

# User Guide



Broadband Networking

## *Broadband* **Cable/DSL** 4-Port Router



Model **NR041**

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#### FCC STATEMENT

The Cable/DSL 4-Port Router has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

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# Chapter 1: Introduction

## The Cable/DSL 4-Port Router

The Network Everywhere Cable/DSL 4-Port Router connects multiple PCs to your cable or DSL modem. And using the Setup Wizard, you can set up your network quickly—just enter your Internet connection settings and let the Wizard do the work!

The Router lets your PCs share one IP address from your ISP, files, printers, and other resources. Use the Router as a DHCP server so it automatically assigns internal IP addresses to your PCs. For network security, the Router's built-in Network Address Translation (NAT) feature helps protect your internal network. Universal Plug and Play makes your networking experience as easy as possible.

## Features

- Setup Wizard for Convenient Network Setup
- Supports Universal Plug and Play for Easy Network Configuration
- Administer and Upgrade Router Remotely over the Internet
- Easily Configurable through Web Browser from Any Networked PC
- Configurable as a DHCP Server on Your Network
- Network Address Translation (NAT) Helps Protect Your Computers from Hackers
- Supports Port Forwarding, DMZ Host, Traffic and Event Logging, and Port Filtering
- 1-Year Limited Warranty

## Package Contents



Figure 1-1

- One Cable/DSL 4-Port Router
- One Power Adapter
- One Setup Wizard CD-ROM with User Guide
- One Quick Installation
- One Registration Card

## Minimum Requirements

- PC with CD-ROM Drive
- Network Adapter with Ethernet (UTP CAT 5) Cabling and TCP/IP Protocol Installed per PC
- Internet Explorer 4.0 (or Higher) or Netscape Navigator 4.7 (or Higher) for Web-based Configuration
- Cable or DSL Modem with Ethernet Connection and Internet Access

## An Introduction to LANs and WANs

Simply put, a **router** is a network device that connects two networks together.

In this instance, the Router connects your **Local Area Network (LAN)**, or the group of PCs in your home or office, to the **Wide Area Network (WAN)**, which is the Internet. The Router processes and regulates the data that travels between these two networks.

Think of the Router as a network device with two sides: the first side interacts with your private **Local Area Network (LAN)** of PCs. The other, public side interacts with the Internet, or the **Wide Area Network (WAN)**, outside of your home or office.

The Router's firewall protects your network of PCs so users on the public, Internet side cannot "see" your PCs. This is how your network remains private. The Router protects your network by inspecting every data packet coming in through the Internet (or WAN) port before delivery to the final destination on the LAN port. The Router inspects Internet port services like the web server, ftp server, or other Internet applications, and, if allowed, it will forward the packet to the appropriate PC on the LAN side.

Remember that the Router's ports connect to two sides. Your 10/100 **LAN** port(s) connect to the LAN, and the Internet (or WAN) port connects to the WAN. The LAN port(s) transmit data at 10 or 100 Mbps, whereas the broadband or WAN port, or Internet port, transmits data at 10 or 100 Mbps.

## IP Addresses

### What's an IP Address?

**IP** stands for Internet Protocol. Every device on an IP-based network, including PCs, print servers, and routers, requires an **IP address** to identify its "location," or address, on the network. This applies to both the WAN and LAN connections. There are two ways of assigning an IP address to your network devices. You can assign static IP addresses or use the Router to assign IP addresses dynamically.

### Static IP Addresses

A **static IP address** is a fixed IP address that you assign manually to a PC or other device on the network. Since a static IP address remains valid until you disable it, **static IP addressing** ensures that the device assigned it will always have that same IP address until you change it. Static IP addresses are commonly used with network devices such as server PCs or print servers.

If you use the Router to share your cable or DSL Internet connection, contact your ISP to find out if they have assigned a static IP address to your account. If so, you will need that static IP address when configuring the Router. You can get that information from your ISP.



**Note:** Since the Router is a device that connects two networks, it needs two IP addresses—one for the LAN, and one for the WAN. In this User Guide, you’ll see references to the “WAN IP address” and the “LAN IP address.”

Since the Router has firewall security, the only IP address that can be seen from the Internet for your network is the Router’s WAN IP address.

However, even this WAN IP address can be blocked, so that the Router and network seem invisible to the Internet—see the Blocking WAN Requests description under IP Filtering in “Chapter 6: The Router’s Web-based Utility.”

### Dynamic IP Addresses

A **dynamic IP address** is automatically assigned to a device on the network, such as PCs and print servers. These IP addresses are called “dynamic” because they are only *temporarily* assigned to the PC or device. After a certain time period, they expire and may change. If a PC logs onto the network (or the Internet) and its dynamic IP address has expired, the **DHCP server** will assign it a new dynamic IP address.

For DSL users, many ISPs may require you to log on with a user name and password to gain access to the Internet. This is a dedicated, high-speed connection type called Point to Point Protocol over Ethernet (PPPoE). PPPoE is similar to a dial-up connection, but PPPoE does not dial a phone number when establishing a connection. PPPoE also will provide the Router with a dynamic IP address to establish a connection to the Internet.

### DHCP (Dynamic Host Configuration Protocol) Servers

PCs and other network devices using dynamic IP addressing are assigned a new IP address by a **DHCP server**. The PC or network device obtaining an IP address is called the DHCP client. DHCP frees you from having to assign IP addresses manually every time a new user is added to your network.

A DHCP server can either be a designated PC on the network or another network device, such as the Router. By default, the Router’s WAN setting is DHCP client.

By default, the Router can act as a DHCP server for your LAN. If you already have a DHCP server running on your network, you *must* disable one of the two DHCP servers. If you run more than one DHCP server on your network, you will experience network errors, such as conflicting IP addresses. To disable DHCP on the Router, see the DHCP section in “Chapter 6: The Router’s Web-based Utility.”



**Note:** Even if you assign a static IP address to a PC, other PCs can still use DHCP’s dynamic IP addressing, as long as the static IP address is not within the DHCP range of the LAN IP Addresses.

If the dynamic IP addressing fails to provide a dynamic IP address, refer to “Appendix A: Troubleshooting.”

## Network Setup Overview

This user guide covers the basic steps for setting up a network with the Router. After going through “Chapter 2: Getting to Know the Cable/DSL 4-Port Router,” most users will only need to use the following chapters:

- Chapter 3: Connect the Router  
This chapter instructs you on how to connect a cable or DSL modem to the Router and connect your PC(s) to the Router.
- Chapter 4: Configure the PCs  
This chapter instructs you on how to configure your PC(s) for a DHCP connection, if the network settings are not already set to DHCP.
- Chapter 5: Configure the Router  
This chapter explains how to configure the Router using your web browser and the Router’s web-based utility. You will configure the Router using the settings provided by your ISP.

When you’re finished with the basic steps, then you are ready to connect to the Internet. After the PC(s) can access the Internet through the Router, you can alter the Router’s settings further; for example, you can adjust them to enable online gaming.

# Chapter 2: Getting to Know the Cable/DSL 4-Port Router

## The Router's Back Panel

The Router's ports, where network cables are connected, are located on the Router's back panel.



Figure 2-1

### Internet

The **Internet** port is where you connect your cable or DSL modem with an Ethernet cable. **Your modem connection will not work from any other port.**

### Ports 1-4

These four **LAN** (Local Area Network) ports connect to network devices, such as PCs, print servers, and network attached storage (NAS). Port 1 can be used as an uplink port to other network devices.

### Power

The **Power** port is where you will connect the power adapter.

### The Uplink Pushbutton

If you use Port 1 to uplink the Router to a hub or switch, press the Uplink pushbutton. If you use Port 1 to connect to a PC, make sure the Uplink pushbutton is not pressed.

## Cable/DSL 4-Port Router

### The Reset Button

The **Reset** button can be used in one of two ways:

1. If the Router is having problems connecting to the Internet, press the **Reset** button for just a moment with a paper clip or a pencil tip. This clears up any jammed connections, and is similar to pressing the **Reset** button on your PC to reboot it.

This will reboot the Router while keeping all of the Router's settings.

2. If you are experiencing extreme problems with the Router and have tried all other troubleshooting measures, press the **Reset** Button and hold it down until the red **Diag** LED on the front panel turns on and off completely.

This will restore factory defaults and clear all of the Router's settings, including settings such as IP addresses or a new password.

## The Router's Front Panel LEDs



Figure 2-2

### Power

*Green.* The **Power** LED lights up when the Router is powered on.

### The LAN Indicators

#### Link/Act

*Green.* The **Link/Act** LED serves two purposes. If the LED is continuously lit, the Router is successfully connected to a device through the corresponding port. If the LED is flickering, the Router is actively sending or receiving data over that port.

#### 100

*Green.* The **100** LED lights up when a successful 100Mbps connection is made through the corresponding port. If this LED does not light up, then your connection speed is 10Mbps.

## The Internet Indicators

**Internet** *Green.* The **Internet** LED lights up when a successful connection is made between the Router and your cable or DSL modem or WAN.

**Diag** *Red.* The **Diag** LED lights up when the Router goes through its self-diagnosis mode during every boot-up. It will turn off upon successful completion of the diagnosis.

If this LED stays on for one minute or longer, see “Appendix A: Troubleshooting.”

Proceed to “Chapter 3: Connect the Router:”

# Chapter 3: Connect the Router

## Overview

Unlike a hub or a switch, the Router’s setup consists of more than simply plugging hardware together. You will have to configure your networked PCs to accept the IP addresses that the Router assigns them (if applicable), and you will also have to configure the Router with setting(s) provided by your Internet Service Provider (ISP).

The installation technician from your ISP should have left the setup information for your modem with you after installing your broadband connection. If not, you can call your ISP to request the data.

Once you have the setup information you need for your specific type of Internet connection, you can begin installation and setup of the Router.

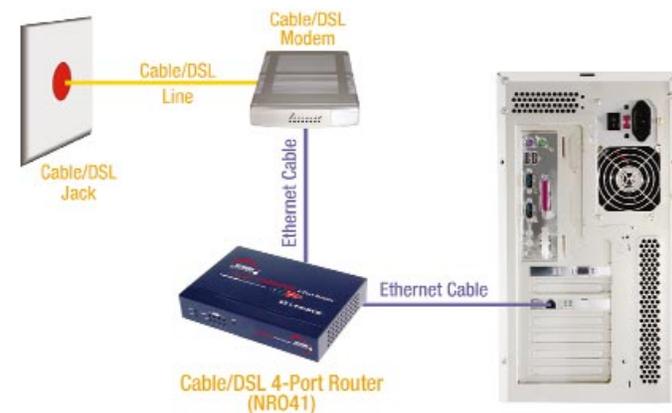


Figure 3-1



**Note:** You have two methods of installing the Router: using the Setup Wizard or using the manual installation instructions. Network Everywhere recommends you run the Setup Wizard on the Setup Wizard CD-ROM. Insert the Setup Wizard CD-ROM into your PC’s CD-ROM drive. The Setup Wizard will run automatically. Then follow the Setup Wizard’s instructions to install the Router.

If you prefer to manually install the Router, then proceed to the next section of the User Guide.

## Connecting Your Hardware Together and Booting Up

1. Before you begin, make sure that all of your network's hardware is powered off, including the Router, PCs, and cable or DSL modem.

2. Connect one end of an Ethernet network cable to one of the LAN ports (labeled **1-4**) on the back of the Router.



Figure 3-2

If you use Port 1 to uplink the Router to a hub or switch, press the Uplink pushbutton. If you use Port 1 to connect to a PC, make sure the Uplink pushbutton is not pressed.

3. Connect the other end of the Ethernet network cable to a standard port on a network device, e.g., a PC, hub, switch, or print server. See “Appendix E: Twisted-Pair Cabling” for details on network cabling.



Figure 3-3

Repeat the above step to connect more PCs or network devices to the Router.

4. Connect the Ethernet network cable from your cable or DSL modem to the **Internet** port on the Router's rear panel. This is the only port that will work for your modem connection.



Figure 3-4

## Cable/DSL 4-Port Router

5. Connect the power adapter to the Power port, and then plug the power adapter into a power outlet.



Figure 3-5



**Note:** It is highly recommended that you plug the Router's power adapter into a power strip with surge protection.

- The **Power** LED on the front panel will light up green as soon as the power adapter is connected properly.

- The **Diag** LED will light up red for a few seconds when the Router goes through its self-diagnostic test. This LED will turn off when the self-test is complete.

5. Power on the cable or DSL modem.

6. Press the **Reset** button on the Router's front panel with a paper clip or a pencil. Hold the button in until the **Diag** LED lights up and then turns off. This will restore the Router's factory default settings.



**Have you** checked that the **Link/Act** LEDs for all your LAN connections and the **Internet** LED for your WAN connection light up?

If these LEDs are not lighting up, make sure that all your cables are securely plugged in, and that all of your hardware is powered on properly. Verify that the modem is plugged into the Internet port on the Router.

**The Router's hardware installation is now complete.**  
Go to “Chapter 4: Configure the PCs.”

## Chapter 4: Configure the PCs

### Overview

The instructions in this chapter will help you configure each of your computers to be able to communicate with the Router.

To do this, you need to configure your PC's network settings to obtain an IP (or TCP/IP) address automatically (called DHCP). Computers use IP addresses to communicate with each other across a network, such as the Internet.

Find out which Windows operating system your computer is running. You can find out by clicking the **Start** button and then selecting the **Settings** option. Then click **Control Panel**, and double-click the **System** icon. If your Start menu doesn't have a Settings option, you're running Windows XP. Click the **Cancel** button when done.

You may need to do this for each computer you are connecting to the Router.



**Important:** These instructions apply only to Windows 95, 98, Millennium, 2000, or XP machines. For TCP/IP setup under Windows NT, see your Windows manual. By default, Windows 98, 2000, Me, and XP have TCP/IP installed and set to obtain an IP address automatically.

The next few pages tell you, step by step, how to configure your network settings based on the type of Windows operating system you are using. Make sure that an Ethernet card or adapter (also known as a network adapter) has been successfully installed in each PC you will configure. Once you've configured your computers, continue to "Chapter 5: Configure the Router."

### Configuring Windows 95, 98, and Millennium PCs

1. Go to the Network screen by clicking the **Start** button. Click **Settings** and then **Control Panel**. From there, double-click the **Network** icon.
2. On the Configuration tab, select the **TCP/IP** line for the applicable Ethernet adapter. Do not choose a TCP/IP entry whose name mentions DUN, PPPoE, VPN, or AOL. If the word **TCP/IP** appears by itself, select that line. (If there is no TCP/IP line listed, refer to "Appendix D: Installing the TCP/IP Protocol" or your Ethernet adapter's documentation to install TCP/IP now.) Then, click the **Properties** button.

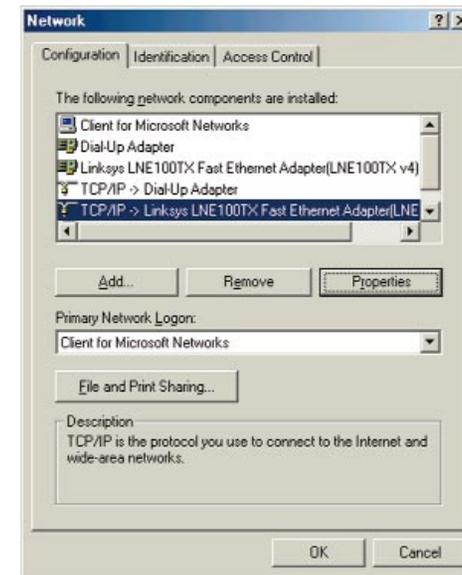


Figure 4-1

- Click the **IP Address** tab. Select **Obtain an IP address automatically**.

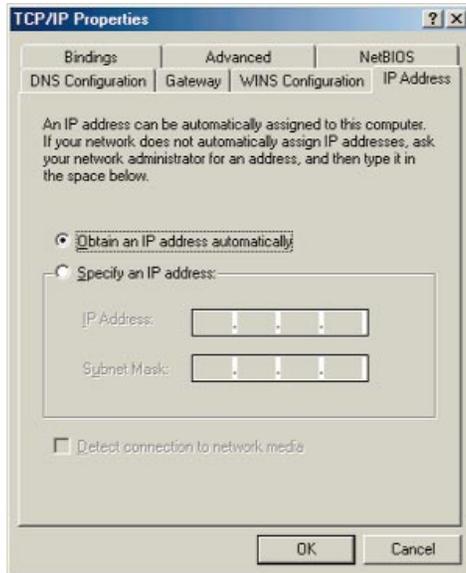


Figure 4-2

- Now click the **Gateway** tab, and verify that the Installed Gateway field is blank. Click the **OK** button.
- Click the **OK** button again. Windows may ask you for the original Windows installation disk or additional files. Check for the files at `c:\windows\options\cabs`, or insert your Windows CD-ROM into your CD-ROM drive and check the correct file location, e.g., `D:\win98`, `D:\win9x`, etc. (if "D" is the letter of your CD-ROM drive).
- Windows may ask you to restart your PC. Click the **Yes** button. If Windows does not ask you to restart, restart your computer anyway.

**Go to "Chapter 5: Configure the Router:"**

## Configuring Windows 2000 PCs

- Click the **Start** button. Click **Settings** and then **Control Panel**. From there, double-click the **Network and Dial-up Connections** icon.
- Select the **Local Area Connection** icon for the applicable Ethernet adapter (usually it is the first Local Area Connection listed). Double-click the **Local Area Connection**. Click the **Properties** button.

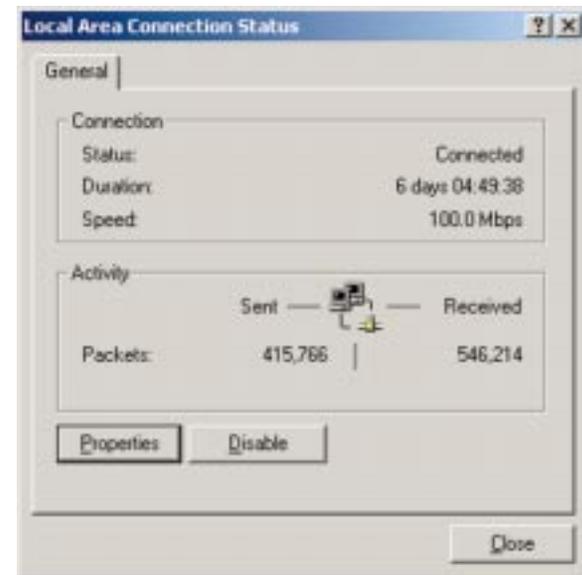


Figure 4-3

3. Make sure the box next to Internet Protocol (TCP/IP) is checked. Highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button.

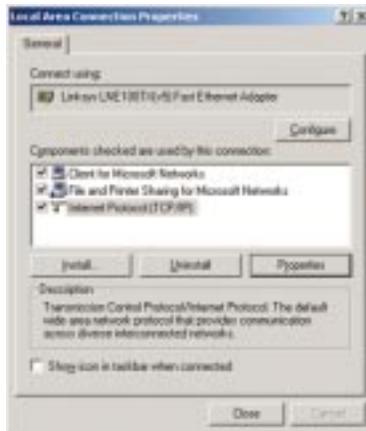


Figure 4-4

4. Select **Obtain an IP address automatically**. Once the new window appears, click the **OK** button. Click the **Close** button again to complete the PC configuration.



Figure 4-5

5. Restart your computer.

Go to “Chapter 5: Configure the Router?”

### Configuring Windows XP PCs

The following instructions assume you are running Windows XP with the default interface. If you are using the Classic interface (where the icons and menus look like previous Windows versions), please follow the instructions for Windows 2000.

1. Click the **Start** button and then **Control Panel**. From there, click the **Network and Internet Connections** icon. Then click the **Network Connections** icon.
2. Select the **Local Area Connection** icon for the applicable Ethernet adapter (usually it is the first Local Area Connection listed). Double-click the **Local Area Connection**. Click the **Properties** button.

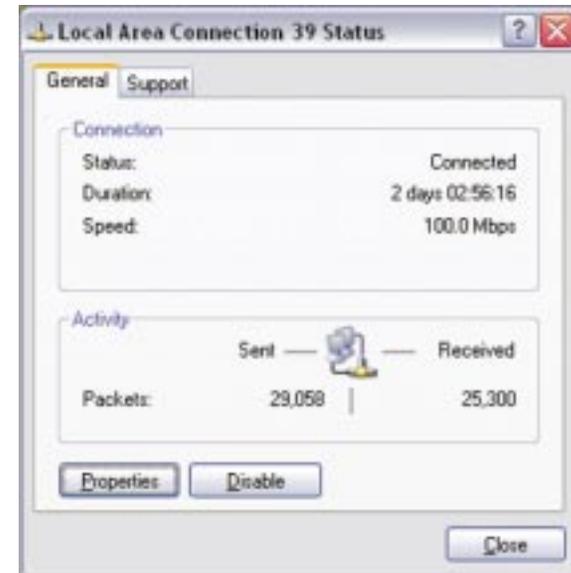


Figure 4-6

- Make sure the box next to Internet Protocol (TCP/IP) is checked. Highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button.

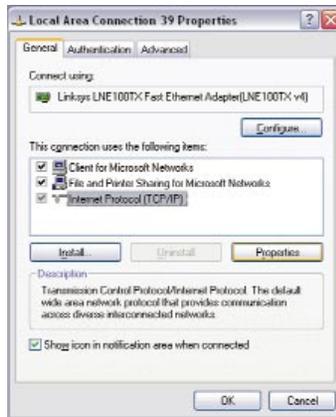


Figure 4-7

- Select **Obtain an IP address automatically**. Once the new window appears, click the **OK** button. Click the **OK** button again (or the **Close** button if any settings were changed) to complete the PC configuration.



Figure 4-8

- Restart your computer.

Go to “Chapter 5: Configure the Router.”

## Chapter 5: Configure the Router

This chapter will show you how to configure the Router to function in your network and gain access to the Internet through your Internet Service Provider (ISP). Detailed description of the Router’s Web-based Utility can be found in “Chapter 6: The Router’s Web-based Utility.” Your ISP may require the use of a Host Name and Domain Name. Further, you will set the WAN Connection Type on the Router’s Setup tab based on the information provided by your ISP. You will need setup information for your Internet connection from your ISP. If you do not have this information, please contact your ISP before proceeding.

The instructions from your ISP tell you how to set up your PC for Internet access. Because you are now using the Router to share Internet access among several computers, you will use the setup information to configure the Router instead of your PC. You only need to configure the Router once using the first computer you set up.



**Note:** If your PC’s Windows operating system supports Universal Plug and Play (UPnP), Windows will offer to create a desktop shortcut to the Router. Click the **OK** button to create the desktop icon, and then double-click the icon to connect to the Router. Otherwise, connect to the Router manually, as directed in steps 1 and 2.

- Open your web browser. (It is all right if you get an error message at this point. Continue following these directions.) Enter



Figure 5-1

**http://192.168.1.1** in the web browser’s Address field. Press the **Enter** key.

- An Enter Network Password window, shown in Figure 5-2, will appear. Leave the User Name field empty, and enter **admin** in lowercase letters in the Password field (**admin** is the default password). Click the **OK** button.



Figure 5-2

3. The Router configuration screen will appear with the Setup tab selected. Based on the setup instructions from your ISP, you may need to provide the **Host Name** and **Domain Name**. These fields allow you to provide a host name and domain name for the Router and are usually left blank. If requested by your ISP (usually cable ISPs), complete these two fields.

The values for the Router's LAN IP Address and Subnet Mask are shown on the Setup screen. The default values are 192.168.1.1 for the IP Address and 255.255.255.0 for the Subnet Mask.

4. The Router supports three connection types: DHCP (obtain an IP automatically), PPPoE, and Static IP Address. These types are listed in the drop-down menu for the **WAN Connection Type** setting. Each Setup screen and available features will differ depending on what kind of connection type you select. Proceed to the instructions for the connection type you are using. When you are finished with the Setup tab, proceed to step 5.



**IMPORTANT:** If you have previously enabled any **Internet-sharing proxy server software** on any of your PCs, you must disable it now.

Some examples of Internet-sharing software are Internet LanBridge, Wingate, ICS, and Sygate. To disable your Internet-sharing software:

- If you are running Netscape Navigator, click **Edit, Preferences, Advanced, and Proxies**. Click **Direct Connection to the Internet**.
- If you are running Internet Explorer 5.x or higher, click **Start, Settings, Control Panel, Internet Options, Connections, and LAN Settings**. Remove checkmarks from all three boxes. Click the **OK** button to continue.

Also, you must disable any **Internet log-on software** (such as Ivasion Winpoet or Enernet 300) and any **firewall software** (such as ZoneAlarm and Watchdog) on all of your PCs.

## DHCP or Obtain an IP Address Automatically

If you are connecting through DHCP or a dynamic IP address from your ISP, perform these steps:

- Select **Obtain an IP automatically** as the WAN Connection Type.
- Click the **Apply** button and then the **Continue** button to save the setting, or click the **Cancel** button to clear the setting and start over. When you are finished, proceed to step 5.



Figure 5-3

## Static or Fixed IP Address

If you are connecting through a static or fixed IP address from your ISP, perform these steps:

- Select **Static (fixed) IP address** as the WAN Connection Type.
- Enter the **WAN IP Address**.
- Enter the **Subnet Mask**.
- Enter the **Default Gateway Address**.
- Enter the **DNS** in the 1, 2, and/or 3 fields. You need to enter at least one DNS address.
- Click the **Apply** button and then the **Continue** button to save the settings, or click the **Cancel** button to clear the settings and start over. When you are finished, proceed to step 5.



Figure 5-4

**PPPoE**

If your DSL provider says that you are connecting through PPPoE or if you normally enter a user name and password to access the Internet, perform these steps:

- A. Select **PPPoE** as the WAN Connection Type.
- B. Enter the **User Name**.
- C. Enter the **Password**.
- D. Click the **Apply** button and then the **Continue** button to save the settings., or click the **Cancel** button to clear the settings and start over.
- E. When you are finished, click the **Status** tab, and then click the **Connect** button to start the connection. Proceed to step 5.

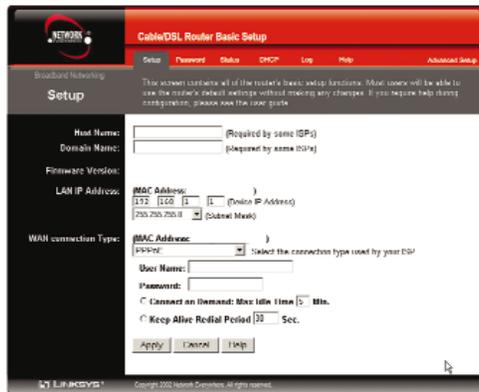


Figure 5-5

**Cable/DSL 4-Port Router**

5. If you haven't already done so, click the **Apply** button and then the **Continue** button to save your Setup settings. Close the web browser.
6. Reset the power on your cable or DSL modem.
7. Restart your computers so that they can obtain the Router's new settings.

If you need advanced setting information, please refer to “Chapter 6: The Router's Web-based Utility” or the Network Everywhere support website at [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com).

Test the setup by opening your web browser from any computer and entering



Figure 5-6

<http://www.linksys.com/registration>.

Congratulations! You've successfully configured the Router.

If you are unable to reach our website, you may want to review what you did in this section or refer to “Appendix A: Troubleshooting.”

**Proceed to “Chapter 6: The Router's Web-based Utility” for more details and advanced settings information.**

# Chapter 6: The Router's Web-based Utility

## Overview

Use the Router's web-based utility to administer it. This chapter will describe each web page in the Utility and each page's key functions. The utility can be accessed via your web browser through use of a computer connected to the Router.

For a basic network setup, most users only have to use the following screens of the utility:

- **Setup** Enter the settings provided by your ISP.
- **Password** The Router's default password is **admin**. To secure the Router, change the Password from its default.

The Status, DHCP, Log, and Help tabs are also available for basic setup. For advanced setup, click the Advanced tab to access these screens: IP Filtering, Port Range Forwarding, Dynamic Routing, Static Routing, DMZ Host, and MAC Address Clone.

## Quick and Easy Router Administration

To access the web-based utility of the Router, launch Internet Explorer or Netscape Navigator, and enter the Router's default IP address, **192.168.1.1**, in the Address field. Then press **Enter**.



Figure 6-1



**Note:** If your PC's Windows operating system supports Universal Plug and Play (UPnP), Windows will offer to create a desktop shortcut to the Router. Click the **OK** button to create the desktop icon, and then double-click the icon to connect to the Router. Otherwise, connect to the Router manually, as directed in steps 1 and 2.

## Cable/DSL 4-Port Router

A password request page, shown in Figure 6-2 will pop up. Leave the User Name field blank, and enter **admin** in the Password field. Then click the **OK** button.



Figure 6-2

To apply any of the settings you change on a page, click the **Apply** button, and then click the **Continue** button. To cancel any values you've entered on any page, click the **Cancel** button.

## Setup

The Setup screen is the first screen you see when you access the web-based utility. If you have already installed and set up the Router, you have already seen this screen and properly configured all of the screen's values.

- **Host Name and Domain Name** These fields allow you to supply a host and domain name for the Router. Some ISPs require these names as identification. You may have to check with your ISP to see if your broadband Internet service has been configured with a host and domain name. In most cases, leaving these fields blank will work.
- **Firmware Version** This entry shows the version and date of the firmware you are using. Future versions of the Router's firmware will be posted and available for download on the Network Everywhere website at [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com).

- **Device LAN IP Address and LAN Subnet Mask** The values for the Router's IP Address and Subnet Mask are shown here. The default values are 192.168.1.1 for the Device IP Address and 255.255.255.0 for the Subnet Mask.
- **WAN Connection Type** The Router supports three connection types: DHCP, PPPoE, and Static IP. Each Setup screen and available features will differ depending on what kind of connection type you select.



**Note:** You can test and see if the settings are correct by successfully connecting to the Internet.

## DHCP

The screenshot shows the 'Cable/DSL Router Basic Setup' interface. The 'Setup' tab is selected. The 'WAN connection Type:' dropdown is set to 'Obtain an IP automatically'. The 'LAN IP Address:' is 192.168.1.1 and the 'Subnet Mask:' is 255.255.255.0. There are 'Apply', 'Cancel', and 'Help' buttons at the bottom.

Figure 6-3

By default, the Router's WAN Connection Type is set to Obtain an IP automatically, and it should be used only if your ISP supports DHCP.

To apply any of the settings you change on this page, click the **Apply** button, and then click the **Continue** button. To cancel any values you've entered on this page, click the **Cancel** button. Continue to the "Password" section.

## Static IP

If you are required to use a permanent IP address, then select **Static (Fixed) IP address**.

The screenshot shows the 'Cable/DSL Router Basic Setup' interface. The 'WAN connection Type:' dropdown is set to 'Static (Fixed) IP address'. The 'Specify WAN IP Address:', 'Subnet Mask:', and 'Default Gateway Address:' fields are all empty. There are 'Apply', 'Cancel', and 'Help' buttons at the bottom.

Figure 6-4

**Specify WAN IP Address** This is the Router's IP address, when seen from the WAN, or the Internet. Your ISP will provide you with the IP Address you need to specify here.

**Subnet Mask** This is the Router's Subnet Mask, as seen by external users on the Internet (including your ISP). Your ISP will provide you with the Subnet Mask.

**Default Gateway Address** Your ISP will provide you with the Default Gateway Address, which is the ISP's IP address.

**DNS (Required)** Your ISP will provide you with at least one DNS (Domain Name System) Server IP Address.

To apply any of the settings you change on this page, click the **Apply** button, and then click the **Continue** button. To cancel any values you've entered on this page, click the **Cancel** button. Continue to the "Password" section.

## PPPoE

Some DSL-based ISPs use PPPoE (Point-to-Point Protocol over Ethernet) to establish Internet connections. If you are connected to the Internet through a DSL line, check with your ISP to see if they use PPPoE. If they do, you will have to enable PPPoE.



Figure 6-5

**User Name and Password** Enter the **User Name** and **Password** provided by your ISP.

**Connect on Demand: Max Idle Time** You can configure the Router to cut the connection with your ISP after a specified period of time (Max Idle Time). If you have been disconnected due to inactivity, Connect on Demand enables the Router to automatically re-establish your connection as soon as you attempt to access the Internet again. If you wish to activate Connect on Demand, click the radio button. In the Max Idle Time field, enter the number of minutes you want to have elapsed before your Internet access disconnects.

**Keep Alive Option: Redial Period** If you select this option, the Router will periodically check your Internet connection. If you are disconnected, then the Router will automatically re-establish your connection. To use this option, click the radio button next to **Keep Alive**. In the Redial Period field, enter the number of seconds you want the Redial Period to last. The default Redial Period is 30 seconds.

To apply any of the settings you change on this page, click the **Apply** button, and then click the **Continue** button. To cancel any values you've entered on this page, click the **Cancel** button. Continue to the "Password" section.



**Important:** If you enable PPPoE, remember to remove any PPPoE applications that are already installed on any of your PCs.

## Password

This screen allows you to set up a password and UPnP Services. You can also restore default settings on the Router.



Figure 6-6

**Router Password** Set a password for the Router. You can use up to 64 alphanumeric characters. The default password is **admin**. If you don't change the password, all users on your network will be able to access the Router using the default password.

**UPnP Services** Universal Plug and Play (UPnP) allows Windows XP to automatically configure the Router for various Internet applications, such as gaming and videoconferencing. Click the radio button next to **Enable** to enable UPnP Services, or **Disable** to disable UPnP Services.

**Restore Factory Defaults** If you select the **Restore Factory Defaults** option and click the **Apply** button, you will clear all of the Router's settings. Do not restore the factory defaults unless you are having difficulties with the Router and have exhausted all other troubleshooting measures. Once the Router is reset, you will have to re-enter all of your configuration data.

To apply any of the settings you change on this page, click the **Apply** button, and then click the **Continue** button. To cancel any values you've entered on this page, click the **Cancel** button.

## Status

This screen displays the Router's current status; it reflects the data and selections you've entered using the Setup screen.

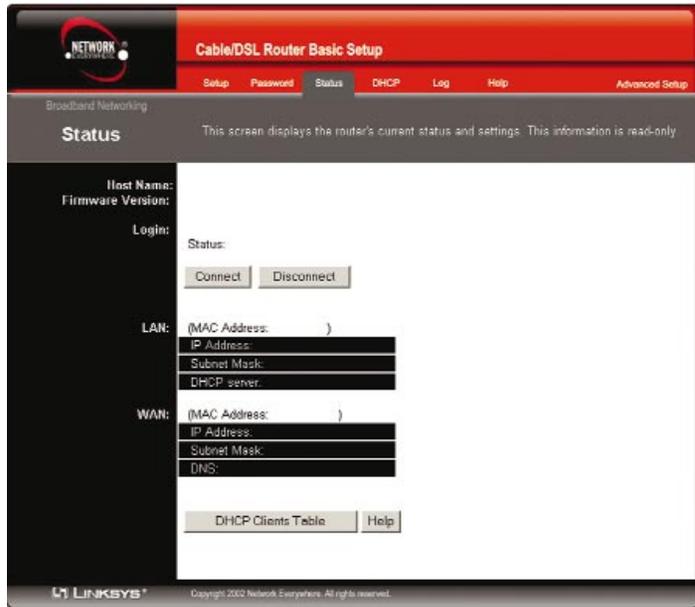


Figure 6-7



**Note:** The information provided and buttons available will vary depending on the Router's settings.

All of the information provided on this screen is read-only. To make changes, select the Setup tab.

**Host Name** This field shows the Router's name.

**Firmware Version** This field shows the installed version and date of the firmware. Version dates are slightly more accurate than version numbers.

**Login** This indicates if you are using a dial-up style connection, e.g., PPPoE. For PPPoE only, there is a **Connect** button to click if you are disconnected and want to re-establish a connection.

## Cable/DSL 4-Port Router

**LAN** These fields display the Router's current MAC Address, IP Address, and Subnet Mask, as seen by users on your local area network. The DHCP Server field shows the status of the Router's DHCP server function, which is either enabled or disabled.

**WAN** These fields display the Router's current MAC Address, IP Address, Subnet Mask, and Default Gateway IP Address, as seen by external users on the Internet. The DNS (Domain Name System) IP Address fields show the IP address(es) of the DNS server(s) currently used by the Router. Multiple DNS IP settings are common. In most cases, the first available DNS entry is used.

**DHCP Release** Click the **DHCP Release** button to release the current IP address of the device connected to the Router's Internet (or WAN) port.

**DHCP Renew** Click the **DHCP Renew** button to replace the Router's current WAN IP address with a new IP address.

**DHCP Clients Table** Click the **DHCP Clients Table** button to view the list of PCs that were given IP addresses by the Router.

## DHCP

**Cable/DSL Router Basic Setup**

Setup Password Status **DHCP** Log Help Advanced Setup

Dashboard Networking

**DHCP**

You can configure the router to act as a DHCP (Dynamic Host Configuration Protocol) server for your network. Consult the user guide for instructions on how to setup your PCs to work with this feature.

DHCP Server:  Enable  Disable

Starting IP Address:

Number of DHCP Users:

DNS 1:    (required)

2:    (optional)

3:    (optional)

Figure 6-8

A Dynamic Host Configuration Protocol (DHCP) server automatically assigns an IP address to each PC on your network for you. Unless you already have one, it is highly recommended that you leave the Router enabled as a DHCP server.

**DHCP Server** DHCP is already enabled by factory default. If you already have a DHCP server on your network, set the Router's DHCP option to **Disable**. Click the **Apply** button and then the **Continue** button. If you disable DHCP, remember to assign a static IP address to the Router.

**Starting IP Address** Enter a value for the DHCP server to start with when issuing IP addresses. This value must be 192.168.1.2 or greater, because the Router's default IP address is **192.168.1.1**.

**Number of DHCP Users** (Optional) Enter the maximum number of PCs that you want the DHCP server to assign IP addresses to. This number cannot be greater than 253. In order to determine the DHCP IP Address range, add the last three digits of the starting IP address (e.g., 100) to the number of DHCP users. By default, as shown in Figure 6-8, add 100 to 50 (number of DHCP users), and the range is 192.168.1.100 to 192.168.1.149.

## Cable/DSL 4-Port Router

**DNS** The Domain Name System (DNS) is how the Internet translates domain or website names into Internet addresses or URLs. Your ISP will provide you with at least one DNS Server IP Address. If you wish to use another, type that IP Address in one of these fields. You can type up to three DNS Server IP Addresses here. The Router will use these for quicker access to functioning DNS servers.

**DHCP Clients Table** Click the **DHCP Clients Table** button to show the current DHCP Client data. (This data is stored in temporary memory and changes periodically.)

**DHCP Active IP Table**

DHCP Server IP Address:

Client Hostname	IP Address	MAC Address

Figure 6-9

To apply any of the settings you change on this page, click the **Apply** button, and then click the **Continue** button. To cancel any values you've entered on this page, click the **Cancel** button.

## Log



Figure 6-10

The Log tab provides you with a log of all incoming and outgoing URLs or IP addresses for your Internet connection.

**Access Log** To access activity logs, select the **Enable** option next to Access Log. This function can be disabled by clicking the **Disable** radio button.

Temporary logs can be accessed from the Log screen by clicking either the **Incoming Access Log** or **Outgoing Access Log** button. The Incoming Access Log gives you a log of all the incoming Internet traffic while the Outgoing Access Log lists all the URLs and IP addresses of Internet sites that users on your network have accessed.

To clear the value you've entered on this page, click **Cancel** and re-enter information. To apply any settings you've altered on this page, click the **Apply** button. Once all settings are correct, click **Continue**.

## Help



Figure 6-11

Under the Help tab, you'll find links to all of the utility's internal support documentation, including the application that upgrades the Router's firmware.

**Network Everywhere Website** Clicking this link will take you to Network Everywhere's website, [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com), provided you are connected to the Internet.

**Online manual in PDF format and Adobe Website** Clicking the Online manual in PDF format link will take you to the latest version of the user guide for this Router. The guide will be in Adobe Acrobat Portable Document File (.pdf) format. You will need the Adobe Acrobat Reader to view this pdf. If you do not have the Acrobat Reader, click the Adobe Website link to download it. These links work only if you are connected to the Internet.

**Upgrade Firmware** New firmware versions are posted at [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com) and can be downloaded for free. If the Router can access the Internet already, there's no need to download a newer firmware version, unless that version has a new feature that you want to use. (To learn about any new firmware with new features, visit [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com).) Loading new firmware onto the Router does not always enhance the speed or the quality of your connection.

To upgrade the Router's firmware:



**Note:** By upgrading the Router's firmware, you may lose the Router's configuration settings.

1. Download the firmware upgrade file from *www.NetworkEverywhere.com*, and extract the file using WinZip.
2. Select the **Help** tab (see Figure 6-14).



Figure 6-12

3. Click **Upgrade Firmware** to display a new window (see Figure 6-12).
4. Click the **Browse** button to find the firmware upgrade file you extracted.
5. Double-click the **firmware file** you extracted. Click the **Upgrade** button (see Figure 6-12), and follow the on-screen instructions.

## Advanced

The following instructions are for advanced users or users whose setup needs require special configuration. When you click the Advanced tab, you will be able to set up these features. There are six additional tabs available.

- **Filters** - Filters block specific internal users from Internet access and enable Virtual Private Network (VPN) sessions.
- **Forwarding** - Sets up public services on your network.
- **Dynamic Routing** - Sets up the Router so it will automatically adjust to physical changes in the network's layout.
- **Static Routing** - Sets up static routes needed when network information must travel to a specific host or network.
- **DMZ Host** - Allows one local user to be exposed to the Internet for use of special-purpose services such as online gaming or videoconferencing.
- **MAC Address Cloning** - Allows you to "clone" your Ethernet adapter's MAC address onto the Router.

## IP Filtering

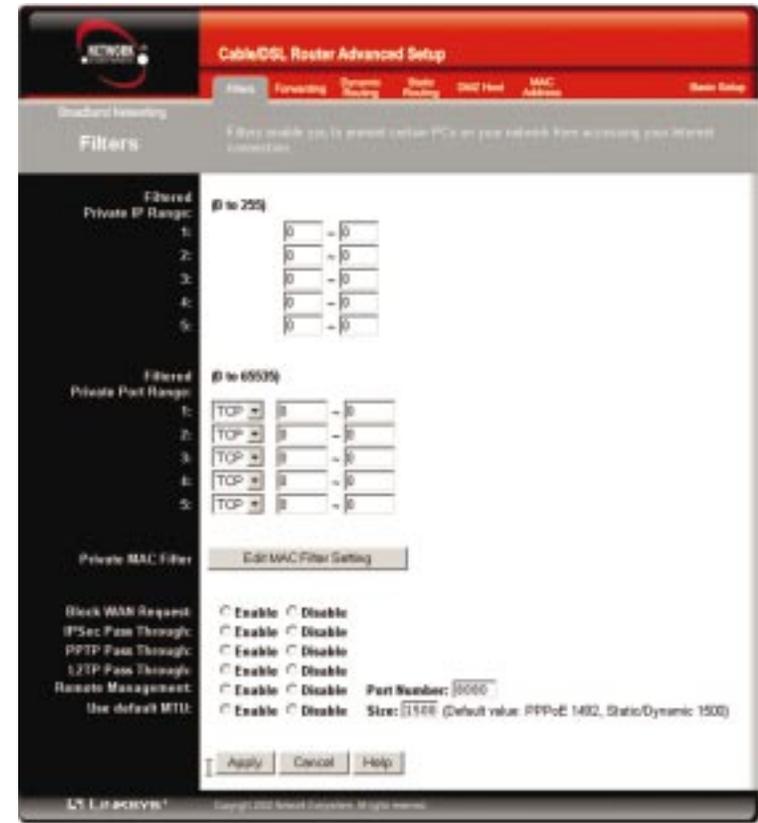


Figure 6-13

IP filters block specific internal users from accessing the Internet and enable Virtual Private Network (VPN) sessions. You can set up filters by using IP addresses or network port numbers (or a range of ports).

### Filtered Private IP Range

- To set up a filter using IP addresses, enter the range of IP addresses you wish to filter in the IP address fields. Users with filtered IP addresses will not be able to access the Internet at all. If you only want to filter one IP address instead of a range of IP addresses, enter the same value into both fields. For instance, if you wish to filter the PC with the IP address of 192.168.1.5, enter **5** into both fields on one line: 192.168.1.5 ~ 192.168.1.5. Click the **Apply** button when finished.

### Filtered Private Port Range

- To filter users by network port number, enter a network port number or a range of network ports. Select the protocol for each port number you want to filter, **TCP** or **UDP**. Enter the port numbers you want to filter in the port numbers fields. Users connected to the Router will no longer be able to access any port number listed there. Click the **Apply** button when you're done.

### Private MAC Filter

- This feature filters the Ethernet adapter's specific MAC address from going out to the Internet.
- To check your Ethernet adapter's MAC address, run **winipcfg** or **ipconfig** in the command prompt, depending on which Windows operating system you are using. To set the MAC filter, click the **Edit MAC Filter Setting** button. When a second window appears (see Figure 6-14), select the range in the drop-down box, and at the MAC number prompt, enter the 12-digit MAC address you want to filter. Click the **Apply** button and the **Continue** button, before closing the window. For information on obtaining a MAC address, go to "Appendix F: Finding the MAC Address and IP Address for Your Ethernet Adapter."

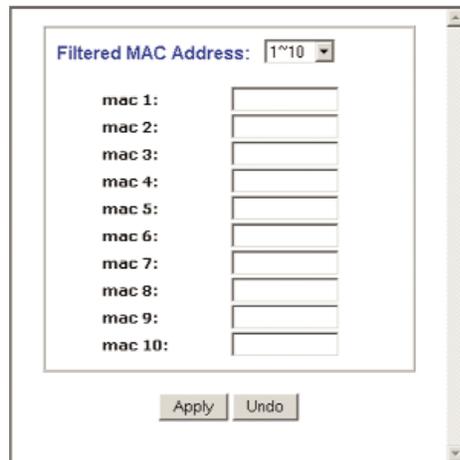


Figure 6-14

### Block WAN Requests

- By enabling the Block WAN Request feature, you can prevent your network from being "pinged," or detected, by other Internet users. The Block WAN Request feature also reinforces your network security by hiding your network ports. Both functions of the Block WAN Request feature make it more difficult for outside users to work their way into your network. This feature is enabled by default.

### IPSec Pass Through

- This feature lets you use IPSec Pass Through. IPSec Pass Through is enabled by default.
- To disable IPSec Pass Through, click on **Disable**.

### PPTP Pass Through

- Point-to-Point Tunneling Protocol is the method used to enable VPN sessions. PPTP Pass Through is enabled by default.
- To disable this feature, click on **Disable** next to **PPTP Pass Through**.

### L2TP Pass Through

- This feature lets you use L2TP Pass Through. L2TP Pass Through is enabled by default.
- To disable this feature, click on **Disable** next to **L2TP Pass Through**.

### Remote Management

- This feature allows you to manage the Router from a remote location, via the Internet. To enable this feature, click on **Enable**, and enter the desired port number (default is 8080). Click the **Apply** button and then the **Continue** button. Remote Management must be activated before you can manage the Router from a remote location. If you wish to use this feature on the browser, enter **http:\<<WAN IP Address>;8080**. (Enter your specific WAN IP Address in place of <WAN IP Address>.)
- To disable this feature, click on **Disable**.

### MTU (Maximum Transmission Unit)

- This feature specifies the largest packet size permitted for network transmission. Select **Enable** and enter the value desired. You should leave this value in the 1200 to 1500 range. Most DSL users should use the value **1492**. For static and dynamic connections, the default MTU value is set at **1500** when disabled. For PPPoE connections, the default MTU value is set at **1492** when disabled.

Click on the **Apply** button and then the **Continue** button to save your changes.

## Port Range Forwarding

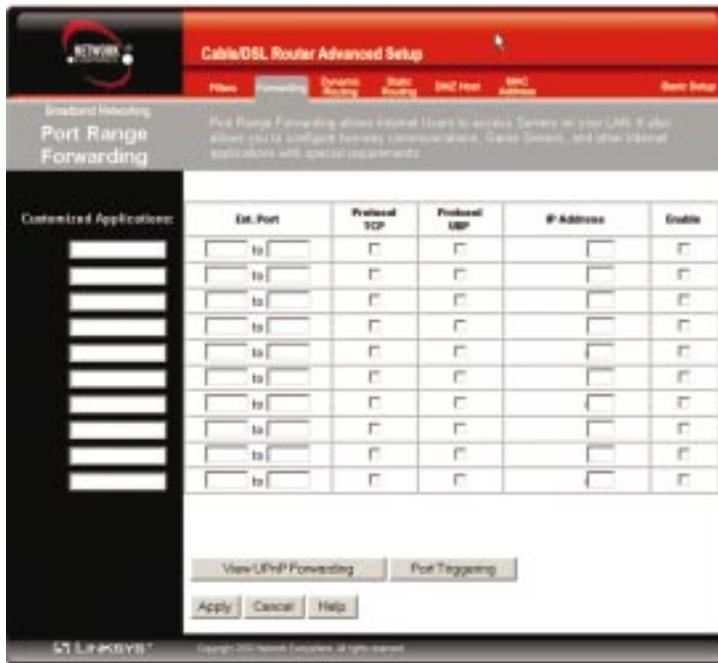


Figure 6-15

Port Range Forwarding sets up public services on your network, such as web servers, ftp servers, e-mail servers, or other specialized Internet applications. (Specialized Internet applications are any applications that use Internet access to perform functions such as videoconferencing or online gaming. Some Internet applications may not require any forwarding.) When users send this type of request to your network via the Internet, the Router will forward those requests to the appropriate PC. Before using Forwarding, the Router's DHCP function must be disabled under the DHCP tab and the Router must be assigned a new static LAN IP address because the IP address may change when using the DHCP server.

If you need to forward all ports to one PC, see the "DMZ" section.

To add a server using Port Range Forwarding:

1. Enter the **name** of the application in the appropriate Customized Applications field.

2. Next to the name of the application, enter the **number** or **range** of the external port(s) used by the server or Internet application in the Ext. Port column. Check with the Internet application software documentation for more information.
3. On the same line, select **UDP** or **TCP**, or select both protocols.
4. Enter the **IP address** of the server that you want the Internet users to be able to access. For information about finding the IP address, go to "Appendix F: Finding the MAC Address and IP Address for Your Ethernet Adapter."
5. Check the **Enable** box to enable the services you have defined. Port Range Forwarding will not function if the **Enable** button is left unchecked. This is disabled (unchecked) by default.
6. Configure as many entries as needed—the Router supports up to 10 ranges of ports. Click the **Apply** button and then the **Continue** button when you are done.

## UPnP Forwarding

Click the **View UPnP Forwarding** screen to access the UPnP Forwarding screen, shown in Figure 6-16. This screen displays preset application settings as well as options for customization of port services for other applications.

The Preset Applications at the top of the list are among the most widely used Internet applications. They include the following:

- **FTP** (File Transfer Protocol) A protocol used to transfer files over a TCP/IP network (Internet, UNIX, etc.). For example, after developing the HTML pages for a website on a local machine, web developers typically upload the files to the web server using FTP. FTP includes functions to log onto the network, list directories, and copy files. FTP operations can be performed by typing commands at a command prompt or via an FTP utility running under a graphical interface such as Windows. FTP transfers can also be initiated from within a web browser by entering the URL preceded by ftp://.
- **Telnet** A terminal emulation protocol commonly used on Internet and TCP/IP-based networks. It allows a user at a terminal or computer to log onto a remote device and run a program.

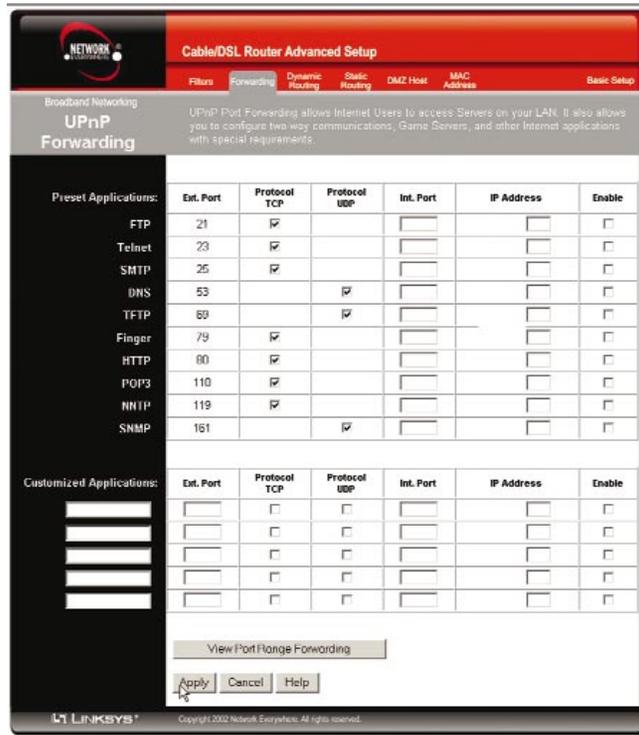


Figure 6-16

- **SMTP** (Simple Mail Transfer Protocol) The standard e-mail protocol on the Internet. It is a TCP/IP protocol that defines the message format and the message transfer agent (MTA), which stores and forwards the mail.
- **DNS** (Domain Name System) The way that Internet domain names are located and translated into IP addresses. A domain name is a meaningful and easy-to-remember “handle” for an Internet address.
- **TFTP** (Trivial File Transfer Protocol) A version of the TCP/IP FTP protocol that has no directory or password capability.
- **Finger** A UNIX command widely used on the Internet to find out information about a particular user, such as his or her telephone number, whether the user is currently logged on, and the last time the user was logged on. The person being “fingered” must have placed his or her profile on the system in order for the information to be available. Fingering requires entering the full user@domain address, for example, name@universityname.edu.

- **HTTP** (HyperText Transport Protocol) The communications protocol used to connect to servers on the World Wide Web. Its primary function is to establish a connection with a web server and transmit HTML pages to the client web browser.
- **POP3** (Post Office Protocol 3) A standard mail server commonly used on the Internet. It provides a message store that holds incoming e-mail until users log on and download it. POP3 is a simple system with little selectivity. All pending messages and attachments are downloaded at the same time. POP3 uses the SMTP messaging protocol. (SMTP may also need to be forwarded.)
- **NNTP** (Network News Transfer Protocol) The protocol used to connect to Usenet groups on the Internet.
- **SNMP** (Simple Network Management Protocol) A widely used network monitoring and control protocol. Data is passed from SNMP agents, which are hardware and/or software processes reporting activity in each network device (hub, router, bridge, etc.) to the workstation console used to oversee the network. The agents return information contained in a MIB (Management Information Base), which is a data structure that defines what is obtainable from the device and what can be controlled (turned off, on, etc.).

You must check the **Enable** box to enable the applications you have defined.

To add a server using UPnP Forwarding:

1. Enter the **name** of the application in the appropriate Application Name field.
2. Next to the name of the application, enter the **number** of the external port used by the server in the Ext. Port column. Check with the Internet application software documentation for more information.
3. On the same line, select **UDP** or **TCP**.
4. Enter the **number** of the internal port used by the server in the Int. Port column. Check with the Internet application software documentation for more information.

- Enter the IP address of the server that you want the Internet users to be able to access. For information about finding the IP address, go to “Appendix F: Finding the MAC Address and IP Address for Your Ethernet Adapter.”
- Check the **Enable** box to enable the services you have defined. UPnP Forwarding will not function if the **Enable** button is left unchecked. This is disabled (unchecked) by default.

## Port Triggering

Application Name	Trigger Port Range	Incoming Port Range
1:		
2:		
3:		
4:		
5:		
6:		
7:		
8:		
9:		
10:		

Apply Cancel

Figure 6-17

From the Port Range Forwarding screen, click the **Port Triggering** button to allow the Router to watch outgoing data for specific port numbers. The IP address of the computer that sends the matching data is remembered by the Router, so that when the requested data returns through the Router, the data is pulled back to the proper computer by way of IP address and port mapping rules.

- Enter the **Application Name** of the trigger.
- Enter the **Trigger Port Range** used by the application. Check with the Internet application for the port number needed.
- Enter the **Incoming Port Range** used by the application. Check with the Internet application for the port number needed.
- Click the **Apply** button and then click the **Continue** button. Click the **Cancel** button to cancel any values you’ve entered.

## Dynamic Routing

Cable/DSL Router Advanced Setup

Dynamic Routing

Working Mode:  Gateway  Router

Dynamic Routing:

TX:

RX:

Show Routing Table

Apply Cancel Help

Figure 6-18

With Dynamic Routing, you can enable the Router to automatically adjust to physical changes in the network’s layout. The Router, using the RIP protocol, determines the network packets’ route based on the fewest number of hops between the source and the destination. The RIP protocol regularly broadcasts routing information to other routers on the network. To set up Dynamic Routing:

- Choose the correct **Working Mode**. **Gateway Mode** should be used if the Router is hosting your network’s connection to the Internet. **Router Mode** should be selected if the Router exists on a network with other routers. In Router Mode, any computer connected to the Router will not be able to connect to the Internet unless you have another router functioning in the Gateway mode.
- Choose a **Dynamic Routing path protocol** for either transmission (TX:) or reception (RX:) of network data by selecting **Enabled**.

When finished making your changes on this tab, click the **Apply** button followed by the **Continue** button to save these changes, or click the **Cancel** button to undo your changes.

Click the **Show Routing Table** button to open a chart displaying how data is routed through your LAN.

## Static Routing



Figure 6-19

If the Router is connected to more than one network, it may be necessary to set up a static route between them. A static route is a pre-determined pathway that network information must travel to reach a specific host or network. From the Static Routing tab, click the **Show Routing Table** button to view the current static routing configuration.

To create a static route entry:

1. Select a **Static Route Entry** from the drop-down list. The Router supports up to 20 static route entries.

To delete a Static Routing entry, select an **entry**, and click the **Delete this entry** button.

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

**Destination LAN IP:** The Destination LAN IP is the address of the remote network or host to which you want to assign a static route. Enter the **IP address** of the host for which you wish to create a static route here. If you are building a route to an entire network, be sure that the network portion of the IP address is set to 0. For example, the Router's standard IP address is 192.168.1.1. Based on this address, the address of the routed network is 192.168.1.x, with the last digit "x" determining the Router's place on the network. Therefore you would enter the IP address 192.168.1.0 if you wanted to route to the Router's entire network, rather than just to the Router.

**Subnet Mask:** The Subnet Mask (also known as the Network Mask) determines which portion of an IP address is the network portion, and which portion is the host portion. Take, for example, a network in which the Subnet Mask is 255.255.255.0. This determines (by using the values 255) that the first three numbers of a network IP address identify this particular network, while the last digit (from 1 to 254) identifies the specific host.

**Default Gateway:** This IP address should be the IP address of the gateway device that allows for contact between the Router and the remote network or host.

**Hop Count:** This determines the maximum number of steps between network nodes that data packets will travel. A node is any device on the network, such as PCs, print servers, routers, etc. The maximum metric, or measure, of hops is 15.

**Interface:** Select **LAN** or **WAN**, depending on the location of the static route's final destination.

3. When finished, click the **Apply** button and then the **Continue** button to save these changes, or click the **Cancel** button to undo your changes.

## DMZ Host



Figure 6-20

The DMZ Hosting feature exposes one local user to the Internet for use of a special-purpose service such as Internet gaming and videoconferencing.

Port Range Forwarding forwards a maximum of 10 ranges of ports, and DMZ Hosting forwards all the ports for one PC at the same time. DMZ Hosting is less secure.

- To expose one PC, enter the computer's IP address. For more information about finding a computer's IP address, refer to "Appendix F: Finding the MAC Address and IP Address for Your Ethernet Adapter."
- Deactivate DMZ by entering **0** in the field.

When finished, click the **Apply** button and click the **Continue** button to save the settings. Otherwise, click the **Cancel** button to undo changes made on this screen.

## MAC Address Clone



Figure 6-21

The Router's **MAC address** is a 12-digit code assigned to a unique piece of hardware for identification, like a social security number. If your ISP requires MAC address registration, find your adapter's MAC address by following the instructions in "Appendix F: Finding the MAC Address and IP Address for Your Ethernet Adapter."

Enter the 12 digits of your adapter's MAC address in the on-screen fields (see Figure 6-21). This "clones" your Ethernet adapter's MAC address onto the Router, so you do NOT have to call your ISP to change the registered MAC address to the Router's MAC address.

When finished making your changes on this tab, click the **Apply** button and then the **Continue** button to save these changes, or click the **Cancel** button to undo your changes.

# Appendix A: Troubleshooting

## Common Problems and Solutions

This appendix consists of two parts: “Common Problems and Solutions” and “Frequently Asked Questions.” Provided are possible solutions to problems that may occur during the installation and operation of the Router. Read the descriptions below to help solve your problems. If you can’t find an answer here, check the Network Everywhere website at [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com).

### 1. I need to set a static IP address on a PC.

The Router, by default, assigns an IP address range of 192.168.1.100 to 192.168.1.150 using the DHCP server on the Router. To set a static IP address, you can only use the ranges 192.168.1.2 to 192.168.1.99 and 192.168.1.151 to 192.168.1.254. Each PC or network device that uses TCP/IP must have a unique address to identify itself in a network. If the IP address is not unique to a network, Windows will generate an IP conflict error message. You can assign a static IP address to a PC by performing the following steps:

#### For Windows 95, 98, and Me:

- A. Click **Start**, choose **Settings**, and open the **Control Panel**. Then, double-click **Network**.
- B. In The following network components are installed box, select the **TCP/IP-Line** associated with your Ethernet adapter. If you only have one Ethernet adapter installed, you will only see one TCP/IP line with no association to an Ethernet adapter. Highlight it and click the **Properties** button.
- C. In the TCP/IP properties window, select the **IP address** tab, and select **Specify an IP address**. Enter an **IP address** that is not used by any other computer on the network connected to the Router. You can only use an IP address in the ranges 192.168.1.2 to 192.168.1.99 and 192.168.1.151 to 192.168.1.254. Make sure that each IP address is unique for each PC or network device.
- D. Click the **Gateway** tab, and in the New Gateway prompt, enter **192.168.1.1**, which is the default IP address of the Router. Click the **Add** button to accept the entry.
- E. Click the **DNS** tab, and make sure the **DNS Enabled** option is selected. Enter the **Host** and **Domain** names (e.g., John for Host and home for Domain). Enter the **DNS entry** provided by your ISP. If your ISP has not provided the DNS IP address, contact your ISP to get that information or go to its website for the information.
- F. Click the **OK** button in the TCP/IP properties window, and click **Close** or the **OK** button for the Network window.
- G. Restart the computer when asked.

#### For Windows 2000:

- A. Click **Start**, choose **Settings**, and open the **Control Panel**. Double-click **Network and Dial-Up Connections**.
- B. Right-click the **Local Area Connection** that is associated with the Ethernet adapter you are using, and select the **Properties** option.
- C. In the Components checked are used by this connection box, highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button. Select **Use the following IP address** option.
- D. Enter an **IP address** that is not used by any other computer on the network connected to the Router. You can only use an IP address in the ranges 192.168.1.2 to 192.168.1.99 and 192.168.1.151 to 192.168.1.254.
- E. Enter the Subnet Mask, **255.255.255.0**.
- F. Enter the Default Gateway, **192.168.1.1** (The Router’s default IP address.)
- G. Toward the bottom of the window, select **Use the following DNS server addresses**, and enter the **Preferred DNS server IP Address** and **Alternative DNS server IP Address**. Contact your ISP to find this information.
- H. Click the **OK** button in the Internet Protocol (TCP/IP) Properties window, and click the **OK** button in the Local Area Connection Properties window.
- I. Restart the computer if asked.

#### For Windows NT 4.0:

- A. Click **Start**, choose **Settings**, and open the **Control Panel**. Double-click the **Network** icon.
- B. Click the **Protocol** tab, and double-click **TCP/IP Protocol**.
- C. When the window appears, make sure you have selected the correct **Adapter** for your Ethernet adapter.
- D. Select **Specify an IP address**, and enter an **IP address** that is not used by any other computer on the network connected to the Router. You can only use an IP address in the ranges 192.168.1.2 to 192.168.1.99 and 192.168.1.151 to 192.168.1.254.
- E. Enter the Subnet Mask, **255.255.255.0**.
- F. Enter the Default Gateway, **192.168.1.1** (Router’s default IP address).
- G. Click the **DNS** tab, and enter the **Host** and **Domain** names (e.g., John for Host and home for Domain). Under DNS Service Search Order, click the **Add** button. Enter the **DNS IP address** in the DNS Server field, and click the **Add** button. Repeat this action for all DNS IP addresses given by your ISP.
- H. Click the **OK** button in the TCP/IP Protocol Properties window, and click the **Close** button in the Network window.
- I. Restart the computer if asked.

**For Windows XP:**

The following instructions assume you are running Windows XP with the default interface. If you are using the Classic interface (where the icons and menus look like previous Windows versions), please follow the instructions for Windows 2000.

- A. Click **Start** and open the **Control Panel**.
- B. Click the **Network and Internet Connections** icon and then the **Network Connections** icon.
- C. Right-click the **Local Area Connection** that is associated with the Ethernet adapter you are using, and select the **Properties** option.
- D. In the This connection uses the following items box, highlight **Internet Protocol (TCP/IP)**. Then, click the **Properties** button.
- E. Enter a unique **IP address** that is not used by any other computer on the network connected to the Router. You can only use an IP address in the ranges 192.168.1.2 to 192.168.1.99 and 192.168.1.151 to 192.168.1.254.
- F. Enter the Subnet Mask, **255.255.255.0**.
- G. Enter the Default Gateway, **192.168.1.1** (Router's default IP address).
- H. Toward the bottom of the window, select **Use the following DNS server addresses**, and enter the **Preferred DNS server IP Address** and **Alternative DNS server IP Address**. Contact your ISP to find this information.
- I. Click the **OK** button in the Internet Protocol (TCP/IP) Properties window. Click the **OK** button in the Local Area Connection Properties window.

2. My Internet connection isn't working.

- A. Check your TCP/IP settings.

**For Windows 95, 98, and Me:**

Refer to "Appendix D: Installing the TCP/IP Protocol" and "Chapter 4: Configure the PCs" for details. Make sure **Obtain IP address automatically** is selected in the settings.

**For Windows 2000:**

- 1) Click **Start**, choose **Settings**, and open the **Control Panel**. Double-click **Network and Dial-Up Connections**.
- 2) Right-click the **Local Area Connection** that is associated with the Ethernet adapter you are using, and select the **Properties** option.
- 3) In the Components checked are used by this connection box, highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button. Make sure that **Obtain an IP address automatically** and **Obtain DNS server address automatically** are selected.

- 4) Click the **OK** button in the Internet Protocol (TCP/IP) Properties window, and click the **OK** button in the Local Area Connection Properties window.
- 5) Restart the computer when asked.

**For Windows XP:**

The following instructions assume you are running Windows XP with the default interface. If you are using the Classic interface (where the icons and menus look like previous Windows versions), please follow the instructions for Windows 2000.

- 1) Click **Start** and open the **Control Panel**.
- 2) Click the **Network and Internet Connections** icon and then the **Network Connections** icon.
- 3) Right-click the **Local Area Connection** that is associated with the Ethernet adapter you are using, and select the **Properties** option.
- 4) In the This connection uses the following items box, highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button. Make sure that **Obtain an IP address automatically** and **Obtain DNS server address automatically** are selected.
- 5) Click the **OK** button in the Internet Protocol (TCP/IP) Properties window, and click the **OK** button in the Local Area Connection Properties window.
- 6) Restart the computer when asked.

**For Windows NT 4.0:**

- 1) Click **Start**, choose **Settings**, and open the **Control Panel**. Double-click the **Network** icon.
- 2) Click the **Protocol** tab, and double-click on **TCP/IP Protocol**.
- 3) When the window appears, make sure you have selected the correct **Adapter** for your Ethernet adapter and set it for **Obtain an IP address from a DHCP server**.
- 4) Click the **OK** button in the TCP/IP Protocol Properties window, and click the **Close** button in the Network window.
- 5) Restart the computer if asked.

- B. Open a command prompt.
  - For **Windows 95, 98, and Me**, click **Start** and choose **Run**. In the Open field, type in **command**. Press the **Enter** key or click the **OK** button.
  - For **Windows NT, 2000, and XP**, please click **Start** and choose **Run**. In the Open field, type **cmd**. Press the **Enter** key or click the **OK** button.

- C. In the command prompt, type **ping 192.168.1.1** and press the **Enter** key.
- If you get a reply, the computer is communicating with the Router.
  - If you do NOT get a reply, please check the cable, and make sure **Obtain an IP address automatically** is selected in the TCP/IP settings for your Ethernet adapter.
- D. In the command prompt, type **ping** followed by your WAN IP address and press the **Enter** key. The WAN IP Address can be found in the web interface of the Router. For example, if your WAN IP address is 1.2.3.4, you would enter **ping 1.2.3.4** and press the **Enter** key.
- If you get a reply, the computer is connected to the Router.
  - If you do NOT get a reply, try the ping command from a different computer to verify that your original computer is not the cause of the problem.
- E. In the command prompt, type **ping www.yahoo.com** and press the **Enter** key.
- If you get a reply, the computer is connected to the Internet. If you cannot open a webpage, try the ping command from a different computer to verify that your original computer is not the cause of the problem.
  - If you do NOT get a reply, there may be a problem with the connection. Try the ping command from a different computer to verify that your original computer is not the cause of the problem.
3. I am not getting a WAN IP address with my Internet connection.
- A. Refer to “Problem #2, My Internet connection isn’t working” to verify that you are connected.
- B. If you need to register the MAC address of your Ethernet adapter with your ISP, please see “Appendix F: Finding the MAC address and IP Address for Your Ethernet Adapter.” If you need to clone the MAC address of your Ethernet adapter onto the Router, see the MAC Address Clone section of “Chapter 6: The Router’s Web-based Utility” for details.
- C. Make sure that you are using the right WAN settings. Contact your ISP to see if your WAN connection type is DHCP, Static IP Address, or PPPoE (commonly used by DSL consumers). Please refer to the Setup section of “Chapter 6: The Router’s Web-based Utility” for details on WAN settings.
- D. Make sure that you have the right cable. Check to see if the WAN column has a solidly lit Link LED.
- E. Make sure that the cable connecting from your cable or DSL modem is connected to the Router’s Internet (or WAN) port. Verify that the Status page of the Router’s web interface shows a valid IP address from your ISP.

- F. Turn off the computer, Router, and cable/DSL modem. Wait 30 seconds, and then turn on the Router, cable/DSL modem, and computer. Check the Status tab of the Router’s web-based utility to see if you get an IP address.
4. I am not able to access the Router’s web interface Setup page.
- A. Refer to “Problem #2, My Internet connection isn’t working” to verify that your computer is properly connected to the Router.
- B. Refer to “Appendix F: Finding the MAC Address and IP address for Your Ethernet Adapter” to verify that your computer has an IP Address, Subnet Mask, Gateway, and DNS.
- C. Set a static IP address on your system; refer to “Problem #1: I need to set a static IP address.”
- D. Refer to “Problem #10: I need to remove the proxy settings or the dial-up pop-up window (for PPPoE users).”
5. I can’t get my Virtual Private Network (VPN) to work through the Router. Access the Router’s web interface by going to **http://192.168.1.1** or the **IP address** of the Router, and go to the **Advanced => Filter** tab. Make sure that you have IPsec pass-through and/or PPTP pass-through enabled.
- VPNs that use IPsec with the ESP (Encapsulation Security Payload known as protocol 50) authentication will work fine. At least one IPsec session will work through the Router; however, simultaneous IPsec sessions might be possible, depending on the specifics of your VPNs.
- VPNs that use IPsec and AH (Authentication Header, known as protocol 51) are incompatible with the Router. AH has limitations due to occasional incompatibility with the NAT standard.
- Change the IP address for the Router to another subnet to avoid a conflict between the VPN IP address and your local IP address. For example, if your VPN server assigns an IP address 192.168.1.X (X is a number from 1 to 254) and your local LAN IP address is 192.168.1.X (X is the same number used in the VPN IP address), the Router will have difficulties routing information to the right location. If you change the Router’s IP address to 192.168.2.1, that should solve the problem. Change the Router’s IP address through the Setup tab of the web interface. If you assigned a static IP address to any computer or network device on the network, you need to change its IP address accordingly to 192.168.2.Y (Y being any number from 1 to 254). Note that each IP address must be unique within the network.

Your VPN may require port 500/UDP packets to be passed to the computer that is connecting to the IPSec server. Refer to “Problem #7, I need to set up online game hosting or use other Internet applications” for details.

Check the Network Everywhere website for more information at [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com).

**6. I need to set up a server behind my Router.**

To use a server like a web, ftp, or mail server, you need to know the respective port numbers they are using. For example, port 80 (HTTP) is used for web; port 21 (FTP) is used for FTP, and port 25 (SMTP outgoing) and port 110 (POP3 incoming) are used for the mail server. You can get more information by viewing the documentation provided with the server you installed. Follow these steps to set up port forwarding through the Router’s web-based utility. We will be setting up web, ftp, and mail servers.

- A. Access the Router’s web-based utility by going to **http://192.168.1.1** or the **IP address** of the Router. Go to the **Advanced => Forwarding** tab.
- B. Enter any **name** you want to use for the Customized Application.
- C. Enter the **Ext. Port range** of the service you are using. For example, if you have a web server, you would enter the range 80 to 80.
- D. Check the **protocol** you will be using, TCP and/or UDP.
- E. Enter the **IP address** of the PC or network device that you want the port server to go to. For example, if the web server’s Ethernet adapter IP address is 192.168.1.100, you would enter 100 in the field provided. Check “Appendix F: Finding the MAC Address and IP Address for Your Ethernet Adapter” for details on getting an IP address.
- F. Check the **Enable** option for the port services you want to use. Consider the example below:

Customized Application	Ext. Port	TCP	UDP	IP Address	Enable
Web server	80 to 80	X	X	192.168.1.100	X
FTP server	21 to 21	X		192.168.1.101	X
SMTP (outgoing)	25 to 25	X	X	192.168.1.102	X
POP3 (incoming)	110 to 110	X	X	192.168.1.102	X

When you have completed the configuration, click the **Apply** button and then the **Continue** button.

**7. I need to set up online game hosting or use other Internet applications.**

If you want to play online games or use Internet applications, most will work without doing any port forwarding or DMZ hosting. There may be cases when you want to host an online game or Internet application. This would require that you set up the Router to deliver incoming packets or data to a specific computer. This also applies to the Internet applications you are using. The best way to get the information on what port services to use is to go to the website of the online game or application you want to use. Follow these steps to set up online game hosting or to use a certain Internet application:

- A. Access the Router’s web interface by going to **http://192.168.1.1** or the **IP address** of the Router. Go to the **Advanced => Forwarding** tab.
- B. Enter any **name** you want to use for the Customized Application.
- C. Enter the **Ext. Port range** of the service you are using. For example, if you want to host Unreal Tournament (UT), you would enter the range 7777 to 27900.
- D. Check the **protocol** you will be using, TCP and/or UDP.
- E. Enter the **IP address** of the PC or network device that you want the port server to go to. For example, if the web server’s Ethernet adapter IP address is 192.168.1.100, you would enter 100 in the field provided. Check “Appendix F: Finding the MAC Address and IP Address for Your Ethernet Adapter” for details on getting an IP address.
- F. Check the **Enable** option for the port services you want to use. Consider the example below:

Customized Application	Ext. Port	TCP	UDP	IP Address	Enable
UT	7777 to 27900	X	X	192.168.1.100	X
HalfLife	27015 to 27015	X	X	192.168.1.105	X
PC Anywhere	5631 to 5631		X	192.168.1.102	X
VPN IPSEC	500 to 500		X	192.168.1.100	X

When you have completed the configuration, click the **Apply** button and then the **Continue** button.

## 8. I can't get my Internet game, server, or application to work.

If you are having difficulties getting any Internet game, server, or application to function properly, consider exposing one PC to the Internet using DeMilitarized Zone (DMZ) hosting. This option is available when an application requires too many ports or when you are not sure which port services to use. Make sure that you disable all the forwarding entries if you want to successfully use DMZ hosting, since forwarding has priority over DMZ hosting. (In other words, data that enters the Router will be checked first by the forwarding settings. If the port number that the data enters from does not have port forwarding, then the Router will send the data to the PC or network device you set for DMZ hosting.) Follow these steps to set DMZ hosting:

- A. Access the Router's web-based utility by going to **http://192.168.1.1** or the **IP address** of the Router. Go to the **Advanced => Forwarding** tab.
- B. Disable or remove the entries you have entered for forwarding. Keep this information in case you want to use it at a later time.
- C. Click the **DMZ Host** tab.
- D. Enter the Ethernet adapter's **IP address** of the computer you want exposed to the Internet. This will bypass the NAT firewall for that computer. Please refer to "Appendix F: Finding the MAC Address and IP Address for Your Ethernet Adapter" for details on getting an IP address.

Once completed with the configuration, click the **Apply** button and then the **Continue** button.

## 9. The password prompt always appears when I am saving settings to the Router.

Reset the Router to the factory default by pressing the **Reset** button for 30 seconds and then releasing it. If you are still getting prompted for a password when saving settings, then perform the following steps:

- A. Access the Router's web interface by going to **http://192.168.1.1** or the **IP address** of the Router. Enter the default password **admin**, and click the **Password** tab.
- B. Enter a **different password** in the Router Password field, and enter the same password in the second field to confirm the password.
- C. Click **Apply** and then **Continue**.

## 10. I am a PPPoE user and I want to remove the dial-up pop-up window.

If you have proxy settings, you need to disable these on your computer. Because the Router is the gateway for the Internet connection, the computer does not need any proxy settings to gain access. Please follow these directions to verify that you do not have any proxy settings and that the browser you use is set to connect directly to the LAN.

**For Microsoft Internet Explorer 5.0 or higher:**

- A. Click **Start**, choose **Settings**, and open the **Control Panel**. Double-click **Internet Options**.
- B. Click the **Connections** tab.
- C. Click the **LAN settings** button and remove anything that is checked.
- D. Click the **OK** button to go back to the previous screen.
- E. Click the option **Never dial a connection**. This will remove any dial-up pop-ups for PPPoE users.

**For Netscape 4.7 or higher:**

- A. Start **Netscape Navigator** and click **Edit**. Choose **Preferences**. Click **Advanced**, and then click **Proxies**.
- B. Make sure that you have **Direct connection to the Internet** selected on this screen.
- C. Close all the windows to finish.

## 11. I want to reset the Router to the factory default settings.

Hold the **Reset** button for up to 30 seconds and then release it. This will return the password, forwarding, and other settings on the Router to the factory default settings. In other words, the Router will revert to its original factory configuration.

## 12. I want to upgrade my Router's firmware.

In order to upgrade the firmware with the latest features, you need to go to the Network Everywhere website and download the latest firmware at [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com). Follow these steps:

- A. Go to the Network Everywhere website at **http://www.NetworkEverywhere.com** and download the latest firmware.
- B. Go to the Help section found in "Chapter 6: The Cable/DSL Router's Web-based Utility." Follow the steps to upgrade the firmware that you downloaded from the website.

**13. The firmware upgrade failed and/or the Diag LED is flashing.**

The upgrade could have failed for a number of reasons. Follow these steps to upgrade the firmware and/or make the Diag LED stop flashing:

- A. If the firmware upgrade failed, use the **TFTP** program (it was downloaded along with the firmware). Open the pdf that was downloaded along with the firmware and TFTP program, and follow the pdf's instructions.
- B. Set a **static IP address** on the PC; refer to "Problem #1, I need to set a static IP address." Use the following IP address settings for the computer you are using:

IP Address: 192.168.1.50  
Subnet Mask: 255.255.255.0  
Gateway: 192.168.1.1

- C. Perform the upgrade using the TFTP program or the Router's web-based utility through its Help tab.

**14. I am using PPPoE with my DSL service, but it is always disconnecting.**

PPPoE is not a dedicated or always-on connection. The DSL ISP can disconnect the service after a period of inactivity, just like a normal phone dial-up connection to the Internet. Using the setup option "keep alive" will help keep the connection. This may not always work, so you may need to re-establish the connection periodically.

- A. To connect to the Router, go to the web browser, and enter **http://192.168.1.1** or the **IP address** of the Router.
- B. Enter the **password**, if asked. (The default password is **admin**.)
- C. In the Setup tab, select the option **Keep Alive**, and set the **Redial Period** option at **20** (seconds).
- D. Click the **Apply** button, and then click the **Continue** button.
- E. Click the **Status** tab, and then click the **Connect** button.
- F. You may see the login status display as **Connecting**. Press the **F5** key to refresh the screen, until you see the login status display as **Connected**.
- G. Click the **Apply** button and click the **Continue** button to continue.

If the connection is lost again, follow steps E to G to re-establish the connection.

**15. I can't access my email, web, or VPN, or I am getting corrupted data from the Internet.**

The Maximum Transmission Unit (MTU) setting may need to be adjusted. By default, the MTU is set at 1500. For most DSL users, it is strongly recommended to use MTU 1492. If you are having some difficulties, perform the following steps:

- A. To connect to the Router, go to the web browser, and enter **http://192.168.1.1** or the **IP address** of the Router.
- B. Enter the password, if asked. (The default password is **admin**.)
- C. Click the **Advanced => Filter** tab.
- D. Look for the MTU option, and select **Enable**. In the Size field, enter **1492**.
- E. Click the **Apply** button and click the **Continue** button to continue.

If your difficulties continue, change the **Size** to different values. Try one value at a time, in this order, until your problem is solved:

1462  
1400  
1362  
1300

**16. I need to use port triggering.**

Port triggering looks at the outgoing port services that are used and will trigger the Router to open the port that the Internet application uses. Follow these steps:

- A. To connect to the Router, go to the web browser, and enter **http://192.168.1.1** or the **IP address** of the Router.
- B. Enter the password, if asked. (The default password is **admin**.)
- C. Click the **Advanced => Forwarding** tab, and click the **Port Trigger** button.
- D. Enter any **name** you want to use for the Application Name.
- E. Enter the **Triggered Port Range**. Check with your Internet application provider for more information on which outgoing port services it is using.
- F. Enter the **Incoming Port Range**. Check with your Internet Application provider for more information on which incoming port services are required by the Internet application.

## 17. The Diag LED stays lit continuously.

- The Diag LED lights up when the device is first powered up. Meantime, the system will boot up itself and check for proper operation. After finishing the checking procedure, the LED turns off to show that the system is working fine. If the LED remains lit after one minute, the device is not working properly. Try to flash the firmware by assigning a static IP address to the computer, and then upgrade the firmware. Try using the following settings, IP Address: 192.168.1.50 and Subnet Mask: 255.255.255.0.

## 18. When I enter a URL or IP address, I get a time-out error or am prompted to retry.

- Make sure that the other PCs work. If they do, ensure that your workstation's IP settings are correct (IP Address, Subnet Mask, Default Gateway, and DNS). Restart the computer that is having a problem.
- If the PCs are configured correctly, but still not working, check the Router. Ensure that it is connected and ON. Connect to it and check its settings. (If you cannot connect to it, check the LAN and power connections.)
- If the Router is configured correctly, check your Internet connection (DSL/cable modem, etc.) to see if it is working correctly. You can remove the Router to verify a direct connection.
- Manually configure the TCP/IP with a DNS address provided by your ISP.
- Make sure that your browser is set to connect directly and that any dial-up is disabled. For Internet Explorer, click on **Tools**, choose **Internet Options**, and then select the **Connection** tab. Make sure that the Internet Explorer is set to **Never dial a connection**. For Netscape Navigator, click **Edit, Preferences, Advanced**, and **Proxy**. Make sure that Netscape Navigator is set to **Direct connection to the Internet**.

## 19. The Full/Col LED keeps flickering continuously.

- Check the Category 5 Ethernet cable and its RJ-45 connectors.
- There may be interference with other network devices. Try removing other PCs or network devices to see if the problem persists. Eliminate each network device one at a time to determine the cause.

## Frequently Asked Questions

What is the maximum number of IP addresses that the Router will support? The Router will support up to 253 IP addresses.

Is IPSec Pass-Through supported by the Router? Yes, it is a built-in feature that the Router automatically enables.

Where is the Router installed on the network? In a typical environment, the Router is installed between the cable/DSL modem and the LAN. Plug the Router into the cable/DSL modem's Ethernet port.

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

Does the WAN connection of the Router support 100 Mbps Ethernet? Yes, the Internet port supports 10 and 100 Mbps.

What is Network Address Translation and what is it used for? Network Address Translation (NAT) translates multiple IP addresses on the private LAN to one public address that is sent out to the Internet. This adds a level of security since the address of a PC connected to the private LAN is never transmitted on the Internet. Furthermore, NAT allows the Router to be used with low cost Internet accounts, such as DSL or cable modems, when only one TCP/IP address is provided by the ISP. The user may have many private addresses behind this single address provided by the ISP.

Does the Router support any operating system other than Windows 95, Windows 98, Windows 2000, Windows NT, or Windows XP? Yes, but Network Everywhere does not, at this time, provide technical support for setup, configuration or troubleshooting of any non-Windows operating systems.

Does the Router support ICQ send files? Yes, with the following fix: click **ICQ menu -> preference -> connections tab->**, and check **I am behind a firewall or proxy**. Then set the firewall time-out to **80** seconds in the firewall setting. The Internet user can then send a file to a user behind the Router.

I set up an Unreal Tournament Server, but others on the LAN cannot join. What do I need to do? If you have a dedicated Unreal Tournament server running, you need to create a static IP for each of the LAN computers and forward ports 7777, 7778, 7779, 7780, 7781, and 27900 to the IP address of the server. You can also use a port forwarding range of 7777 ~ 27900. If you want to use the UT Server Admin, forward another port (8080 usually works well but is used for remote admin. You may have to disable this.), and then in the [UWeb.WebServer] section of the server.ini file, set the ListenPort to 8080 (to match the mapped port above) and ServerName to the IP assigned to the Router from your ISP.

Can multiple gamers on the LAN get on one game server and play simultaneously with just one public IP address? It depends on which network game or what kind of game server you are using. For example, Unreal Tournament supports multiple logins with one public IP Address.

How do I get *Half-Life: Team Fortress* to work with the Router? The default client port for Half-Life is 27005. The computers on your LAN need to have "+clientport 2700x" added to the HL shortcut command line; the x would be 6, 7, 8, and on up. This lets multiple computers connect to the same server. *One problem:* Version 1.0.1.6 won't let multiple computers with the same CD key connect at the same time, even if on the same LAN (not a problem with version 1.0.1.3). As far as hosting games, the HL server does not need to be in the DMZ. Just forward port 27015 to the local IP address of the server computer.

How can I block corrupted FTP downloads? If you are experiencing corrupted files when you download a file with your FTP client, try using another FTP program.

The web page hangs; downloads are corrupt, or nothing but junk characters are being displayed on the screen. What do I need to do? Force your Ethernet adapter to 10Mbps or half duplex mode, and turn off the "Auto-negotiate" feature of your Ethernet adapter as a temporary measure. (Please look at the Network Control Panel in your Ethernet adapter's Advanced Properties tab.) Make sure that your proxy setting is disabled in the browser. Check our website at [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com) for more information.

If all else fails in the installation of the Router, what can I do? Reset the Router by holding down the reset button until the Diag LED fully turns on and off. Reset your cable or DSL modem by powering the unit off and then on. Obtain and flash the latest firmware release that is readily available on the Network Everywhere website, [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com).

How will I be notified of new Router firmware upgrades? All Network Everywhere firmware upgrades are posted on the Network Everywhere website at [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com), where they can be downloaded for free. The Router's firmware can be upgraded with TFTP programs. If the Router's Internet connection is working well, there is no need to download a newer firmware version, unless that version contains new features that you would like to use. Downloading a more current version of Router firmware will not enhance the quality or speed of your Internet connection, and may disrupt your current connection stability.

Will the Router function in a Macintosh environment? Yes, but the Router's setup pages are accessible only through Internet Explorer 4.0 or Netscape Navigator 4.0 or higher for Macintosh.

I am not able to get the web configuration screen for the Router. What can I do? You may have to remove the proxy settings on your Internet browser, e.g., Netscape Navigator or Internet Explorer. Or remove the dial-up settings on your browser. Check with your browser documentation, and make sure that your browser is set to connect directly and that any dial-up is disabled. Make sure that your browser is set to connect directly and that any dial-up is disabled. For Internet Explorer, click **Tools, Internet Options**, and then the **Connection** tab. Make sure that Internet Explorer is set to **Never dial a connection**. For Netscape Navigator, click **Edit, Preferences, Advanced**, and **Proxy**. Make sure that Netscape Navigator is set to **Direct connection to the Internet**.

What is DMZ Hosting? Demilitarized Zone (DMZ) allows one IP address (computer) to be exposed to the Internet. Some applications require multiple TCP/IP ports to be open. It is recommended that you set your computer with a static IP if you want to use DMZ Hosting. To get the LAN IP address, see "Appendix F: Finding the MAC Address and IP Address for Your Ethernet Adapter."

If DMZ Hosting is used, does the exposed user share the public IP with the Router? No.

Does the Router pass PPTP packets or actively route PPTP sessions? The Router allows PPTP packets to pass through.

Is the Router cross-platform compatible? Any platform that supports Ethernet and TCP/IP is compatible with the Router.

How many ports can be simultaneously forwarded? Theoretically, the Router can establish 520 sessions at the same time, but you can only forward 10 ranges of ports.

Does the Router replace a modem? Is there a cable or DSL modem in the Router? No, the Router must work in conjunction with a cable or DSL modem.

Which modems are compatible with the Router? The Router is compatible with virtually any cable or DSL modem that supports Ethernet.

What are the advanced features of the Router? The Router's advanced features include IP Filtering, Port Range Forwarding, Dynamic Routing, Static Routing, DMZ Hosting, and MAC Address Cloning.

What is the maximum number of VPN sessions allowed by the Router? The maximum number depends on many factors. At least one IPSec session will work through the Router; however, simultaneous IPSec sessions *may* be possible, depending on the specifics of your VPNs.

How can I check whether I have static or DHCP IP Addresses? Consult your ISP to obtain this information.

How do I get mIRC to work with the Router? Under the Port Range Forwarding tab, set port forwarding to 113 for the PC on which you are using mIRC.

**If your questions are not addressed here, refer to the Network Everywhere website, [www.NetworkEverywhere.com](http://www.NetworkEverywhere.com).**

## Appendix B: Glossary

**10BaseT** - An Ethernet standard that uses twisted wire pairs.

**100BaseTX** - IEEE physical layer specification for 100 Mbps over two pairs of Category 5 UTP or STP wire.

**Adapter** - Printed circuit board that plugs into a PC to add to capabilities or connectivity to a PC. In a networked environment, a network interface card (NIC) is the typical adapter that allows the PC or server to connect to the intranet and/or Internet.

**Auto-negotiate** - To automatically determine the correct settings. The term is often used with communications and networking. For example, Ethernet 10/100 cards, hubs, and switches can determine the highest speed of the node they are connected to and adjust their transmission rate accordingly.

**Backbone** - The part of a network that connects most of the systems and networks together and handles the most data.

**Bandwidth** - The transmission capacity of a given facility, in terms of how much data the facility can transmit in a fixed amount of time; expressed in bits per second (bps).

**Bit** - A binary digit. The value—0 or 1—used in the binary numbering system. Also, the smallest form of data.

**Boot** - To cause the computer to start executing instructions. Personal computers contain built-in instructions in a ROM chip that are automatically executed on startup. These instructions search for the operating system, load it, and pass control to it.

**Bottleneck** - A traffic slowdown that results when too many network nodes try to access a single node, often a server node, at once.

**Bridge** - A device that interconnects different networks together.

**Broadband** - A data-transmission scheme in which multiple signals share the bandwidth of a medium. This allows the transmission of voice, data, and video signals over a single medium. Cable television uses broadband techniques to deliver dozens of channels over one cable.

**Browser** - A browser is an application program that provides a way to look at and interact with all the information on the World Wide Web or PC. The word “browser” seems to have originated prior to the Web as a generic term for user interfaces that let you browse text files online.

**Cable Modem** - A device that connects a computer to the cable television network, which in turn connects to the Internet. Once connected, cable modem users have a continuous connection to the Internet. Cable modems feature asymmetric transfer rates: around 36 Mbps downstream (from the Internet to the computer), and from 200 Kbps to 2 Mbps upstream (from the computer to the Internet).

**CAT 5** - ANSI/EIA (American National Standards Institute/Electronic Industries Association) Standard 568 is one of several standards that specify “categories” (the singular is commonly referred to as “CAT”) of twisted pair cabling systems (wires, junctions, and connectors) in terms of the data rates that they can sustain. CAT 5 cable has a maximum throughput of 100 Mbps and is usually utilized for 100BaseTX networks.

**CPU (Central Processing Unit)** - The computing part of the computer. Also called the “processor,” it is made up of the control unit and ALU.

**CSMA/CD (Carrier Sense Multiple Access/Collision Detection)** - The LAN access method used in Ethernet. When a device wants to gain access to the network, it checks to see if the network is quiet (senses the carrier). If it is not, it waits a random amount of time before retrying. If the network is quiet and two devices access the line at exactly the same time, their signals collide. When the collision is detected, they both back off and each waits a random amount of time before retrying.

**Database** - A database is a collection of data that is organized so that its contents can easily be accessed, managed, and updated.

**Data Packet** - One frame in a packet-switched message. Most data communications is based on dividing the transmitted message into packets. For example, an Ethernet packet can be from 64 to 1518 bytes in length.

**Default Gateway** - The routing device used to forward all traffic that is not addressed to a station within the local subnet.

**DHCP (Dynamic Host Configuration Protocol)** - A protocol that lets network administrators centrally manage and automate the assignment of Internet

Protocol (IP) addresses in an organization's network. Using the Internet's set of protocol (TCP/IP), each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine. Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DHCP uses the concept of a “lease” or amount of time that a given IP address will be valid for a computer. The lease time can vary depending on how long a user is likely to require the Internet connection at a particular location. It's especially useful in education and other environments where users change frequently. Using very short leases, DHCP can dynamically reconfigure networks in which there are more computers than there are available IP addresses. DHCP supports static addresses for computers containing Web servers that need a permanent IP address.

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

**DNS** - The Domain Name System (DNS) is the way that Internet domain names are located and translated into Internet Protocol (IP) addresses. A domain name is a meaningful and easy-to-remember “handle” for an Internet address.

**Domain** - A subnetwork comprised of a group of clients and servers under the control of one security database. Dividing LANs into domains improves performance and security.

**Download** - To receive a file transmitted over a network. In a communications session, download means receive, and upload means transmit.

**Driver** - A workstation or server software module that provides an interface between a network interface card and the upper-layer protocol software running in the computer; it is designed for a specific NIC, and is installed during the initial installation of a network-compatible client or server operating system.

**Dynamic IP Address** - An IP address that is automatically assigned to a client station in a TCP/IP network, typically by a DHCP server. Network devices that serve multiple users, such as servers and printers, are usually assigned static IP addresses.

**Dynamic Routing** - The ability for a router to forward data via a different route based on the current conditions of the communications circuits. For example, it can adjust for overloaded traffic or failing lines and is much more flexible than static routing, which uses a fixed forwarding path.

**Ethernet** - IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium. Has a transfer rate of 10 Mbps. Forms the underlying transport vehicle used by several upper-level protocols, including TCP/IP and XNS.

**Fast Ethernet** - A 100 Mbps technology based on the 10Base-T Ethernet CSMA/CD network access method.

**Firewall** - A firewall is a set of related programs, located at a network gateway server, that protects the resources of a network from users from other networks. (The term also implies the security policy that is used with the programs.) An enterprise with an intranet that allows its workers access to the wider Internet installs a firewall to prevent outsiders from accessing its own private data resources and for controlling what outside resources to which its own users have access.

Basically, a firewall, working closely with a router, examines each network packet to determine whether to forward it toward its destination.

**Firmware** - Code that is written onto read-only memory (ROM) or programmable read-only memory (PROM). Once firmware has been written onto the ROM or PROM, it is retained even when the device is turned off.

**Fragmentation** - Breaking a packet into smaller units when transmitting over a network medium that cannot support the original size of the packet.

**FTP (File Transfer Protocol)** - A protocol used to transfer files over a TCP/IP network (Internet, UNIX, etc.). For example, after developing the HTML pages for a website on a local machine, they are typically uploaded to the Web server using FTP.

FTP includes functions to log onto the network, list directories, and copy files. It can also convert between the ASCII and EBCDIC character codes. FTP oper-

ations can be performed by typing commands at a command prompt or via an FTP utility running under a graphical interface such as Windows. FTP transfers can also be initiated from within a Web browser by entering the URL preceded with ftp://.

Unlike e-mail programs in which graphics and program files have to be “attached,” FTP is designed to handle binary files directly and does not add the overhead of encoding and decoding the data.

**Full Duplex** - The ability of a device or line to transmit data simultaneously in both directions.

**Gateway** - A device that interconnects networks with different, incompatible communications protocols.

**Half Duplex** - Data transmission that can occur in two directions over a single line, but only one direction at a time.

**Hardware** - Hardware is the physical aspect of computers, telecommunications, and other information technology devices. The term arose as a way to distinguish the “box” and the electronic circuitry and components of a computer from the program you put in it to make it do things. The program came to be known as the software.

**Hub** - The device that serves as the central location for attaching wires from workstations. Can be passive, where there is no amplification of the signals; or active, where the hubs are used like repeaters to provide an extension of the cable that connects to a workstation.

**HTTP (HyperText Transport Protocol)** - The communications protocol used to connect to servers on the World Wide Web. Its primary function is to establish a connection with a Web server and transmit HTML pages to the client browser.

**IEEE** - The Institute of Electrical and Electronics Engineers. The IEEE describes itself as “the world’s largest technical professional society—promoting the development and application of electrotechnology and allied sciences for the benefit of humanity, the advancement of the profession, and the well-being of our members.”

The IEEE fosters the development of standards that often become national and international standards. The organization publishes a number of journals, has many local chapters, and has several large societies in special areas, such as the IEEE Computer Society.

**IP Address** - In the most widely installed level of the Internet Protocol (IP) today, an IP address is a 32-binary digit number that identifies each sender or receiver of information that is sent in packets across the Internet. When you request an HTML page or send e-mail, the Internet Protocol part of TCP/IP includes your IP address in the message (actually, in each of the packets if more than one is required) and sends it to the IP address that is obtained by looking up the domain name in the Uniform Resource Locator you requested or in the e-mail address you're sending a note to. At the other end, the recipient can see the IP address of the Web page requestor or the e-mail sender and can respond by sending another message using the IP address it received.

**IPCONFIG** - A utility that provides for querying, defining and managing IP addresses within a network. A commonly used utility, under Windows NT and 2000, for configuring networks with static IP addresses.

**IPSec (Internet Protocol Security)** - IPSec is a developing standard for security at the network or packet processing layer of network communication. A big advantage of IPSec is that security arrangements can be handled without requiring changes to individual user computers.

**IRQ (Interrupt ReQuest)** - A hardware interrupt on a PC. There are 16 IRQ lines used to signal the CPU that a peripheral event has started or terminated. Except for PCI devices, two devices cannot use the same line.

**ISP** - An ISP (Internet service provider) is a company that provides individuals and companies access to the Internet and other related services such as website building and virtual hosting.

**LAN** - A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building).

**Latency** - The time delay between when the first bit of a packet is received and the last bit is forwarded.

**MAC Address** - The MAC (Media Access Control) address is a unique number assigned by the manufacturer to any Ethernet networking device, such as a network adapter, that allows the network to identify it at the hardware level.

**Mbps (MegaBits Per Second)** - One million bits per second; unit of measurement for data transmission.

**mIRC** - mIRC runs under Windows and provides a graphical interface for logging onto IRC servers and listing, joining, and leaving channels.

**Motherboard** - A motherboard is the physical arrangement in a computer that contains the computer's basic circuitry and components.

**NAT** - NAT (Network Address Translation) is the translation of an Internet Protocol address (IP address) used within one network to a different IP address known within another network. One network is designated the inside network and the other is the outside.

**NetBEUI (NetBIOS Extended User Interface)** - The transport layer for NetBIOS. NetBIOS and NetBEUI were originally part of a single protocol suite that was later separated. NetBIOS sessions can be transported over NetBEUI, TCP/IP, and SPX/IPX protocols.

**NetBIOS** - The native networking protocol in DOS and Windows networks. Although originally combined with its transport layer protocol (NetBEUI), NetBIOS today provides a programming interface for applications at the session layer (layer 5). NetBIOS can ride over NetBEUI, its native transport, which is not routable, or over TCP/IP and IPX/SPX, which are routable protocols.

NetBIOS computers are identified by a unique 15-character name, and Windows machines (NetBIOS machines) periodically broadcast their names over the network so that Network Neighborhood can catalog them. For TCP/IP networks, NetBIOS names are turned into IP addresses via manual configuration in an LMHOSTS file or a WINS server.

There are two NetBIOS modes. The Datagram mode is the fastest mode, but does not guarantee delivery. It uses a self-contained packet with send and receive name, usually limited to 512 bytes. If the recipient device is not listening for messages, the datagram is lost. The Session mode establishes a connection until broken. It guarantees delivery of messages up to 64KB long.

**Network** - A system that transmits any combination of voice, video, and/or data between users.

**Network Mask** - Also known as the "Subnet Mask."

**NIC (Network Interface Card)** - A board installed in a computer system, usually a PC, to provide network communication capabilities to and from that computer system. Also called an adapter.

**Notebook (PC)** - A notebook computer is a battery-powered personal computer generally smaller than a briefcase that can easily be transported and conveniently used in temporary spaces such as on airplanes, in libraries, at temporary offices, and at meetings. A notebook computer, sometimes called a laptop computer, typically weighs less than five pounds and is three inches or less in thickness.

**Packet Filtering** - Discarding unwanted network traffic based on its originating address or range of addresses or its type (e-mail, file transfer, etc.).

**Partitioning** - To divide a resource or application into smaller pieces.

**PCI (Peripheral Component Interconnect)** - A peripheral bus commonly used in PCs, Macintoshes and workstations. It was designed primarily by Intel and first appeared on PCs in late 1993. PCI provides a high-speed data path between the CPU and peripheral devices (video, disk, network, etc.). There are typically three or four PCI slots on the motherboard. In a Pentium PC, there is generally a mix of PCI and ISA slots or PCI and EISA slots. Early on, the PCI bus was known as a “local bus.”

PCI provides “plug-and-play” capability, automatically configuring the PCI cards at startup. When PCI is used with the ISA bus, the only thing that is generally required is to indicate in the CMOS memory which IRQs are already in use by ISA cards. PCI takes care of the rest.

PCI allows IRQs to be shared, which helps to solve the problem of limited IRQs available on a PC. For example, if there were only one IRQ left over after ISA devices were given their required IRQs, all PCI devices could share it. In a PCI-only machine, there cannot be insufficient IRQs, as all can be shared.

**PCMCIA** - The PCMCIA (Personal Computer Memory Card International Association) is an industry group organized in 1989 to promote standards for a credit card-size memory or I/O device that would fit into a personal computer, usually a notebook or laptop computer.

**Ping (Packet INternet Groper)** - An Internet utility used to determine whether a particular IP address is online. It is used to test and debug a network by sending out a packet and waiting for a response.

**Plug-and-Play** - The ability of a computer system to configure expansion boards and other devices automatically without requiring the user to turn off the system during installation.

**POP3 (Post Office Protocol 3)** - A standard mail server commonly used on the Internet. It provides a message store that holds incoming e-mail until users log on and download it. POP3 is a simple system with little selectivity. All pending messages and attachments are downloaded at the same time. POP3 uses the SMTP messaging protocol.

**Port** - A pathway into and out of the computer or a network device such as a switch or router. For example, the serial and parallel ports on a personal computer are external sockets for plugging in communications lines, modems, and printers.

**Port Mirroring** - Port mirroring, also known as a roving analysis port, is a method of monitoring network traffic that forwards a copy of each incoming and outgoing packet from one port of a network switch to another port where the packet can be studied. A network administrator uses port mirroring as a diagnostic tool or debugging feature, especially when fending off an attack. It enables the administrator to keep close track of switch performance and alter it if necessary. Port mirroring can be managed locally or remotely.

**PPPoE (Point to Point Protocol over Ethernet)** - PPPoE is a method for the encapsulation of PPP packets over Ethernet frames from the user to the ISP over the Internet. One reason PPPoE is preferred by ISPs is because it provides authentication (username and password) in addition to data transport. A PPPoE session can be initiated by either a client application residing on a PC, or by client firmware residing on a modem or router.

**PPTP (Point-to-Point Tunneling Protocol)** - A protocol which allows the Point to Point Protocol (PPP) to be tunneled through an IP network. PPTP does not specify any changes to the PPP protocol but rather describes a “tunneling service” for carrying PPP (a tunneling service is any network service enabled by tunneling protocols such as PPTP, L2F, L2TP, and IPSEC tunnel

**RIP (Routing Information Protocol)** - A simple routing protocol that is part of the TCP/IP protocol suite. It determines a route based on the smallest hop count between source and destination. RIP is a distance vector protocol that routinely broadcasts routing information to its neighboring routers.

**RJ-11 (Registered Jack-11)** - A telephone connector that holds up to six wires. The RJ-11 is the common connector used to plug a telephone into a wall.

**RJ-45** - A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.

**Router** - Protocol-dependent device that connects subnetworks together. Routers are useful in breaking down a very large network into smaller subnetworks; they introduce longer delays and typically have much lower throughput rates than bridges.

**Server** - Any computer whose function in a network is to provide user access to files, printing, communications, and other services.

**SMTP (Simple Mail Transfer Protocol)** - The standard e-mail protocol on the Internet. It is a TCP/IP protocol that defines the message format and the message transfer agent (MTA), which stores and forwards the mail.

**SNMP (Simple Network Management Protocol)** - A widely used network monitoring and control protocol. Data is passed from SNMP agents, which are hardware and/or software processes reporting activity in each network device (hub, router, bridge, etc.) to the workstation console used to oversee the network. The agents return information contained in a MIB (Management Information Base), which is a data structure that defines what is obtainable from the device and what can be controlled (turned off, on, etc.).

**Software** - Instructions for the computer. A series of instructions that performs a particular task is called a “program.” The two major categories of software are “system software” and “application software.” System software is made up of control programs such as the operating system and database management system (DBMS). Application software is any program that processes data for the user.

A common misconception is that software is data. It is not. Software tells the hardware how to process the data.

**SOHO (Small Office/Home Office)** - Market segment of professionals who work at home or in small offices.

**Static IP Address** - A permanent IP address that is assigned to a node in a TCP/IP network.

**Static Routing** - Forwarding data in a network via a fixed path. Static routing cannot adjust to changing line conditions as can dynamic routing.

**Storage** - The semi-permanent or permanent holding place for digital data.

**STP (Shielded Twisted Pair)** - Telephone wire that is wrapped in a metal sheath to eliminate external interference.

**Subnet Mask** - The method used for splitting IP networks into a series of subgroups, or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets.

**Swapping** - Replacing one segment of a program in memory with another and restoring it back to the original when required.

**Switch** – 1. A data switch connects computing devices to host computers, allowing a large number of devices to share a limited number of ports. 2. A device for making, breaking, or changing the connections in an electrical circuit.

**TCP (Transmission Control Protocol)** - A method (protocol) used along with the IP (Internet Protocol) to send data in the form of message units (datagram) between network devices over a LAN or WAN. While IP takes care of handling the actual delivery of the data (routing), TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient delivery over the network. TCP is known as a “connection oriented” protocol due to requiring the receiver of a packet to return an acknowledgment of receipt to the sender of the packet resulting in transmission control.

**TCP/IP (Transmission Control Protocol/Internet Protocol)** - The basic communication language or set of protocols for communications over a network (developed specifically for the Internet). TCP/IP defines a suite or group of protocols and not only TCP and IP.

**Telnet** - A terminal emulation protocol commonly used on the Internet and TCP/IP-based networks. It allows a user at a terminal or computer to log onto a remote device and run a program.

**TFTP (Trivial File Transfer Protocol)** - A version of the TCP/IP FTP protocol that has no directory or password capability.

**Throughput** - The amount of data moved successfully from one place to another in a given time period.

**Topology** - A network’s topology is a logical characterization of how the devices on the network are connected and the distances between them. The most common network devices include hubs, switches, routers, and gateways. Most large networks contain several levels of interconnection, the most important of which include edge connections, backbone connections, and wide-area connections.

**TX Rate** – Transmission Rate.

**UDP** (User Datagram Protocol) - A method (protocol) used along with the IP (Internet Protocol) to send data in the form of message units (datagram) between network devices over a LAN or WAN. While IP takes care of handling the actual delivery of the data (routing), UDP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient delivery over the network. UDP is known as a “connection-less” protocol due to NOT requiring the receiver of a packet to return an acknowledgment of receipt to the sender of the packet (as opposed to TCP).

**Upgrade** - To replace existing software or firmware with a newer version.

**Upload** - To send a file transmitted over a network. In a communications session, upload means transmit, and download means receive.

**URL** (Uniform Resource Locator) - The address that defines the route to a file on the Web or any other Internet facility. URLs are typed into the browser to access Web pages, and URLs are embedded within the pages themselves to provide the hypertext links to other pages.

**UTP** - Unshielded twisted pair is the most common kind of copper telephone wiring. Twisted pair is the ordinary copper wire that connects home and many business computers to the telephone company. To reduce crosstalk or electromagnetic induction between pairs of wires, two insulated copper wires are twisted around each other. Each signal on twisted pair requires both wires. Since some telephone sets or desktop locations require multiple connections, twisted pair is sometimes installed in two or more pairs, all within a single cable.

**WAN** (Wide Area Network) - A communications network that covers a relatively large geographic area, consisting of two or more LANs. Broadband communication over the WAN is often through public networks such as the telephone (DSL) or cable systems, or through leased lines or satellites. In its most basic definition, the Internet could be considered a WAN.

**WINIPCFG** - Configuration utility based on the Win32 API for querying, defining, and managing IP addresses within a network. A commonly used utility for configuring networks with static IP addresses.

**Workgroup** - Two or more individuals that share files and databases.

## Appendix C: How to Ping Your ISP's E-mail & Web Addresses

Virtually all Internet addresses are configured with words or characters (e.g., *www.NetworkEverywhere.com*, *www.yahoo.com*, etc.) In actuality, however, these Internet addresses are assigned to IP addresses, which are the true addresses on the Internet. For example, *www.NetworkEverywhere.com* is actually 216.237.158.81. Type it into your web browser and you will wind up at the Network home page every time. There are servers that translate the URL to an IP address; this is called the Domain Name System (DNS).

IP and web addresses, however, can sometimes be long and hard to remember. Because of this, certain ISPs will shorten their server addresses to single words or codes on their users' web browser or e-mail configurations. If your ISP's e-mail and web server addresses are configured with single words (*www*, *e-mail*, *home*, *pop3*, etc.) rather than whole Internet addresses or IP addresses, the Router may have problems sending or receiving mail and accessing the Internet. This happens because the Router has not been configured by your ISP to accept their abbreviated server addresses.

The solution is to determine the true web addresses behind your ISP's code words. You can determine the IP and web addresses of your ISP's servers by “pinging” them.



**Important:** If you don't have your ISP's web and e-mail IP addresses, you *must* either get them from your ISP or follow these steps *prior* to connecting your Cable/DSL Router to your network.

## Step One: Pinging an IP Address

The first step to determining your ISP's web and e-mail server address is to ping its IP address.

1. **Power on the computer and the cable or DSL modem**, and restore the network configuration set by your ISP if you have since changed it.
2. **Click Start**, then **Run**, and type **command** in the Open field. This will bring up the DOS window.
3. **At the DOS command prompt**, type **ping mail** (assuming that the location for which you're trying to find an IP address is configured as *mail*). Press **Enter**. Information such as the following data, taken from a ping of Microsoft Network's e-mail server, will be displayed.

```
C:\>ping mail

Pinging mail [24.53.32.4] with 32 bytes of data:

Reply from 24.53.32.4: bytes=32 time<10ms TTL=128

Ping statistics for 24.53.32.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0%
    loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Figure C-1

4. **Write down the IP address returned by the ping command.** (In the example above: 24.53.32.4.) This IP address is the actual IP address of the server *mail*, or any other word or value you have pinged.

## Step Two: Pinging for a Web Address

While the IP address returned above would work as your e-mail server address, it may not be permanent. IP addresses change all the time. Web addresses, however, usually don't. Because of this, you're likely to have fewer problems by configuring your system with web addresses rather than IP addresses. Follow the instructions below to find the web address assigned to the IP address you just pinged.

1. **At the DOS command prompt**, type **ping -a 24.53.32.4**, where 24.53.32.4 is the IP address you just pinged. Information such as the following data will be displayed.

```
C:\>ping -a 24.53.32.4

Pinging mail.msnv3.occa.home.com [24.53.32.4] with
32 bytes of data:

Reply from 24.53.32.4: bytes=32 time<10ms TTL=127

Ping statistics for 24.53.32.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0%
    loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Figure C-2

2. **Write down the web address returned by the ping command** (In the example in Figure C-2: *mail.msnv3.occa.home.com* is the web address). This web address is the web address assigned to the IP address you just pinged. While the IP address of *mail* could conceivably change, it is likely that this web address will not.
3. **Replace your ISP's abbreviated server address** with this extended web address in the corresponding Internet application (web browser, e-mail application, etc.).

Once you have replaced the brief server address with the true server address, the Router should have no problem accessing the Internet through that Internet application.

# Appendix D: Installing the TCP/IP Protocol

Follow these instructions to install the TCP/IP protocol on one of your PCs *only* after a network card (also called an Ethernet adapter) has been successfully installed inside the PC. These instructions are for Windows 95, 98, and Me. For TCP/IP setup under Windows NT, 2000, and XP, see your Windows documentation or the Help feature.

1. Click the **Start** button. Choose **Settings** and then **Control Panel**.
2. Double-click on the **Network** icon to bring up your Network window. Select the **Configuration** tab.

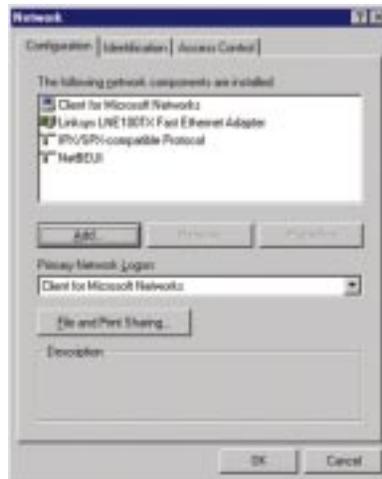


Figure D-1

3. Click the **Add** button.
4. Double-click on **Protocol**.
5. Highlight **Microsoft** under the list of manufacturers.

6. Find and double-click **TCP/IP** in the list to the right (see Figure D-2).

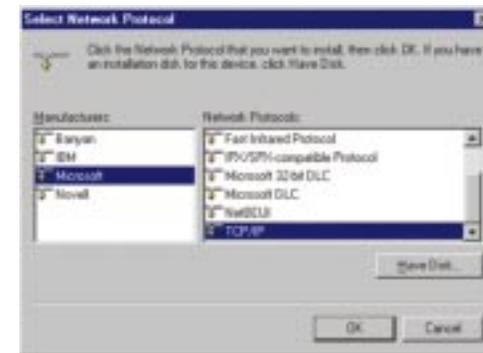


Figure D-2

7. After a few seconds, the main Network window will appear. The TCP/IP Protocol should now be listed on the Configuration tab.

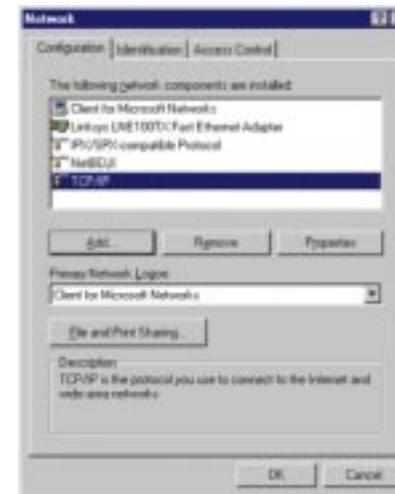


Figure D-3

8. Click the **OK** button. Windows may ask for original Windows installation files. Supply them as needed, e.g., c:\windows\options\cabs, D:\win98, D:\win95 (where "D" is the letter of your CD-ROM drive).
9. Windows will ask you to restart the PC. Click the **Yes** button.

**The TCP/IP installation is now complete.**

# Appendix E: Twisted-Pair Cabling

There are different grades, or “categories,” of twisted-pair cabling. Category 5 is the most reliable and most highly recommended. Straight-through cables are used for connecting computers to a hub. Crossover cables are used for connecting a hub to another hub (there is an exception: some hubs have a built-in uplink port that is crossed internally; this allows you to link or connect hubs together with a straight-through cable instead).

### RJ-45 Color Chart

- Wire 1 → White with an Orange Stripe
- Wire 2 → Orange
- Wire 3 → White with a Green Stripe
- Wire 4 → Blue
- Wire 5 → White with a Blue Stripe
- Wire 6 → Green
- Wire 7 → White with a Brown Stripe
- Wire 8 → Brown

You can buy pre-made Category 5 cables, or cut and crimp your own. Category 5 cables can be purchased or crimped as either straight-through or crossover. Inside a Category 5 cable are eight thin, color-coded wires inside that run from one end of the cable to the other. All eight wires are used. In a straight-through cable, wires 1, 2, 3, and 6 at one end of the cable are also wires 1, 2, 3, and 6 at the other end. In a crossover cable, the order of the wires change from one end to the other: wire 1 becomes 3, and 2 becomes 6. See Figures E-3 and

straight-through cable		crossed cable	
Wire	Becomes	Wire	Becomes
1	1	1	3
2	2	2	6
3	3	3	1
6	6	6	2

E-4 on the next page for more detailed information on straight-through and crossover cabling.

To determine which wire is wire number 1, hold the cable so that the end of the plastic RJ-45 tip (the part that goes into a wall jack first) is facing away from you. Face the clip down so that the copper side faces up (the springy clip will now be parallel to the floor). When looking down on the copper side, wire 1 will be on the far left.

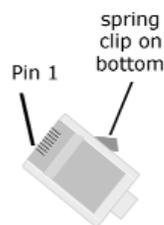


Figure E-2

## Crimping Your Own Network Cables

### • Straight-Through Cabling

The diagram shows a straight-through cable with RJ-45 connectors at both ends. Labels indicate that pins 4, 5, 7, and 8 are not used. On the left connector, pins 1 & 2 are labeled 'Transmit' and pins 3 & 6 are labeled 'Receive'. On the right connector, pins 1 & 2 are labeled 'Receive' and pins 3 & 6 are labeled 'Transmit'. A table below shows the wire-to-pin mapping:

Pin number	Wire Color
Pin 1	Orange/White
Pin 2	Orange
Pin 3	Green/White
Pin 4	Blue
Pin 5	Blue/White
Pin 6	Green
Pin 7	Brown/White
Pin 8	Brown

Wire	Becomes
1	1
2	2
3	3
6	6

Figure E-3

### • Cross-Over Cabling

The diagram shows a cross-over cable with RJ-45 connectors at both ends. Labels indicate that pins 4, 5, 7, and 8 are not used. On the left connector, pins 1 & 2 are labeled 'Receive' and pins 3 & 6 are labeled 'Transmit'. On the right connector, pins 3 & 6 are labeled 'Receive' and pins 1 & 2 are labeled 'Transmit'. A table below shows the wire-to-pin mapping:

Pin number	Wire Color
Pin 1	Orange/White
Pin 2	Orange
Pin 3	Green/White
Pin 4	Blue
Pin 5	Blue/White
Pin 6	Green
Pin 7	Brown/White
Pin 8	Brown

Wire	Becomes
1	3
2	6
3	1
6	2

Figure E-4

# Appendix F: Finding the MAC Address and IP Address for Your Ethernet Adapter

This appendix describes how to find the MAC address for your Ethernet adapter to do either MAC Filtering or MAC Address Cloning. You can also find the IP address of your computer's Ethernet adapter. The IP address is used for filtering, forwarding, and DMZ hosting. Find your Windows operating system and follow the steps in this appendix to find the MAC address or IP address for your adapter.

## For Windows 95, 98, and Me:

1. Click on **Start** and choose **Run**. In the Open field, enter **winipcfg**. Then, press the **Enter** key or click on the **OK** button.

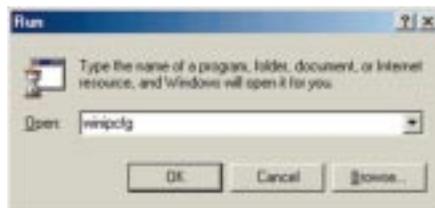


Figure F-1

2. When the IP Configuration window appears, select the Ethernet adapter that you are using.

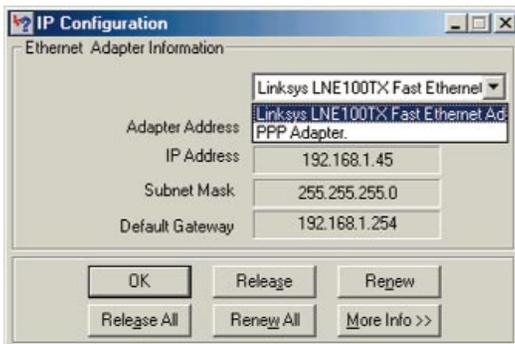


Figure F-2

3. Write down the Adapter Address as shown on your computer screen (see Figure F-3). This is the MAC address for your Ethernet adapter and will be shown as a series of numbers and letters.



**Note:** The MAC address is also called the Adapter Address in Windows 95, 98, and Me.

The MAC address/Adapter Address is what you will use for the Router's MAC Address Cloning or MAC Filtering.

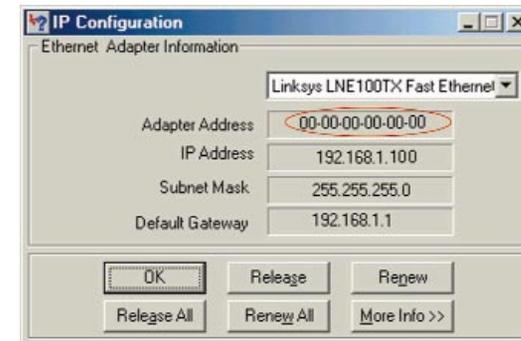


Figure F-3

The example in Figure F-3 shows the IP address of your Ethernet adapter as 192.168.1.100. Your computer may show something different.

## For Windows NT, 2000, and XP:

1. Click on **Start** and choose **Run**. In the Open field, enter **cmd**. Press the **Enter** key or click the **OK** button.



Figure F-4

- In the command prompt, enter **ipconfig /all** press the **Enter** key. Your PC's information will be displayed as shown in Figure F-5.

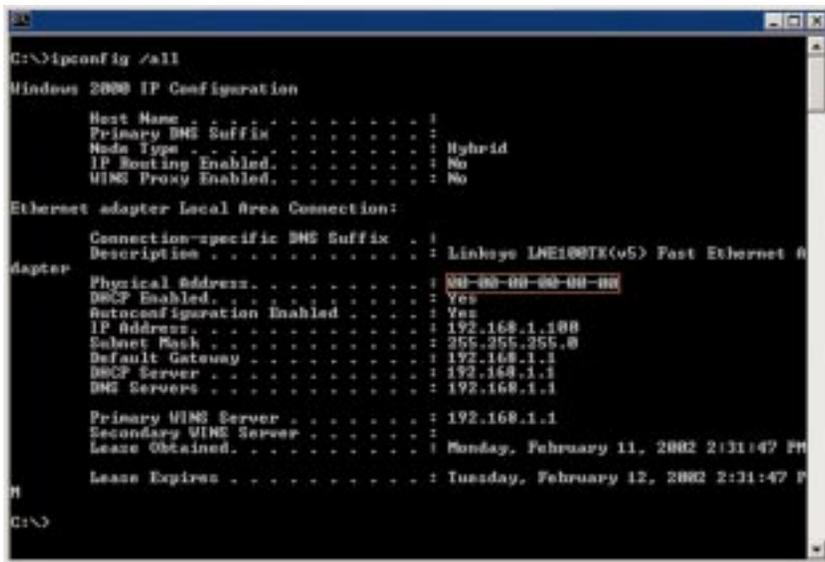


Figure F-5

- Write down the Physical Address as shown on your computer screen; it is the MAC address for your Ethernet adapter. It will appear as a series of letters and numbers.

The MAC address/Physical Address is what you will use for MAC Address Cloning or MAC Filtering.

 **Note:** The MAC address is also called the Physical Address in Windows NT, 2000, and XP.

The example in Figure F-5 shows the IP address of your Ethernet adapter as 192.168.1.100. Your computer may show something different.

Enter the **12-digit MAC address** that you wrote down from the Physical Address shown in Figure F-5. Make sure to type the 12 digits **without the hyphens** into one of the fields for MAC Filtering. (See Figure F-6.)

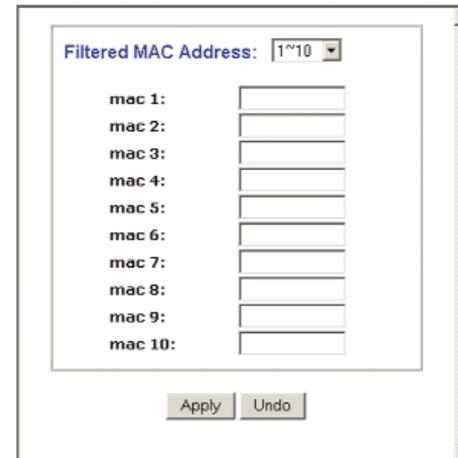


Figure F-6

Click on **Apply** when finished.

When entering information for MAC Address Cloning, type the **12-digit MAC address** (see Figure F-7).



Figure F-7

Click on **Apply** when finished.

## Appendix G: Specifications

Standards Protocol	IEEE 802.3, IEEE 802.3u CSMA/CD
Ports	
LAN:	Four 10/100 RJ-45 Ports
Internet:	One 10/100 RJ-45 Port
Speed (Mbps)	
LAN:	10/100 (Half-Duplex), 20/200 (Full-Duplex)
Internet (WAN):	10/100
Cabling Type	UTP Category 5 or better
LED Indicators	Power
LAN:	Link/Act, 100
Internet:	Internet, Diag

### Environmental

Dimensions	7.0" x 1.5" x 5.5" (176 mm x 38 mm x 140 mm)
Unit Weight	13.6 oz. (0.38 kg)
Power	12V DC, 800 mA
Certifications	FCC Class B, CE Mark, VCCI
Operating Temp.	0°C to 40°C (32°F to 104°F)
Storage Temp.	-20°C to 70°C (-4°F to 158°F)
Operating Humidity	10% to 85%, Non-condensing
Storage Humidity	5% to 90%, Non-condensing

## Appendix H: Warranty Information

BE SURE TO HAVE YOUR PROOF OF PURCHASE AND A BARCODE FROM THE PRODUCT'S PACKAGING ON HAND WHEN CALLING. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE.

IN NO EVENT SHALL NETWORK EVERYWHERE'S LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, ITS ACCOMPANYING SOFTWARE, OR ITS DOCUMENTATION. NETWORK EVERYWHERE DOES NOT OFFER REFUNDS FOR ANY PRODUCT.

NETWORK EVERYWHERE OFFERS CROSS SHIPMENTS, A FASTER PROCESS FOR PROCESSING AND RECEIVING YOUR REPLACEMENT. NETWORK EVERYWHERE PAYS FOR UPS GROUND ONLY. ALL CUSTOMERS LOCATED OUTSIDE OF THE UNITED STATES OF AMERICA AND CANADA SHALL BE HELD RESPONSIBLE FOR SHIPPING AND HANDLING CHARGES. PLEASE CALL NETWORK EVERYWHERE FOR MORE DETAILS.

## Appendix I: Contact Information

For help with the installation or operation of the Cable/DSL 4-Port Router, contact Network Everywhere Technical Support at one of the phone numbers or Internet addresses below.

<b>Technical Support</b>	949-271-5470, M-F, 8:00 am to 5:00 pm (PST)
<b>Fax</b>	949-265-6655
<b>Email</b>	support@NetworkEverywhere.com
<b>Web site</b>	<a href="http://www.NetworkEverywhere.com">http://www.NetworkEverywhere.com</a>



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