP ProCurve 10/100 Hub 12
HP ProCurve 10/100 Hub 24

Model Number: HP J3294A
HP J3295A

conforms to the following Product Specifications:

Safety: EN60950 (1992) +A1,A2 / IEC 950 (1991) +A1,A2,A3,A4
EN60825-1 (1993) / IEC 825-1 (1993), Class 1
GB 4943 (1995)

EMC: EN 55022 (1994) / CISPR-22 (1993) Class A
GB 9254 (1988)
EN50082-1 (1992)
prEN 55024-2 (1992) / IEC 801-2 (1991), 4 kV CD, 8 kV AD
prEN 55024-3 (1991) / IEC 801-3 (1984), 3 V/m
prEN 55024-4 (1992) / IEC 801-4 (1988), 1 kV-(power line)
0.5 kV-(signal line)

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carries the CE marking accordingly.

Tested with Hewlett-Packard Co. products only.

Roseville, November 10, 1998



Mike Avery, Regulatory Engineering Manager

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Department TRE, Herrenberger Strasse 130, D-71034 Böblingen (FAX:+49-7031-14-3143).

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