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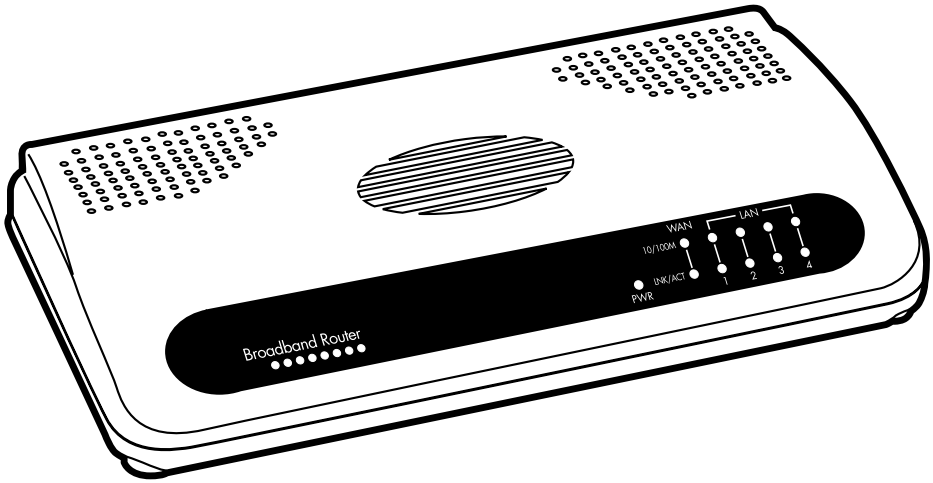
Pure Networking Broadband Router Users' Guide



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CE

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ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

    A: El cable de poder o el contacto ha sido dañado; u

    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

    C: El aparato ha sido expuesto a la lluvia; o

    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

    E: El aparato ha sido tirado o su cubierta ha sido dañada.

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1. Specifications

Memory: Flash: 2-MB NOR; RAM: 16-MB SDRAM

Protocols Supported: TCP/IP, UDP, ICMP, PPPoE, PPTP, NAT/PAT, DHCP, PAP/CHAP/MS-CHAP, L2TP, PPTP, IPSec passthrough

Throughput: 40 Mbps

Standards: IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX

User Controls: (1) Reset button

Connectors: LAN: (4) RJ-45;
WAN: (1) RJ-45;
Printer: (2) USB Type A

Indicators: (11) LEDs: (1) Power, (1) WAN 10/100, (1) WAN LNK/ACT, (4) LAN 10/100, (4) LAN LNK/ACT

Size: 1.2"H x 7.4"W x 3.9"D (3 x 18.8 x 9.9 cm)

Weight: 0.6 lb. (0.3 kg)

2. Introduction

2.1 Overview

The Pure Networking Broadband Router is an incredibly fast router with 20-Mbps LAN-to-WAN throughput. It enables multiple users (up to 253!) to share one broadband Internet connection through an ADSL or cable modem.

Configure your Internet connection settings in the Pure Networking Broadband Router. Then plug your PC into the LAN port, and you're ready to share files and access the Internet. You can even access private LAN servers from the public network. Plus, remote management allows configuration and upgrades from a remote site (over the Internet).

Monitor the router's status, such as DHCP client log, security log, and device/connection status. An easy-to-use, Web-based GUI simplifies configuration and management.

As your network grows, you can connect another hub or switch to the router's four LAN ports and one WAN port, allowing you to easily expand your network. The router is also equipped with a print server that supports LPD printing protocol, so you can share your printer with all Intranet users.

The router gives you firewall protection between network users and the Internet. It also supports advanced features, such as special applications, DMZ, virtual servers, access control, and bridge mode.

2.2 The Router's Back Panel

Figure 2-1 shows the Pure Networking Broadband Router's back panel. It has a power connector, two USB Type A printer ports, four LAN ports, a WAN port, and a reset button. Numbers 1–5 in Figure 2-1 correspond to numbers 1–5 in Table 2-1.

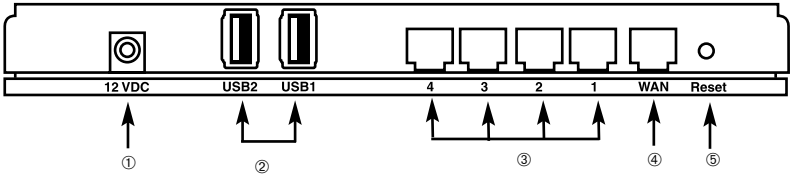

Figure 2-1. Back panel.

Table 2-1. The router's back-panel connectors and buttons.

Connector or Button	Function
① Power connector	Connect the router's power supply here.
② (2) USB Type A printer ports	Connect the router to printers via these ports.
③ (4) RJ-45 LAN ports	Use the four LAN ports to connect LAN PCs, printer servers, hubs, and switches to the router.
④ (1) RJ-45 WAN port	The WAN port connects to the segment that links your xDSL or cable modem to the Internet. If the modem port is an uplink port, use a crossover cable to link the WAN port to the modem. If the modem port is a regular port, use a straight-through cable to link the WAN port to the modem.

Table 2-1 (continued). The router's back-panel connectors and buttons.

Connector or Button	Function
⑤ Reset button	The Reset button has a dual function. 1. If problems occur with your router, press the router's Reset button with a pencil tip for less than four seconds. The router will reboot itself, keeping your original configuration. 2. If problems persist, you experience extreme problems, or you forgot your password, press the Reset button for longer than four seconds. The router will reset itself to factory-default settings.

2.3 The Router's Front Panel

On the router's front panel, there are LEDs that inform you of the router's current status (see Figure 2-2). Numbers 1–5 in Figure 2-2 correspond to numbers 1–5 in Table 2-2.

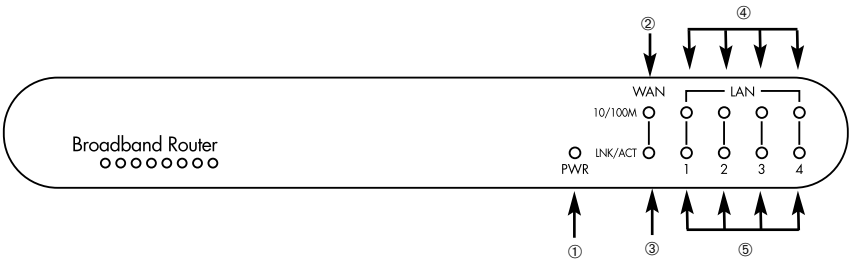

Figure 2-2. Front-panel LEDs.

Table 2-2. The router's front-panel LEDs.

LED	Light Status	Description
① PWR	On	The router's power supply is on.
	Off	The router's power supply is off.
② WAN 10/100M	Green	The WAN port is running at 100 Mbps.
	Yellow	The WAN port is running at 10 Mbps.
	Off	No WAN connection.
	Flashing	Data is being sent to the WAN port.
③ WAN LNK/ACT	On	WAN is connected.
	Off	No WAN connection.
	Flashing	WAN port has activity (ACT), data is being sent.
④ LAN 10/100M (Ports 1–4)	Green	The LAN port is running at 100 Mbps.
	Yellow	The LAN port is running at 10 Mbps.
	Off	No LAN connection.
	Flashing	Data is being sent to the LAN port.
⑤ LAN LNK/ACT (Ports 1-4)	On	LAN is connected.
	Off	No LAN connection.
	Flashing	LAN port has activity (ACT), data is being sent.

2.4 What's Included

Your package should contain the following items.

- (1) Pure Networking Broadband Router
- (1) Straight-through UTP cable
- (1) Power adapter
- (1) CD-ROM containing print server drivers
- This users' manual

If anything is missing or damaged, please contact Black Box at 724-746-5500.

2.5 What You Need to Supply

- (1) External xDSL (ADSL) or cable modem with an Ethernet port (RJ-45).
- (1) Network Interface Card (NIC) for each PC.
- Each PC should have a Web browser installed (Internet Explorer 4.0 or higher, or Netscape Navigator® 4.7 or higher).

3. Getting Started

Follow these instructions to set up the router and get connected to the Internet.

1. Set up your network as shown in Figure 3-1.

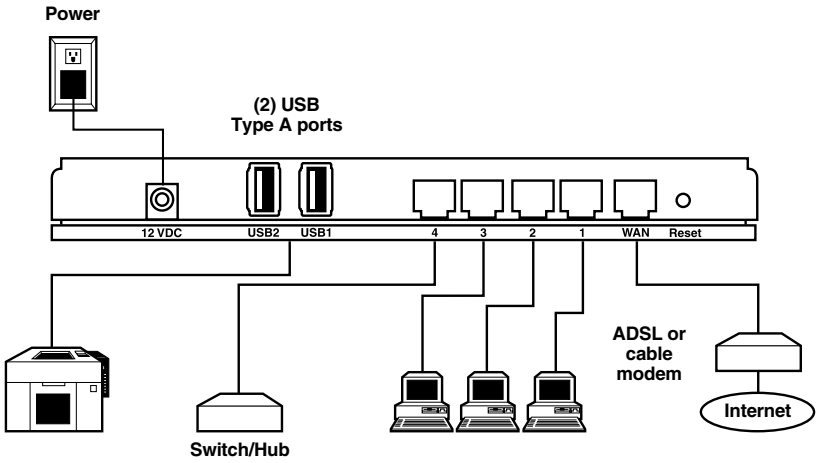

Figure 3-1. Typical LAN setup.

2. Set your LAN PC clients so that they can obtain IP addresses automatically. Each LAN client requires an IP address; it allows LAN clients to find one another. (If you have already configured your PC to obtain an IP automatically, proceed to step 3 on page 21.)

   Configure your PC to obtain an IP address automatically.

   By default the router's DHCP is on, which enables it to obtain an IP address automatically once your PC is configured to do so. This section shows you how to configure your PC so that it can obtain an IP address automatically for either Windows® 95/98/Me (step 2a), Windows XP (step 2b), Windows 2000 (step 2c), or Windows NT® (step 2d) operating systems. For other operating systems (Macintosh®, Sun®, etc.), follow the manufacturer's instructions.

   2a. Windows 95/98/Me

   1. Click the **Start** button and select **Settings**, then click **Control Panel**. The Control Panel window will appear.

2. Double-click the **Network** icon. The Network window will appear.

3. Check your list of Network Components. If TCP/IP is not installed, click the **Add** button to install it now. If TCP/IP is installed, go to step 6.

4. In the Network Component Type dialog box, select **Protocol** and click the **Add** button.

5. In the Select Network Protocol dialog box, select **Microsoft** and **TCP/IP** and then click the **OK** button to start installing the TCP/IP protocol. You may need your Windows CD to complete the installation.

6. After installing TCP/IP, go back to the Network dialog box. Select **TCP/IP** from the list of Network Components, then click on the **Properties** button. Figure 3-2 appears.

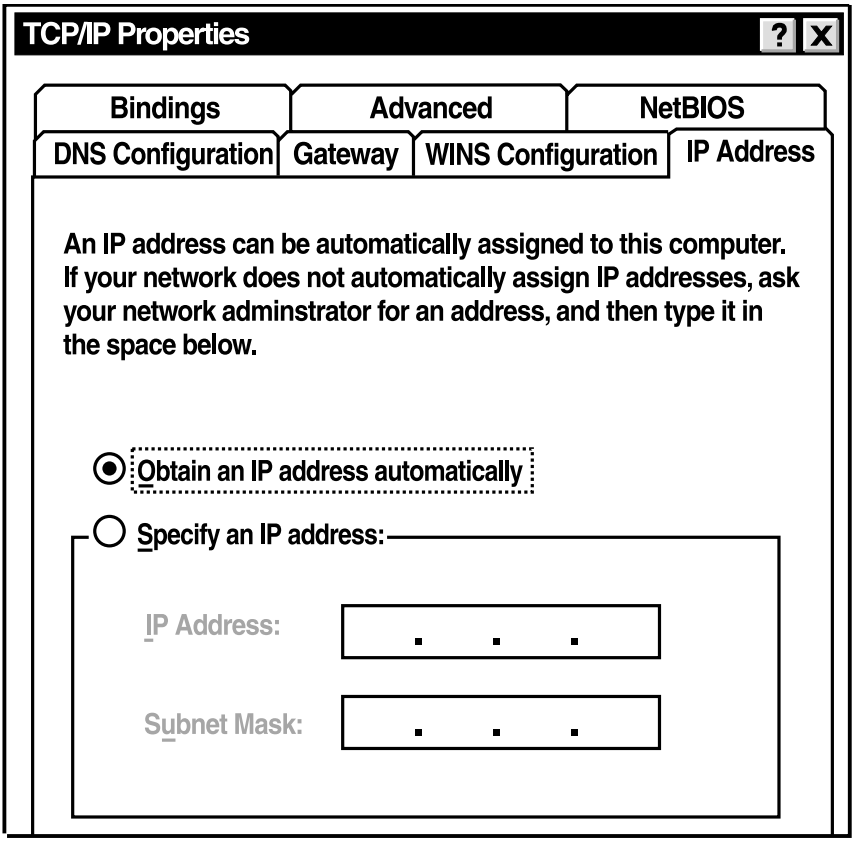

Figure 3-2. TCP/IP properties.

7. Check each of the tabs and verify the following settings.

   - Bindings: Check client for Microsoft Networks, and **File** and **Printer Sharing** for Microsoft Networks.
   - Advanced: Select the router's configuration.
   - NetBIOS: Select the NetBIOS protocol.
   - DNS Configuration: Select **Disable DNS**.
   - Gateway: All fields are blank.
   - WINS Configuration: Select **Disable WINS Resolution**.
   - IP Address: Select **Obtain IP Address Automatically**.

8. Reboot the PC. Your PC will now obtain an IP address automatically from your Pure Networking Broadband Router's DHCP server.

NOTE

Make sure that the Pure Networking Broadband Router's DHCP server is the only DHCP server available on your LAN.

Once you've configured your PC to obtain an IP address automatically, proceed to step 3 on page 21.

2b. Windows XP

1. Click on the **Start** button and select **Settings**, then click on **Network Connections**. The Network Connections window will appear.
2. Double-click on the **Local Area Connection** icon. The Local Area Connection window will appear.
3. Check your list of Network Components. You should see **Internet Protocol [TCP/IP]** on your list. Select it, and click on the **Properties** button. Figure 3-3 appears.
4. In the Internet Protocol (TCP/IP) Properties window, select **Obtain an IP address automatically** and **Obtain DNS server address automatically** as shown in Figure 3-3.

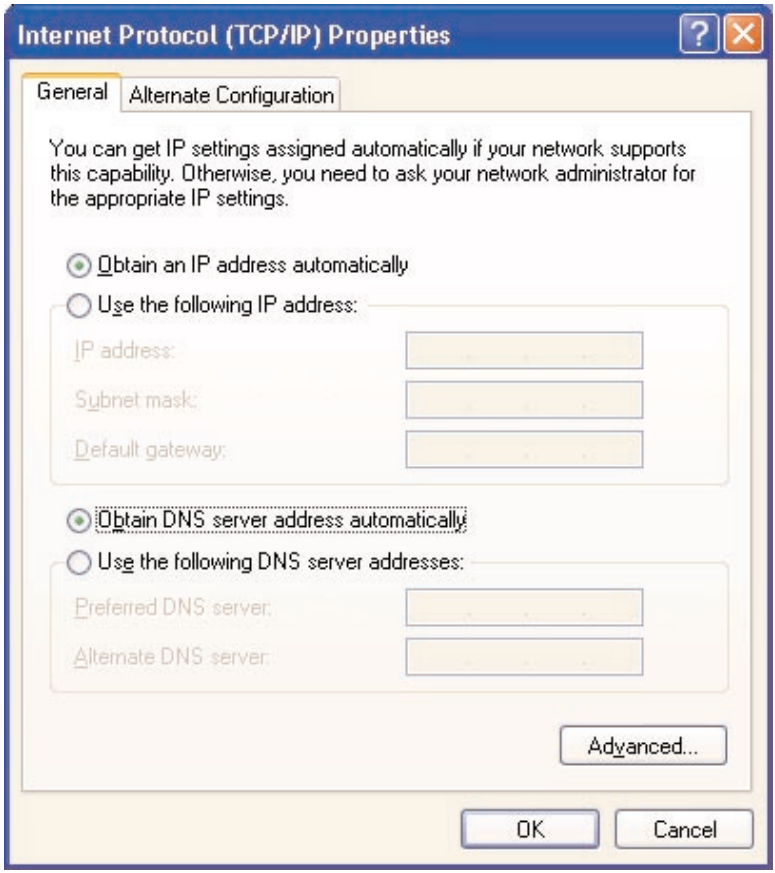

Figure 3-3. Internet Protocol (TCP/IP) Properties screen, General tab.

5. Click on the **OK** button to confirm the setting. Your PC will now obtain an IP address automatically from your router's DHCP server.

NOTE

Make sure that the router's DHCP server is the only DHCP server available on your LAN.

Once you've configured your PC to obtain an IP address automatically, proceed to step 3 on page 21.

2c. Windows 2000

1. Click the **Start** button and select **Settings**, then **Control Panel**. The Control Panel window will appear.

2. Double-click the **Network and Dial-up Connections** icon. In the Network and Dial-up Connection window, double-click the **Local Area Connection** icon. The Local Area Connection window will appear.

3. In the Local Area Connection window, click on the **Properties** button.

4. Check your list of Network Components. You should see **Internet Protocol** (**TCP/IP**) on your list. Select it and click on the **Properties** button.

5. In the Internet Protocol (TCP/IP) Properties window, select **Obtain an IP Address Automatically** and **Obtain DNS Server Address Automatically** as shown in Figure 3-4.

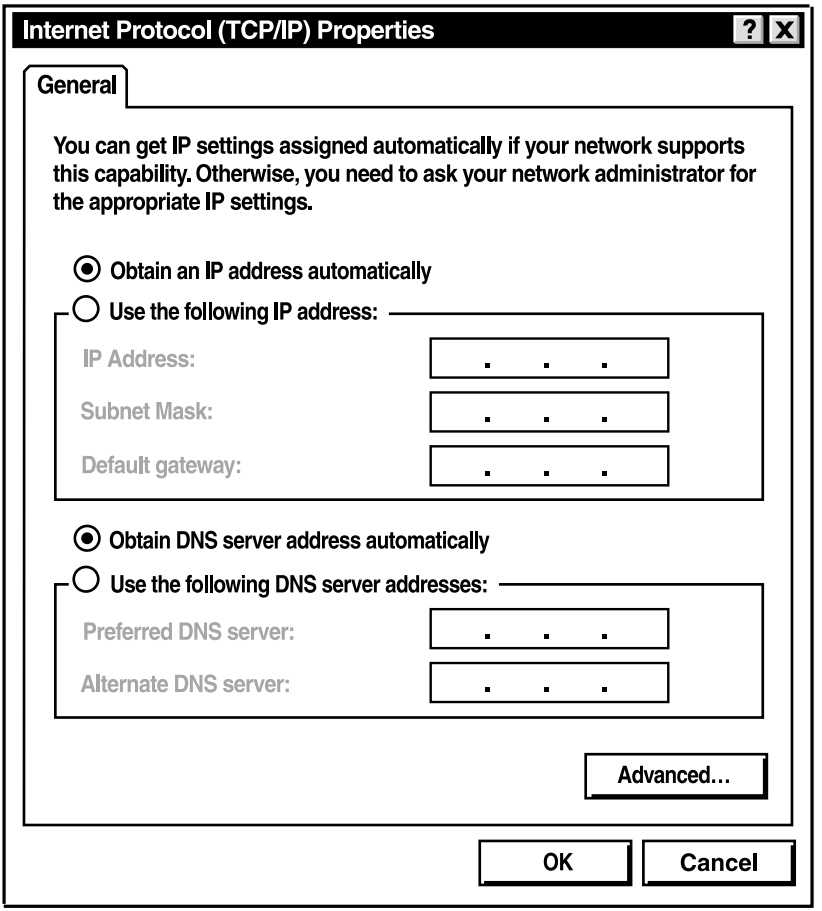

Figure 3-4. Internet protocol (TCP/IP) properties, General tab.

6. Click on **OK** to confirm the setting. Your PC will now obtain an IP address automatically from your Pure Networking Broadband Router's DHCP server.

NOTE

Make sure that the Pure Networking Broadband Router's DHCP server is the only DHCP server available on your LAN.

Once you've configured your PC to obtain an IP address automatically, proceed to step 3 on page 21.

2d. Windows NT

1. Click the **Start** button and select **Settings**, then **Control Panel**. The Control Panel window will appear.

2. Double-click on the **Network** icon. The Network window will appear. Select the **Protocol** tab from the Network window.

3. Check to see if the TCP/IP Protocol is on your list of Network Protocols. If TCP/IP is not installed, click on the **Add** button to install it now. If TCP/IP is installed, go to step 5 below.

4. In the Select Network Protocol window, select the **TCP/IP Protocol** and click on the **OK** button to start installing the TCP/IP protocol. You may need your Windows CD to complete the installation.

5. After you install TCP/IP, go back to the Network window. Select **TCP/IP** from the list of Network Protocols, then click the **Properties** button. Figure 3-5 appears.

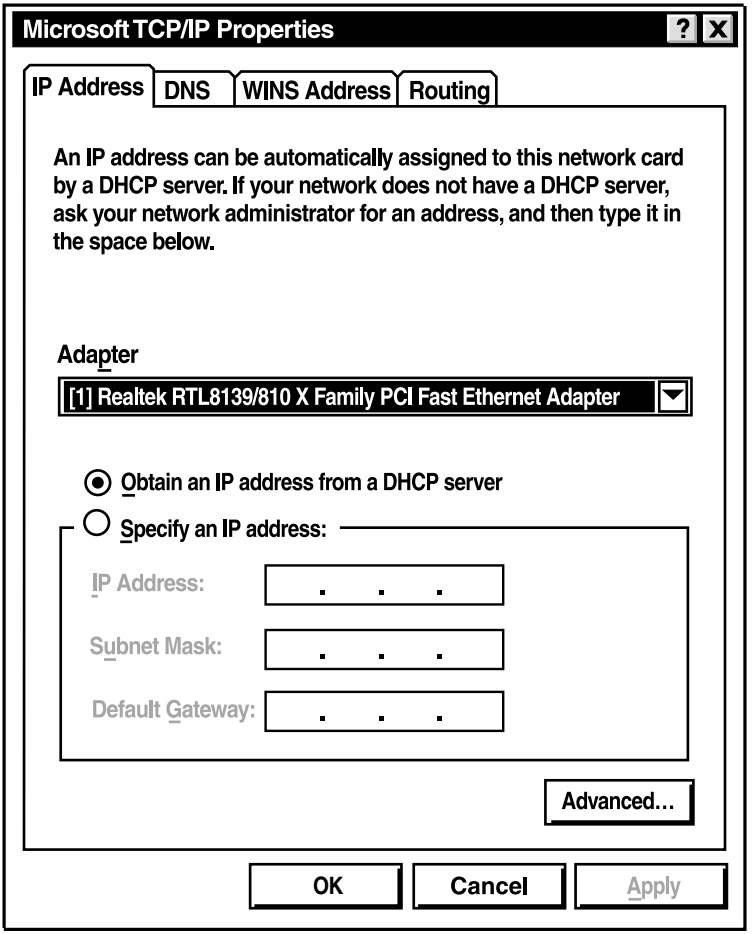

Figure 3-5. Microsoft TCP/IP properties.

6. Check each of the tabs and verify the following settings.

   - IP Address: Select **Obtain an IP address from a DHCP server**.
   - DNS: Leave all fields blank.
   - WINS Address: Leave all fields blank.
   - Routing: Leave all fields blank.

7. Click on the **OK** button to confirm the setting. Your PC will now obtain an IP address automatically from your Pure Networking Broadband Router's DHCP server.

Once you've configured your PC to obtain an IP address automatically, proceed to step 3 (below).

3. Once you have configured your PCs to obtain an IP address automatically, the router's DHCP server will automatically give your LAN clients an IP address. By default, the Pure Networking Broadband Router's DHCP server is enabled so that you can obtain an IP address automatically. To see if you have obtained an IP address, see **Appendix A**.

NOTE

Make sure that the Pure Networking Broadband Router's DHCP server is the only DHCP server available on your LAN. If there is another DHCP on your network, then you'll need to switch one of the DHCP servers off.

4. Once your PC has obtained an IP address from your router, enter the default IP address `192.168.2.1` (the Pure Networking Broadband Router's IP address) into your PC's Web browser and press **Enter**. See Figure 3-6.

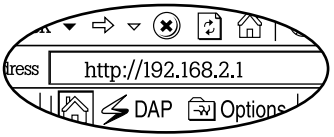

Figure 3-6. Entering the default IP address.

5. The screen shown in Figure 3-7 will appear. This site contains the router's Web-based management screens that allow you to configure your Pure Networking Broadband Router. Click on **LOGIN**.

NOTE

By default there is no password. For security reasons, we recommend that you add a password as soon as possible (see Figure 3-7).

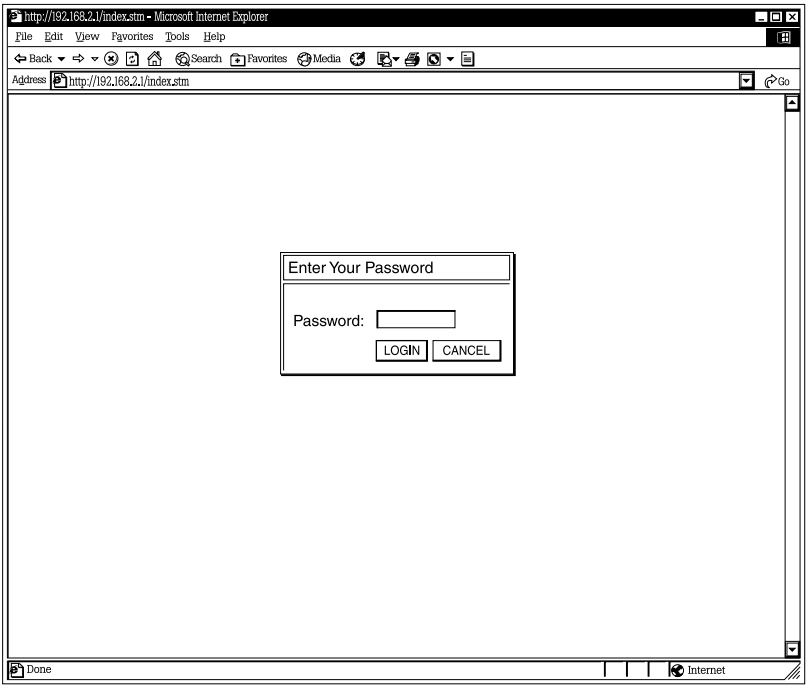

Figure 3-7. The Enter Your Password screen.

6. The Home page shown in Figure 3-8 will appear. The Home page is divided into four sections: Quick Setup Wizard, General Setup, Status Information, and Tools.

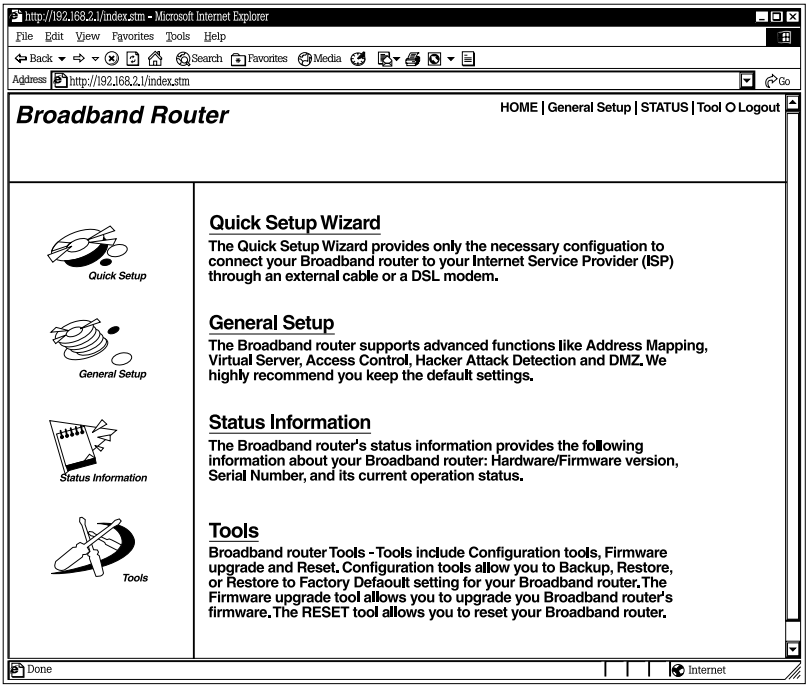

Figure 3-8. Home page.

Quick Setup Wizard (Chapter 4)

If you want to use the Pure Networking Broadband Router only as an Internet access device, then you *only* need to configure the screens in the Setup Wizard section.

General Setup (Chapter 5)

If you want to use the Pure Networking Broadband Router's advanced features, you'll need to configure the Quick Setup Wizard and the General Setup section. Or, you can just configure the General Setup section, since the General Setup/WAN and the Quick Setup Wizard contain the same configurations.

Status Information (Chapter 6)

Use the Status Information section to monitor the router's current status information.

Tools (Chapter 7)

If you want to reset the router (because of problems), save your configurations, or upgrade the firmware, go to **Chapter 7**.

Table 3-1 describes the router's four Home page options.

Table 3-1. Home page selections.

Menu	Description
Quick Setup Wizard	Select your Internet connection type. Then, using the drop-down menus, fill in the configurations necessary to connect to your Internet Service Provider (ISP).
General Setup	This section contains configurations for the Pure Networking Broadband Router's advanced functions such as bridge, address mapping, virtual server, access control, hacker attack prevention, DMZ, special applications, and other functions to meet your LAN requirements.
Status Information	In this section, you can see the Pure Networking Broadband Router's system information, Internet connection, device status, security log, and DHCP client log information.

Table 3-1 (continued). Home page selections.

Menu	Description
Tools	This section contains the router's tools, including configuration tools, firmware upgrade, and reset. Configuration tools allow you to backup (save), restore, or restore to factory-default configuration for your Pure Networking Broadband Router. The firmware upgrade tool allows you to upgrade your Pure Networking Broadband Router's firmware. The reset tool allows you to reset your router.
Logout	Selecting Logout will return you to the Home page (it has the Login button).

7. Click on Quick Setup Wizard (see **Chapter 4**) to start configuring settings required by your ISP so that you can access the Internet. The other sections (General Setup, Status Information, and Tools) do not need to be configured unless you wish to implement or monitor more advanced features or information.

Select the section (Quick Setup Wizard, General Setup, Status Information, or Tools) you wish to configure and proceed to the corresponding chapter. Use the selections on the Home screen's top right-hand page (see Figure 3-9) to navigate around the Web-based management user interface.

Figure 3-9. Home page menu bar.

4. Quick Setup Wizard

4.1 Setup

The Quick Setup Wizard is designed to get you using the Pure Networking Broadband Router as quickly as possible. You are required to fill in only the information necessary to access the Internet. Once you click on the Quick Setup Wizard in the Home page, you should see the screen shown in Figure 4-1.

4.2 Time Zone

The Time Zone allows your router to base its time on the settings configured here. This will affect functions such as log entries and firewall settings.

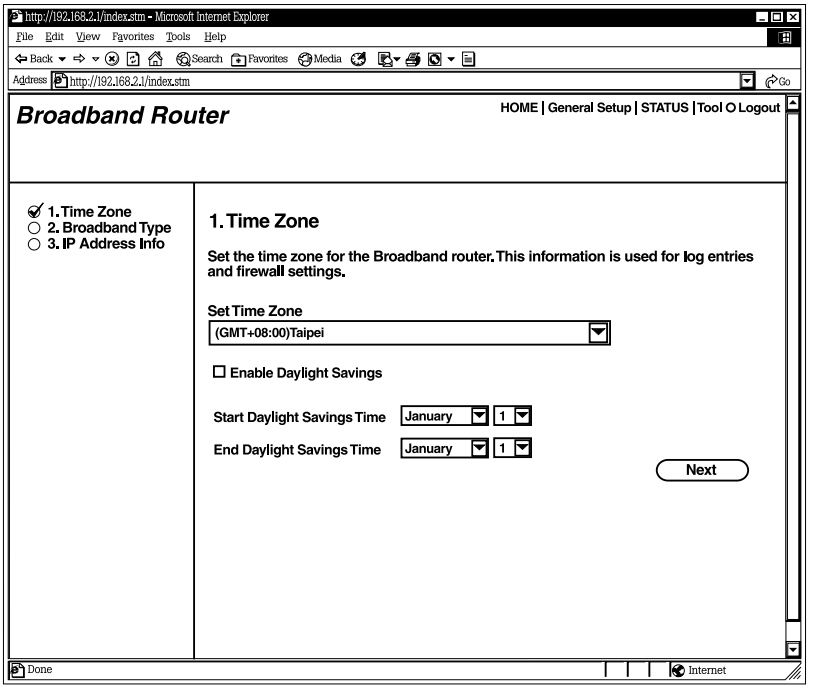

Figure 4-1. Set Time Zone screen.

Table 4-1 describes the router's time zone options.

Table 4-1. Time Zone screen parameters.

Parameter	Description
Set Time Zone	Use the drop-down menu to select the time zone of the country you are currently in. The router will set its time based on your selection.
Enable Daylight Savings	The router can also take Daylight Savings into account. If you want to use this function, check the Enable Function box to enable the Daylight Savings configuration.
Start Daylight Savings Time	Use the drop-down menu to select the day you want to start Daylight Savings Time.
End Daylight Savings Time	Use the drop-down menu to select the day you want to end Daylight Savings Time.
Next button	Click on this button to save your changes and go on to the next screen.

Click on the **Next** button to proceed to Broadband Type.

4.3 Broadband Type

In this screen, you'll select one of four types of connections that you'll use to connect your Pure Networking Broadband Router's WAN port to your ISP (see Figure 4-2).

NOTE

Different Internet Service Providers (ISPs) require different methods of connecting to the Internet. Check with your ISP for the type of connection it requires.

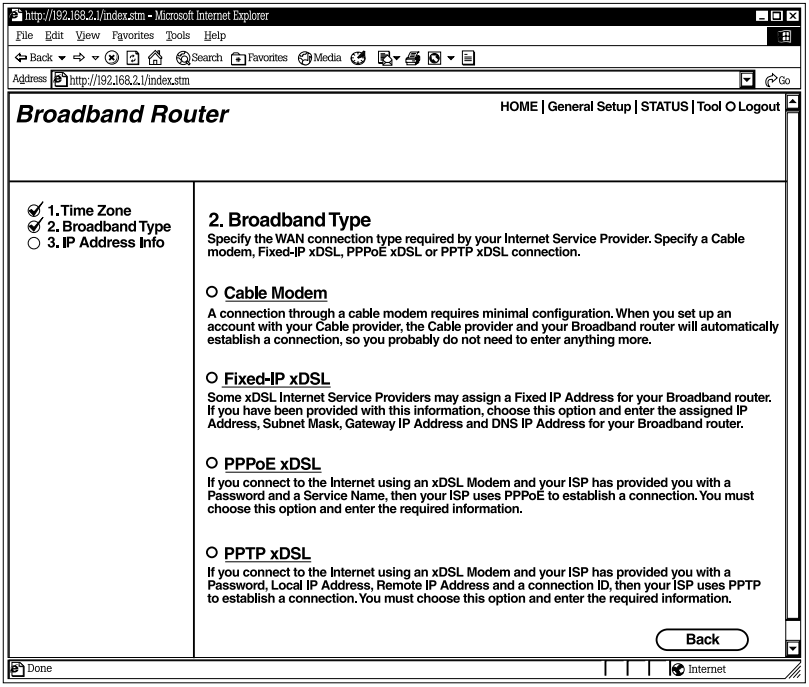

Figure 4-2. Selecting the broadband type.

Table 4-2 lists the ways that the router selects addresses and connections.

Table 4-2. Broadband type parameters.

Menu	Type of Connection
Cable Modem	Your ISP will automatically give you an IP address.
Fixed-IP xDSL	Your ISP has given you an IP address already.
PPPoE xDSL	Your ISP requires you to use a Point-to-Point Protocol over Ethernet (PPPoE) connection.
PPTP xDSL	Your ISP requires you to use a Point-to-Point Tunneling Protocol (PPTP) connection.
Back button	Click on this button to go back to the previous screen.

Click on one of the WAN types and then proceed to the manual's relevant sub-section (**4.3.1**, **4.3.2**, **4.3.3**, or **4.3.4**). Click on the **Back** button to return to the previous screen.

4.3.1 Cable Modem

Choose **Cable Modem** if your ISP will automatically give you an IP address. Some ISPs may also require you to fill in additional information, such as Host Name and MAC address (see Figure 4-3).

NOTE

The Host Name and MAC address section is optional. You can skip this section if your ISP does not require these settings for you to connect to the Internet.

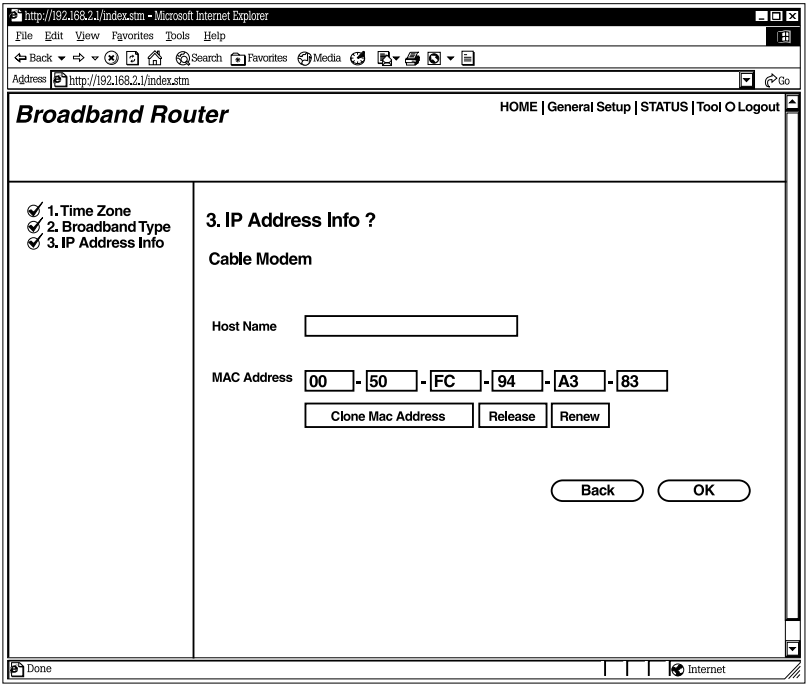

Figure 4-3. IP Address Info, Cable Modem.

Table 4-3 lists the cable modem's host name and MAC address options.

Table 4-3. Cable modem parameters.

Parameter	Description
Host Name	If your ISP requires a host name, type in the host name provided by your ISP. Leave it blank if your ISP does not require a host name.
MAC Address	Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally established your Internet connection to. Type in the MAC address in this section.
Clone MAC Address button	Or, use the **Clone MAC Address** button to replace the WAN MAC address with the MAC address of the PC you are currently using. To find out what the PC's MAC address is, see **Appendix A**. (See the **Glossary** for an explanation of MAC address.)
Release button	Click on this button to release the WAN IP address.
Renew button	Click on this button to renew the WAN IP address.
Back button	Click on this button to go back to the previous screen.
OK button	Click on this button to save your changes and go on to the next screen.

Click on the **OK** button when you have finished the configuration above. The configuration for the cable modem connection is complete. You can start using the router now. If you want to use some of the advanced features supported by this router, see **Chapters 6**, **7**, and **8**.

4.3.2 Fixed-IP xDSL

Select Fixed-IP xDSL if your ISP has given you a specific IP address to use. Your ISP should provide all the information required in this section. See Figure 4-4.

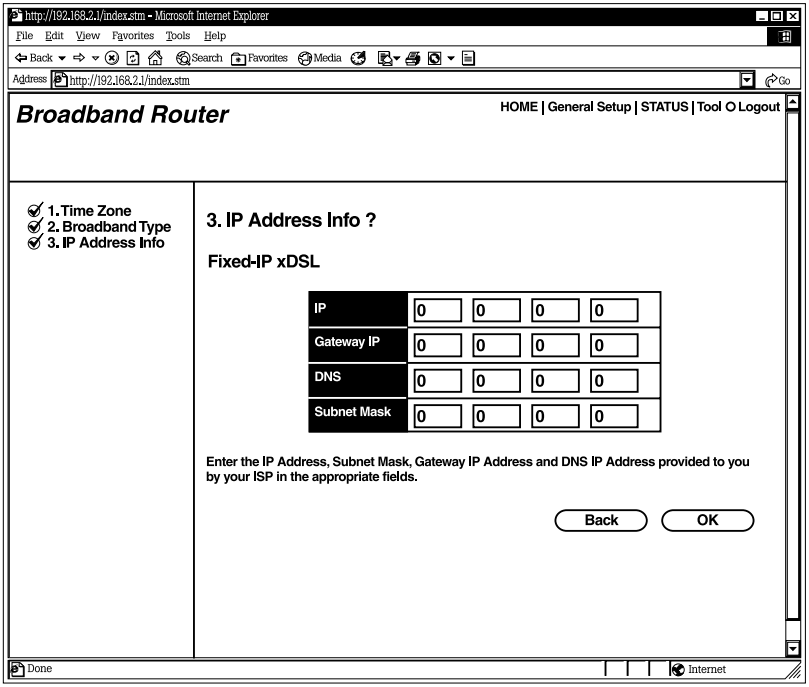

Figure 4-4. IP Address Info, Fixed-IP xDSL.

Table 4-4 describes the Fixed-IP xDSL options.

Table 4-4. The router's fixed-IP xDSL parameters.

Parameter	Description
IP	Type in the IP address that your ISP has given you.
Gateway IP	Type in the ISP's IP address gateway.
DNS	Type in the ISP's DNS server IP address.
Subnet Mask	Type in the subnet mask provided by your ISP (for example, 255.255.255.0).
Back button	Click on this button to go back to the previous screen.

Table 4-4 (continued). The router's fixed-IP xDSL parameters.

Parameter	Description
OK button	Click on this button to save your changes and go on to the next screen.

Click on the **OK** button when you have finished adding the information. The configuration for the Fixed-IP xDSL connection is complete. You can start using the router now. If you want to use some of the advanced features supported by this router, see **Chapters 6**, **7**, and **8**.

4.3.3 PPPoE xDSL

Select PPPoE xDSL if your ISP requires the PPPoE protocol to connect you to the Internet. Your ISP should provide all the information required in this section (see Figure 4-5).

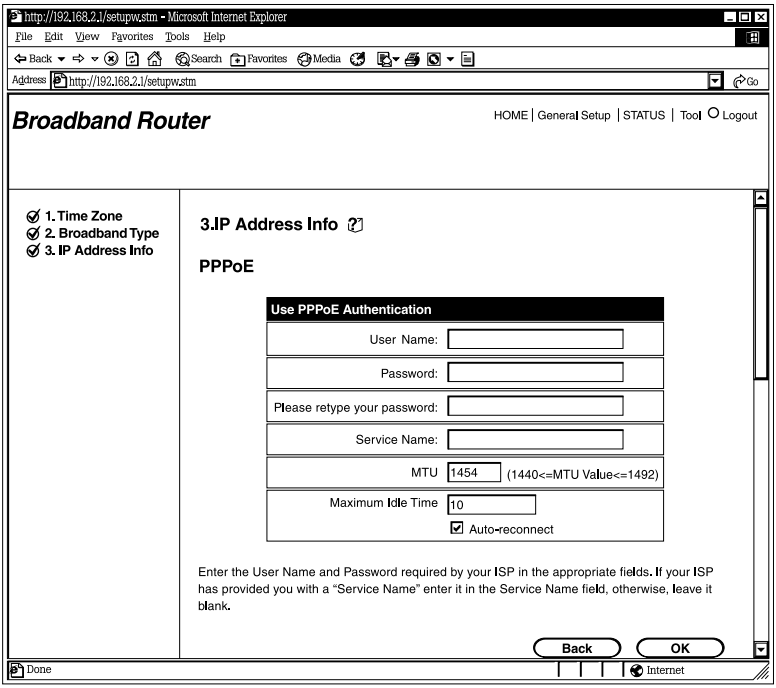

Figure 4-5. IP Address Info, PPPoE.

Table 4-5 lists the parameters you must select to activate the PPPoE protocol.

Table 4-5. PPPoE parameters.

Parameter	Description
User Name	Type in the user name provided by your ISP for the PPPoE connection.
Password	Type in the password provided by your ISP for the PPPoE connection.
Please retype your password	Type in the password again to reconfirm.
Service Name	This is optional. Type in the service name if your ISP requires it; otherwise, leave it blank.
MTU	This is optional. Type in the maximum size of your transmission packet to the Internet. Leave it as is if you to not wish to set a maximum packet size.
Maximum Idle Time	Type in an idle time threshold (minutes) for the WAN port. This means that if no packets have been sent (no one using the Internet) during this specified period, the router will automatically disconnect the connection with your ISP.
Auto-reconnect	If you check the Auto-reconnect function, then when the WAN connection is disconnected, the router will automatically reconnect when a user requests access to the Internet.
Back button	Click on this button to go back to the previous screen.
OK button	Click on this button to save your changes and go on to the next screen.

NOTE

Idle time "0" means no timeout; for example, no time restriction (always On).

Click on the **OK** button when you have finished the configuration above. The configuration for the PPPoE connection is complete. You can start using the router now. If you want to use some of the advanced features supported by this router, see **Chapters 6**, **7**, and **8**.

4.3.4 PPTP xDSL

Select PPTP xDSL if your ISP requires the PPTP protocol for connecting you to the Internet. Your ISP should provide all the information required in this section. See Figure 4-6.

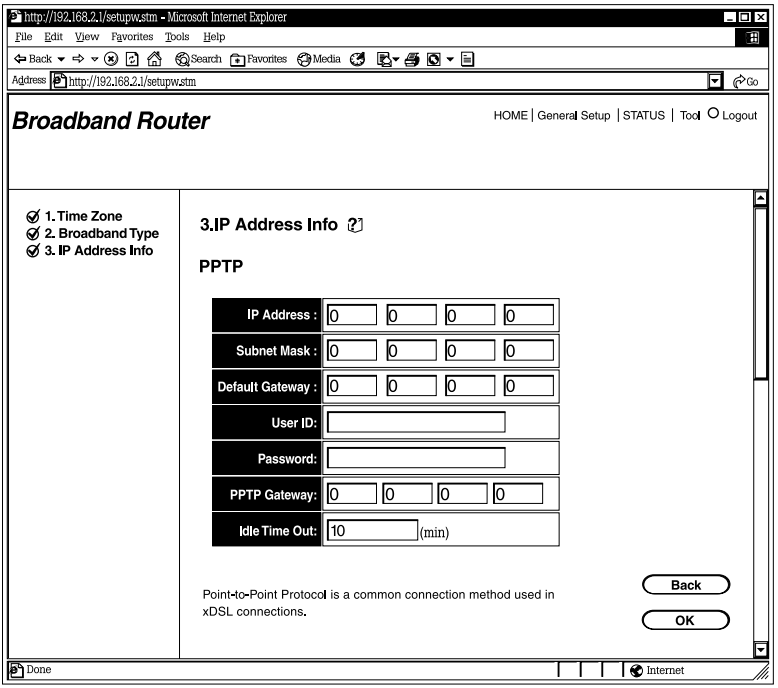

Figure 4-6. IP Address Info, PPTP.

Table 4-6 lists the options you must select to enable the PPTP protocol.

Table 4-6. PPTP protocol parameters.

Parameter	Description
IP Address	Type in the IP address that your ISP has given you to establish a PPTP connection.
Subnet Mask	Type in the subnet mask provided by your ISP (for example, 255.255.255.0).
Default Gateway	Type in the ISP gateway's IP address.
User ID	Type in the user name provided by your ISP for the PPTP connection. This is sometimes called a connection ID.
Password	Type in the password provided by your ISP for the PPTP connection.
PPTP Gateway	If your LAN has a PPTP gateway, then type in that PPTP gateway IP address here. If you do not have a PPTP gateway, then enter the ISP's Gateway IP address.
Idle Time Out	You can type in an idle time threshold (minutes) for the WAN port. This means that if no packets have been sent (no one is using the Internet) throughout this specified period, then the router will automatically disconnect the connection with your ISP.
Back button	Click on this button to go back to the previous screen.
OK button	Click on this button to save your changes and go on to the next screen.

NOTE

Idle time "0" means no time out; for example, no time restriction (always On).

Click on the **OK** button when you have finished the configuration above. The configuration for the PPTP connection is complete. You can start using the router now. If you want to use some of the advanced features supported by this router, see **Chapters 6**, **7**, and **8**.

5. General Setup

Once you click on the General Setup button from the Home page, you should see the screen shown in Figure 5-1.

If you have already configured the Quick Setup Wizard, you do *not* need to configure anything in the General Setup screen for you to start using the Internet.

The General Setup screen contains advanced features that allow you to configure the router to meet your network's needs such as wireless, bridge, address mapping, virtual server, access control, hacker attack prevention, special applications, DMZ, and other functions.

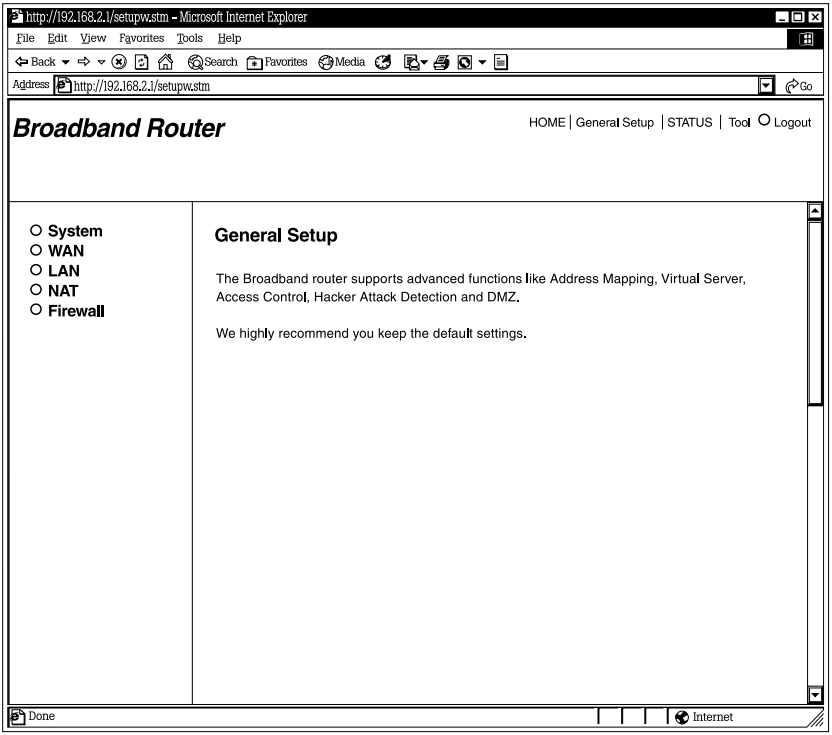

Figure 5-1. General Setup screen.

Table 5-1 provides a general description of the advanced functions available.

Table 5-1. Advanced functions parameters.

Menu	Description
System	This section allows you to set the Pure Networking Broadband Router's system time zone, password, and remote management.
WAN	This section allows you to select the connection method in order to establish a connection with your ISP.
LAN	You can specify the LAN segment's IP address, subnet mask, enable/disable DHCP, and select an IP range for your LAN. You also can configure the print server.
NAT	Configure the Address Mapping, Virtual Server, and Special Applications functions in this section. This allows you to specify what user/packet can pass your router's NAT.
Firewall	The Firewall section allows you to configure Access Control, Intrusion Detection, and DMZ.

Select one of the above General Setup selections and proceed to the manual's relevant sub-section (**Section 5.1** through **5.5)**.

5.1 System

The system screen allows you to specify a time zone, change the system password, and specify a remote management user for the router. See Figure 5-2.

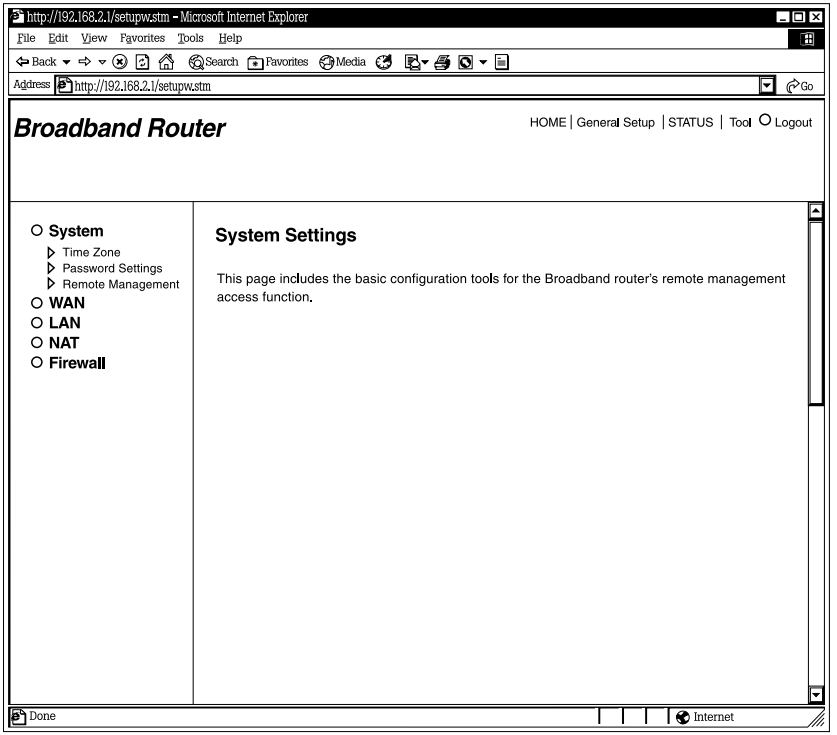

Figure 5-2. System Settings.

Table 5-2 lists the router's available system settings.

Table 5-2. System parameters.

Parameter	Description
Time Zone	Using the drop-down menu, select your country's time zone. The router will set its time based on your selection.
Password Settings	Type in a password in order to access the Web-based management Web site.
Remote Management	Type in a Host IP address that can perform remote management functions.

5.1.1 Time Zone

The Time Zone allows your router to reference or base its time on the settings configured here, which will affect functions such as log entries and firewall settings. See Figure 5-3.

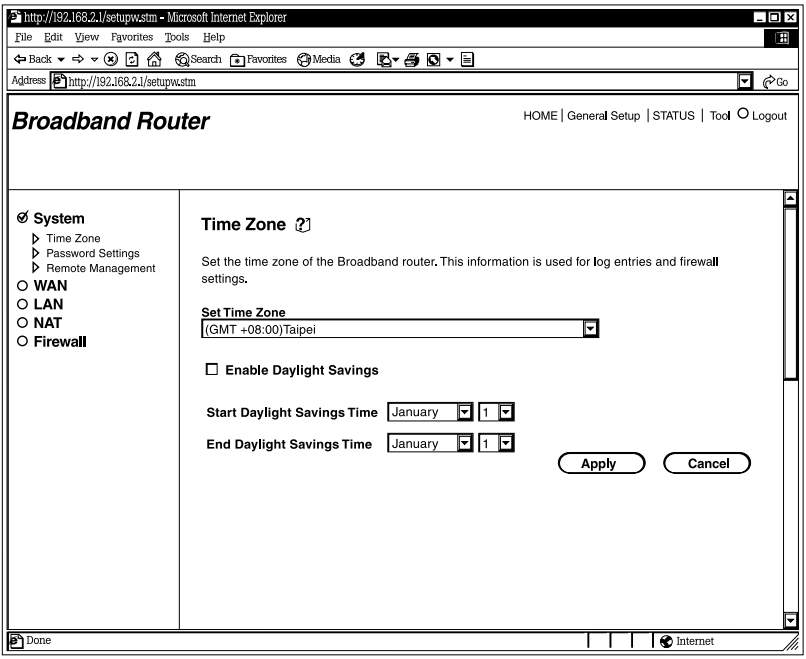

Figure 5-3. Selecting the time zone.

Table 5-3 lists the router's time zone options.

Table 5-3. Time zone parameters.

Parameter	Description
Set Time Zone	Use the drop-down menu to select your country's time zone. The router will set its time based on your selection.
Enable Daylight Savings	The router can also take daylight savings time into account. If you want to use this function, you must check the enable box.
Start Daylight Savings Time	Use the drop-down menu to select the day you want to start Daylight Savings Time.
End Daylight Savings Time	Use the drop-down menu to select the day you want to end Daylight Savings Time.
Apply button	Click on this button to save your changes.
Cancel button	Click on this button to cancel your changes.

Click on the **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.1.2 Password Settings

You can change the password required to log into the router's system Web-based management. By default, there is no password. Assign a password to the administrator as soon as possible and store it in a safe place. Passwords can contain up to 12 alphanumeric characters and are case-sensitive. See Figure 5-4.

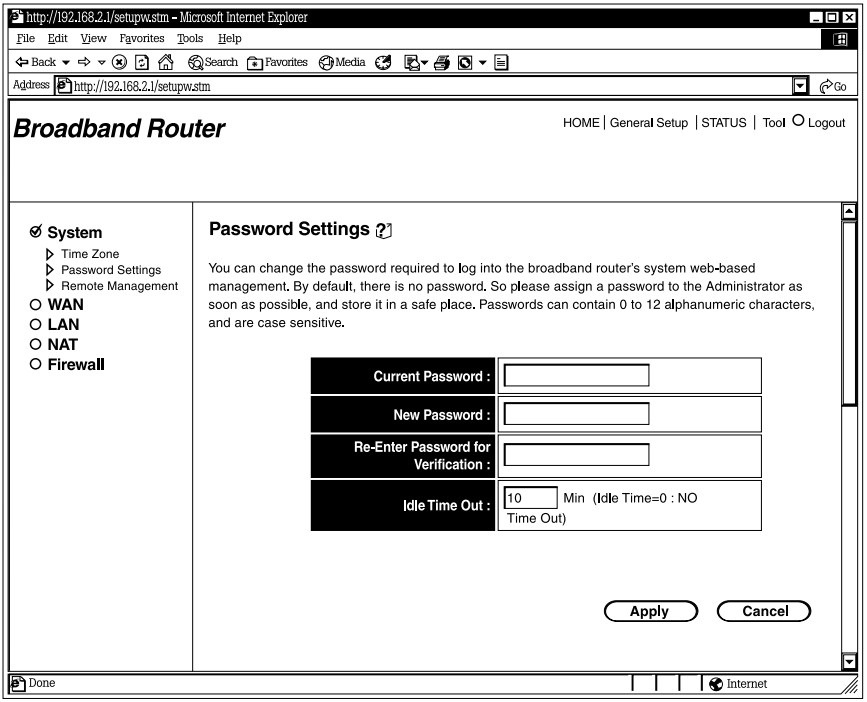

Figure 5-4. Choosing a password.

Table 5-4 describes how to set the router's password.

NOTE

By default there is no password.

Table 5-4. Password settings parameters.

Parameter	Description
Current Password	Type in your current password for the remote management administrator to login to the Pure Networking Broadband Router.
New Password	Type in your new password.
Re-Enter Password for Verification	Type in your new password again for verification purposes.
Idle Time Out	Type in the time (in minutes) that the router will wait for Web-based activity before logging out.
Apply button	Click on this button to save your changes.
Cancel button	Click on this button to cancel your changes.

NOTE

If you forget your password, you'll have to reset the router to the factory default (no password) with the Reset button (see the router's back panel).

NOTE

Idle time "0" means no timeout; for example, no time restriction.

Click on the **Apply** button at the bottom of the screen to save the above configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.1.3 Remote Management

The remote management function allows you to designate a host in the Internet. This lets you configure the Pure Networking Broadband Router from a remote site. Type in the designated host IP Address (see the NOTES, below) in the Host IP Address field. See Figure 5-5.

NOTES

1. **This must be a real-world registered IP address.**

2. **This function will only work for a Fixed IP Static address from your ISP. Dynamically allocated IP addresses from your ISP will not work.**

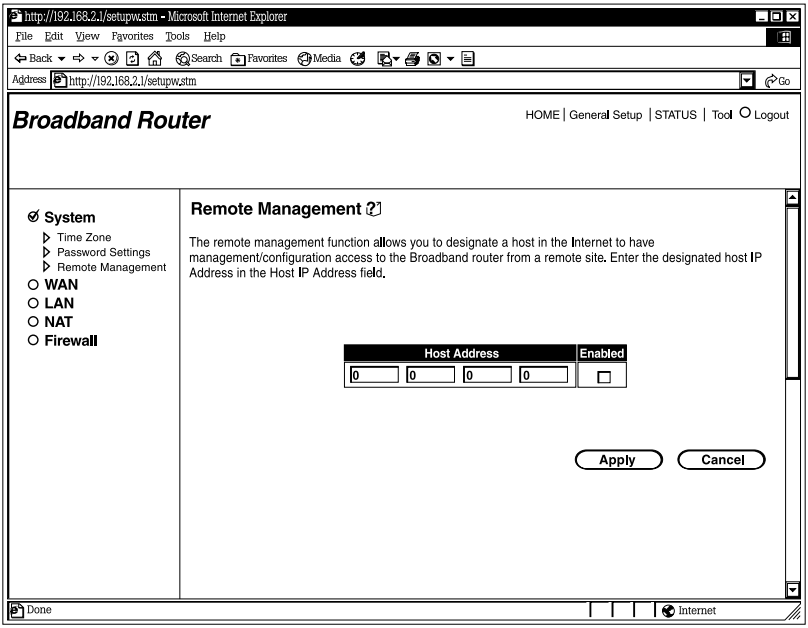

Figure 5-5. Managing the router remotely.

Table 5-5 describes how to enable the host address from the Remote Management screen.

Table 5-5. Host address parameters.

Parameter	Description
Host Address	Type in the host IP address in the Internet that will have management/configuration access to the Pure Networking Broadband Router from a remote site. If you are at home and your home IP address has been designated as the Remote Management host IP address for this router (located in your company office), then you are able to configure this router from your home. If the host address is left as 0.0.0.0, anyone can access the router's Web-based configuration from a remote location if they know the password.
Enabled	Clicking on this box enables the remote management function.
Apply button	Click on this button to save your changes.
Cancel button	Click on this button to cancel your changes.

NOTE

When you want to access the Web-based management from a remote site, you must enter the router's WAN IP address into your Web browser followed by port number 8080. You'll also need to know the password set in the Password Setting screen to access the router's Web-based management. (For example, in Figure 5-6, the WAN IP address is 10.0.0.1 and the port number is 8080.)

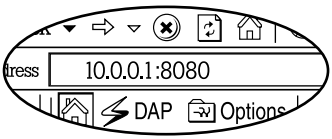

Figure 5-6. Type in the WAN IP address.

Click on **Apply** to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.2 WAN

Use the WAN Settings screen if you have already configured the Quick Setup Wizard section and you would like to change your Internet connection type. The WAN Settings screen allows you to specify the type of WAN port connection you want to establish with your ISP. In the WAN Settings screen, you can also command the router to act as a bridge. The WAN settings offer the following selections for the router's WAN port: Dynamic IP, PPPoE, PPTP, Static IP Address, Bridge, DNS, and DDNS. See Figure 5-7.

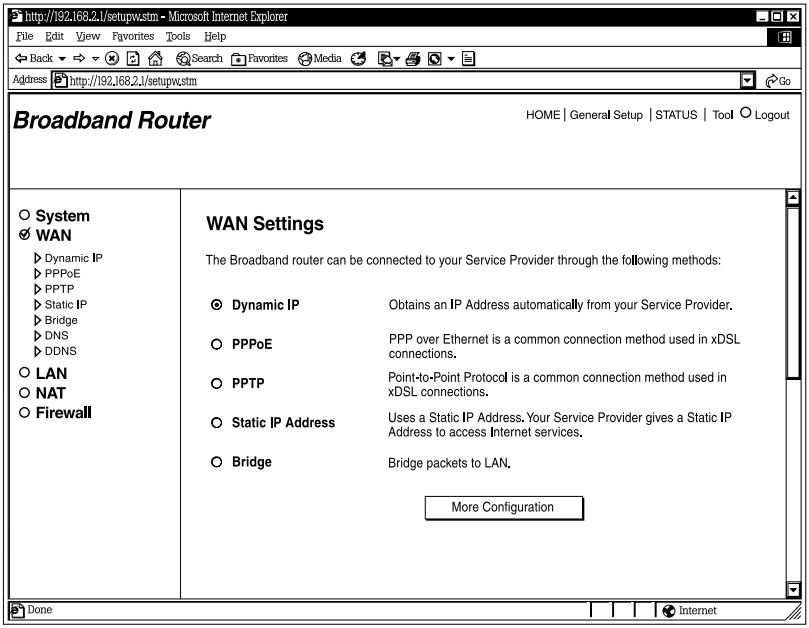

Figure 5-7. Connecting to a WAN.

Table 5-6 describes the ways that the router can connect to the service provider.

Table 5-6. WAN settings parameters.

Parameter	Description
Dynamic IP	Click on this button if your ISP will automatically give you an IP address.
PPPoE	Click on this button if your ISP requires a PPPoE connection.
PPTP	Click on this button if your ISP requires you to use a Point-to-Point Tunneling Protocol (PPTP) connection.
Static IP Address	Click on this button if your ISP has given you an IP address already.
Bridge	Click on this button if the router can be used as a bridge between LANs.
DNS	Select this option from the menu to specify a DNS server that you want to use.
DDNS	Select this option from the menu to specify a DDNS server that you want to use, and configure the user name and password provided by your DDNS service provider.
More Configuration button	Click on this button to save your changes and go on to the next screen.

Once you have made a selection, click on the **More Configuration** button.

5.2.1 Dynamic IP

Choose the Dynamic IP selection if your ISP will automatically give you an IP address. Some ISPs may also require you to fill in additional information, such as host name, domain name, and MAC address.

5.2.2 PPPoE

Select PPPoE if your ISP requires the PPPoE protocol for connecting to the Internet. Your ISP should provide all the information required in this section.

5.2.3 PPTP

Select PPTP if your ISP requires the PPTP protocol for connecting to the Internet. Your ISP should provide all the information required in this section.

5.2.4 Static IP Address

Select Static IP Address if your ISP has given you a specific IP address for you to use. Your ISP should provide all the information required in this section.

5.2.5 Bridge

The bridge mode screen allows you to set your Pure Networking Broadband Router to bridge mode and assign an IP address for management purposes. When the bridge mode is selected, the router in effect becomes a switch, transferring packets from the WAN port to the LAN port and vice versa without any NAT involvement. In bridge mode, the original WAN MAC is ignored, and the original LAN MAC address will be used as the MAC address. These values will be restored when you set the device to operating modes other than the bridge mode. See Figure 5-8.

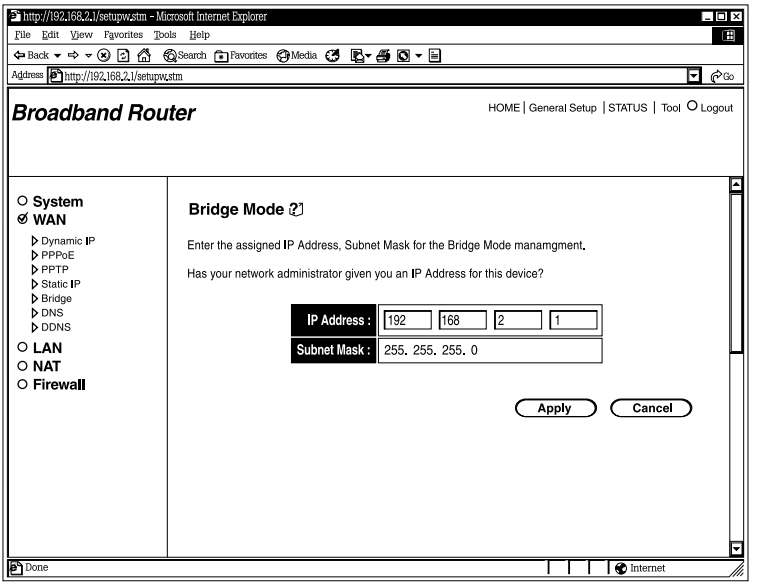

Figure 5-8. Configuring the router as a bridge.

Table 5-7 describes the IP address and subnet mask settings.

Table 5-7. Bridge mode parameters.

Parameter	Description
IP Address	Type in an IP address for the bridge mode. This IP address allows you to access the Web-based management if you decide to switch back to the router mode.
Subnet Mask	Type in the subnet mask for the bridge mode management.
Apply	Click on this button to save your changes.
Cancel	Click on this button to cancel your changes.

Click **Apply** to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

Bridge mode

Figure 5-9 demonstrates how you can use the bridge mode. The router basically becomes a hub/switch, allowing you to connect LAN clients to your Local Area Network.

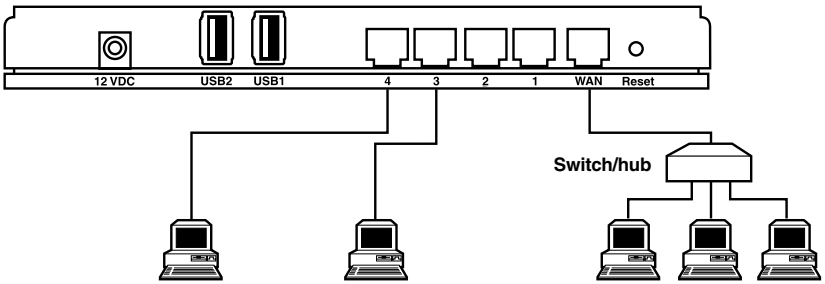

Figure 5-9. Bridge mode configuration.

5.2.6 DNS

A Domain Name System (DNS) server is an index of IP addresses and Web addresses. If you type a Web address into your browser, a DNS server will find that name in its index and the matching IP address. Most ISPs provide a DNS server for speed and convenience. If your service provider connects you to the Internet with dynamic IP settings, it is likely that the DNS server IP address is provided automatically. However, if there is a DNS server that you would rather use, you need to specify the IP address of that DNS server here. See Figure 5-10.

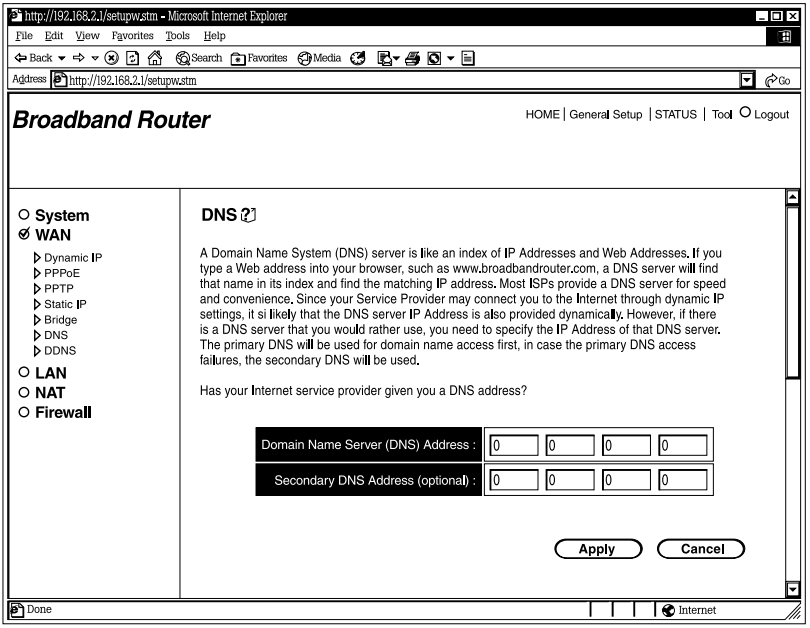

Figure 5-10. Choosing a DNS server.

Table 5-8 describes the DNS server settings.

Table 5-8. DNS parameters.

Parameter	Description
Domain Name Server (DNS) Address	Type in the ISP's DNS server IP address. Or, you can specify your own preferred DNS server IP address.
Secondary DNS Address (optional)	This is an optional parameter. You can type in another DNS server's IP address as a backup. The secondary DNS will be used if the above DNS fails.
Apply button	Click on this button to save your changes.
Cancel button	Click on this button to cancel your changes.

Click on the **Apply** button at the bottom of the screen to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.2.7 DDNS

DDNS allows you to map the static domain name to a dynamic IP address. You must get an account, password, and your static domain name from the DDNS service providers. This router supports DynDNS and TZO. See Figure 5-11.

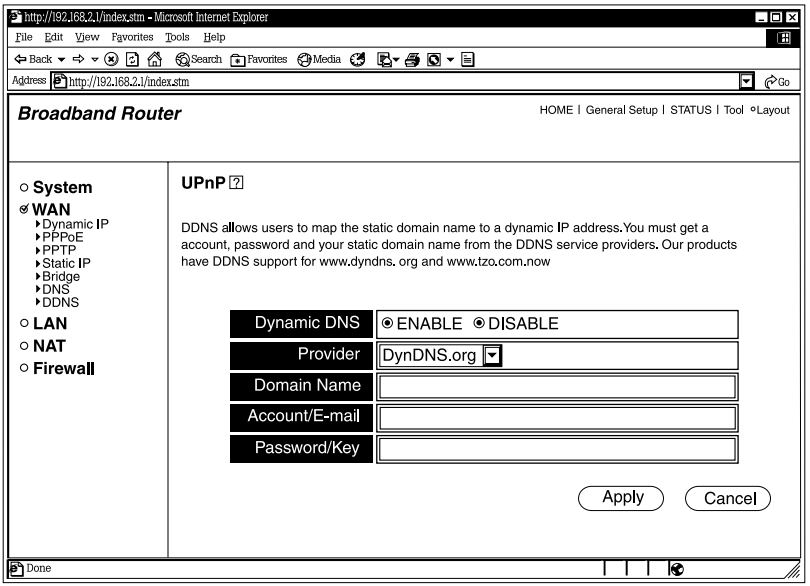

Figure 5-11. Selecting DDNS from the UPnP screen.

Table 5-9 lists the DDNS options, including the default values.

Table 5-9. DDNS parameters.

Parameter	Default	Description
Dynamic DNS	Disable	Enable or disable the DDNS function.
Provider	DynDNS	Select a DDNS service provider.
Domain Name	—	Type in the static domain name that uses DDNS.
Account/E-mail	—	Type in the account that your DDNS service provider assigned to you.
Password/Key	—	Type in the password you set for the DDNS service account above.

Table 5-9 (continued). DDNS parameters.

Parameter	Default	Description
Apply button	—	Click on this button to save your changes.
Cancel button	—	Click on this button to cancel your changes.

Click on the **Apply** button at the bottom of the screen to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.2.8 L2TP

Select L2TP if your ISP requires the L2TP protocol for connecting to the Internet. Your ISP should provide all the information required in this section. See Figure 5-12.

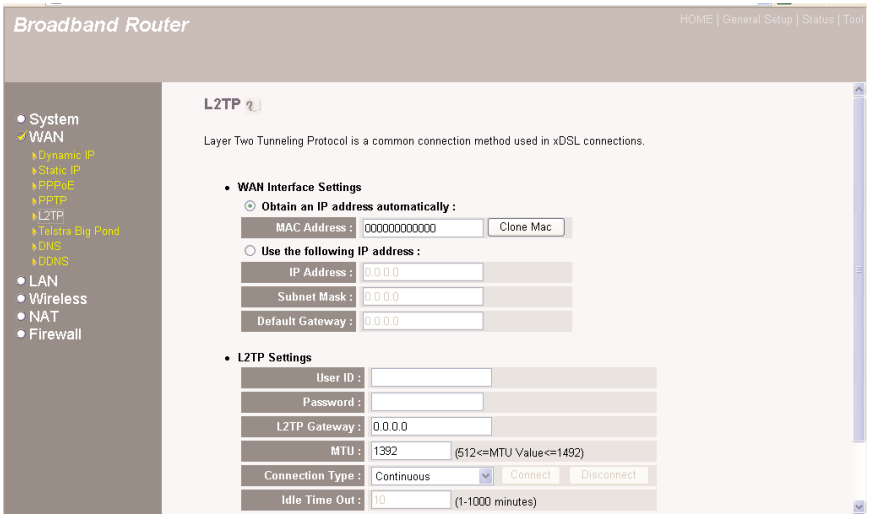

Figure 5-12. L2TP screen.

Table 5-10 describes the router's L2TP settings.

Table 5-10. L2TP parameters.

Parameter	Description
Obtain an IP address automatically	The ISP requires you to obtain an IP address by DHCP before connecting to the L2TP server.
Clone MAC button	Click on this button to use the MAC address.
Use the following IP address	The ISP gives you a static IP to be used to connect to the L2TP server.
IP Address	Type in the IP address that your ISP has given you to establish an L2TP connection.
Subnet Mask	Type in the subnet mask provided by your ISP (for example, 255.255.255.0).
Default Gateway	Type in the ISP gateway's IP address.
User ID	Type in the user name provided by your ISP for the PPTP connection. This is sometimes called a connection ID.
Password	Type in the password provided by your ISP for the PPTP connection.
L2TP Gateway	If your LAN has an L2TP gateway, type in that L2TP gateway IP address here. If you do not have an L2TP gateway, type in the ISP's gateway IP address.
MTU	This is optional. Type in the maximum size of your transmission packet to the Internet. Leave it as is if you do not want to set a maximum packet size.

Table 5-10 (continued). L2TP parameters.

Parameter	Description
Connection Type	Select an option from the drop-down menu. If you select **Continuous**, the router will always connect to the ISP. If the WAN line breaks down and links again, the router will auto-reconnect to the ISP. If you select **Connect On Demand**, the router will auto-connect to the ISP when someone wants to use the Internet and stay connected until the WAN idle timeout. The router will close the WAN connection if the time period that no one is using the Internet exceeds the idle time. If you select **Manual**, the router will connect to the ISP only when you click **Connect** manually from the Web user interface. The WAN connection will not disconnect because of the idle timeout. If the WAN line breaks down and later links again, the router will not auto-connect to the ISP.
Connect button	Click on this button to connect to the ISP.
Disconnect button	Click on this button to disconnect from the ISP.
Idle Time Out	Type in an idle time threshold (minutes) for the WAN port. This means that if no packets have been sent (no one is using the Internet) throughout this specified period, then the router will automatically disconnect from your ISP.
OK button (not visible in Figure 5-12)	Click on this button to save your changes.

NOTE

This idle timeout function may not work because of some network application software's abnormal activities, computer virus, or hacker attacks from the Internet. For example, some software sends network packets to the Internet in the background, even when you are not using the Internet. Turn off your computer when you are not using it. This function also may not work with some ISPs. Make sure this function can work properly when you use it for the first time, especially if your ISP charges you by time used.

Click on **OK** when you have finished the configuration above. You have now completed the configuration for the L2TP connection. Start using the router now, or if you want to use some of the advanced features supported by this router, see **Chapters 6**, **7**, and **8**.

5.2.9 Telstra Big Pond

Select Telstra Big Pond (see Figure 5-13) if your ISP requires the Telstra Big Pond protocol for connecting to the Internet. Your ISP should provide all the information required in this section. Telstra Big Pond is used by the ISP in Australia.

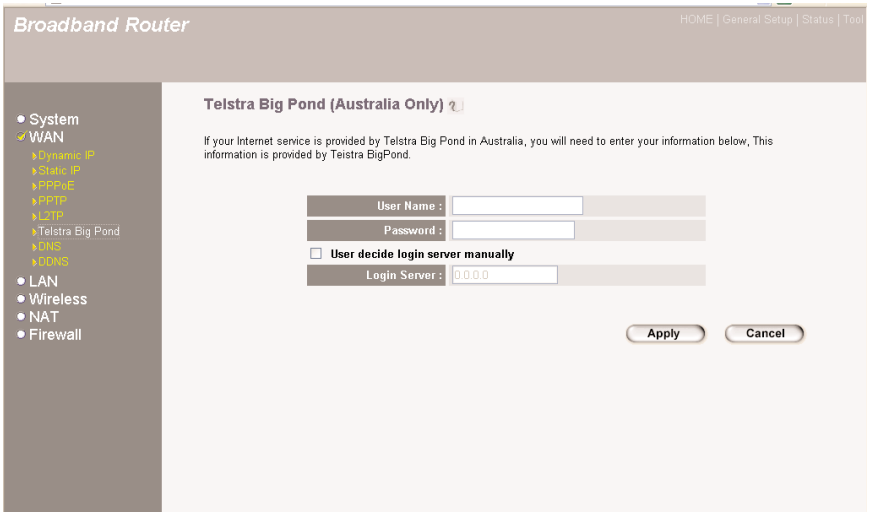

Figure 5-13. Screen required for use in Australia.

Refer to Table 5-11 if you're connecting to the Internet via Telstra Big Pond.

Table 5-11. Telstra Big Pond parameters.

Parameter	Description
User Name	Type in the user name provided by your ISP for the Telstra Big Pond connection.
Password	Type in the password provided by your ISP for the Telstra Big Pond connection.
User decides login server manually	Check this box if you want to assign the IP for the Telstra Big Pond's login server manually.
Login Server	Type in the IP for the login server.
Apply button	Click on this button to save your changes.
Cancel button	Click on this button to cancel your changes.

Click on the **Apply** button when you have finished the configuration above. Use the router now, or use some of the advanced features described in **Chapters 6**, **7**, and **8**.

5.3 LAN

The LAN Settings screen allows you to set up the LAN interface IP, DHCP server parameters, UPnP, and print server. See Figure 5-14.

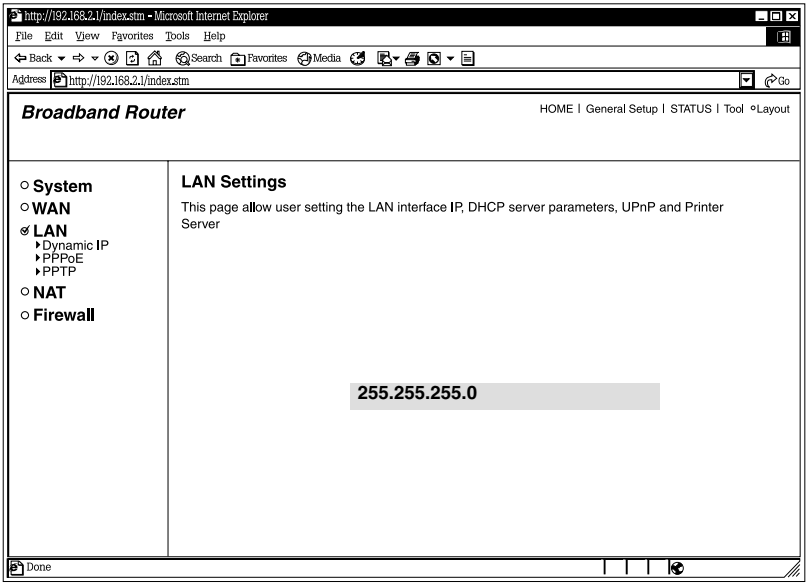

Figure 5-14. Setting LAN options.

5.3.1 Interface

The LAN Port screen allows you to specify a private IP address for your router's LAN ports. See Figure 5-15.

NOTE

You cannot change the subnet mask. It will always be 255.255.255.0.

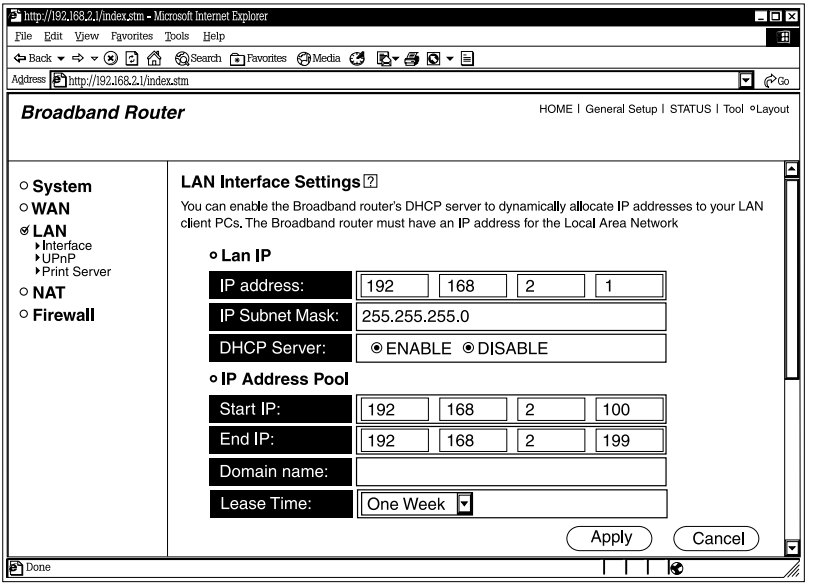

Figure 5-15. LAN interface screen.

Table 5-12 lists the LAN interface settings options.

Table 5-12. LAN port parameters.

Parameter	Default	Description
IP address	192.168.2.1	Type in the router's LAN port IP address. (Your LAN client's default gateway IP address.)
IP Subnet Mask	255.255.255.0	Type in a subnet mask for your LAN segment.

Table 5-12 (continued). LAN port parameters.

Parameter	Default	Description
DHCP Server	Enabled	You can enable or disable the DHCP server. By enabling the DHCP server, the router will automatically give your LAN clients an IP address. If the DHCP is not enabled, then you'll have to manually set your LAN client's IP addresses. Make sure the LAN client is in the same subnet as the Pure Networking Broadband Router if you want the router to be your LAN client's default gateway.
IP Address Pool Start IP End IP	—	Type in a particular IP address range for your DHCP server to issue IP addresses to your LAN Clients.
Domain Name	—	Type in a domain name for your LAN.
Lease Time	—	The DHCP, when enabled, will temporarily give your LAN clients an IP address. In the Lease Time setting, use the drop-down menu to specify the time period that the DHCP lends an IP address to your LAN clients. The DHCP will change your LAN client's IP address when it reaches this time threshold period.
Apply button	—	Click on this button to save your changes.
Cancel button	—	Click on this button to cancel your changes.

NOTE

By default the IP range is from Start IP 192.168.2.100 to End IP 192.168.2.199. If you want your PC to have a static/fixed IP address, then you'll have to choose an IP address outside this IP address pool.

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.3.2 UPnP

With UPnP, all PCs in your intranet will discover the router automatically. You do not have to do any configuration for your PC. You can access the Internet through this router easily. See Figure 5-16.

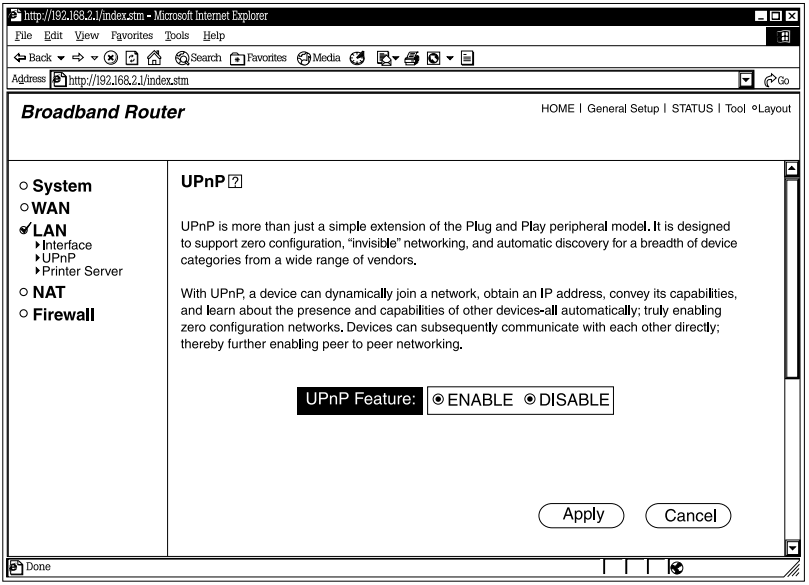

Figure 5-16. UPnP router discovery.

Table 5-13 describes how to enable or disable UPnP.

Table 5-13. UPnP parameters.

Parameter	Default	Description
UPnP Feature	Disable	Click on **Enable** or **Disable** to enable or disable the UPnP feature. After you enable the UPnP feature, all client systems that support UPnP, like Windows XP, can discover this router automatically and access the Internet through the router without any configuration. The NAT Traversal function provided by UPnP can let applications that support UPnP smoothly connect to Internet sites without any incompatibility problem due to the NAT port translation.
Apply button	—	Click on this button to save your changes.
Cancel button	—	Click on this button to cancel your changes.

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.3.3 Print Server

The router provides a print server function that can let you share a printer among all PCs in your Intranet. It supports LPD printing protocol. LPD printing protocol can be used in Windows, Linux®, and other operating systems that provide LPD printing. For Windows users, we provide a print server network driver. You have to install the driver before using the router as a print server. See Figure 5-17.

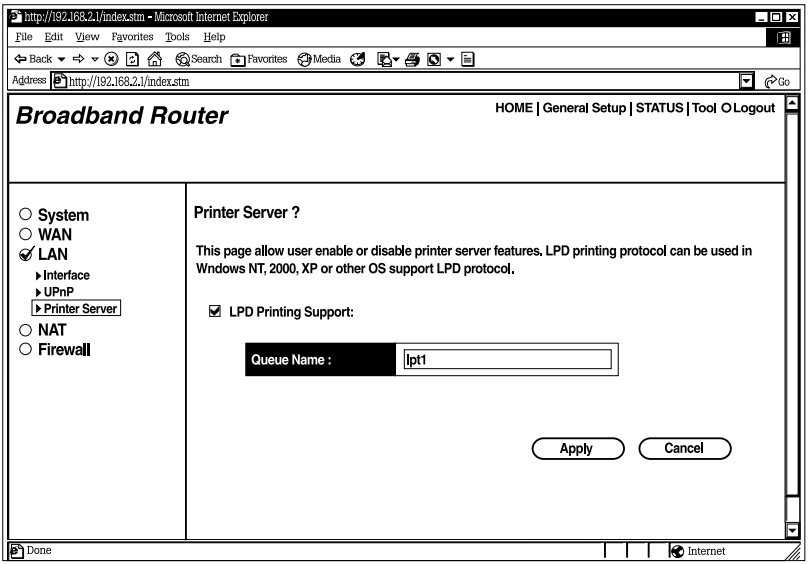

Figure 5-17. Connecting to a print server.

Table 5-14 describes how to enable a print server.

Table 5-14. Print server parameters.

Parameter	Description
LPD Printing Support	Click on this box to enable/disable the print server's LPD printing.
Queue Name	Type in the LPD print server's queue name.
Apply button	Click on this button to save your changes.
Cancel button	Click on this button to cancel your changes.

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.4 NAT

Network Address Translation (NAT) allows multiple users at your local site to access the Internet through a single public IP address or multiple public IP addresses. NAT provides firewall protection from hacker attacks and allows you to map private IP addresses to public IP addresses for key services, such as Web sites and FTP. See Figure 5-18.

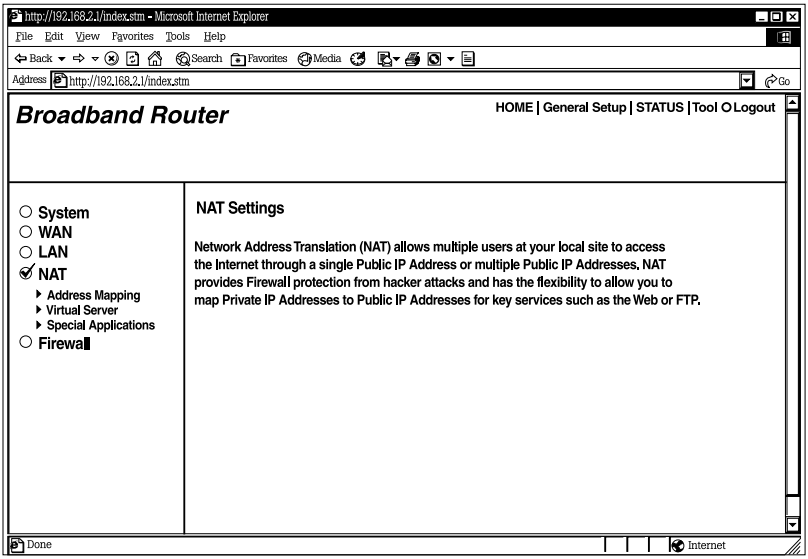

Figure 5-18. NAT settings screen.

Table 5-15 describes the three NAT options.

Table 5-15. NAT parameters.

Parameter	Description
Address Mapping	You can have different services (for example, email, FTP, Web, etc.) going to different service servers/clients in your LAN. Address mapping allows you to redirect a particular range of service port numbers (from the Internet/WAN ports) to a particular LAN IP address.

Table 5-15 (continued). NAT parameters.

Parameter	Description
Virtual Server	You can have different services (for example, email, FTP, Web, etc.) going to different service servers/ clients in your LAN. The virtual server allows you to redirect a particular service port number (from the Internet/WAN port) to a particular LAN IP address and its service port number.
Special Applications	Some applications require multiple connections, such as Internet games, videoconferencing, Internet telephony, and others. In this section, you can configure the router to support these types of applications.

Click on one of the three NAT selections and proceed to **Section 5.4.1**, **5.4.2**, and **5.4.3**.

5.4.1 Address Mapping

The Address Mapping (also called Port Forwarding) function allows you to redirect a particular range of server port numbers (from the Internet/WAN ports) to a particular LAN IP address. It helps you to host some servers behind the router NAT firewall.

NOTE

The Address Mapping/Port Forwarding screen is not shown in this manual.

Table 5-16 lists the Address Mapping options.

Table 5-16. Address Mapping parameters.

Parameter	Description
Enable Port Forwarding	This enables you to redirect ports to a specific server.
Private IP	This is the private IP for the server behind the NAT firewall.
Type	This is the protocol type to be forwarded. You can choose to forward TCP or UDP packets only or select both to forward both TCP and UDP packets.
Port Range	The ports range to be forwarded to the private IP.
Comment	This setting's description.
Add Port Forwarding into the table	Type in the Private IP, Type, Port Range, and Comment for the setting to be added, then click on **Add**. This Port Forwarding setting will be added into the Current Port Forwarding table. If you make a typing mistake before adding it and want to retype it again, click on **Clear** to clear the fields.
Remove Port Forwarding from the table	If you want to remove some Port Forwarding settings from the Current Port Forwarding table, select the Port Forwarding settings you want to remove in the table and then click on **Delete Selected**. If you want to remove all Port Forwarding settings from the table, click on the **Delete All** button. Click on **Reset** to clear your current selections.
Apply button	Click on this button to save your changes.
Cancel button	Click on this button to cancel your changes.

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.4.2 Virtual Server

Use the Virtual Server function when you want different servers/clients in your LAN to handle different services/Internet application types (for example, email, FTP, Web server, etc.) from the Internet. Computers use port numbers to recognize a particular service/Internet application type. The virtual server allows you to redirect a particular service port number (from the Internet/WAN port) to a particular LAN private IP address and its service port number. (See the **Glossary** for an explanation of the port number.) See Figure 5-19.

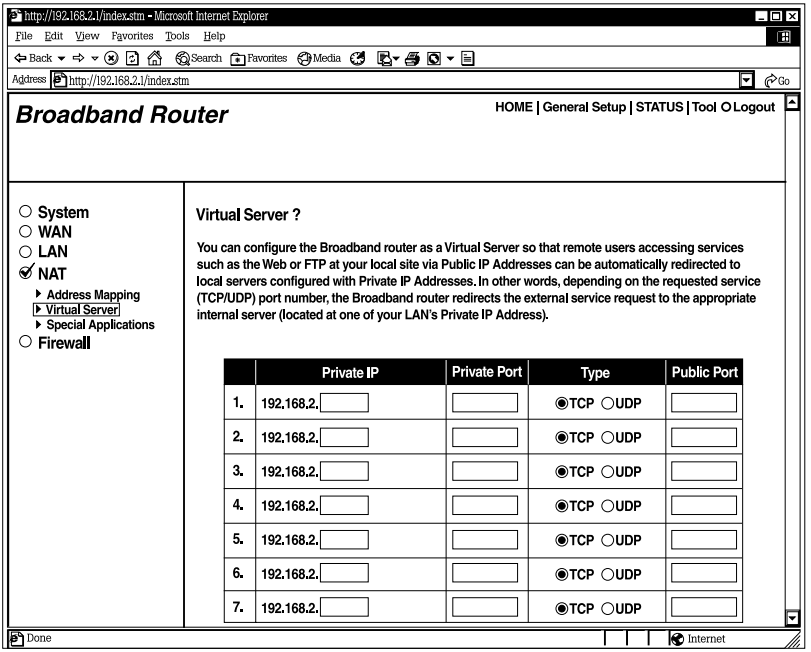

Figure 5-19. Configuring the router as a virtual server.

Table 5-17 describes the router's virtual server options.

Table 5-17. Virtual Server parameters.

Parameter	Description
Private IP	Type in the LAN client/host IP address that the private port number packet will be sent to.
Private Port	Type in the port number (of the above private IP host) that the below public port number will be changed to when the packet enters your LAN (to the LAN Server/Client IP).
Type	Click on the port number protocol type (TCP or UDP). If you are unsure, then leave it set to the default TCP protocol.
Public Port	Type in the service (service/Internet application) port number from the Internet that will be redirected to the above private IP address host in your LAN.
Apply button	Click on this button to save your changes. (Scroll down in the screen to see this button.)
Cancel button	Click on this button to cancel your changes. (Scroll down in the screen to see this button.)

NOTES

1. **You need to give your LAN PC clients a fixed/static IP address for the virtual server to work properly.**

2. **The virtual server function will have priority over the DMZ function if there is a conflict between the virtual server and the DMZ settings.**

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

Virtual Server Application

Figure 5-20 demonstrates one of the ways you can use the virtual server function. Use the virtual server when you want the Web server located in your private LAN to be accessible to Internet users. The following configuration means that any request coming from the Internet to access your Web server will be translated to your LAN's Web server (192.168.2.2).

NOTE

For the virtual server to work properly, Internet/remote users must know your global IP address. (For Web sites, you will need to have a fixed/static global/public IP address.)

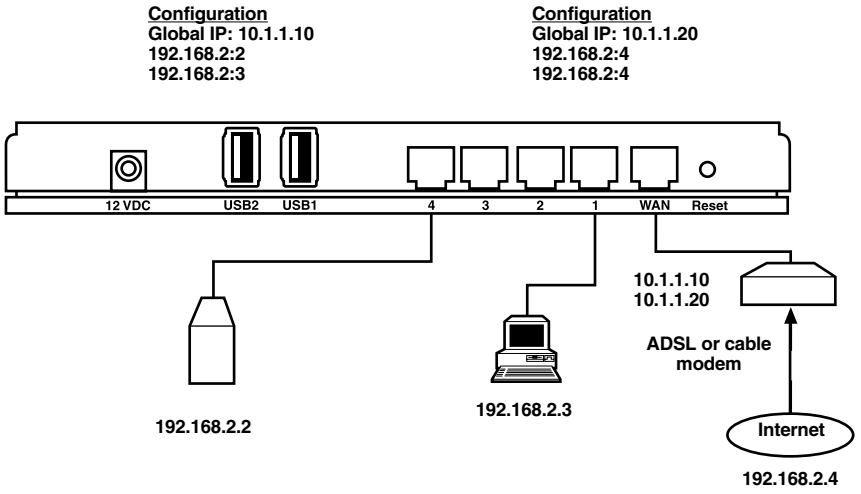

Figure 5-20. Using a virtual server.

5.4.3 Special Applications

Some applications, such as Internet games and videoconferencing, Internet telephony and others, require multiple connections. In this section, you can configure the router to support multiple connections for these types of applications. See Figure 5-21.

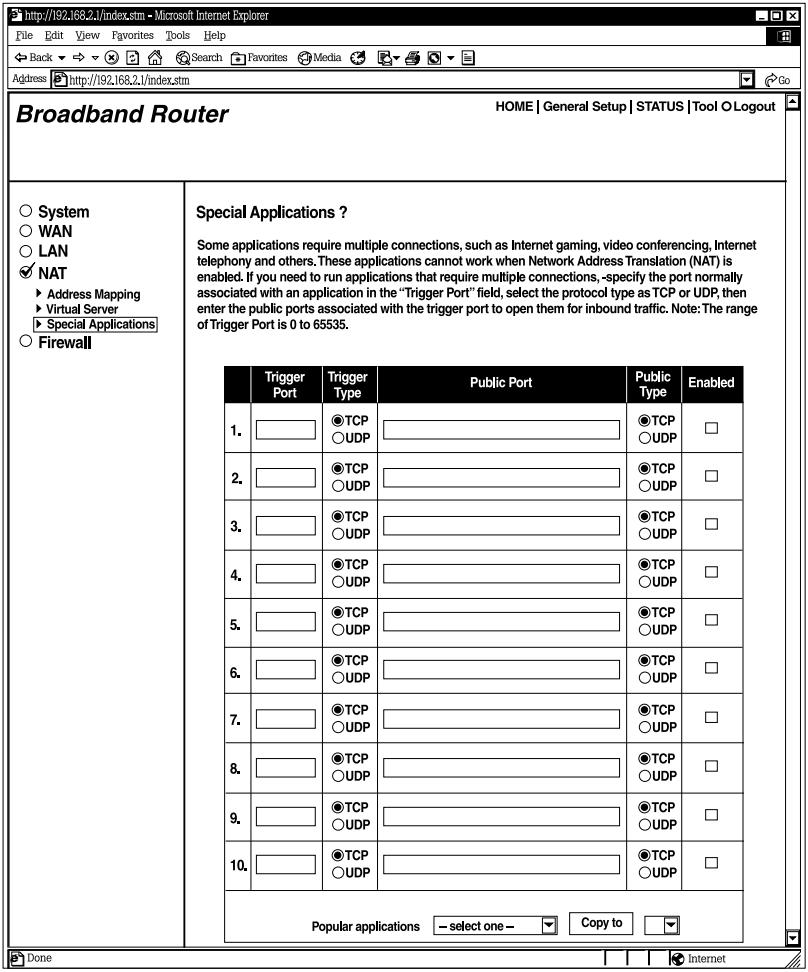

Figure 5-21. Special Applications screen.

Table 5-18 lists the router's special applications options.

Table 5-18. Special applications parameters.

Parameter	Description
Trigger Port	Type in the outgoing (outbound) port number for this particular application.
Trigger Type	Click on TCP or UDP to select whether the outbound port protocol is TCP or UDP.
Public Port	Type in the incoming (inbound) port or port range for this type of application (for example, 2300–2400, 47624).
Public Type	Click on the inbound port protocol type (TCP or UDP).
Enabled	Check the enabled box to enable this particular special application configuration.
Popular Applications	This section lists the more popular applications that require multiple connections. Select an application from the popular applications drop-down menu.
Copy to drop-down menu	Select a location (1–10) in the Copy to drop-down menu.
Copy to button	Click on this button to list the public ports required for this popular application in the location (1–10) you specified.

NOTES

1. **The range of the Trigger Port is from 0 to 65535.**
2. **Individual port numbers are separated by a comma (for example, 47624, 5775, 6541, etc.). To add a port range, use a hyphen to separate the two- port-number range (for example, 2300–2400).**
3. **Only one LAN client can use a particular Special Application at a time.**

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

Special Applications

If you need to run applications that require multiple connections, specify the port (outbound) normally associated with that application in the Trigger Port field. Then select the protocol type (TCP or UDP) and enter the public ports associated with the trigger port to open them up for inbound traffic.

Table 5-19 lists the port settings for this example.

Table 5-19. Trigger/public port settings.

ID	Trigger Port	Trigger Type	Public Port	Public Type	Comment
1	28800	UDP	2300–2400, 47624	TCP	MSN Game Zone
2	6112	UDP	6112	UDP	Battle.net

In the example above, when you trigger port 28800 (outbound) for MSN Game Zone, then the router will allow incoming packets for ports 2300–2400 and 47624 to be directed to you.

NOTE

Only one LAN client can use a particular special application at a time.

5.4.4 ALG Settings

Select applications for gateways operating at the ISO's Application layer. (See Figure 5-19.) Table 5-20 tells you how to enable or disable Application Layer Gateway (ALG).

Table 5-20. ALG parameters.

Parameter	Description
Enable	Select to enable Application Layer Gateway for an application. The router will then let that application correctly pass through the NAT gateway.
Apply button	Click on this button to save your changes.

Click on **Apply** at the bottom of the screen to save the above configurations. You can now configure other advanced sections or start using the router with the advanced settings in place.

5.5 Firewall

The Pure Networking Broadband Router provides extensive firewall protection. This restricts connection parameters, thus limiting the risk of hacker attack. However, for applications that require unrestricted access to the Internet, you can configure a specific client/server as a Demilitarized Zone (DMZ). See Figure 5-22.

NOTE

To enable the Firewall settings, select Enable and click Apply.

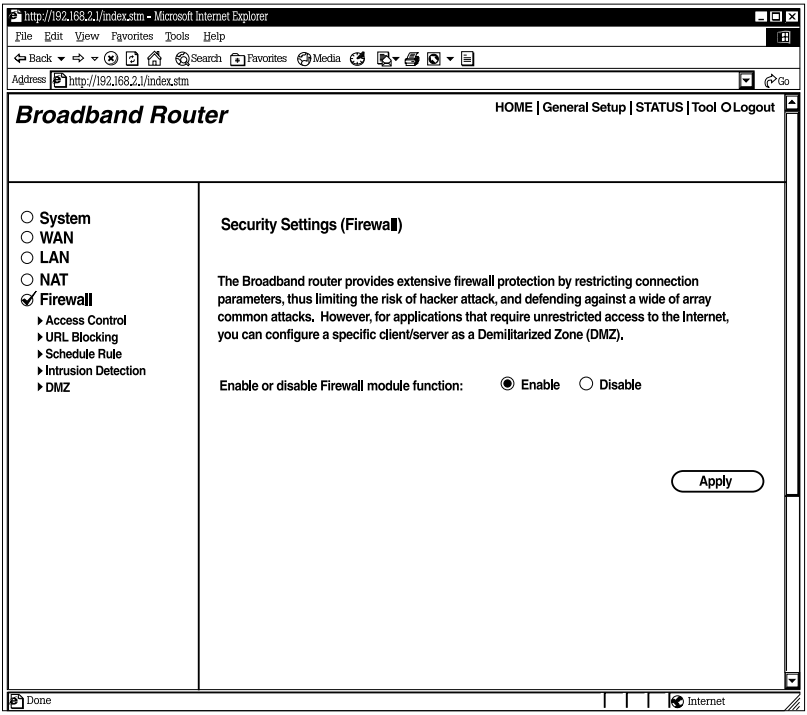

Figure 5-22. Security Settings (Firewall) screen.

Table 5-21 lists the router's firewall functions.

Table 5-21. Security settings options.

Parameter	Description
Access Control	Enables you to specify which hosts can or cannot have access to certain Internet applications.
URL Blocking	Enables you to specify which URLs can not be accessed by users.
Schedule Rule	Assign time ranges for schedules.
Intrusion Detection	The router's firewall can block common hacker attacks and alert you by email if attacks occur.
DMZ	The DMZ function allows you to redirect all packets going to your WAN port IP address to a particular IP address in your LAN.
Enable button	Click on this button to enable the firewall module.
Disable button	Click on this button to disable the firewall module.
Apply button	Click on this button to apply the firewall setting.

5.5.1 Access Control

If you want to restrict users from accessing certain Internet applications/services (for example, Internet Web sites, email, FTP etc.), then this is the place to set that configuration. Access control allows users to define the traffic type permitted in your LAN. You can control which PC client uses what services and also the time period in which they can have access to these services. See Figure 5-23.

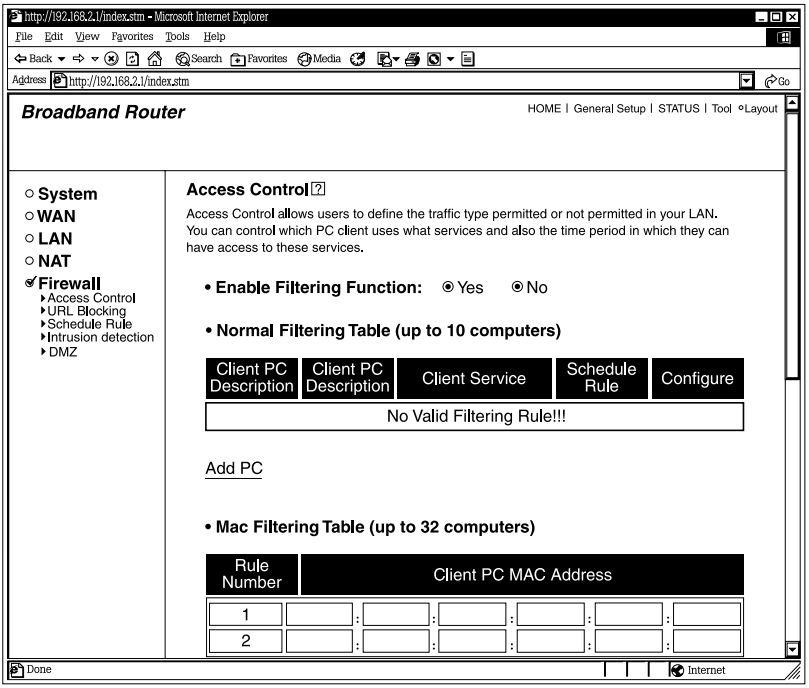

Figure 5-23. Controlling user access to the Internet.

Table 5-22 describes access control options and entering blocked MAC addresses.

Table 5-22. Access control parameters.

Parameter	Description
Enable Filtering Function	Click on **Yes** to deny access to specific addresses or port numbers. Click on **No** to allow access to all ports.
Add PC	Adds an access control rule for users by IP addresses.
MAC Filtering Table	Type in the client PCs' MAC addresses that you want to block from accessing the Internet.
Apply button	Click on this button to save the filtering selection.

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place). See Figure 5-24.

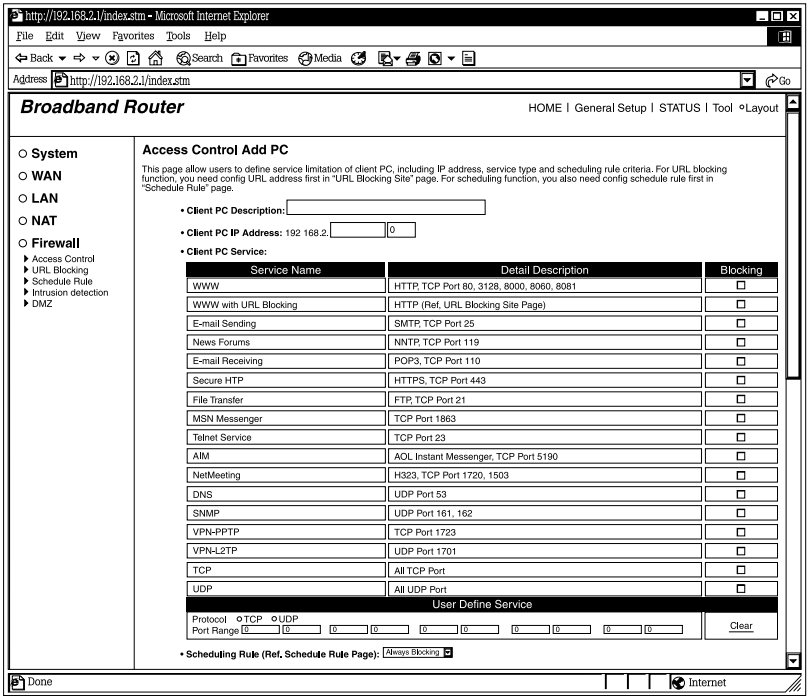

Figure 5-24. Access Control Add PC screen.

Table 5-23 describes how to enter Access Control Add PC options.

Table 5-23. Add PC parameters.

Parameter	Description
Client PC Description	Type in the PC's name.
Client PC IP Address	Type in the IP address range that you wish to apply to this access control rule. This is the user's IP address(es) for which you want to set up an access control rule. You can select a range of users simply by typing the starting user's last digit (octet) IP address and the last user's last octet IP address in the appropriate boxes. If you want to select only one user, then type in the user's last digit IP address in both boxes.
Client PC Service	You can block the clients from accessing some Internet services by checking the services you want to block.
Protocol	Click on **UDP** or **TCP** to select the UDP or TCP protocol type you want to block.
Port Range	Type in up to five port ranges. The router will block clients from accessing Internet services that use these ports.
Scheduling Rule	From the drop-down box, you can select one of the scheduling rules you set previously. The router will block the clients during the time in the scheduling rule.
Clear	Click on this button to clear the screen settings.
Apply	Clicking on Apply (scroll to see it) saves the changes.

NOTE

You need to give your LAN PC clients a fixed/static IP address for the access control rule to work properly.

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

Access Control Application

In Figure 5-25, LAN client B cannot access any Web sites ever (Web sites use Port 80). However, LAN client A is unable to access Web sites (and any other service that uses ports between 80 and 999) between Saturday 8 am to Sunday 8 pm.

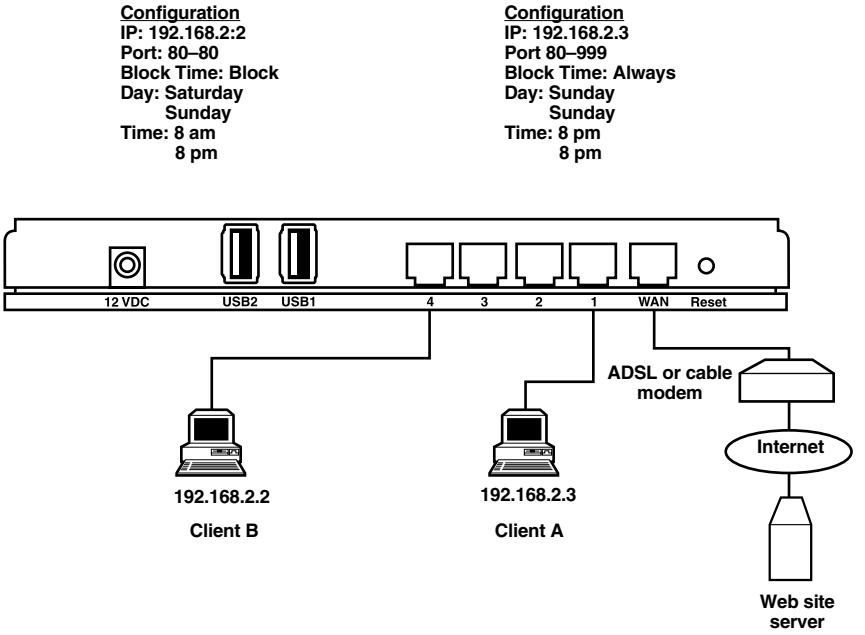

Figure 5-25. Restrict or allow access to various Web site servers.

5.5.2 URL Blocking

You can block access to some Web sites from particular PCs by entering a full URL address or just a keyword for the Web site. To specify particular PCs, go to the Access Control page (Figure 5-23) and select the URL Blocking option (left side of the screen). Figure 5-26 will appear.

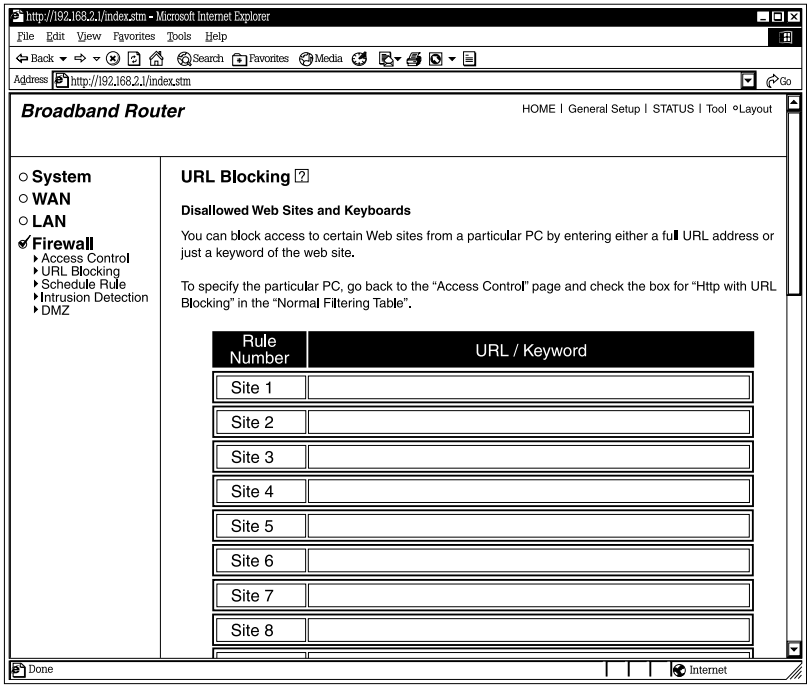

Figure 5-26. Blocking Web site access.

Table 5-24 describes the URL keyword.

Table 5-24. URL blocking parameters.

Parameter	Description
Rule Number	Assign a site number for each blocked Web site.
URL/Keyword	Type in the full URL address or the keyword for the Web site that you want to block.
Apply button	Click on this button (scroll down in the screen to see the button) to save your changes.

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.5.3 Schedule Rule

You can set up a time schedule that denies access to the router at specified times of the day or night. For example, a user may only have access to the router between 8 am and 5 pm. To configure this time, click on **Add Schedule Rule** in Figure 5-27.

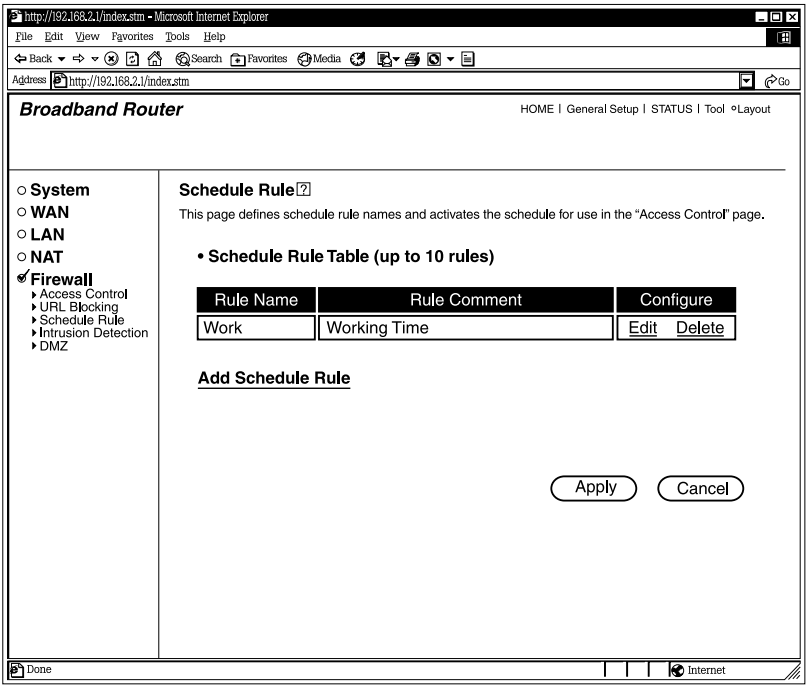

Figure 5-27. Add Schedule Rule screen.

Table 5-25 lists schedule rule options.

Table 5-25. Add Schedule Rule parameters.

Parameter	Description
Rule Name	Type in the scheduled time period's name.
Rule Comment	Type in a comment to identify the scheduled time.
Edit	Use this to modify the scheduled time range.

Table 5-25 (continued). Add Schedule Rule parameters.

Parameter	Description
Delete	**Delete** the time schedule rule.
Add Schedule Rule	Click **Add Schedule Rule** to add a time period (schedule) to enable or disable access to the Internet.
Apply button	Click on this button to save your changes.
Cancel button	Click on this button to cancel the changes.

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place). See Figure 5-28.

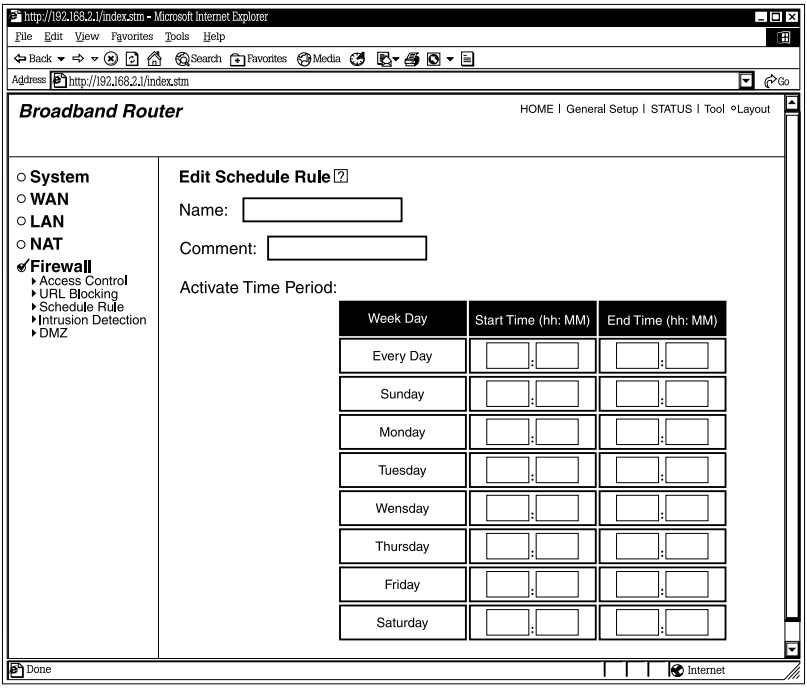

Figure 5-28. Edit Schedule Rule screen.

Table 5-26 explains how to edit the router's time schedule to allow or deny access to the Internet at scheduled times of day or night.

Table 5-26. Edit Schedule Rule parameters.

Parameter	Description
Name	Type in the name of the schedule rule.
Comment	You can type in a comment that identifies the schedule rule.
Activate Time Period	Type in the schedule rule start and end times for each day of the week.

Table 5-26 (continued). Edit Schedule Rule parameters.

Parameter	Description
Apply button	Scroll down in the screen to see this button, then click on it to save the schedule rule.

Click on the **Apply** button to save the configurations and go back to the Schedule Rule screen (Figure 5-27).

5.5.4 Intrusion Detection

The Pure Networking Broadband Router's firewall can block common hacker attacks, including Denial of Service, Ping of Death, and RIP defect. If Internet attacks occur, the router can also alert you by email. See Figures 5-29, 5-30, and 5-31.

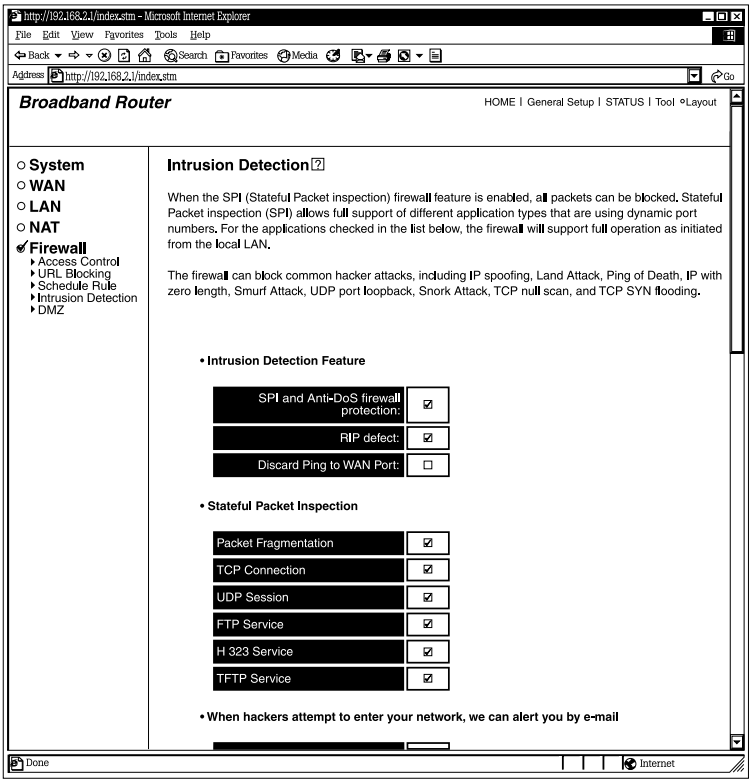

Figure 5-29. Intrusion Detection screen, part #1.

Tables 5-27 through 5-29 describe the router's firewall options. Figures 5-29 through 5-31 show one continuous screen.

Table 5-27. Intrusion detection/stateful packet inspection parameters.

Parameter	Description
Intrusion Detection Feature	
SPI and Anti-DoS Firewall Protection	Protects from any Denial of Service attacks.
RIP defect	Protection from RIP defect.
Discard Ping to WAN Port	The router's WAN port will not respond to any Ping requests.
Stateful Packet Inspection	The router will analyze all selected protocols' packets according to the sessions' state and block all abnormal packets.
Packet Fragmentation	Check this box to enable packet fragmentation.
TCP Connection	Check this box to enable TCP connection.
UDP Session	Check this box to enable UDP session.
FTP Service	Check this box to enable FTP service.
H 323 Service	Check this box to enable H 323 service.
TFTP Service	Check this box to enable TFTP service.

Scroll down in Figure 5-29 to see the screen section shown in Figure 5-30.

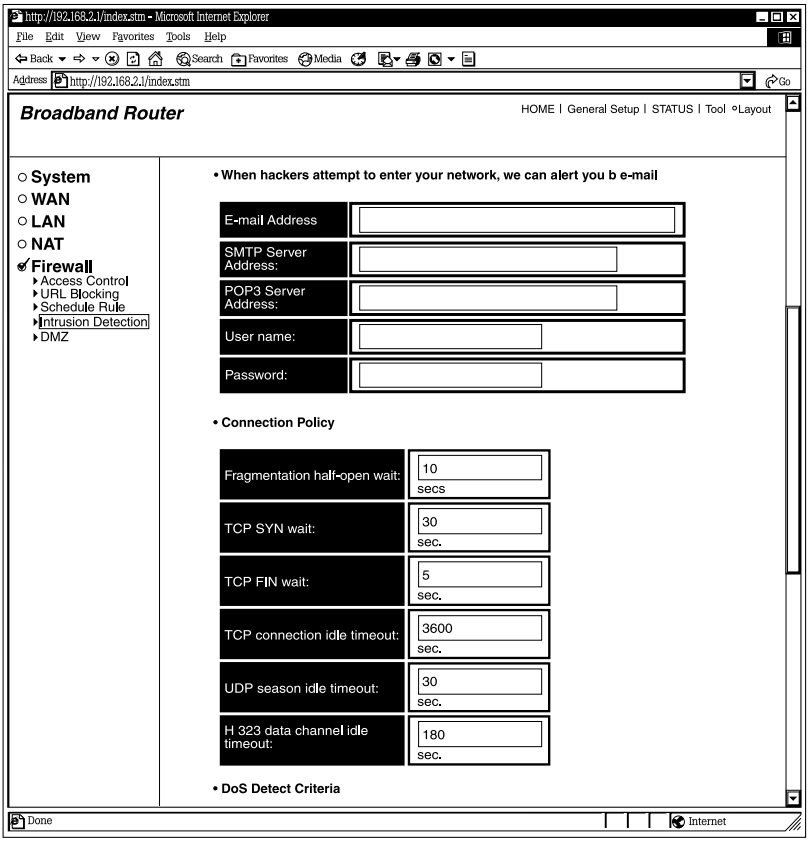

Figure 5-30. Intrusion Detection screen, part #2.

Table 5-28. Hacker alerts/connection policy parameters.

Parameter	Description
Hacker Alerts	
Email Address	Type in the email address that you would like the alert warning to be sent to if an attack occurs.
SMTP Server Address	Type in the SMTP server's IP address.

Table 5-28 (continued). Hacker alerts/connection policy parameters.

Parameter	Description
POP3 Server Address	Type in the selected POP3 server's email address' IP address.
User name	Type in the selected POP3 server's user name.
Password	Type in the selected POP3 server's password.
Connection Policy	Set up the time that the router will maintain the connection, and also the idle timeout. All timeout sessions will be removed to protect the router from DoS attacks.
Fragmentation half-open wait	Type in a time (in seconds).
TCP SYN wait	Type in a time (in seconds).
TCP FIN wait	Type in a time (in seconds).
TCP connection idle timeout	Type in a time (in seconds).
UDP session idle timeout	Type in a time (in seconds).
H 323 data channel idle timeout	Type in a time (in seconds).

Scroll down in Figure 5-30 to see the screen section shown in Figure 5-31.

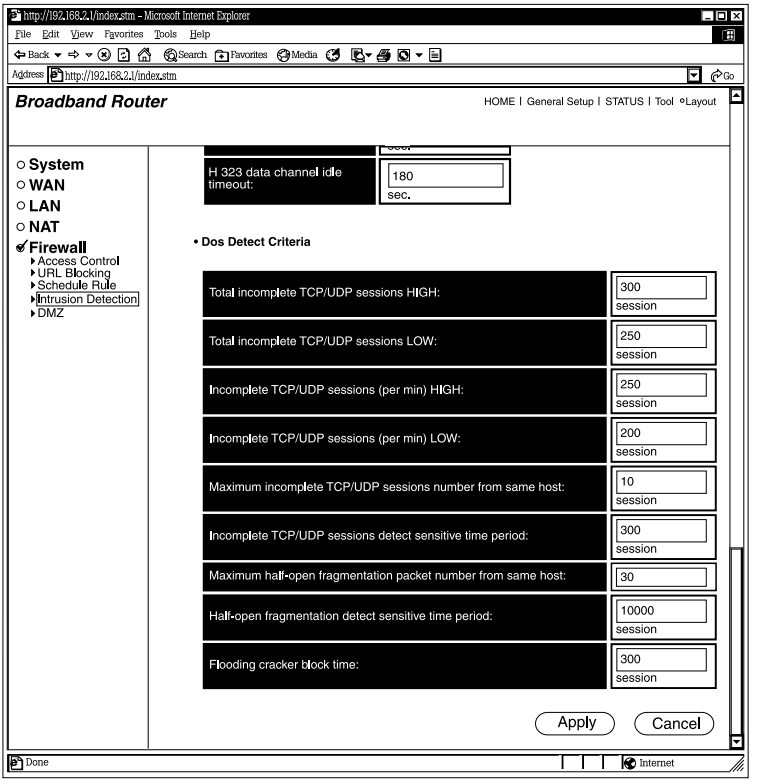

Figure 5-31. Intrusion Detection screen, part #3.

Table 5-29. DoS Detect Criteria.

Parameter	Description
DoS Detect Criteria	Set up the criteria for abnormal events. Any abnormal event that happens more often than the allowed criteria will be treated as a DoS attack. The router will record this event in the security log and alert the user by email.
Total incomplete TCP/UDP sessions HIGH	Type in the maximum session number.

Table 5-29 (continued). DoS Detect Criteria.

Parameter	Description
Total incomplete TCP/UDP sessions LOW	Type in the maximum session number.
Incomplete TCP/UDP sessions (per min) HIGH	Type in the maximum session number.
Incomplete TCP/UDP sessions (per min) LOW	Type in the maximum session number.
Maximum incomplete TCP/UDP sessions number from same host	Type in the maximum session number.
Incomplete TCP/UDP sessions detect sensitive time period	Type in the maximum session number.
Maximum half-open fragmentation packet number from same host	Type in the maximum packet number.
Half-open fragmentation detect sensitive time period	Type in the maximum time period.
Flooding cracker block time	Type in the maximum block time.
Apply button	Click on this button to save the changes.
Cancel	Click on this button to cancel the changes.

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

5.5.5 DMZ

If you have a local client PC that cannot run an Internet application (for example, online games) properly from behind the NAT firewall, then you can open the client up to unrestricted two-way Internet access by defining a DMZ host. The DMZ function allows you to redirect all packets going to your WAN port IP address to a particular IP address in your LAN. The difference between the Virtual Server and the DMZ function is that the Virtual Server redirects a particular service/Internet application (for example, FTP, Web sites) to a particular LAN client/server, whereas DMZ redirects all packets (regardless of services) going to your WAN IP address to a particular LAN client/server. See Figure 5-32.

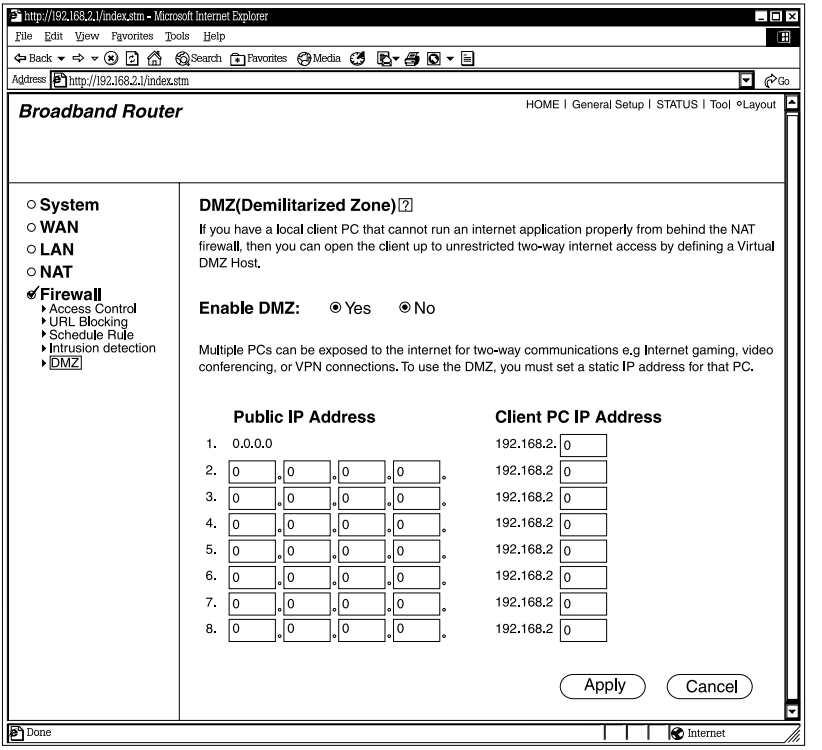

Figure 5-32. DMZ (Demilitarized Zone) screen.

Table 5-30 lists the DMZ options.

Table 5-30. DMZ parameters.

Parameter	Description
Enable DMZ	Click on **Yes** to enable DMZ. Click on **No** to disable DMZ.
Public IP Address	Type in the WAN port's IP address or any other public IP addresses given to you by your ISP.
Client PC IP Address	Type in a particular host's IP address in your LAN that will receive all the packets originally going to the WAN port/public IP address(es) above.
Apply button	Click on this button to save your changes.
Cancel button	Click on this button to cancel the changes.

NOTES

1. **If there is a conflict between the virtual server and the DMZ setting, the virtual server function will have priority over the DMZ function.**
2. **You need to give your LAN PC clients a fixed/static IP address for DMZ to work properly.**

Click on the **Apply** button to save the configurations. You can now configure other advanced sections or start using the router (with the advanced settings in place).

6. Status Information

The status information section allows you to monitor the router's current status. You can use the status information page to monitor the router's WAN/LAN interfaces' connection status, the current firmware and hardware version numbers, any illegal attempts to access your network, and information on all DHCP client PCs currently connected to your network.

Table 6-1 lists the router's available status information options.

Table 6-1. Status information parameters.

Parameter	Description
Status and Information	Shows the router's system information.
Internet Connection	View the router's current Internet connection status and other related information.
Device Status	View the Pure Networking Broadband Router's current setting status.
Security Log	View any attempts that have been made to illegally gain access to your network.
DHCP Client Log	View your LAN client's information that is currently linked to the Pure Networking Broadband Router's DHCP server.

Select one status information selections and proceed to the relevant sub-section (**Section 6.1** through **6.5**).

6.1 Status and Information

The status and information section allows you to view the router's system information. See Figure 6-1.

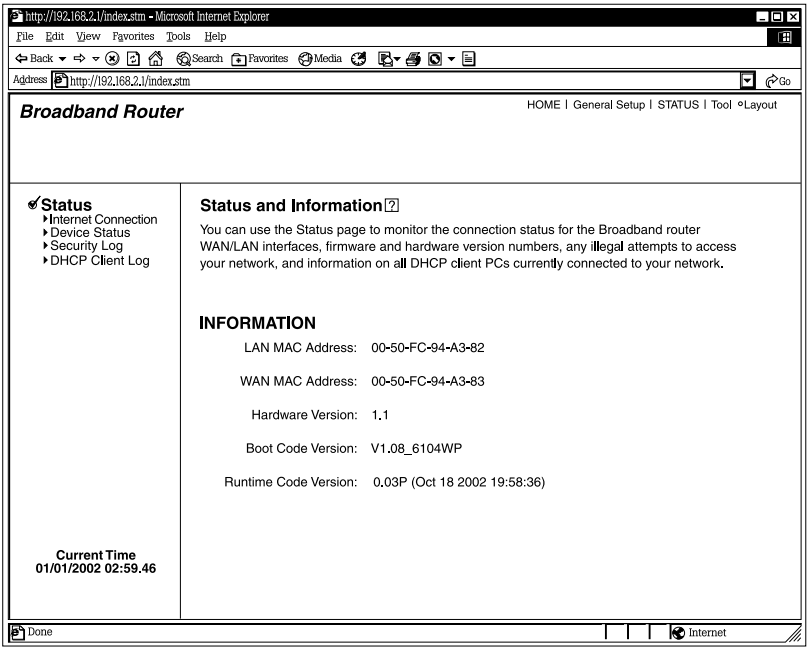

Figure 6-1. System information screen.

Table 6-2 describes the status and information screen information.

Table 6-2. Status and information parameters.

Parameter	Description
Information	You can see the router's system information, such as the router's LAN MAC address, WAN MAC address, hardware version, boot code version, and runtime code version.

6.2 Internet Connection

View the Pure Networking Broadband Router's current Internet connection status and other related information. See Figure 6-2.

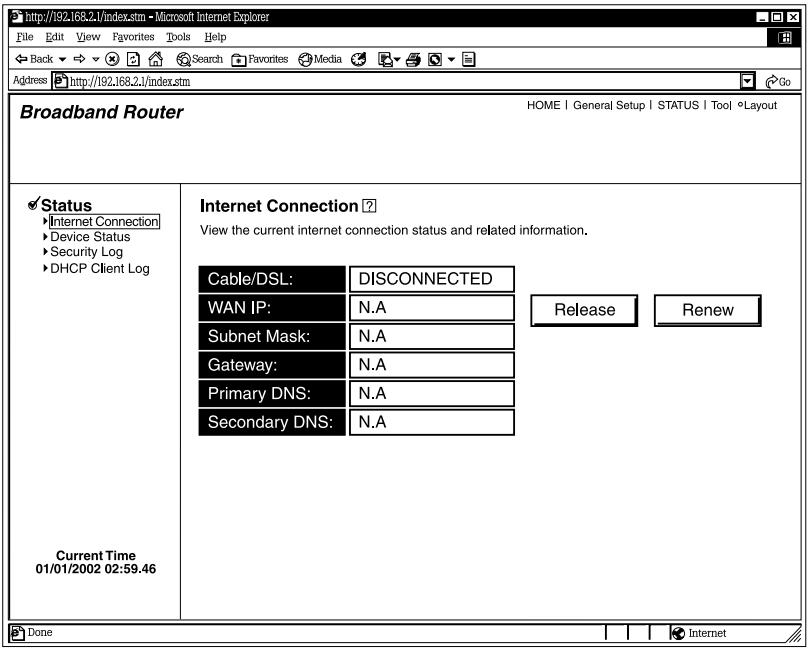

Figure 6-2. Internet Connection screen.

Table 6-3 describes the Internet connection screen.

Table 6-3. Internet connection parameters.

Parameter	Description
Internet Connection	This page displays whether the WAN port is connected to a cable/DSL connection. It also displays the router's WAN port's WAN IP address, subnet mask, and ISP gateway as well as the primary DNS and secondary DNS being used.

Table 6-3 (continued). Internet connection parameters.

Parameter	Description
Release button	Press this button to disconnect from the Internet.
Renew button	Press this button to reconnect to the Internet.

NOTE

When the WAN port is a Dynamic IP connection, the Release and Renew buttons will release the Pure Networking Broadband Router's WAN IP address. Renew will get another IP address from the DHCP server. If the WAN port uses PPPoE, Release will disconnect the PPP session, and Renew will initialize another PPP session.

6.3 Device Status

View the Pure Networking Broadband Router's current configuration settings. The Device Status screen displays the configuration settings you've configured in **Chapters 4** and **5.** See Figure 6-3.

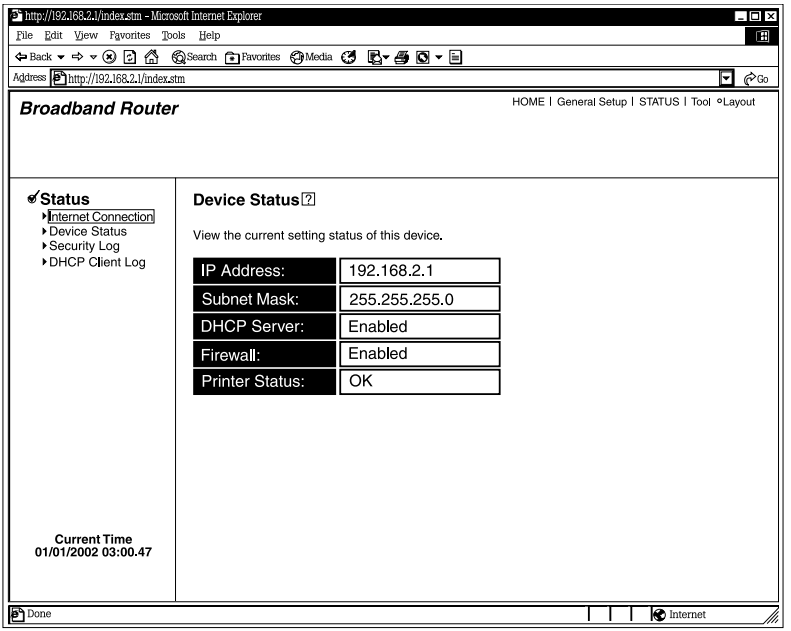

Figure 6-3. Device Status screen.

Table 6-4 describes the device status options.

Table 6-4. Device status parameters.

Parameter	Description
Device Status	This page shows the router's current device settings. It displays the Pure Networking Broadband Router LAN port's current LAN IP address and subnet mask. It also shows whether the DHCP server and firewall functions are enabled/disabled. The firewall status is shown as **Enabled** (the default setting) if the firewall is enabled (regardless of whether you've configured any firewall features). Printer status is also displayed.

6.4 Security Log

View any attempts that have been made to illegally gain access to your network. See Figure 6-4.

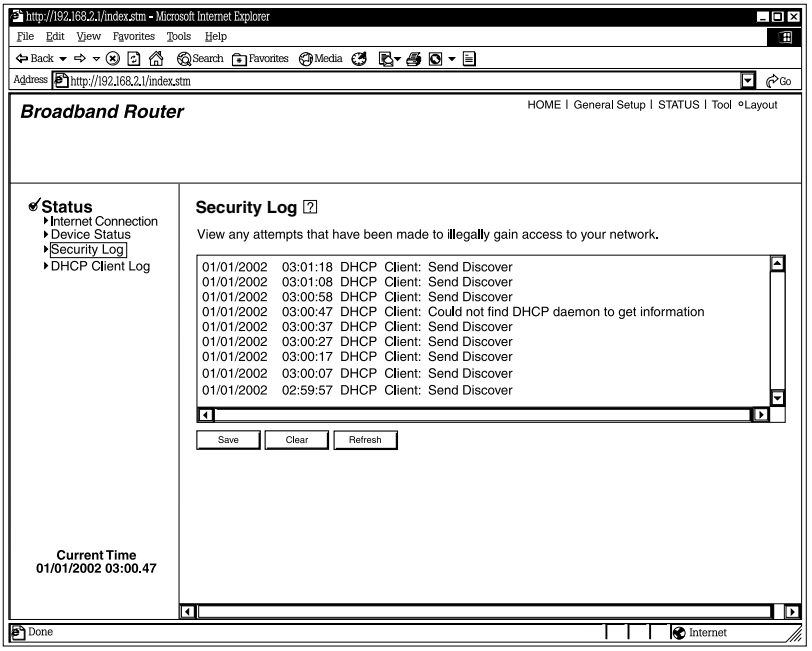

Figure 6-4. Security Log screen.

Table 6-5 describes the security log options.

Table 6-5. Security log parameters.

Parameter	Description
Security Log	This page shows the router's current security log. It displays any illegal attempts to access your network. The security log can be saved to a local file for further processing. It can also be cleared or refreshed to get the most updated information. When the system is powered down, the security log will disappear if it's not saved to a local file.
Save button	This button saves the current security log settings.
Clear button	This button clears the security log settings.
Refresh button	This button refreshes the screen.

6.5 DHCP Client Log

View your LAN client's information that's currently linked to the Pure Networking Broadband Router's DHCP server. See Figure 6-5.

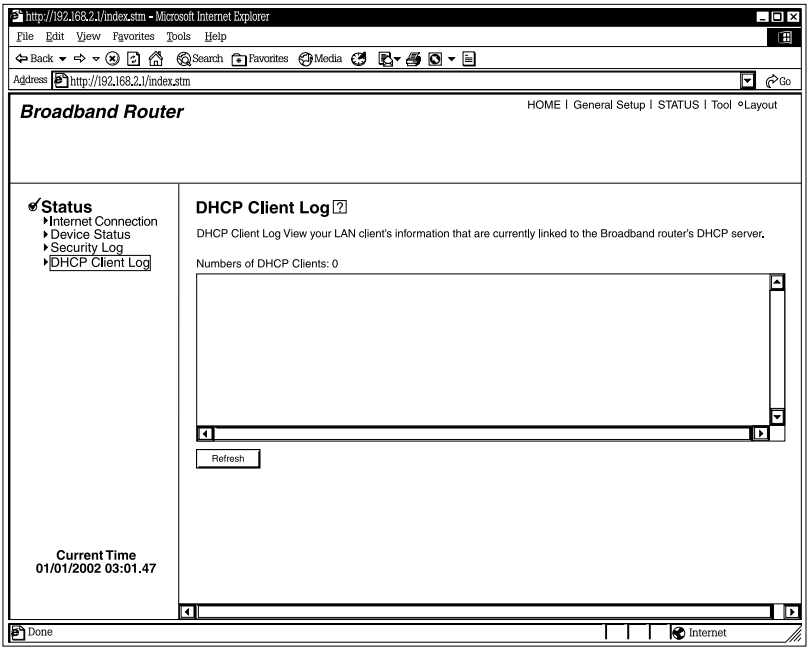

Figure 6-5. DHCP Client Log screen.

Table 6-6 provides information about the DHCP clients in your network.

Table 6-6. DHCP client parameters.

Parameter	Description
DHCP Client Log	This page shows all DHCP clients (LAN PCs) currently connected to your network. **Numbers of DHCP Clients** displays the number of LAN clients that are currently linked to the Pure Networking Broadband Router's DHCP server. The DHCP client log displays the IP address and the MAC address of each LAN client.
Refresh button	Click on this button to refresh the screen and get the most updated information.

7. Tools

This page includes the basic configuration tools, such as Configuration Tools (save or restore configuration settings), Firmware Upgrade (upgrade system firmware), and Reset. See Figure 7-1.

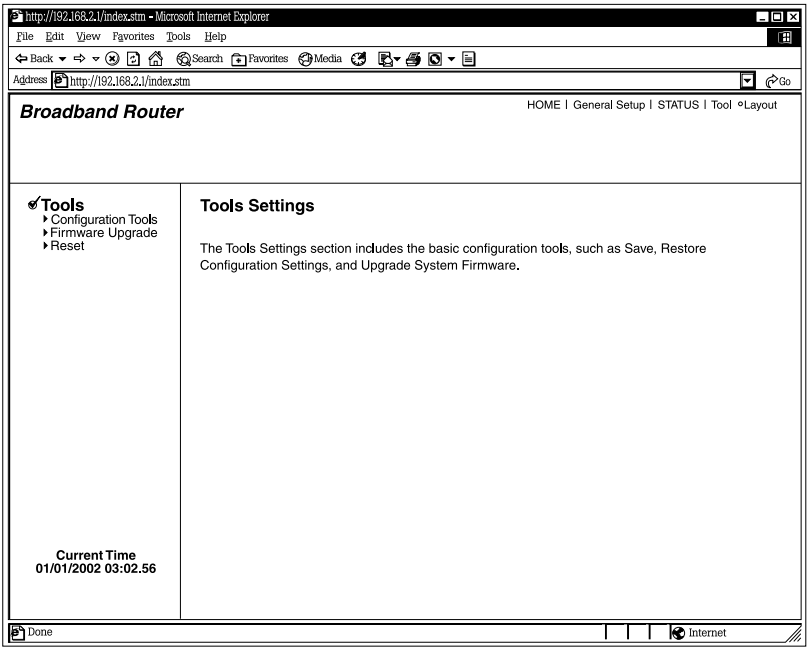

Figure 7-1. Tools Settings screen.

Table 7-1 lists the Tools menu options.

Table 7-1. Tools settings parameters.

Parameter	Description
Configuration Tools	You can save the router's current configuration, restore the router's saved configuration files, and restore the router's factory-default settings.

Table 7-1 (continued). Tools settings parameters.

Parameter	Description
Firmware Upgrade	This page allows you to upgrade the router's firmware.
Reset	Press this button to reset the router's system if any problem exists.

Select one of the Tools Settings selections and proceed to **Section 7.1**, **7.2**, or **7.3**.

7.1 Configuration Tools

The Configuration Tools screen allows you to back up the router's current configuration setting. Saving the configuration settings provides added protection and convenience if problems occur with the router and you have to reset it to its factory default. When you save the Configuration setting, you can reload the saved configuration into the router through the Restore selection. If extreme problems occur, you can use the Restore to Factory Default selection; this will set all configurations to their original default settings (for example, when you first purchased the router). See Figure 7-2.

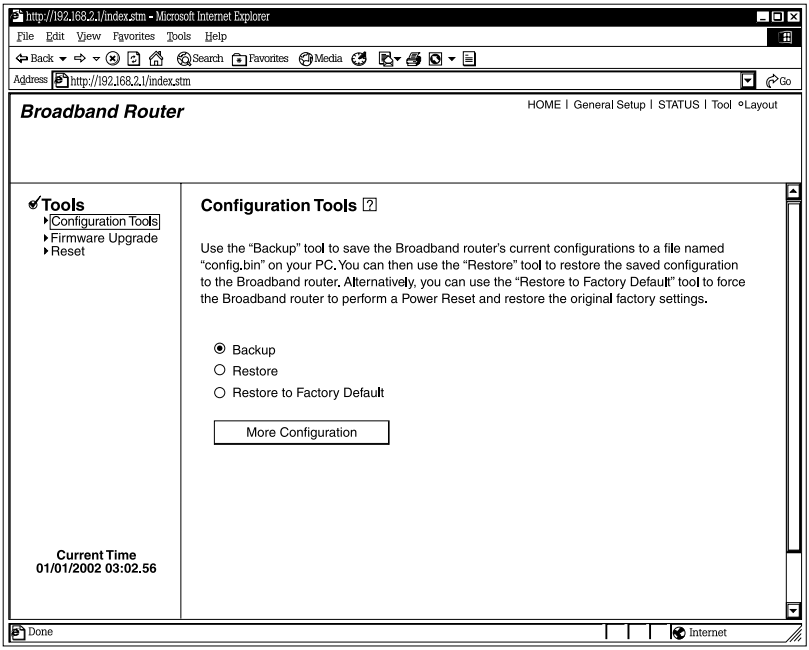

Figure 7-2. Configuration Tools screen.

Table 7-2 describes the router's configuration tools.

Table 7-2. Configuration Tools parameters.

Parameter	Description
Backup	This saves the Pure Networking Broadband Router's current configuration to a file named *backup_config.exe* on your PC.
Restore	This restores the saved configuration to the router.
Restore to Factory Default	Forces the Pure Networking Broadband Router to perform a power reset and restore the original factory settings.

Table 7-2 (continued). Configuration Tools parameters.

Parameter	Description
More Configuration button	Click on this button to save the configuration and go on to the next screen.

NOTE

Click on the More Configuration button after making a selection; follow the instructions.

7.2 Firmware Upgrade

This page allows you to upgrade the router's firmware. See Figure 7-3.

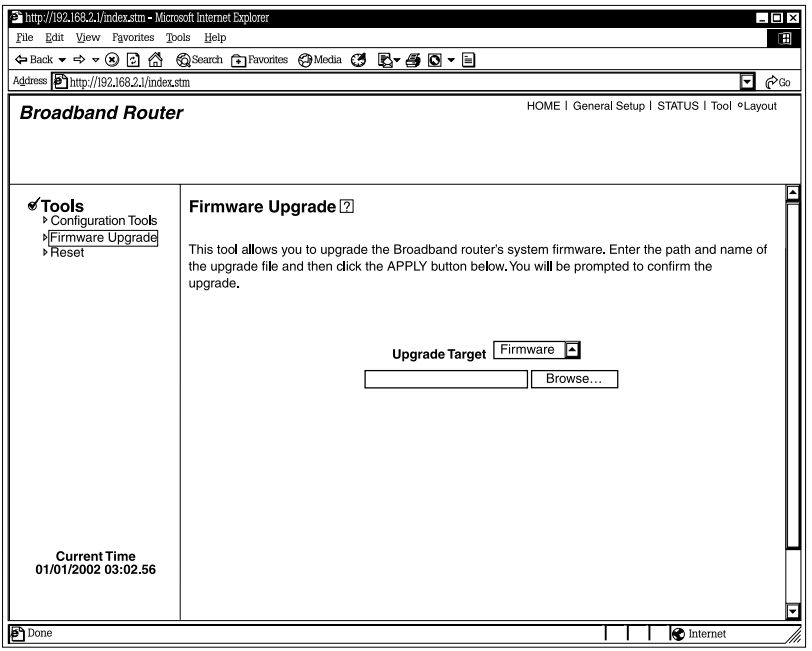

Figure 7-3. Firmware Upgrade screen.

This tool allows you to upgrade the router's system firmware. To upgrade the firmware, you'll need to download the firmware file to your local hard disk and enter that file name and path in the appropriate field on this page.

Table 7-3 describes the firmware upgrade procedure.

Table 7-3. Firmware upgrade parameters.

Parameter	Description
Upgrade Target	Use the drop-down menu to scroll through the available firmware files.
Browse button	Click on this button to find the firmware file on your PC.
Apply button	Click on this button (scroll down to see it) to begin the upgrade.

Once you've selected the new firmware file, click on the **Apply** button to start the upgrade process. (You may have to wait a few minutes for the upgrade to complete.) Once the upgrade is complete, you can start using the router.

7.3 Reset

If the system stops responding correctly, or in some way stops functioning, you can perform a reset. Your settings will not be changed. To perform the reset, click on the **Apply** button. You will be asked to confirm your decision. The reset will be complete when the Power light stops blinking. Once the reset process is complete, you may start using the router again. The reset function reboots your router's system. See Figure 7-4.

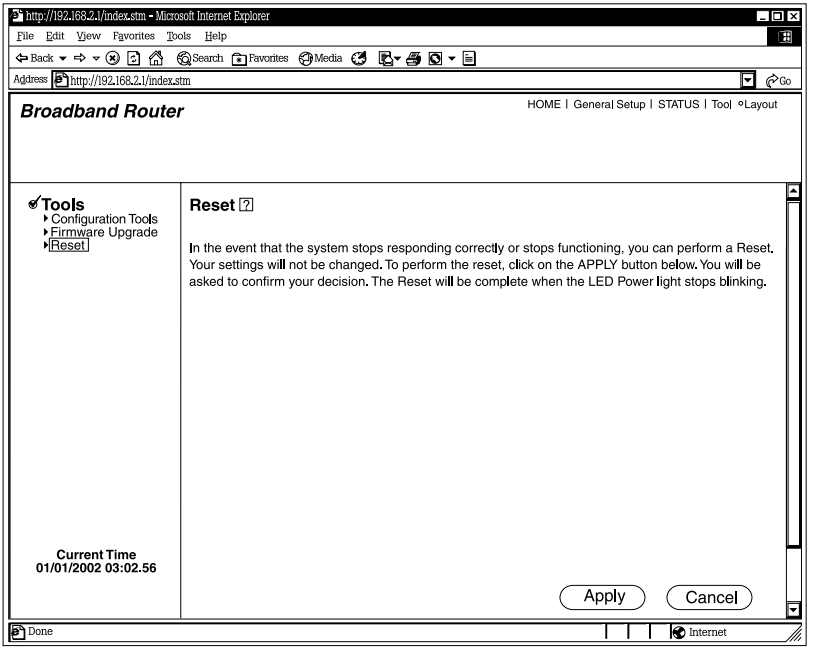

Figure 7-4. Reset screen.

Table 7-4 describes the reset options.

Table 7-4. Reset parameters.

Parameter	Description
Apply	Click on this button to perform a reset.
Cancel	Click on this button to cancel the reset.

8. Print Server

8.1 Install the Print Server Network Driver

1. In Windows, open the Command Prompt program.

2. Type `WEClient.exe` at the prompt, and the **PrintServer Network Driver Setup Program** window will appear. See Figure 8-1.

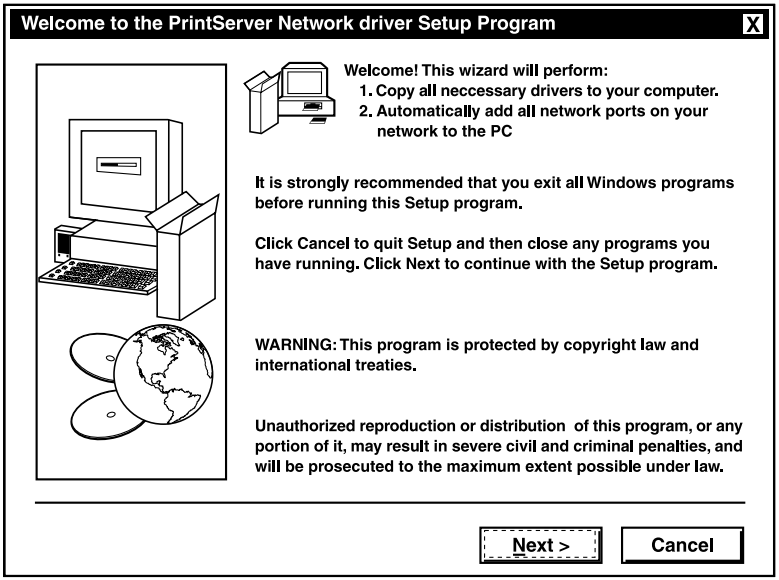

Figure 8-1. PrintServer Network Driver Setup Program window.

3. Click on the **Next** button and specify the destination folder where the utility will be installed. See Figure 8-2. Or, click on the **Cancel** button to cancel the setup.

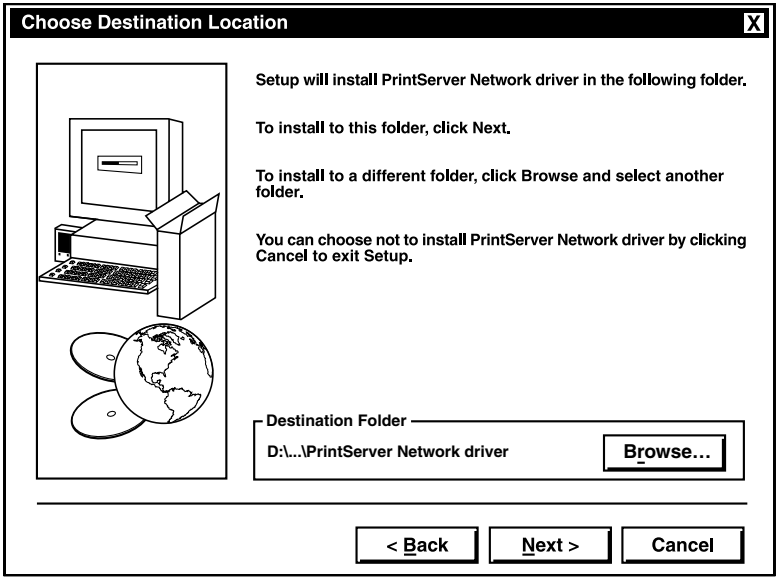

Figure 8-2. Choose Destination Location window.

Table 8-1 lists the button functions shown in Figure 8-2.

Table 8-1. Destination Location window parameters.

Parameter	Description
Browse	Click on this button to browse through the available destination folders.
Back	Click on this button to go back to the previous screen.
Next	Click on this button to save your changes and go on to the next screen.
Cancel	Click on this button to cancel your changes.

4. Click on the **Next** button and specify the program folder where the program icons will be added. See Figure 8-3.

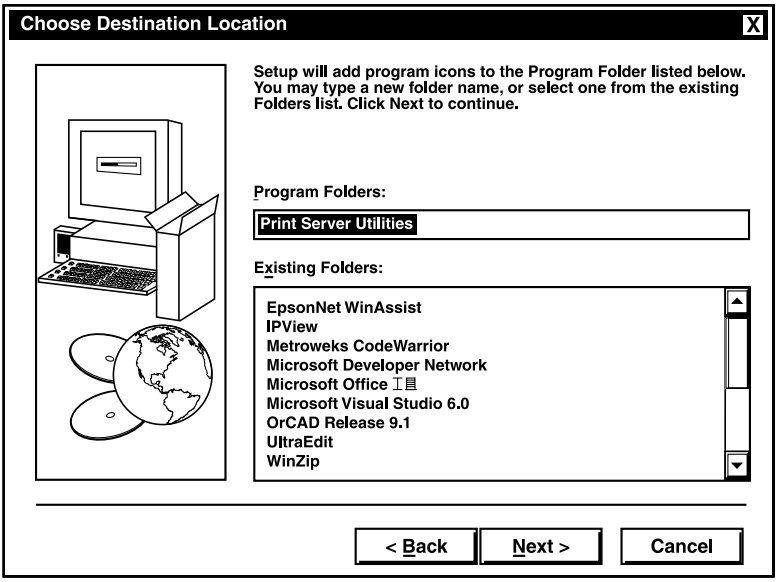

Figure 8-3. Select Program Folder window.

Table 8-2 describes the program folder options.

Table 8-2. Program folder parameters.

Parameter	Description
Program Folders	Type in the program folder name.
Existing Folders	Scroll through the existing folders list.
Back button	Click on this button to go back to the previous screen.
Next button	Click on this button to save the changes and go on to the next screen.
Cancel button	Click on this button to cancel the changes.

5. Click on the **Next** button to start installation. The **Utilities Installation** window (not shown here) appears on your screen.

6. The program will finish installing all the utilities and drivers. So far you've only completed the installation phase and prepared to use the print server. Next, you'll add a remote port for the print server. Click on the **Add** button to add a remote port. See Figure 8-4. Or, click on the **Delete** button to cancel, or the **Exit** button to exit.

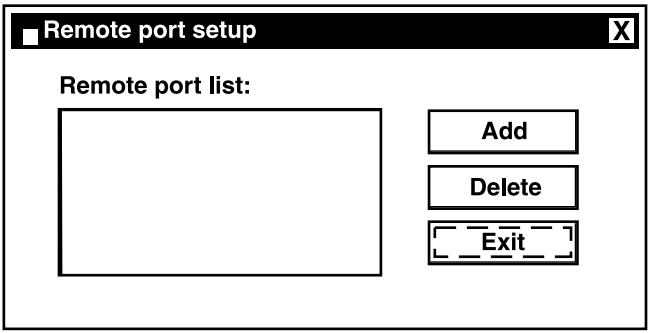

Figure 8-4. Remote Port Setup window.

7. You have to assign a print server name and enter the print server's IP address. You can only select P1 or P2 (the router has only two print ports). After filling in the data, click **OK** to proceed. See Figure 8-5. Or, click on **Cancel** to cancel the changes without saving.

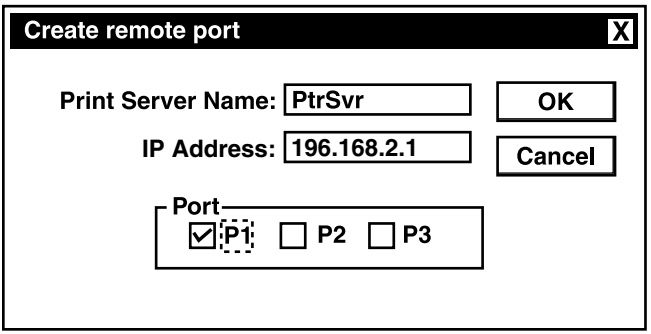

Figure 8-5. Create Remote Port window.

8. After adding a remote port for the print server, you can see the remote port's name in the remote port list. The remote port's name consists of the print server name and the port number, which are separated by a hyphen. For example, if you assign "PtrSvr" as the print server name and select port "P1", then the remote port's name will be "PtrSvr-P1". You can click **Add** to add another remote port. Click **Delete** to delete a selected remote port. When you have finished setting the remote port, click **Exit** to exit the setup tool. See Figure 8-6.

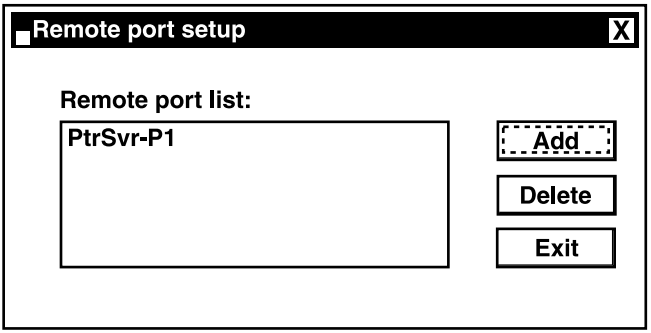

Figure 8-6. Remote Port Setup window.

9. Print server client tool installation is complete. You can start using the print server.

8.2 Add a Network Printer

After installing the print server client tool, you need to add the network printer to your PC.

1. Click the **Start** button. Choose **Setting** and **Printers**.

2. Double-click on **Add Printer**. See Figure 8-7. Click on **Next** to continue.

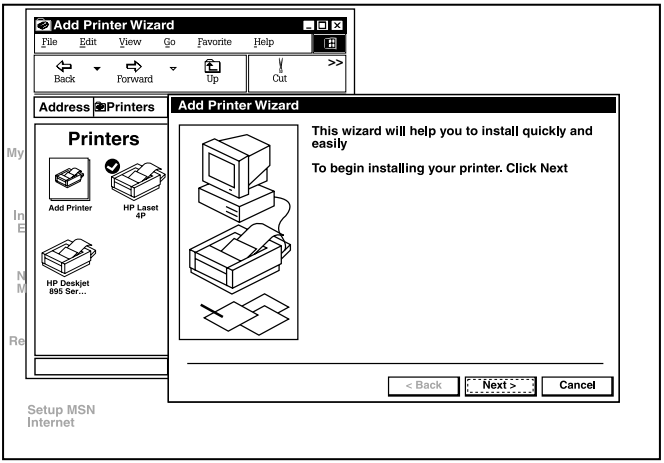

Figure 8-7. Add Printer window.

3. Select **Local Printer** and click **Next**. See Figure 8-8.

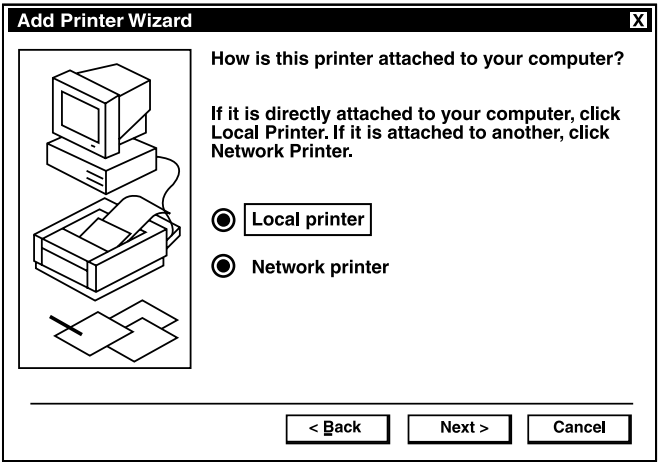

Figure 8-8. Add Printer Wizard.

4. Select the suitable printer manufacturer and model, then click **Next**. See Figure 8-9.

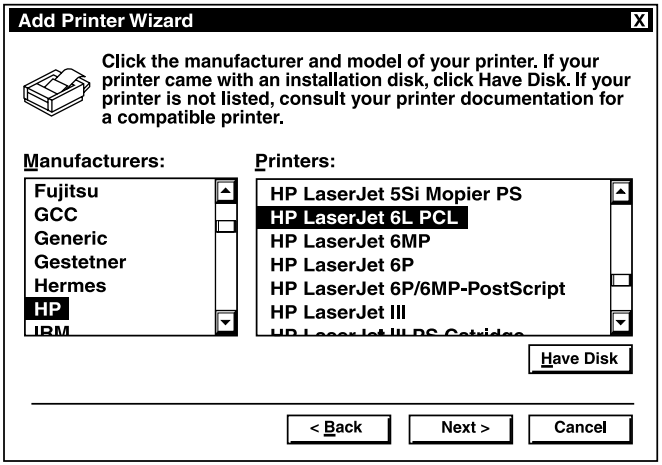

Figure 8-9. Choosing a Printer.

5. Choose the print server's remote port that was created in **Section 8.1** and click **Next**. See Figure 8-10.

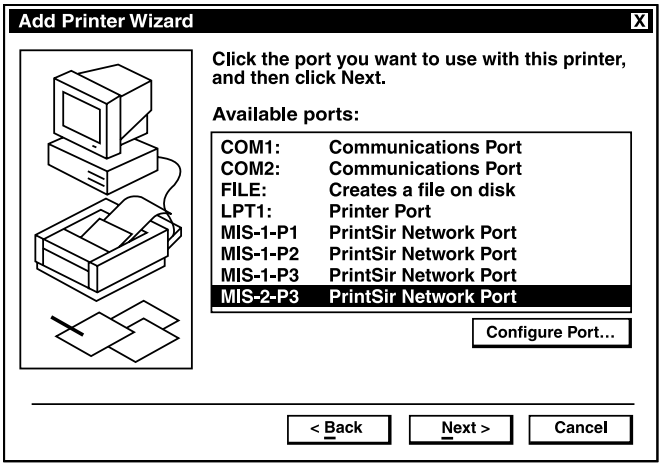

Figure 8-10. Choosing the Print Server's remote port.

6. Complete the rest of the questions that will appear on-screen to finish the network printer setup.

Appendix A. How to Manually Find Your PC's IP and MAC Addresses

1. In Windows, open the Command Prompt program. See Figure A-1.

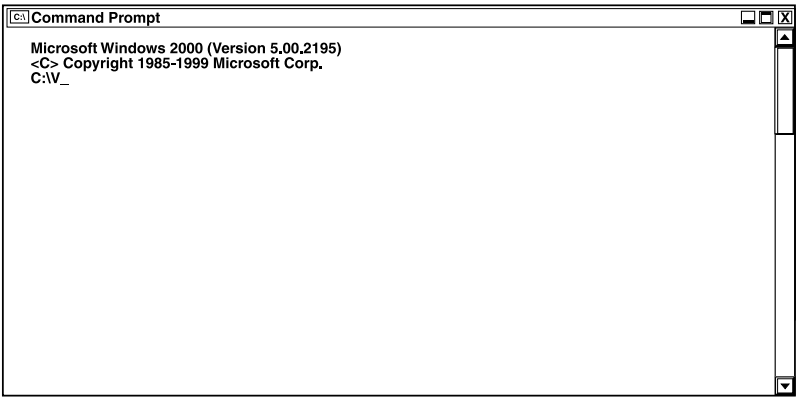

Figure A-1. Command Prompt program window #1.

2. Type `ipconfig/all` and press **Enter**. See Figure A-2.

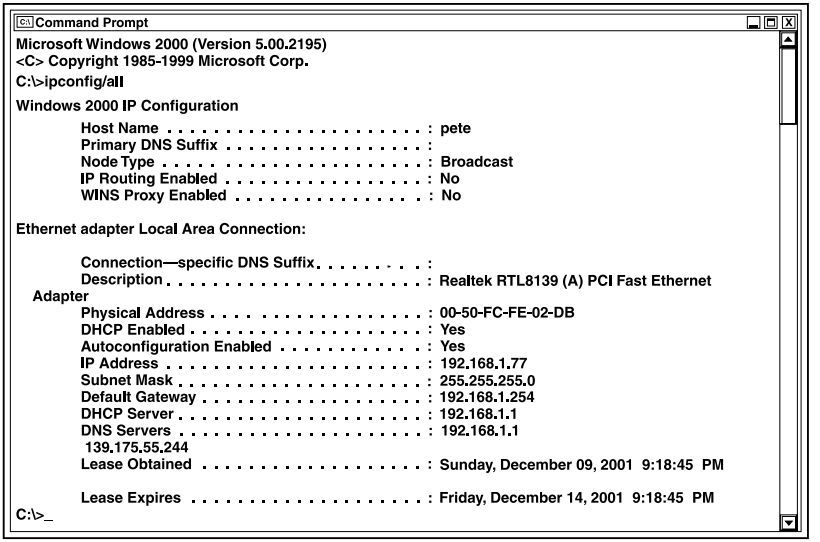

Figure A-2. Command Prompt program window #2.

- Your PC's IP address is the "IP address" (in this case, 192.168.1.77).
- The router's IP address is the "Default Gateway" (in this case, 192.168.1.254).
- Your PC's MAC address is the "Physical Address" (in this case, 00-50-FC-FE-02-DB).

Appendix B. Troubleshooting

B.1 Calling Black Box

If you determine that your Pure Networking Broadband Router is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box at 724-746-5500.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

B.2 Shipping and Packaging

If you need to transport or ship your Pure Networking Broadband Router:

- Package it carefully. We recommend that you use the original container.
- If you are shipping the Pure Networking Broadband Router for repair, make sure you include everything that came in the original package. Before you ship, contact Black Box to get a Return Authorization (RA) number.

Appendix C. Glossary

Bridge: A bridge is an intelligent, internetworking device that forwards or filters packets between different networks based on Data Link layer (MAC) address information.

Default Gateway (Router): Every non-router IP device needs to configure a default gateway's IP address. When the device sends out an IP packet, if the destination is not on the same network, the device has to send the packet to its default gateway, which will then send it out toward the destination.

DHCP: Dynamic Host Configuration Protocol. This protocol automatically gives every computer on your home network an IP address.

DNS Server IP Address: DNS stands for Domain Name System, which allows Internet servers to have a domain name (such as ***www.broadbandrouter.com***) and one or more IP addresses (such as 192.34.45.8). A DNS server keeps a database of Internet servers and their respective domain names and IP addresses so that when a domain name is requested (as in typing "***broadbandrouter.com***" into your Internet browser), the user is sent to the proper IP address. The DNS server IP address used by the computers on your home network is the location of the DNS server your ISP has assigned to you.

DSL Modem: DSL stands for Digital Subscriber Line. A DSL modem uses your existing phone lines to transmit data at high speeds.

Ethernet: A standard for computer networks. Ethernet networks are connected by special cables and hubs. They move data around at up to 10/100 Mbps.

Idle Timeout: After there is no traffic to the Internet for a pre-configured amount of time, the connection will automatically be disconnected.

IP Address and Network (Subnet) Mask: IP stands for Internet Protocol. An IP address consists of a series of four numbers separated by periods that identifies a single, unique Internet computer host in an IP network. (Example: 192.168.2.1.) It consists of 2 portions: the IP network address and the host identifier.

The IP address is a 32-bit binary pattern that can be represented as four cascaded decimal numbers separated by "." For example, an address follows this pattern: aaa.aaa.aaa.aaa, where each "aaa" can be anything from 000 to 255, or as four cascaded binary numbers separated by ".":
bbbbbbbb.bbbbbbbb.bbbbbbbb.bbbbbbbb, where each "b" can either be 0 or 1.

A network mask is also a 32-bit binary pattern. It consists of consecutive leading 1's followed by consecutive trailing 0's, like this: 11111111.11111111.11111111.00000000. Therefore, sometimes a network mask can also be described simply as ***x*** number of leading 1's.

When both are represented side by side in their binary forms, all bits in the IP address that correspond to 1's in the network mask become part of the IP network address, and the remaining bits correspond to the host ID.

For example, if the IP address for a device is, in its binary form, 11011001.10110000.10010000.00000111, and if its network mask is 11111111.11111111.11110000.00000000, it means the device's network address is 11011001.10110000.10010000.00000000, and its host ID is 00000000.00000000.00000000.00000111. This is a convenient and efficient method for routers to route IP packets to their destination.

ISP: Internet Service Provider. An ISP is a business that provides connectivity to the Internet for individuals and other businesses or organizations.

ISP Gateway Address: The ISP Gateway Address is an IP address for the Internet router located at the ISP's office.

LAN: Local Area Network. A LAN is a group of computers and devices connected together in a relatively small area (such as a house or an office). Your home network is considered a LAN.

MAC (Media Access Control) Address: A MAC address is the hardware address of a device connected to a network. The MAC address is a unique identifier for a device with an Ethernet interface. It consists of two parts: three bytes of data that corresponds to the Manufacturer ID (unique for each manufacturer), plus three bytes that are often used as the product's serial number.

NAT: Network Address Translation. This process allows all of the computers on your home network to use one IP address. Using the Pure Networking Broadband Router's NAT capability, you can access the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.

Port: Network clients (LAN PC) use port numbers to distinguish one network application/protocol from another. Below is a list of common applications and protocol/port numbers:

Application	Protocol	Port Number
Telnet	TCP	23
FTP	TCP	21
SMTP	TCP	25
POP3	TCP	110
H.323	TCP	1720
SNMP	UCP	161
SNMP Trap	UDP	162
HTTP	TCP	80
PPTP	TCP	1723
pcANYWHERE®	TCP	5631
pcANYWHERE	UDP	5632

PPPoE: Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a secure data transmission method originally created for dialup connections; PPPoE is for Ethernet connections. PPPoE relies on two widely accepted standards, Ethernet and the Point-to-Point Protocol. It is a communications protocol for transmitting information over Ethernet between different manufacturers.

Protocol: A protocol is a set of rules for interaction agreed upon between multiple parties so that when they interface with each other based on such a protocol, the interpretation of their behavior is well defined and can be made objectively, without confusion or misunderstanding.

Router: A router is an intelligent network device that forwards packets between different networks based on network layer address information such as IP addresses.

Subnet Mask: A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of ten numbers (for example, 255.255.255.0) configured like an IP address. It is used to create IP address numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must be assigned by InterNIC).

TCP/IP, UDP: Transmission Control Protocol/Internet Protocol (TCP/IP) and Unreliable Datagram Protocol (UDP). TCP/IP is the standard protocol for data transmission over the Internet. Both TCP and UDP are Transport layer protocol. TCP performs proper error detection and error recovery, and thus is reliable. UDP, on the other hand, is not reliable. They both run on top of the IP (Internet Protocol), a Network layer protocol.

WAN: Wide Area Network. A network that connects computers located in geographically separate areas (for example, in different buildings, cities, or countries). The Internet is a WAN.

Web-based management Graphical User Interface (GUI): Many devices support a graphical user interface that is based on the Web browser. This means the user can use the familiar Netscape Navigator or Microsoft® Internet Explorer to control/configure or monitor the device being managed.