hp digital home networking

Ethernet gateway

model hn200e

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conventions

The following conventions are used in this guide:

symbols

The > symbol guides you through a series of software steps. For example:

Click **Start** > **Settings** > **Control Panel** to view the active control panels.

warnings

A Warning indicates possible damage to the HP Gateway or to other equipment. A Warning can also indicate a possible harm to yourself or to others.

For example:

Warning: *Plugging into a nongrounded electrical socket can damage your Gateway.*

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contents

introduction

hp digital home networking ethernet gateway

Congratulations on your purchase of a HP Digital Home Networking Ethernet Gateway. The Ethernet Gateway is the perfect solution for connecting multiple PCs to your high-speed broadband cable modem or DSL Internet connection.

Your Gateway can be configured as a Dynamic Host Configuration Protocol (DHCP) server, which means that it can automatically assign Internet Protocol (IP) addresses to PCs in your Local Area Network (LAN). The Gateway becomes your only visible network device on the Internet.

The Gateway also serves as your Internet firewall, protecting your networked PCs from access by external users. All incoming data is monitored and filtered using a firewall. You can configure your Gateway to permit playing Internet games and video conferencing. You also can use IP filtering to block your users from access to the Internet as needed.

Now all of your network users can enjoy fast broadband Internet access and can share internal data. Link it all together and your network will operate faster than you ever imagined.

gateway features

❑ Connects to a broadband modem and to a local Ethernet network

❑ Equipped with a 4-port 10/100 switch

❑ Connects all network PCs to the Internet with a single IP address

❑ Firewall protects PCs from Internet intruders

❑ Configurable through a Web browser such as Internet Explorer or Netscape Navigator

❑ Supports Internet Protocol Security (IPSec) pass-through for Virtual Private Networking (VPN)

❑ Can be administered remotely over the Internet

❑ 10/100 switch speeds up gaming and multimedia access

❑ Configurable as a DHCP server on a network

❑ Compatible with virtually all standard Internet applications

❑ Blocks users from Internet access if desired

❑ Demilitarized Zone (DMZ) hosting enables Internet multimedia applications such as video conferencing and Internet gaming

getting to know the Ethernet gateway

Ethernet gateway rear panel

The Ethernet Gateway ports, to which network cables are connected, are located on the rear panel of the Gateway.

Ethernet Gateway rear panel
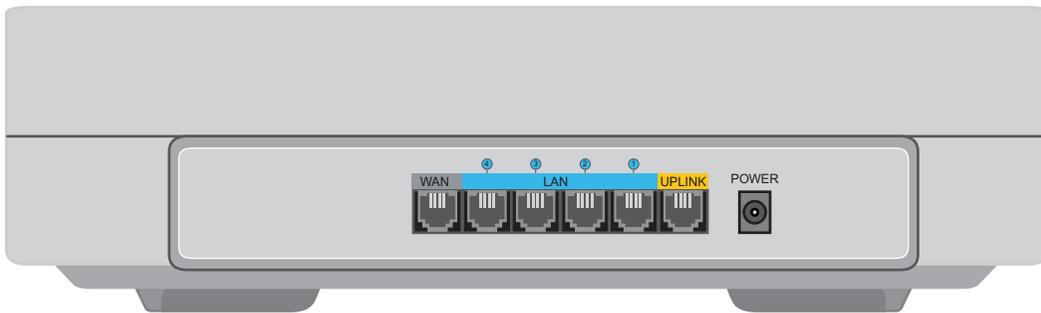
Ethernet gateway ports

WAN (dark gray)	You will connect the DSL or cable modem to the Wide Area Network (WAN) port.
LAN Ports 1–4 (blue)	You will connect devices on your Local Area Network (LAN), such as PCs and print servers, to the four LAN ports.
Uplink Port (yellow)	You can connect a cable from another switch, router, or hub to the Uplink port to add it to your network. Since the Uplink port shares wiring with LAN port 1, port 1 will be disabled if a cable is plugged into the Uplink port (and vice versa).
Power	You will connect the included AC Power Adapter to the Power port.

Ethernet gateway front panel LEDs

Ethernet Gateway front panel
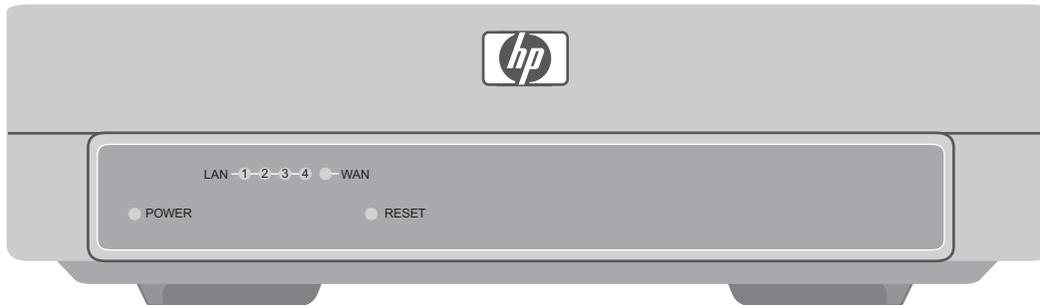
LAN indicators

Power	*Green*. The Power LED lights green when the Gateway is powered on. There is no ON/OFF switch; simply plug or unplug the power to turn Gateway on or off.
LAN	*Green*. If the LAN LED is continuously lit, the Gateway is successfully connected to the device plugged into that port (1, 2, 3, or 4). If the LED is flickering, the Gateway is actively sending or receiving data through that port.
WAN	*Green*. The WAN LED lights when a successful connection is made between the Gateway and the Internet through your broadband modem.

reset button

To refresh Gateway connections and attempt to fix routing problems, very briefly depress the **Reset** button with a paper clip.

If you have exhausted all troubleshooting options (see the troubleshooting section of this *user's guide*) and continue to experience serious routing problems, depress the **Reset** button for about five seconds to clear all of the Gateway data and restore the factory default settings.

Warning: *Resetting the Gateway may create conflicts between your PCs' actual IP addresses and what the Gateway expects them to be. You may be forced to restart the entire system.*

If the Gateway locks up, unplug the Power Adapter from the Gateway's Power Port for 3 to 5 seconds (but not longer) and then plug it back in. Leaving the power off for too long could result in the loss of network connections.

gateway system tray application

overview

The Gateway installation wizard installed an application on your computer that functions as a tool kit for your Gateway. The application is accessed from a green, red, or yellow house icon in the Windows System Tray. The Window System Tray is in the recessed area of the Windows taskbar in the lower right of your screen.

If you did not authorize installation of the icon during Gateway installation, or if you deleted the icon by choosing Exit from the pop-up menu, you can reinstall the icon from the Windows Start menu. Click **Start > Programs > HP Digital Home Networking > Gateway System Tray Application**. You can access the System Tray application from any computer on your network.

The color of the house icon (green, red, or yellow) reflects the status of the network's Internet connection and your computer's ability to communicate with the Gateway:

❑ **Green: all is well** This computer is connected to the home network with an active Internet connection.

Gateway System Tray icon (green)

❑ **Red: no Internet connection** This computer is connected to the home network, but there is no active Internet connection.

Gateway System Tray icon (red)

❑ **Yellow: connection to Gateway lost**   This computer is no longer connected to the home network or to the Internet.

Gateway System Tray icon (yellow)

Besides providing constant feedback through the icon color, the Gateway System Tray application provides additional functionality:

❑ If there is any change in network status, a status notification window appears on your screen describing the changed situation.

❑ Right-click the Gateway System Tray icon to bring up a menu allowing you to access the Gateway Control Panel, generate special status or diagnostic reports, download and install software or firmware upgrades, and launch additional Gateway utilities.

status notification windows

Any change in network status generates a status notification window describing the change and, if needed, suggests actions to take. The change may also cause a color change in the System Tray icon. (These same windows appear when you select Get current network status from the System Tray pop-up menu. If all the results are "ok", the utility has not detected any connection problems. If you do receive an error message, however, see the table "Internet Connection Diagnostic" on page 25 for more information.)

Note: This automatic notification feature is controlled by a toggle option in the System Tray pop-up menu described in "Notify me when network events occur" on page 27.
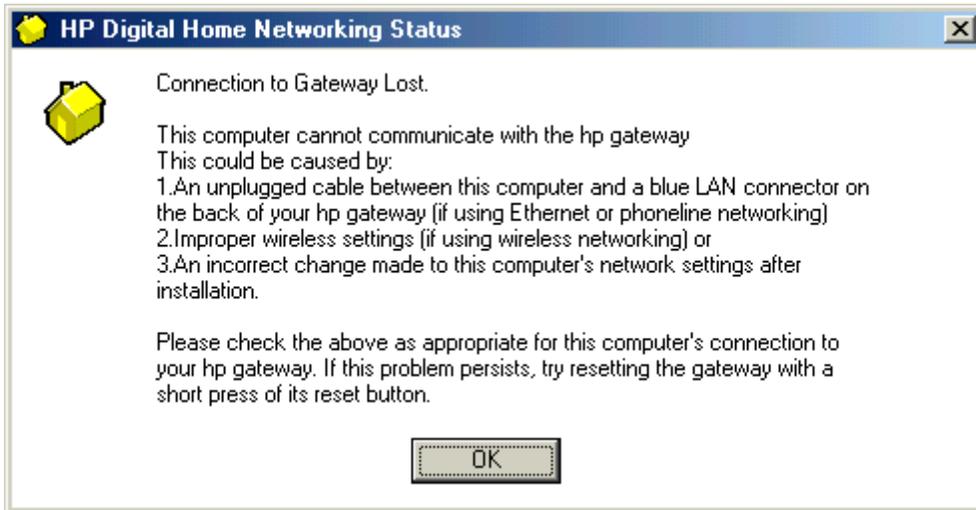
The following are examples of status notification windows, along with explanatory comments (notice that the color of the house icon on the screen matches the color of the icon on the System Tray):

Internet Connection Down
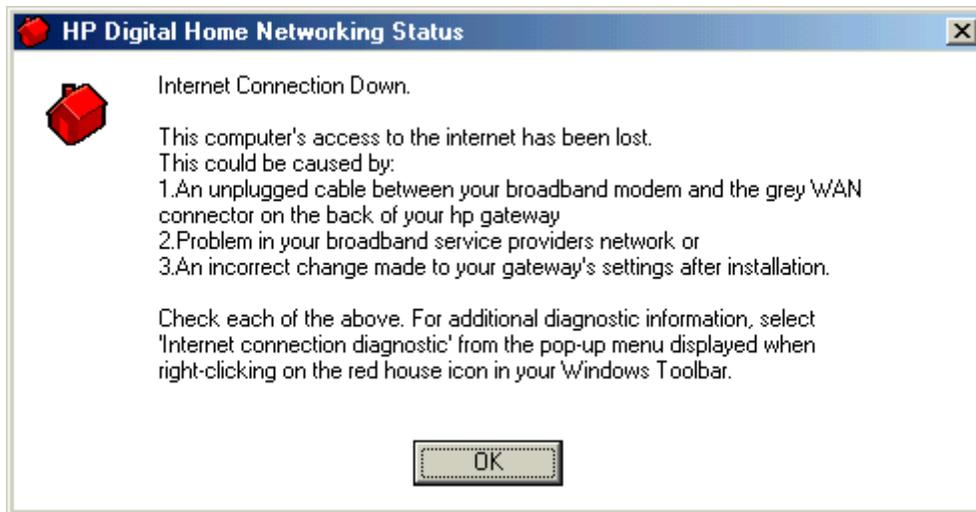
This window appears when the Gateway attempts to access the Internet and cannot detect a connection.
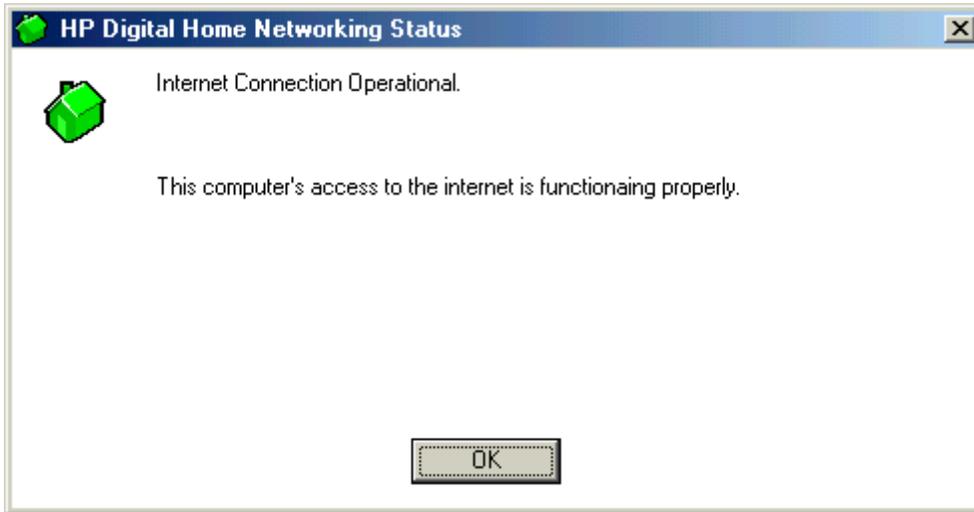
Connection to Gateway Lost

This window appears when your computer cannot establish a link to the Gateway.

Caution: If you reset the Gateway, be sure to do so only *briefly* (a second or two) or the Gateway will be reset to the factory defaults and any modifications you have made will be lost.

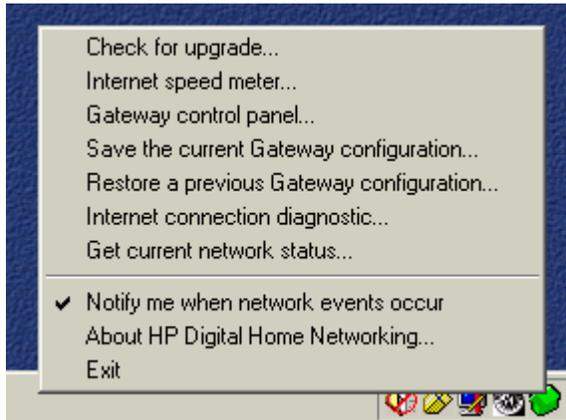**Internet Connection Operational**

This window appears when the Internet connection is restored. It also appears when when you first start your computer.

pop-up menu

Right-clicking the Gateway System Tray icon to display the following pop-up menu:

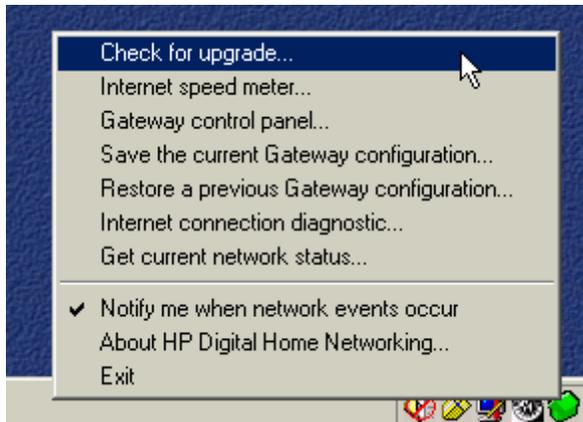**Gateway System Tray pop-up menu**

This menu provides convenient access to Gateway tools, which are described in this section.

Accessing a menu choice:

1 Right-click the icon, move cursor to highlight the desired option.

2 Highlight the desired option.

3 Left-click the option to launch it.

Check for upgrade

Check for upgrade...

When a software or firmware upgrade becomes available on the HP Web site, you are notified automatically by a notification window (assuming you have enabled this option — see "Notify me when network events occur" on page 27) and prompted to download and install the upgrade.

Since the automatic notification may not be as frequent as you would like, you can also manually check for the availability of upgrades by selecting **Check for upgrade...** from the System Tray application pop-up menu. The application checks the HP Web site, determines which upgrade (if any) is available for your configuration, gives you an opportunity to confirm that you wish to download and install the upgrade, and performs the download and installation of your new software or firmware upgrade.

Internet speed meter

Internet speed meter...
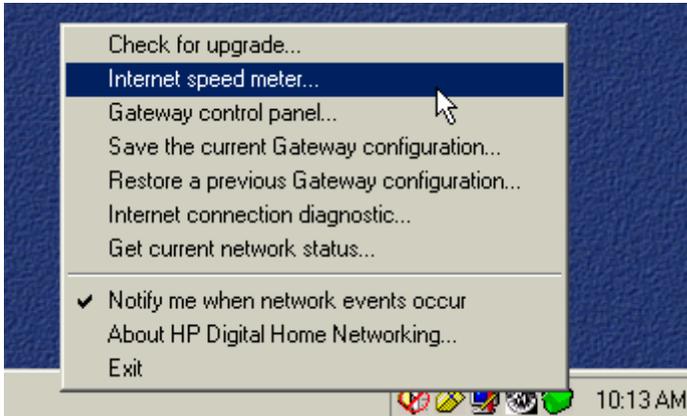
Selecting **Internet speed meter...** launches a utility that monitors your upstream and downstream Internet connection speed. When you select this choice, the following window appears:

speed meter start window
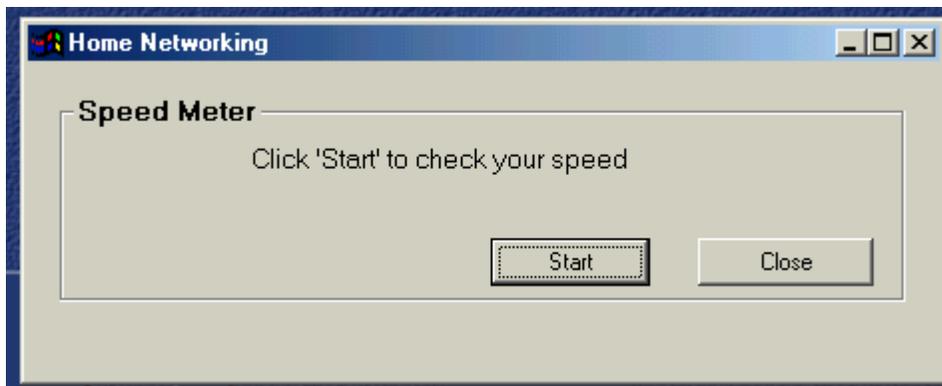
Click **Start**, and the following window appears displaying the speed of your Internet connection (it may take a few seconds to display both downstream and upstream parameters). With DSL, the downstream speed (the speed data is downloaded from the Internet to your computer) is typically much faster than the

upstream speed (the speed at which data is uploaded from your computer to the Internet), as shown in the example. Contact your DSL or broadband cable provider for specifications.

speed meter report
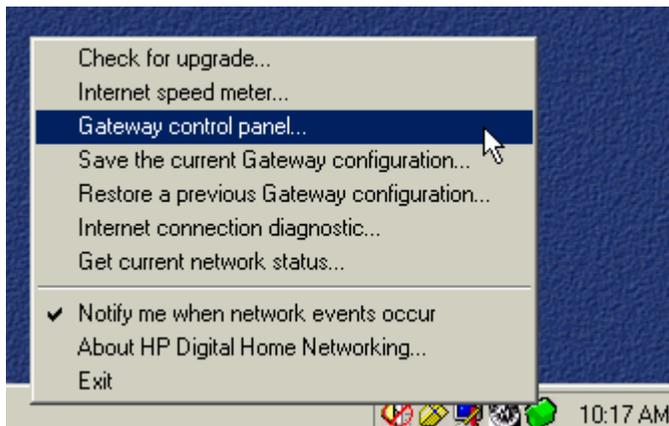

Gateway control panel

Gateway control panel...

The Gateway Control Panel allows you to adjust the settings of your Gateway. Access to the Control Panel requires the Gateway's administrative password.

Save the current Gateway configuration

Save the current Gateway configuration...
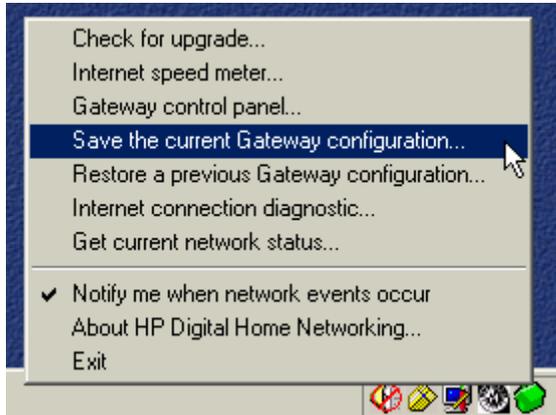
This option provides a backup copy of your current Gateway settings in the event that you need to restore them. This is especially useful if you modify your settings using the Gateway Control Panel, upgrade Gateway software or firmware, or experience a system crash.

1 Select **Save the current Gateway configuration...** The following screen appears:

Save configuration backup file location
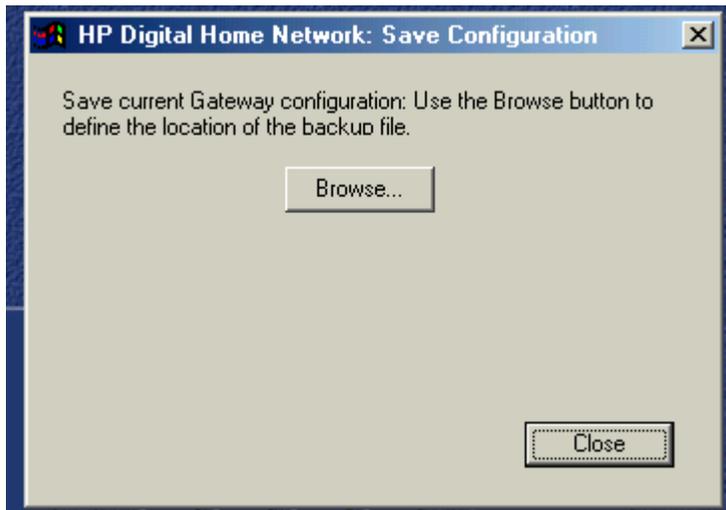
2 Click **Browse** to select a location to store the Gateway configuration backup file. The following dialog box appears:

Choose location for configuration backup file
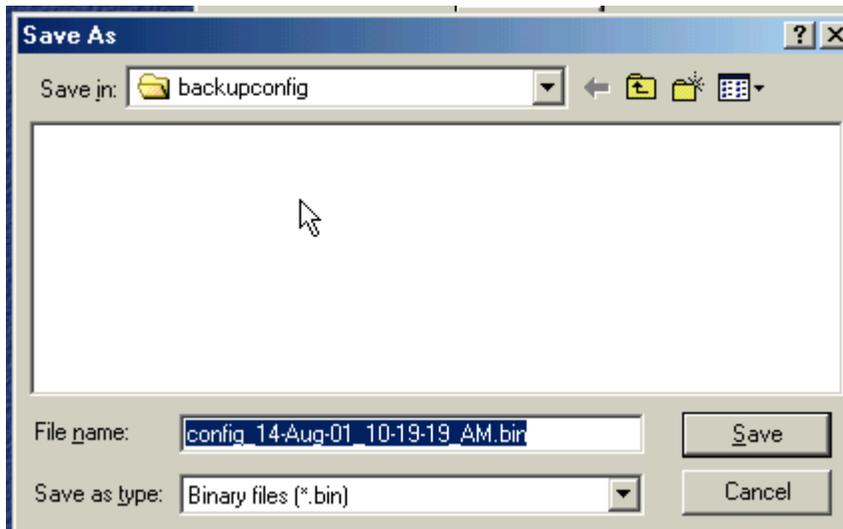
3 Navigate to a location of your choice for the backup file, or accept the default.

4 Click **Save** to save the file. The file is identified by a date and time, so you can save a series of different configurations if desired.

> **Note:** *It is recommended that you save the current Gateway configuration on a diskette for safekeeping after installing the Gateway.*

Restore a previous Gateway configuration

Restore a previous Gateway configuration...
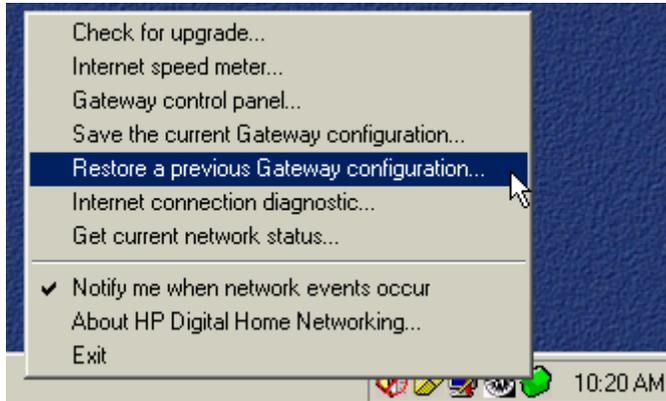
Select this choice to restore a previously saved configuration. If you have saved more than one configuration, you can select a specific one.

Internet connection diagnostic

Internet connection diagnostic... menu choice
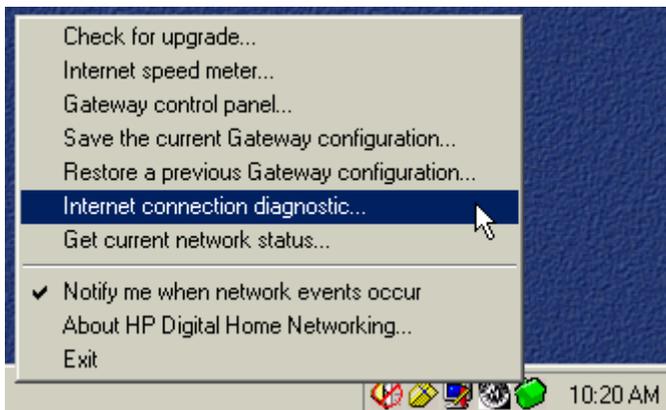
This utility checks your Internet connection to identify problems when a loss of connection occurs. Select the **Internet connection diagnostic...** to display the Internet connection diagnostic start window:

Internet connection diagnostic start window
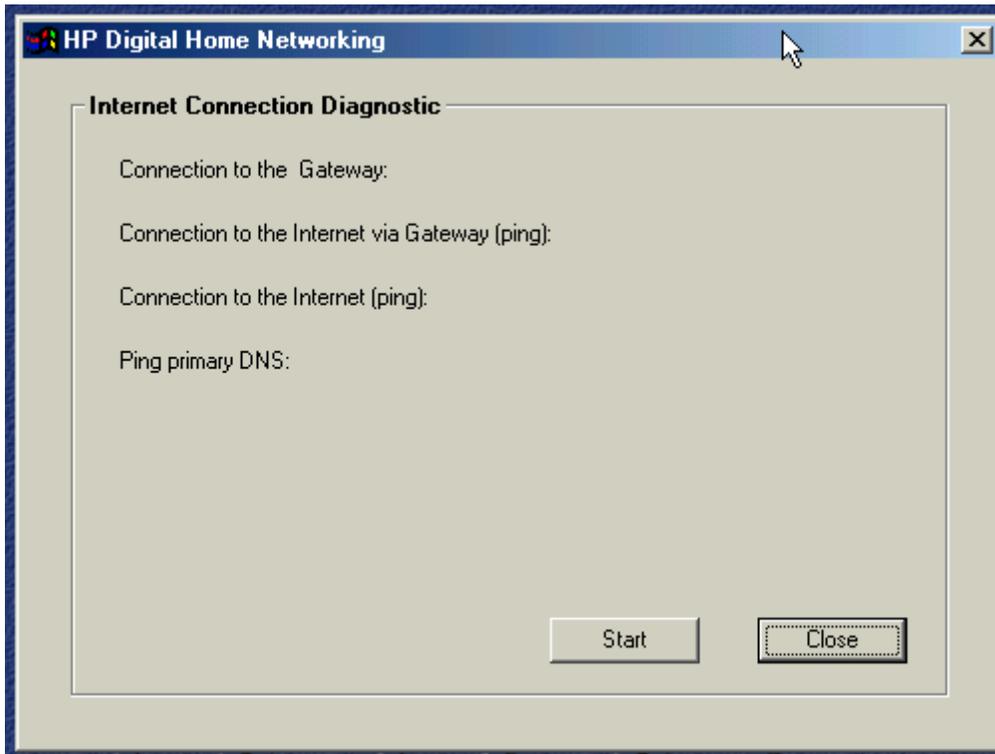
The utility checks for Internet connections via the Gateway or directly from your computer.

Click **Start** to begin the diagnostic routine. The Internet Connection Diagnostic
screen appears:

Internet connection diagnostic report window
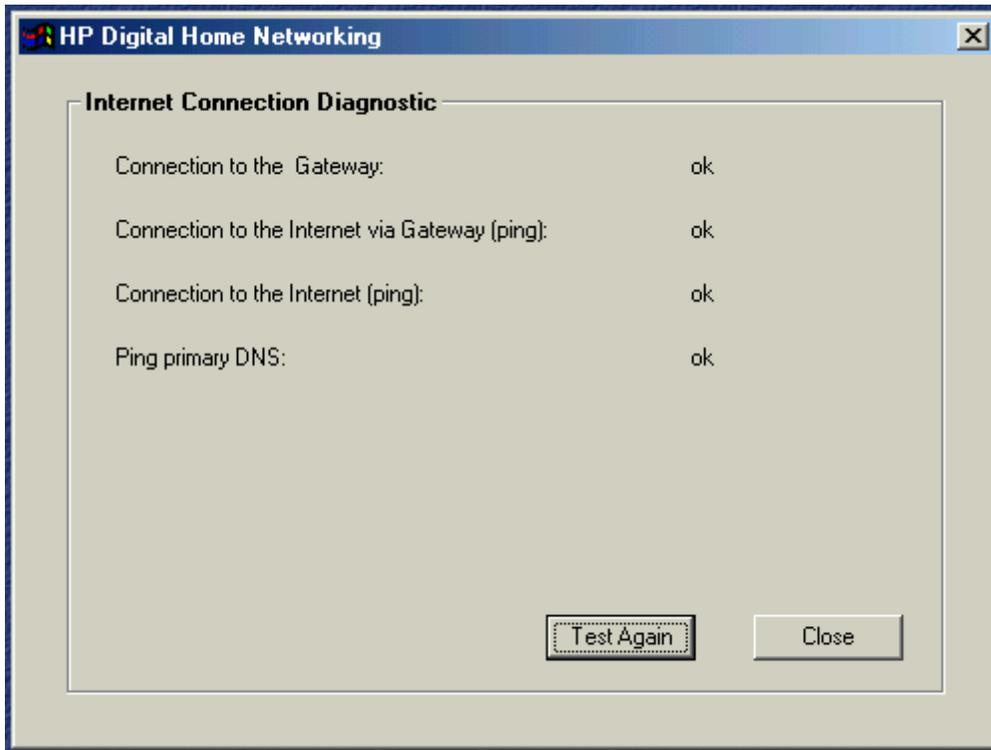
If all results are "ok", the utility has not detected any connection problems.

Internet Connection Diagnostic		
Parameter	**Message**	**Meaning**
Connection to the Gateway	Failed	Requires a "soft" reset of the Gateway. Depress the Reset button briefly (one or two seconds) with a paperclip. Depressing the Reset button longer that two seconds can cause the factory default settings to activate.
Connection to the Internet via Gateway (Ping)	Failed	Contact your ISP.
Connection to the Internet (Ping)	Failed	Contact your ISP.
Ping primary DNS	Failed	Contact your ISP.

Interpreting a "failed" report for any parameter:

❏ Connection to the Gateway. "Failed" means you should perform a soft reset of your Gateway. To do this, *briefly* depress the Reset button (only a second or two) on your Gateway with a paper clip or pencil tip. Be careful not to hold it down any longer than one to two seconds or the Gateway will be reset to the factory defaults and any modifications you have made will be lost.

❏ Connection to the Internet via Gateway. "Failed" means you should contact your Internet service provider (ISP).

❏ Connection to the Internet. "Failed" means you should contact your Internet service provider.

❏ Ping primary DNS. "Failed" implies an Internet Service Provider problem. Contact your ISP to report the problem.

Get current network status

Get current network status...
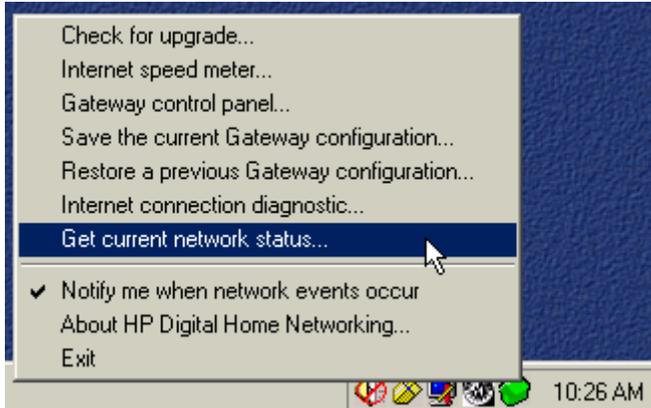
Selecting this choice generates one of the status notification windows discussed and illustrated in the section "status notification windows" on page 13. If all is well and the diagnostic utility detects no changes, the window appears:

example of a current network status window
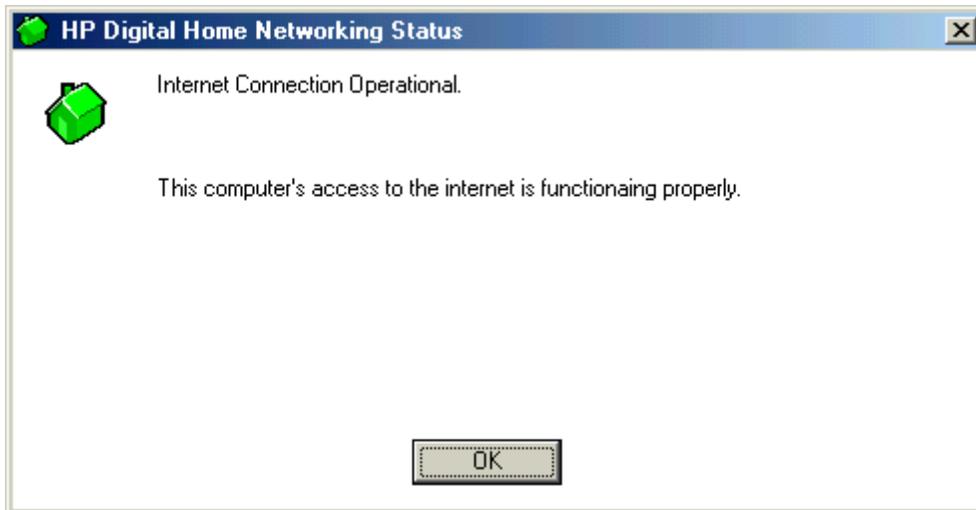
Notify me when network events occur

Notify me when network events occur
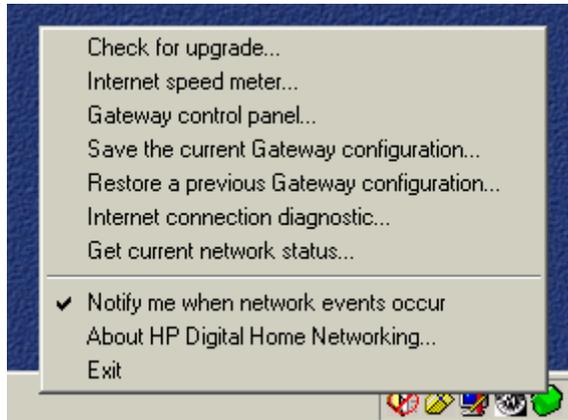
Selecting this option displays the status notification windows discussed in "status notification windows" on page 13. If you do not wish to receive these notifications select it and verify that the checkmark no longer appears next to this option (if a checkmark is present, make the selection again).

About HP Digital Home Networking

Selecting this option displays a window giving the version number of the Gateway System Tray application.

Exit

Selecting the Exit option removes the Gateway System Tray icon from the System Tray and prevents the program from launching when you next restart the computer.

To restore the icon to the System Tray, select **Start > Programs > HP Digital Home Networking > Gateway System Tray Application**.

gateway control panel

overview

The Gateway Control Panel allows you to configure additional functions beyond those installed through the Installation Wizard. This tool is a simplified alternative to the Expert Interface, which is described in the Appendix of this *user's guide*. The functions of the Gateway Control Panel eliminate the need to use the Expert Interface in most cases.

However, you may wish to refer to the Appendix for supplementary information for some of the options described in this chapter.

> ⚠️ **Caution:** *Only one user can access the Gateway Control Panel at a time.*

The Gateway Control Panel is a typical Windows control panel with tabs which provide access to the following functions:

❑ My Network
❑ Password
❑ Internet Access
❑ Application Access
❑ Application Hosting
❑ Expert Interface
❑ FAQ & Troubleshooting
❑ Remote Support

accessing the gateway control panel

The Gateway Control Panel is accessed from the Gateway System Tray icon described in the previous chapter. It can also be accessed from **Start > Programs > HP Digital Home Networking > Gateway Control Panel**.

To access the Gateway Control Panel from the Windows System Tray:

1 Locate the Gateway System Tray icon (depicted as a green, red, or yellow house depending on current network status). The Windows System Tray is in the recessed area of the Windows taskbar in the lower right of your screen.

Gateway System Tray icon

2 Right-click the icon. The Gateway System Tray menu appears:

Gateway System Tray menu
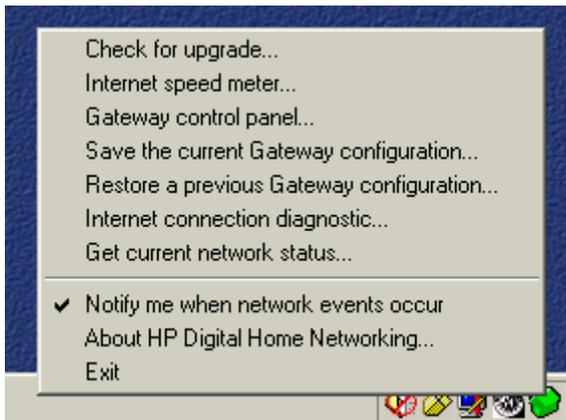
3 Select **Gateway control panel...**

Select Gateway control panel... option
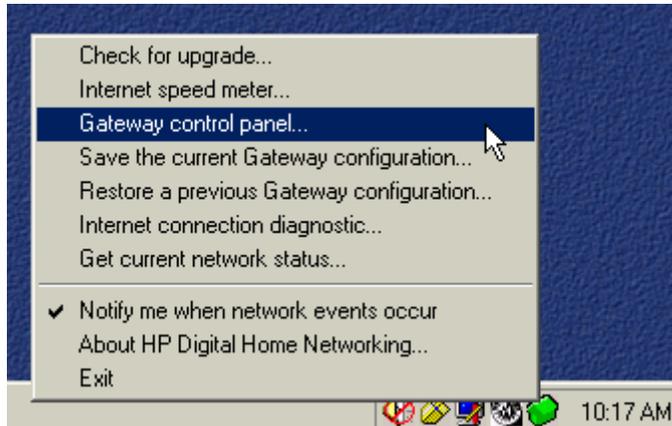
The Gateway Control Panel Login window appears:

Gateway Control Panel Login window

4 Enter your Gateway Password in the Login Password field, then click **OK**. The default password is "admin".

5 Click **Hint** on the Login screen if you cannot remember your password. The Password Hint window appears:

Password hint window

6 The question you provided when the default password was changed is displayed. Enter the answer in the Hint Answer field, then click **OK**. The Hint reply window appears:

Hint reply window

7 Click **OK**, and the password will be automatically inserted into Password box. Click **OK** to complete the login.

gateway control panel screen

When you have successfully logged on, the Gateway Control Panel screen appears with the My Network tab selected. With any tab selected, you can access all the other functions by clicking another tab.

Apply button

You can save changes at any time by clicking the **Apply** button. Clicking **Apply** does not close the control panel, and you can continue to use the other tabs to make additional changes to your settings. Clicking **Apply** saves *all* the changes on *all* the tabs, not just the settings on the tab you are currently modifying.

OK button

When you are finished using the control panel and wish to save any additional changes and exit, click **OK**. The control panel will close and your changes will be saved.

Cancel button

If you wish to exit the control panel without saving any unsaved changes, click **Cancel**.

gateway control panel tabs

My Network tab

This tab is a display-only overview of your network. It shows your Gateway and all the devices connected to the network, and it shows whether each device has an Ethernet, phoneline, or wireless connection.

The display is dynamically updated. However, click the **Refresh** button for the most current information.

Password tab

The Password tab allows you to change your Gateway's password and password hint. It is strongly advised that you create a password hint question and answer the first time you change your password in case you forget you password.

To change the password:

1 Click **Change Password**.

2 Enter the current password in the Current Password field.

3 Enter a new password in the New Password field.

4 Reenter the new password in the Confirm New Password field.

5 Click **OK**.

6 Click **Apply** to save the changes.

To change the password hint:

1 Click **Change Password Hint**.

2 Enter a hint question in the Hint Question field. For example, "Where was I born?"

3 Enter the answer to the hint question in the Hint Answer field.

4 Click **OK**. If you forget your password while logging onto the Gateway Control Panel, click **Hint**, supply the hint answer, and the existing password is provided.

5 Click **Apply** to save changes.

Internet Access tab

The Internet Access tab allows you to restrict specified computers on your network from accessing the Internet. You can also allow one user to be exposed to the Internet for a special purpose such as Internet gaming or video conferencing (the firewall is disabled for that one user).

To block specified computers from Internet access:

1 In the Internet Access Enabled window, locate the computer of the user whom you wish to block from Internet access.

2 Single-click that computer. To make multiple selections, hold down the Control key while single-clicking entries.

3 Click and drag all selected computers to the Internet Access Disabled window or click the left-pointing arrow button between the two windows.

If you change your mind or make a mistake, highlight and drag the selection back into the center window.

4 Click **Apply** to save the changes.

To expose one computer to the Internet:

1 From the Internet Access Enabled window, locate the one computer you wish to expose to the Internet.

Caution: *Exposing a computer to the Internet using this option disables firewall protection for that computer.*

2 Click and drag that entry into the Unprotected PC window (or select it and click the right-pointing arrow button.

3 Click **Apply** to save changes.

Application Access tab

The Application Access tab allows you to block specified computers on your local network from access to games or other applications on the Internet.

To block access to Internet applications:

1 From the Application List window, locate the application you wish to block from Internet access for all users on your local network.

2 Single-click that entry. To make multiple selections, hold down the Control key while single-clicking entries.

3 Click and drag all selected computers to the Internet Access Disabled window or click the left-pointing arrow button between the two windows.

> ***Note:*** *If an application you select shares the same port(s) with other applications, all applications configured for those ports will be dragged along with your selection since this operation blocks the port used by those applications, not the application itself.*
>
> *If you change your mind or make a mistake, highlight and drag applications back into the center window.*

4 Click **Apply** to save the changes.

Application Hosting tab

The Application Hosting tab allows you to host Internet services, e-mail, or an FTP server on one network computer. The services must be installed on the computer. Then access to network computers is enabled through the Applications Hosting tab. Once enabled, all requests from the Internet for a service will be routed by the Gateway to the computer specified. If no computer has been enabled for a service, access to that service is blocked by the Gateway.

Some ISPs restrict hosting services. Check with your ISP before installing a hosted service.

Positioning your cursor over one of the applications listed on the tab displays the existing settings (port numbers and protocols) for that application.

To enable hosting of Internet services:

1 On the Application Hosting tab, locate the application you want to enable.

2 Click the **Enable** checkbox.

3 Select the computer on your network that will be hosting this service from the drop-down menu.

4 Repeat for any additional applications.

5 Click **Apply** to save changes.

To add a new application to the list:

1 On the Application Hosting tab, click **Add Application**.

2 Enter the name of the application you want to add.

3 See the documentation that came with the application you wish to add for acceptable port number (or range of port numbers) and protocols. (The preset applications available on the the Application Hosting tab the port numbers are already configured.)

4 Enter the port number for the application; if a range is specified, click the **Enter Port Range** checkbox and enter the range of port numbers in the Starting Port and Ending Port fields.

5 To specify the protocol, click **Advanced** and select among these choices:

❑ Both TCP and UDP (the default)

❑ TCP

❑ UDP

6 Click **OK**.

7 Click **Apply** to save the changes.

To remove an application from the list:

1 On the Application Hosting tab, click **Remove Application(s)**.

2 Click the checkbox next the application you wish to remove. You can check more than one box.

3 Click **OK**.

4 Click **Apply** to save the changes.

Expert Interface tab

This tab provides access to the Expert Interface described in the Appendix to this *user's guide*. The other tabs of the Gateway Control Panel to provide automated access to the Expert Interface settings. Only *advanced* users should attempt to access the Expert Interface directly.

To access the Expert Interface, click **Launch Expert Interface**.

Caution: *Only one user can access the Expert Interface at a time.*

FAQ & Troubleshooting tab

This tab refers you to this *user's guide*, which resides on the CD-ROM provided. You may want to refer to the following chapters:

❑ Appendix: the Expert Interface

❑ Troubleshooting

❑ FAQ

❑ Glossary

The index will help you locate additional information related to the operation of the Gateway Control Panel.

Remote Support tab

The Remote Support tab provides access to the HP Customer Care Web site and also provides an opportunity for HP customer care experts to assist you directly if you experience difficulties you cannot solve by other means. A button on the tab takes you through the process of allowing HP Customer Care direct access to your Gateway, which it can then configure via remote access.

frequently asked questions (FAQs)

gateway general information

What is Network Address Translation (NAT) and what is it used for?

Network Address Translation (NAT) translates multiple IP addresses on the private LAN to one public address that is sent out to the Internet. This adds a level of network security since the addresses of PCs connected to the private LAN are never transmitted over the Internet. NAT also allows the Gateway to be used with low-cost Internet accounts, such as DSL or cable modem, where only one Transmission Control Protocol/Internet Protocol (TCP/IP) address is provided by the Internet Service Provider (ISP). The user may have 253 private addresses behind this single address provided by the ISP.

What type of firewall does the Gateway have?

The Gateway uses NAT and TCP/IP port inspections.

Is the Gateway cross-platform compatible?

Any platform that supports Ethernet and TCP/IP is compatible with the Gateway.

Does the Gateway replace a modem? Is there a cable or DSL modem in the Gateway?

No, the Gateway must work in conjunction with a cable or DSL modem.

Which modems are compatible with the Gateway?

This Gateway is compatible with virtually any cable or DSL modem that supports Ethernet.

How can I check whether I have static or DHCP IP Addresses?

Consult your ISP to obtain this information.

How do I get mIRC to work with the Gateway?

On the PC on which you are using mIRC, click, the **Forwarding** tab on the Expert Interface and set **Port forwarding** to 113 (see "forwarding" on page 72 of the Appendix: Expert Interface). If you experience difficulty after setting port forwarding, try changing the Direct Client-to-Client (DCC) settings to a range from 1024 to 1030 on the DCC option of the Forwarding settings

page of the Expert Interface.

How can I block corrupted FTP downloads?

If you are experiencing corrupted files when you download a file with your FTP client, try using another FTP program.

What is DMZ Hosting?

Demilitarized zone (DMZ) hosting allows one IP address (or computer) to be exposed to the Internet. Some applications require multiple TCP/IP ports to be open. It is recommended that you set your computer with a static IP address if you want to use DMZ Hosting.

If DMZ Hosting is used, does the exposed user/PC share the public IP address with the Gateway?

No.

Does the Gateway pass PPTP packets or actively route PPTP sessions?

The Gateway allows Point-to-Point Tunneling Protocal (PPTP) packets to pass through.

installation and configuration options

How many IP addresses can the Gateway support?

The Gateway supports a maximum of 253 IP addresses.

Where is the Gateway installed on the network?

In a typical environment, the Gateway is installed between the modem and the LAN. Plug the Gateway into the cable or DSL modem's Ethernet port.

Does the Gateway support any operating system other than Windows 95, 98, Me, 2000, NT, or XP?

Yes, but Hewlett-Packard does not provide technical support for setup, configuration, or troubleshooting of any non-Windows operating systems at this time.

If all else fails in the installation, what can I do?

Reset the Gateway by depressing the **Reset** button for at least three seconds, then reset your cable or DSL modem by powering the unit off and then back on. Obtain and flash (upload) the latest firmware release from the Hewlett-Packard Web site (www.hp.com).

Does the Gateway function in a Macintosh environment?

Yes, but the Gateway's setup pages are accessible only through Internet Explorer v4.0 or Netscape Navigator v4.0 or higher for Macintosh PCs.

I cannot get the Web configuration screen for the Gateway. What can I do?

You may have forgotten to remove the proxy server settings on your Internet browser, such as Netscape Navigator or Internet Explorer. Or, remove the dial-up settings on your browser. Check your browser documentation.

Will the Gateway allow me to use my own public IP addresses and domain, or do I have to use the IP addresses provided by the Gateway?

The Gateway mode allows customization of your public IP addresses and domain.

How many ports can be simultaneously forwarded?

Theoretically, the Gateway can establish 520 sessions at the same time, but you can only forward 10 ranges of ports.

What is the maximum number of virtual private network (VPN) sessions allowed by the Gateway?

One VPN session at a time; the memory buffer on the Gateway is 512 KB.

My Web pages hang up, I get corrupted downloads, or junk characters are being displayed on the screen. What do I do?

Force your Ethernet network interface card (NIC) to 10 Mbps or half duplex mode and turn off the **Autonegotiate** feature temporarily (go to the Network Control Panel in your Ethernet Adapter's Advanced Properties tab). Check with your NIC manufacturer for more information.

supported software

Does the Gateway support ICQ send files?

Yes, with the following fix: from ICQ menu > preference > connections tab >, select **I am behind a firewall or proxy** and set the firewall time-out to 80 seconds in the firewall setting. The Internet user can then send a file to a user behind the Gateway.

How do I get Napster to work with the Gateway?

Napster is fully compatible with the Gateway. During installation select **no idea** when asked about your firewall settings. Set your proxy settings to **No Proxy Server** in **File>Preferences**.

I set up an Unreal Tournament server, but others on the network cannot join. What do I do?

If you are running a dedicated Unreal Tournament (UT) server, you must create a static IP address for each of the network PCs and forward ports *7777, 7778, 7779, 7780, 7781,* and 27900 to the IP address of the server. If you want to use the UT server admin, forward another port (8080 usually works well), then in the [UWeb.WebServer] section of the server.ini file, set the ListenPort to 8080 to match the mapped port above and ServerName to the IP assigned to the Gateway from your ISP.

Can multiple gamers on the LAN log on to one game server and play simultaneously with just one public IP address?

It depends on which network game you're playing and what kind of game server you're using. For example, UT supports multi-login with just one public IP address.

How do I get Half-Life:Team Fortress to work with the Gateway?

The default client port for Half-Life is 27005. The PCs on your LAN must have "+clientport 2700x" in the HL shortcut command line; the x would be 6, 7, 8, and on up. This allows multiple PCs to connect to the same server. One exception: version 1.0.1.6 won't let multiple PCs with the same CD key connect at the same time, even if they're on the same LAN (it's not a problem with version 1.0.1.3). For hosting games, the HL server does not need to be in the DMZ. Just forward port 27015 to the local IP of the server PC. There remains, however, a problem with people being booted after a few minutes with an *illegible server* message.

Does the Gateway support IPsec?

A new IPsec pass-through feature is now included.

supported features

What are the advanced features of the Gateway?

The Gateway's advanced features include IP filtering, IP forwarding, dynamic routing, static routing, DMZ hosting, and MAC address cloning.

Is IPSec Pass-Through supported by the EtherFast Gateway?

Yes, it is a built-in feature that the Gateway automatically enables.

Does the Gateway support IPX or AppleTalk?

No. TCP/IP is the only protocol standard for the Internet and has become the global standard for communications. IPX, a NetWare communications protocol used only to route messages from one node to another, and AppleTalk, a communications protocol used on Apple and Macintosh networks, can be used from LAN to LAN connections, but those protocols cannot connect from WAN to LAN.

Does the WAN connection of the Gateway support 100 Mbps Ethernet?

Since broadband Internet connections like cable and DSL do not exceed 10 Mbps, the Gateway's current hardware design only supports 10 Mbps Ethernet on its WAN port. It does support 100 Mbps through the built-in auto-sensing Fast Ethernet 10/100 switch on the LAN side of the Gateway.

Does the Gateway support SPI?

Stateful packet inspection (SPI) is a new feature of the Gateway.

upgrade information

How will I be notified of new Gateway firmware upgrades?

All Hewlett-Packard firmware upgrades are posted on the HP website at www.hp.com, where they can downloaded for free. The Gateway's firmware can be upgraded with TFTP programs. If your Gateway's Internet connection is working well, there is no need to download a newer firmware version unless that version contains new features that you would like to use. Downloading a more current version of Gateway firmware will not enhance the quality or speed of your Internet connection, and may disrupt your current connection stability.

troubleshooting

I can't connect to the Gateway.

❏ Verify that the Gateway is properly installed, the LAN connections are OK (the LAN LEDs should be lit), and it is powered on.

❏ Verify that the PC is using an IP address between 192.168.1.2 and 192.168.1.254 and thus compatible with the Gateway default IP address of 192.168.1.1.

❏ The subnet mask must be set to 255.255.255.0 to match the Gateway's subnet mask. Confirm these settings for the Gateway from the Windows **Start** button by selecting **Settings > Control Panel > Network** (or **Network & Dial-up Connections**) **> Local Area Connection > Internet Protocol (TCP/IP)/Properties**.

I can't browse through the Gateway.

❏ Verify that both ends of the Ethernet cable and power adapter are properly connected and that the LEDs on the front panel are functioning properly.

❏ If using Windows 98 or Me, verify the TCP/IP setup on the client side. Click the Windows **Start** button, select **Run**, type **winipcfg**, and click **Enter**. The PC should have an IP address of 192.168.1.xxx ("xxx" is from 2 to 254), the subnet mask should be 255.255.255.0, the default gateway IP should be the Gateway's IP address, and it should have DNS. If using Windows 2000, use **ipconfig** to obtain this information.

❏ Also, check the same values as indicated in the previous bullet in the Setup tab of the Gateway's Expert Interface (see the Setup sections of the Appendix: Expert Interface of this user's guide.)

When I enter a URL or IP address, I get a *Request timed out* error.

❏ Check to see if other PCs give you the same error message. If they do, verify that your workstations' IP settings are correct (IP address, subnet mask, default gateway, and DNS server).

❏ If the PCs are configured correctly but still not working, check the Gateway. Verify that it is connected and powered on. Connect to the Gateway and check its settings. If you cannot connect to it, check the LAN and power connections.

❏ If the Gateway is configured correctly, check your Internet connection (broadband modem) to see that it is working correctly.

❏ Manually configure the TCP/IP with a DNS address provided by your ISP.

I can't obtain an IP address from my cable or DSL modem.

❑ Verify that all of your cabling is properly connected and that the Gateway's WAN and LAN LEDs are lighting up.

❑ Power down your cable or DSL modem for a few seconds, then turn it back on. After the modem goes through its self-test, see if you now have an IP address.

❑ Verify that your cable or DSL modem is DHCP-capable.

❑ You may have to enter the host or domain name on the Setup page of the Gateway's Expert Interface. See "setup" on page 51 of the Appendix: Expert Interface.

❑ Your ISP may require MAC Addresses. Check with your ISP. This MAC address can be obtained on the Status screen of the Gateway's Expert Interface.

I can't get a link to a modem, hub, or switch for one of my ports.

❑ Verify that your cabling is undamaged and is connected properly.

❑ Verify that your network interface adapter has been properly installed.

❑ Verify that both the Gateway and the other device are powered on.

❑ If you are linking to a hub or a switch, be sure that the other device is functioning properly.

❑ If you are connecting to a cable modem, try plugging it into the Gateway's uplink port rather than into a LAN port.

❑ If all else fails, reset the Gateway by depressing the **Reset** button with a paper clip. If you continue to experience serious routing problems, depressing the **Reset** button for about five seconds will clear all of the Gateway data and restore the factory default settings. However, be cautious before resetting the Gateway since doing so risks creating conflicts between your PCs' actual IP addresses and what the Gateway expects them to be, and you may be forced to restart the entire system.

I can't access my e-mail or the Internet.

❑ Some ISPs, especially cable providers, configure their networks so that you don't have to enter a full Internet address into your Web browser or e-mail application to reach your home page or receive your e-mail.

❑ You must obtain this information before connecting the Gateway to your network: ask your ISP.

appendix: the expert interface

advanced administration

For your convenience, a Web-based administrative utility called the Expert Interface has been programmed into your Gateway. Advanced Gateway administrative tasks may be performed through this interface. The Expert Interface may be accessed through any computer on the network by typing **http://192.168.1.1** in the address box of your Web browser (such as Internet Explorer or Netscpe Navigator) and pressing **Enter**. The Enter Network Password dialog box appears.

Enter Network Password dialog box

1 Leave the User Name field blank.

2 Type **admin** into the Password field.

> *Note:* *"admin" is the default password. We recommend that you change this password periodically by following the directions in the Password section of this Appendix.*

3 Click **OK**.

screens and functions

The following pages contain descriptions of each screen and its functions. The screens described are:

❑ Setup

❑ Password

❑ Status

❑ DHCP

❑ Log

❑ Help

❑ Advanced: The Advanced screen contains links to the following advanced settings screens:

 ❑ Filters

 ❑ Forwarding

 ❑ Dynamic Routing

 ❑ Static Routing

 ❑ DMZ Host

 ❑ MAC Clone

Similar explanations and instructions to the material in this guide can be found by clicking each screen's **Help** button (or the **Help** tab). To clear any values entered on a page, click **Cancel** and reenter the information. To save any settings altered on a page, click **Apply**. From any screen, click a new tab to access additional settings screens.

setup

The SETUP screen appears when the Expert Interface is accessed.

SETUP Screen

Note: *If you have used the Installation Wizard to install your Gateway, you have already properly configured all of this screen's initial settings.*

❑ Host Name: Allows you to create a name for the Gateway, required by some Internet Service Providers (ISPs).

❑ Domain Name: Allows you to create a domain name, required by some ISPs.

❑ Firmware Version: Shows the version of the firmware you are using.

❑ LAN IP Address and Subnet Mask: The IP address and subnet mask of the Gateway as seen by internal LAN users in your home or office. The default IP address is 192.168.1.1 and the default subnet mask is 255.255.255.0. It is recommended that you keep the defaults.

❑ WAN IP Address: Displays the Media Access Control (MAC) address of the Gateway and controls the IP address and subnet mask of the Gateway as seen by external users on the Internet.

  ❑ If your ISP is running a Dynamic Host Configuration Protocol (DHCP) server, select **Obtain an IP Address Automatically**. Your ISP will allocate an IP address.

  ❑ If you have a static (fixed) IP address, subnet mask, and gateway setting select **Specify an IP address**. Enter the IP address, subnet mask, default gateway address, and Domain Name Server (DNS) IP address provided by your ISP.

Note: *You can verify that your various settings are correct by attempting to connect to the Internet as follows: type **www.hp.com** into the address window of your Web browser and press **Enter**.*

❑ Login PPPoE: Check with your ISP to determine whether Point-to-Point Protocol over Ethernet (PPPoE) should be enabled. If PPPoE should be enabled:

1 Select **PPPoE** as the login method.

2 Enter the User Name and the Password as specified by your ISP.

3 Select one of the following:

  ❑ **Connect on Demand** to connect/disconnect the PPPoE connection automatically.
  The PPPoE connection will be disconnected if it has been idle longer than the Max Idle Time setting (recommended settings are 0 or 9999 for best connection reliability). If you have been disconnected due to inactivity, Connect on Demand enables your Gateway to automatically

reestablish your connection as soon as you attempt to access the Internet again.

❏ **Keep Alive** to keep the Internet connection alive indefinitely.
The gateway keeps the Internet connection alive indefinitely by sending out a few data packets periodically so your Internet service detects that the connection is still active. If you enable PPPoE, remember to remove any existing PPPoE applications already on any of your PCs. (Disregard RAS Plan which is for RAS only.)

If PPPoE should not be enabled: Select **Disable**.

❏ Login RAS (Singapore only): SingTel Magix uses Alcatel Remote Access Service (RAS) as the main authentication method for its Asymmetric Digital Subscriber Line (ADSL) servers in Singapore. This method uses TCP port 5555. To enable RAS:

1 Select **RAS** as the login method, then enter your user name.

> **Note:** *A 512K user should use one of the following formats: username or username@INT512.*

2 Enter your password and select your RAS Plan.

3 To check your RAS status select the **Status** tab. (Disregard Connect on Demand and Keep Alive, which are for the PPPoE option only.)

Click **Apply** to save settings.

password

The default password on your Gateway is "admin". To ensure security, we strongly recommend that you change your password when setting up your gateway, and then at regular intervals.

To change your password:

1   Click the **Password** tab of the Expert Interface to view the Password screen.

PASSWORD Screen

2   Enter your new Gateway password in the Router Password box.

3   Enter the new passwork again in the second box exactly as you typed it in the first box.

4   Click **Apply**.

Remote management allows you to manage your Gateway from a remote location via the Internet.

To enable remote management:

1 Click the **Advanced** tab.

2 Click the **Filters** tab and select **Enable** under Remote Management.

3 Click **Apply**. A remote managment password will be assigned.

To change remote management password:

1 On the Password screen, in the Remote Management Password box, enter a new password.

2 Click **Apply**.

Restore Factory Defaults: Allows you to restore the Gateway default settings.

> **Note:** *If you set the Restore Factory Default option to Yes and click Apply, you will clear all of the Gateway's settings. You will have to set up the Gateway again.*

status

The STATUS screen displays the current status of the Gateway, reflecting data and selections entered on the SETUP screen. All of the information provided on the STATUS screen is read-only. To make changes, select the **Setup** tab.

Select the **Status** tab of the Expert Interface to view the STATUS screen.

STATUS Screen

❑ Host Name: Shows the name of your Gateway, which is required by some ISPs.

❑ Firmware Version: Shows the version and date of the installed firmware. Dates are slightly more accurate than version numbers.

❑ Login: Shows whether PPPoE or RAS support is enabled and whether either one is connected.

❑ LAN: Displays the current IP address and subnet mask of the Gateway as seen by users on your LAN.

❑ DHCP Server: Shows whether the Gateway's DHCP server is either enabled or disabled.

❑ WAN: Displays the WAN IP address, WAN subnet mask, and Gateway's WAN default gateway IP address as seen by external users on the Internet.

❑ Domain Name System (DNS) IP Address: Shows the IP address(es) of the DNS currently used by the Gateway. Multiple DNS IP settings are common.

DHCP

A Dynamic Host Configuration Protocol (DHCP) server automatically assigns IP addresses to each computer on a network. Unless you already have a DHCP server on your network, it is highly recommended that your Gateway be set up as a DHCP server.

Select the **DHCP** tab of the Expert Interface to view the DHCP screen.

DHCP Screen

❑ DHCP Server: Select **Enable** to enable the Gateway's DHCP server option. If you already have a DHCP server on your network, select **Disable**. If you disable DHCP, remember to assign a static IP address that is in your local subnet.

❑ Starting IP Address: Enter an initial IP address (or accept the default) for the DHCP server when issuing IP addresses. Since the default IP address for your

Gateway is 192.168.1.1, the starting IP address must be 192.168.1.2 or greater.

❑ Number of DHCP users: Enter the maximum number of devices to which you want the DHCP server to assign IP addresses. Accept the default value or you may enter a number up to a maximum of 253. The maximum number depends on the starting IP address, so the total number must be chosen such that the starting IP address + the number of DHCP users –1 is equal to or less than 254 (which is the maximum value).

❑ DHCP Clients Table: Click **DHCP Clients Table** to show current DHCP client information. This information is stored in temporary memory since it changes periodically, so the list of clients could disappear, as shown on the following screen:

DHCP Clients Table Screen

Close Window

DHCP Active IP Table

Refresh

DHCP Server IP Address: **192.168.1.1**

Client Hostname	IP Address	MAC Address	Delete
jb763891	192.168.1.33	00-10-A4-D2-6F-E4	☐

log

The LOG screen displays a record of all access traffic passing through the Gateway, including e-mail and FTP tranmissions, whether they originate from your LAN, your WAN, or from the Internet. Check logs through the LOG screen or by using the LogViewer Windows application.

Select the **Log** tab of the Expert Interface to view the LOG screen.

LOG Screen
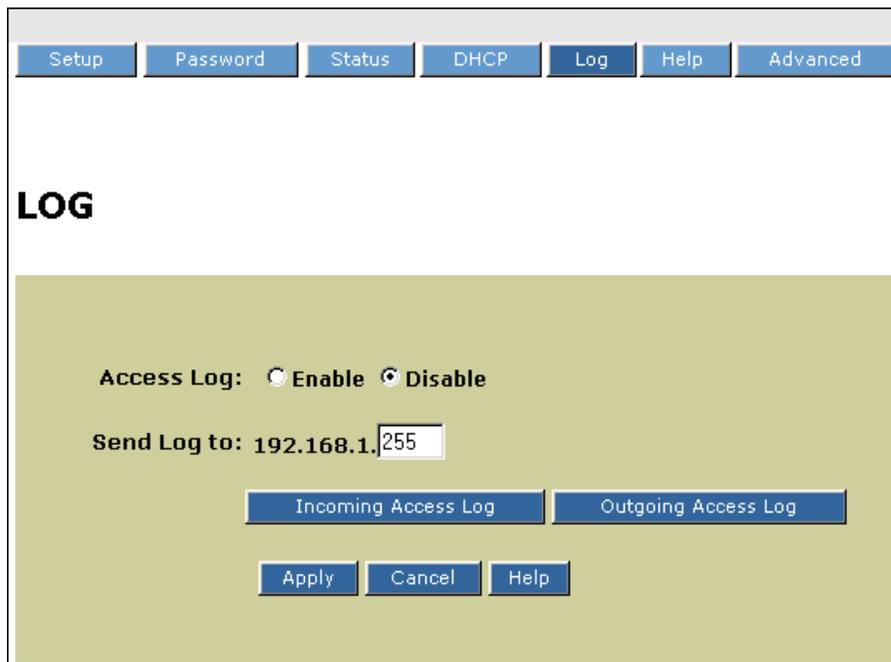
❑ Access Log: Select **Enable** to activate.

❑ Send Log To: The Gateway can send log messages to the LAN host. To launch LogViewer to record log messages:

1 Choose a PC located on your LAN.

2 Enter the selected PC's IP address in the Send Log to box. The Gateway will then send the log messages to that PC. Otherwise, it will send log messages to the default IP address, 255.

❑ Incoming Access Log: Click **Incoming Access Log** to display the WAN host's access log, the WAN host IP address, and the Gateway's port number.

❑ Outgoing Access Log: Click **Outgoing Access Log** to display the LAN host's access log, the LAN host IP address, destination URL or IP address, and the service or port number.

help

The HELP screen links to all of the Expert Interface online help screens. Each help screen, as well as all of the settings screens, contain links to the HP Web site (including technical support and Customer Care).

Select the **Help** tab of the Expert Interface to view the HELP screen.

HELP: Main Menu Screen
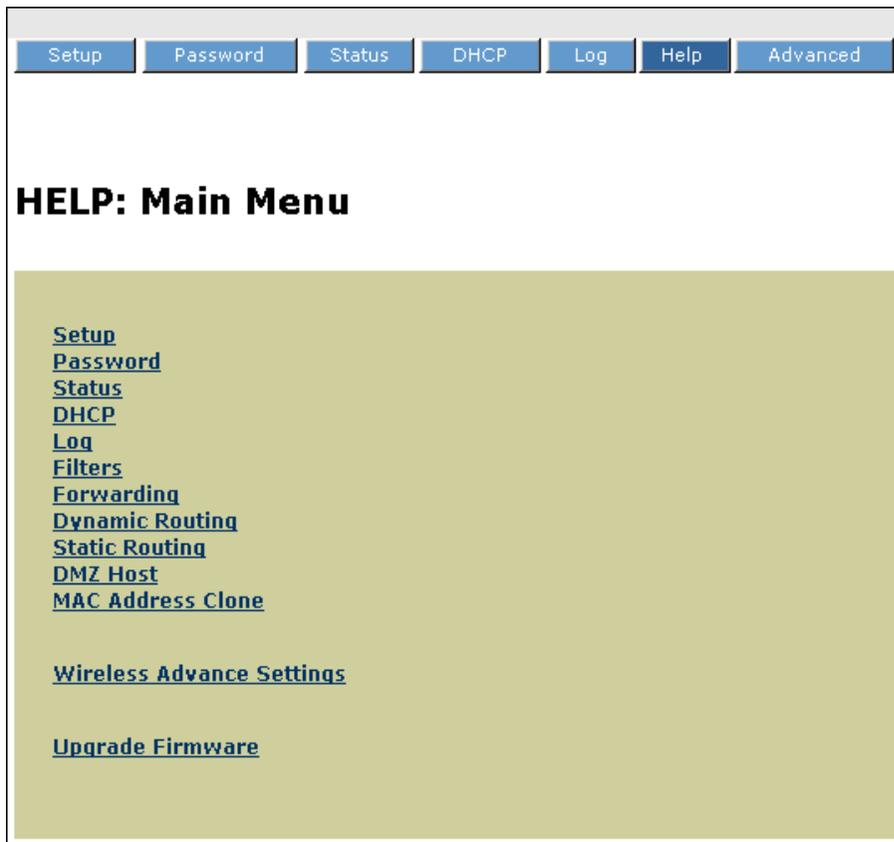
Each settings screen also contains a Help button at the bottom of each page linked to the help page for that particular screen. Selecting the Help tab at the top of each settings screen takes you to this HELP menu screen.

advanced

The Advanced screen provides access to six settings screens: Filters, Forwarding, Dynamic Routing, Static Routing, DMZ Host, and Mac Clone.

Select the **Advanced** tab of the Expert Interface to view the ADVANCED screen.

filters

Filters settings allow you to configure the Gateway to block selected users who are configured on this network from accessing the Internet. You can set up different filters for different users based on their IP addresses, their network port numbers, or their physical addresses. You can also enable Virtual Private Networking (VPN) sessions.

Select the **Filters** tab of the Expert Interface to view the FILTERS screen.

Advanced: FILTERS Screen

```
| Filters | Forwarding | Dyn. Routes | Static Routes | DMZ | MAC Clone | Setup |
```

ADVANCED: FILTERS

Filters enable you to prevent certain PCs on your network from accessing the
Internet connection.

**Filtered Private IP   (0 to 254)
Range:**

1:   192.168.1.[0] ~ [0]
2:   192.168.1.[0] ~ [0]
3:   192.168.1.[0] ~ [0]
4:   192.168.1.[0] ~ [0]
5:   192.168.1.[0] ~ [0]

**Filtered Private Port   (0 to 65535)
Range:**

1:   [Both ▼] [0] ~ [0]
2:   [Both ▼] [0] ~ [0]
3:   [Both ▼] [0] ~ [0]
4:   [Both ▼] [0] ~ [0]
5:   [Both ▼] [0] ~ [0]

Private MAC Filter: [Edit MAC Filter Setting]

SPI: ○ Enable ● Disable
Block WAN Request: ● Enable ○ Disable
Multicast Pass Through: ○ Enable ● Disable
IPSec Pass Through: ● Enable ○ Disable
PPTP Pass Through: ○ Enable ● Disable
Remote Management: ○ Enable ● Disable
Remote Upgrade: ○ Enable ● Disable
MTU: ○ Enable ● Disable Size: [0]

[Apply] [Cancel] [Help]

❑   Filtered Private IP Range: Enter the range of IP addresses desired to filter into
     the IP address range fields. Users with these IP addresses will not be able to
     access the Internet. To filter only one IP address, enter the same number desired

in both boxes. For example, if the IP address is 192.168.1.5, enter **5** in each box.

❑ Filtered Private Port Range: Filter users by entering their network port numbers. Select the protocols and enter the range of port numbers that you want to filter into the port number range fields. Users with these port numbers will not be able to access the Internet.

❑ Private MAC Filter: Filter users by entering their physical MAC addresses. Click **Edit MAC Filter Setting** and enter the MAC addresses desired to filter into the MAC address fields. Users with these MAC addresses will not be able to access the Internet.

❑ Stateful Packet Inspection (SPI): The Gateway supports SPI. Select either **Enable** or **Disable**.

❑ Block WAN Request: Prevents hackers from attacking through the Internet. When enabled, the Gateway will drop unaccepted TCP requests and ICMP packets from the Internet. Hackers will not be able to locate the Gateway by pinging the WAN IP address.

❑ IPSec Pass Through: The Gateway supports IPSec pass-through. Select either **Enable** or **Disable**.

❑ PPTP Pass Through: The Gateway supports Point-to-Point Tunneling Protocol (PPTP) pass-through, used to enable VPN sessions (but only one at a time). Select either **Enable** or **Disable**.

❑ Remote Management: Allows you to manage your Gateway from a remote location via the Internet. To activate the Remote Management feature:

1 Click **Enable** to activate.

2 Enter **http://[WAN IP Address]:8080** in the address box of the Web browser on any PC on your network.

3 Press Enter. You will be able to change any settings in the Expert Interface.

❑ Remote Upgrade: Select **Disable**. Remote Upgrade currently is not available.

❑ Maximum Transmission Unit (MTU): Limits the MTU of the Gateway. To implement MTU:

1 Select **Enable**.

2 Enter the MTU size.

3 Click **Apply** to save changes.

forwarding

Select the **Forwarding** tab of the Expert Interface to view the FORWARDING screen.

ADVANCED: FORWARDING Screen

port forwarding

Port forwarding is used to set up public services on a network, such as Web, FTP, or e-mail servers. When Internet users make certain requests to your network, the Gateway forwards them to specific computers equipped to handle the requests. For

example, if you set port number 80 (HTTP) to be forwarded to IP address 192.168.1.2, then all HTTP requests from outside users will be forwarded to 192.168.1.2.

Enter a valid IP address. You may need to establish a static IP address with your Internet provider in order to properly run an Internet server. For added security, Internet users are able to communicate with the server but will not actually be connected. The packets are forwarded through the Gateway.

To add a server using forwarding:

1   Enter the range of port numbers and select the protocol used by the server.

2   Enter the IP address of the server that you want the Internet users to be able to access. Refer to your software documentation for more information concerning which service port settings may need to be changed, if any.

3   Configure as many entries as desired up to the number of boxes provided.

4   Click **Apply** to save changes.

To delete a server entry:

1   Delete the port range number.

2   Delete the IP address.

3   Click **Apply** to save changes.

port triggering

Port triggering enables a server and LAN host to communicate using alternate ports when using certain applications or games. To enable port triggering:

1   Click **Port Triggering**.

2   Enter the port numbers used by the applications.

3   Enter the triggering (outgoing) port number and the alternate (incoming) port number.

4   Click **Apply** to save changes.

5   After several seconds you will be returned to the Port Triggering window. Click **Close Window** to return to the Forwarding tab.

The Gateway will forward incoming packets to the LAN host.

dynamic routing

Dynamic routing allows the Gateway to automatically adjust to physical changes in network layout. The Gateway, using the dynamic Routing Information Protocol (RIP) protocol, determines the route that the network packets take based on the fewest number of hops between source and destination. The RIP protocol regularly broadcasts routing information to other routers on the network.

Select the **Dyn. Routes** tab of the Expert Interface to view the DYNAMIC ROUTING screen.

ADVANCED: DYNAMIC ROUTING Screen

To view the current routing table:

Click **Show Routing Table** to view all valid dynamic route entries in use.

To set up Dynamic Routing:

1 In the Working Mode field, select **Gateway** if your Gateway is hosting your network's connection to the Internet. Select **Router** if the router exists on a

network with other routers, including a separate network gateway that handles the Internet connection.

2   In the TX field, choose the protocol to transmit data on the network.

3   In the RX field, choose the protocol to receive data from the network.

4   Click **Apply** to save changes.

static routing

If your Gateway is connected to more than one network, it may be necessary to set up a static route between them. Static routing determines the path that data follows over your network before and after it passes through your Gateway. You can use static routing to allow different IP domain users to access the Internet through this device.

Warning: *This is an advanced feature. Please proceed with caution.*

This Gateway is also capable of dynamic routing. To view the Dynamic Routing screen, select the **Dyn. Routes** tab. In many cases, it is better to use dynamic routing because it allows the Gateway to automatically adjust to physical changes in the network layout. In order to use static routing, the Gateway's DHCP settings must be disabled.

Select the **Static Routes** tab of the Expert Interface to view the STATIC ROUTING screen.

ADVANCED: STATIC ROUTING Screen

To view current routing table:

Click **Show Routing Table** to see all valid static route entries in use.

To create a static route entry:

1 Select a static route entry from the Static Routing drop-down list. The Gateway supports up to 20 static route entries.

2 Enter the following data to create a new static route:

❑ Destination LAN IP: Enter the IP address of the remote network or host for which you wish to create a static route. If you are building a route to an entire network set the network portion of the IP address to zero (0). For example, the Gateway's standard IP address is 192.168.1.1. Based on this address, the address of the network to which the Gateway is connected is 192.168.1, with the last digit (1, in this case) determining the Gateway's place on the network. Enter 192.168.1.0 for the IP address if you want to route to the Gateway's entire network.

❑ Subnet Mask: Enter the subnet mask used on the destination LAN's IP domain. The subnet mask (also known as the network mask) identifies which portion of an IP address is the network portion and which is the host portion. For example, if the subnet mask is 255.255.255.0, the first three numbers (255) identify this particular network, while the last digit (1 to 254) identifies the specific host.

❑ Default Gateway: If the Gateway is the main IP router to connect your network to the Internet, then the default gateway IP address and your Gateway IP address are the same. If you have another router handling your network's Internet connection, enter the IP address of your main Internet router here instead.

❑ Hop Count: Specifies the number of nodes a data packet passes through before reaching its destination. A node is any device on the network (switches and PCs, for example).

❑ Interface: Specifies whether your network is on the internal LAN or the WAN (the Internet). Select one of the following:

  ❑ LAN if you are connecting to a subnetwork.

  ❑ WAN if you are connecting to a network through the Internet.

3 Click **Apply** to save changes.

4 Repeat steps 1–3 for up to 20 entries.

To delete a static route entry:

1 Select the static route entry from the drop-down list.

2 Click **Delete this Entry**.

3 Click **Apply** to save changes.

DMZ host

The DMZ Host setting screen allows one local user to be exposed to the Internet for a special purpose such as Internet gaming or video conferencing. Whereas IP Forwarding can only forward a maximum of ten ranges of ports, DMZ hosting forwards all the ports for one PC simultaneously.

Warning: *This feature disables any firewall protection for the local DMZ host.*

Select the **DMZ** tab of the Expert Interface to view the DMZ HOST screen.

ADVANCED: DMZ HOST Screen

To activate the DMZ Host:

1 Enter the DMZ Host IP address.

2 Click **Apply** to save changes.

To deactivate the DMZ Host:

1 Enter a zero in DMZ Host IP Address.

2 Click **Apply** to save changes.

MAC address clone

A Media Access Control (MAC) address is a unique 12-digit identification code assigned to a hardware device. MAC address clone attaches the MAC address of the network card/adapter onto your Gateway that was connected to your cable or DSL modem during installation. This satisfies the requirement by some ISPs that you register this address with them.

Select the **Mac Address Clone** tab of the Expert Interface to view the MAC Address Clone screen.

ADVANCED: MAC Address Clone

To clone the MAC address of your network card/adapter onto your Gateway:

1 From the Windows **Start** menu, select **Run**.

2 Type **command** in the Open: box.

3 Click **OK**.

4 At the DOS prompt, type one of the following:

   ❑ **winipcfg** for Windows 98 or Me

   ❑ **ipconfig/all** for Windows 2000

   then press **Enter**.

5 Enter the 12-digit MAC address, found in the Adapter/Physical Address field, in the User Defined WAN MAC Address boxes on the MAC Address Clone screen.

6 Click **Apply** to save changes.

specifications

general

Model number	hn200e
Standards	IEEE 802.3 (10BaseT), IEEE 802.3u (100BaseTX)
Protocol	CSMA/CD
Ports	LAN: four 10/100 RJ-45 switched ports WAN: one 10BaseT Ethernet RJ-45 port for the cable or DSL modem
Speed	LAN: 10/100 Mbps WAN: 10 Mbps
Cabling type	10BaseT: UTP Category 3 or better 100BaseT: UTP Category 5 or better
Topology	Star
LED indicators	Power, LAN, WAN

environmental

Dimensions	189.2 mm x 150.9 mm x 53.1 mm (7.45 in x 5.94 in x 2.09 in)
Power input	External, 9V DC, 1 amp
Certifications	FCC Part 15, Class B
Operating temperatures	0° C to 40° C (32° F to 104° F)
Storage temperature	–20° C to 70° C (–4° F to 158° F)
Operating humidity	10% to 85%, noncondensing
Storage humidity	5% to 90%, noncondensing

glossary

10BaseT

Ethernet standard topology for twisted pair (T) cabling (transfer rate of 10 Mbps over 100 meters).

100BaseT

Fast Ethernet twisted pair cabling (transfer rate of 100 Mbps over 100 meters).

ad-hoc network

Group of computers, each with a wireless LAN network adapter, connected as an independent wireless local area network for the duration of a single communications session. An ad-hoc wireless LAN is applicable at a departmental scale for a branch or SOHO (small office/home office) operation.

ADSL (Asymmetric Digital Subscriber Line)

A DSL modem technology geared to acceptable Internet performance in which downstream data transfer (downloading data from the Internet to the subscriber) is faster than upstream data transfer (uploading data from the subscriber).

ATM (Asynchronous Transfer Mode)

Asynchronous transfer mode (broadband switching). ATM (asynchronous transfer mode) — a dedicated-connection switching technology that transmits digital data over a physical medium using digital signal technology. An individual cell is processed asynchronously relative to other related cells and is queued before being multiplexed over the transmission path.

broadband

Fast Internet access through DSL, cable modem, or other means.

BSS (Basic Service Set)

One wireless network.

BSSID (Basic Service Set Identification)

A unique name (or ID) used by all computers on the network. A specific ad-hoc LAN. Computers in a BSS must be configured with the same BSSID.

bus topology

Simple way of connecting computers in a network linearly along a single cable (each connected to the cable, not one to another).

client/server network

Network in which one computer (the "server") shares resources with other computers, called "clients" (as opposed to a peer-to-peer network).

CSMA/CD (Carrier Sense Multiple Access/Collision Detect)

The protocol for carrier transmission access in an Ethernet network in which each device senses whether the line is idle and then sends data. If another device sends data at the same time, a collision occurs, the data is discarded, and the devices try again.

default gateway

The router used to forward all traffic not addressed to a station within the local subnet.

DHCP (Dynamic Host Configuration Protocol)

A utility for assigning TCP/IP addresses to workstations automatically (a unique IP address must be assigned to each computer in the network). When computers are moved within the network, DHCP allows automated IP addresses to be assigned automatically. DHCP "leases" an IP address to a device for a specific amount of time, which is useful in education and other environments where users change frequently. DHCP also supports static IP addresses for computers needing a permanent IP address, such as those containing Web servers. See static IP address.

DCHP Client

A device configured to receive a DHCP address.

DHCP Server

A device configured to assign IP addresses to DHCP clients.

DMZ (Demilitarized Zone)

Computer host or small network inserted as a "neutral zone" between a company's private network and the external public network. It prevents outside users from having access to an internal server containing confidential data.

DMZ Hosting

Allows one IP address (or computer) to be exposed to the Internet. Some applications require multiple TCP/IP ports to be open. It is recommended that you set your computer with a static IP address if you want to use DMZ Hosting.

DNS (Domain Name System)

Method for matching Internet domain names with IP addresses. When a Uniform Resource Locator (URL) is entered into a Web browser, a domain name server retrieves the corresponding IP address for the domain name specified ("name resolution") and sends the request to the appropriate server. Domain names are convenient "handles" for IP addresses.

DSL (Digital Subscriber Line)

Transmits data bi-directionally at high speeds.

DSSS (Direct Sequence Spread Spectrum)

Generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low-power wideband noise and is rejected (ignored) by most narrowband receivers.

dynamic IP address

An IP address that is automatically assigned (typically by a DHCP server) in a TCP/IP network, as opposed to a static IP address.

ESS (Extended Service Set)

More than one wireless network.

ESSID (Extended Service Set Identification)

A unique name (or ID) used by users roaming among the multiple wireless networks. An infrastructure configuration can support roaming capability for mobile workers. More than one BSS can be configured as an ESS. Users within an ESS can roam freely between BSSs while served as a continuous connection to the network. Wireless stations and wireless access points within an ESS must be configured with the same ESSID and radio channel.

Ethernet

Protocol and cabling scheme allowing transfer of data at 10 Mbps.

Ethernet card

See NIC (Network Interface Card).

FHSS (Frequency Hopping Spread Spectrum)

Uses a narrowband carrier that changes frequency in a pattern known to both transmitter and receiver. Properly synchronized, the net effect is to maintain a single logical channel. To an unintended receiver, FHSS appears to be short-duration impulse noise.

firewall

A set of related programs, located at a network gateway server, that protects the resources of a network from users in other networks. It also controls access of internal users to outside resources. A firewall, working closely with the Gateway, examines each network packet to determine whether or not to forward it to its destination.

firmware

Programming inserted permanently onto a chip within a computing device.

FTP (File Transfer Protocol)

Enables electronic exchange of bulk information over an intranet or the Internet.

gateway

Hardware or software acting as a translator between two different protocols; a router.

HomePNA (Home Phoneline Networking Alliance)

See HPNA (Home Phoneline Networking Alliance).

host

Computer on network that provides services to other computers.

HPNA (Home Phoneline Networking Alliance)

A standard for home local area networks using phoneline connections.

IEEE (Institute of Electrical and Electronics Engineers)

The IEEE promotes the development and application of electrotechnology and allied sciences, fosters the develoment of standards that often become national and international standards, publishes several journals, and has local and regional chapters.

infrastructure

LAN incorporating both wired and wirelss devices. Allows wireless devices to access a central database.

Internet

Worldwide network of networks linking millions of computers together; *see also* WAN (Wide Area Network).

intranet

Private home or business network.

IP (Internet Protocol) address

A unique 12-digit number (for example, 205.112.134.121) identifying each sender and receiver of network packets across the Internet.

IPSec (Internet Protocol Security)

A developing standard for security on the Internet.

IPX (Internet Packet eXchange)

A Novell NetWare communications protocol similar to IP (Internet Protocol) used to route messages from one node to another on a network.

ISM band

The FCC and its counterparts outside the U.S. have set aside bandwidth for unlicensed use on the ISM band. In particular, the spectrum in the vicinity of 2.4 GHz is being made available worldwide.

ISP (Internet Service provider)

Company or organization providing access to the Internet.

LAN (Local Area Network)

Computers and peripherals linked together by cabling in a home, business, or local area with communication via networking protocols.

MAC (Media Access Control) address

A computer's unique hardware number that identifies it over a network.

Mbps

Megabits per second.

NAT (Network Address Translation)

Translation of an IP address in one network to a different IP address known within another.

Netware™

Novell's network operating system.

network

System connecting two or more computers and peripherals enabling them to communicate and share resources.

network adapter

See NIC (Network Interface Card).

network mask

See subnet mask.

NIC (Network Interface Card)

Card or adapter that allows a computer to connect to a network. Also called a network adapter. Ethernet cards and phoneline adapters are examples.

PCI (Peripheral Component Interconnect)

Specification defining an interconnection system between a PC and attached devices through up to ten expansion slots.

PCMCIA (Personal Computer Memory Card International Association) card

A memory card or I/O device that is inserted into a PC, usually a notebook or laptop computer.

peer-to-peer network

Network in which all computers are of equal rank and share resources equally, as opposed to a client/server network.

peripheral

Any piece of equipment attached to a computer, including printers, scanners, CD-ROM burners, Zip drives, or other means.

Ping (Packet Internet Groper)

Internet utility used to determine whether a particular IP address is online. It can be used to test and debug a network by sending out a data packet and waiting for a response.

PNA (Phoneline Networking Alliance)

See HPNA (Home Phoneline Networking Alliance).

PPPoE (Point-to-Point Protocol over Ethernet)

Method used mostly by DSL providers for connecting personal computers to a broadband modem for Internet access. Similar to a dial-up connection but at higher speeds.

PPTP (Point-to-Point Tunneling Protocol)

Protocol allowing corporations to extend their corporate network over the Internet through private "tunnels." This has the effect of using the Internet as a large private local area network known as a "virtual private network" or VPN.

print server

A hardware device that enables a printer to be connected directly to a network.

protocol

Network language allowing devices to communicate.

proxy server

Computer with software that controls user access to Internet services and information.

ring topology

See token ring topology.

RIP (Routing Information Protocol)

Widely used protocol for routing traffic on the Internet.

RJ-11

4-wire phoneline cable connector.

RJ-45

8-wire twisted pair connector used for connecting Ethernet devices.

Roaming

Roaming allows a portable computer user to communicate continuously while moving freely throughout an area greater than that covered by a single wireless access point. Before using the roaming function, the computer must be set to the same channel as the wireless access point for the coverage area.

router

Device or software connected to at least two networks that determines where a data packet will next be forwarded on the Internet. Located at the gateway where two networks meet. Often part of a network switch.

RTS/CTS (request-to-send/clear-to-send)

In exchanging data on a network, RTS is a signal sent from one computer or other device requesting permission to send data to a receiving device; CTS is a signal from the receiving computer or device indicating it is ready to receive the data.

server

Computer on a network that provides services to other computers on the network.

SPI (stateful packet inspection)

The ability of a firewall to remember outgoing requests to the Internet from internal network users and only allow responses to those requests back through the firewall, thus denying attempts to access the local network that have not been requested.

spread spectrum

Wideband radio frequency technique designed to trade bandwidth efficiency for reliability, integrity, and security.

SSID (Service Set ID)

A generic term for a Service Set ID.

SSL (Secure Sockets Layer)

Protocol enabling encrypted and authenticated Internet communications.

star (or spanning tree) topology

Ethernet networking in which all devices (including computers, print servers, or additional hubs) are connected through a central hub.

static IP address

Permanent IP address assigned to a node in a TCP/IP network. Network devices serving multiple users, such as servers and printers, are usually assigned static IP addresses, as compared to dynamic IP address.

subnet mask

Method for splitting IP networks into a series of subgroups, or subnets. Also known as a network mask.

switch

A network device that selects a path or circuit for sending a unit of data to its next destination. It may also serve as a router, but at its basic level is simpler and faster than a router.

T1 line

High-speed communications line.

TCP/IP (Transmission Control Protocol/Internet Protocol)

Basic communication language of the Internet (but can also be used in private networks). TCP keeps track of individual data packets, while IP handles the actual delivery of the data.

TFTP (Trivial File Transfer Protocol)

A simple, easy-to-implement protocol for transferring files on a network that lacks most of the features of a normal File Transfer Protocol (FTP) program (it cannot list directories or authenticate users).

token ring topology

Networking layout in which computers and other devices are connected in a unidirectional loop or ring. A computer captures a "token" being passed around the network and waiting for data transmission.

topology

Arrangement of cables and hardware in a network; *see* bus topology, default gateway, star (or spanning tree) topology, and token ring topology.

URL (Uniform Resource Locator)

Unique address on the Internet.

USB (Universal Serial Bus)

USB ports connect high-speed peripherals; supports multiport hubs.

UTP (Unshielded Twisted Pair)

The most common kind of copper telephone wiring connecting home and many business computers to a telephone service.

VPN (Virtual Private Network)

See PPTP (Point-to-Point Tunneling Protocol).

WAN (Wide Area Network)

Communications network that extends over a wide geographic area; sometimes used to mean the Internet.

WEP (Wired Equivalent Privacy)

A data privacy mechanism based on a 64-bit shared key algorithm, as described in the IEEE 802.11 standard.

index

regulatory notices

hewlett-packard company

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

❑   This device may not cause harmful interference, and

❑   This device must accept any interference received, including interference that may cause undesired operation.

❑   Pursuant to Part 15.21 of the FCC Rules, any changes or modifications to this equipment not expressly approved by Hewlett-Packard Company may cause harmful interference, and void your authority to operate this equipment. To maintain compliance with FCC Rules and Regulations, use only cable accessories provided.

For further information, contact:

Hewlett-Packard Company
Manager of Corporate Product Regulations
3000 Hanover Street
Palo Alto, Ca 94304
(650) 857-1501

note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, can cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

❑   Reorient or relocate the receiving antenna.

❑   Increase the separation between the equipment and the receiver.

❑   Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

❑   Consult the dealer or an experienced radio/TV technician for help.