WESTELL

DUAL CONNECT NAT ROUTER (MODEL 2200) WITH DMH™ TECHNOLOGY

USER GUIDE

030-300372 Rev. A
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1. PRODUCT DESCRIPTION

The Westell® Dual Connect NAT Router with DMH™ technology adds reliable, high-speed, Internet access to your existing home or office phone line. Your ADSL connection is "always-on" ending the hassles of dial-up modems and busy signals. Installation is easy ... no tools ... no headaches. Simply connect the hardware, apply power, and perform the simple software configuration for your Dual Connect NAT Router.

This Router is capable of data rates hundreds of times faster than a traditional analog modem. But unlike analog modems, Westell's Dual Connect NAT Router allows you to use the same phone line for simultaneous voice/fax communications and high-speed Internet access, eliminating the need for dedicated phone lines for voice and data needs. The Plug and Play feature means that no user configuration is required.

Your Westell modem is equipped with the latest in DSL modem technology. One of the innovative features included within your modem is a technology called Dynamic Multi-Hybrid or DMH™. This technology enables your modem to achieve the fastest possible connection under various loop (telephone wires) conditions.

NOTE: Hereafter the Westell Dual Connect NAT Router will be referred to as "Dual Connect NAT Router" or "Router."

2. SAFETY INSTRUCTIONS

Never install any telephone wiring during a lightning storm.

Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Use caution when installing or modifying telephone lines.

WARNING

Risk of electric shock. Voltages up to 140 Vdc (with reference to ground) may be present on telecommunications circuits.

3. REGULATORY INFORMATION

3.1 FCC Compliance Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the Federal Communication Commission (FCC) Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, 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 can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to a different circuit from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

PART 68 - COMPLIANCE REGISTRATION

This equipment (Model 2200) complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. A label on the bottom of this equipment contains, among other information, the Ringer Equivalence Number (REN), and the product identifier. For products approved after July 23, 2001 the product identifier is in the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g. 03 is a REN of 0.3). The REN is used to determine the number of devices that may be connected to a telephone line. For earlier products, the REN is separately shown on the label. If requested, this number must be provided to the telephone company.

Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most, but no all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

This equipment is designated to connect to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant. An FCC compliant telephone cord and modular plug is provided with the equipment. See the Installation Information section of this User Guide for details.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instruction for details.

If this terminal equipment (Model 2200) causes harm to the telephone network, the telephone company may request you to disconnect the equipment until the problem is resolved. The telephone company will notify you in advance if temporary discontinuance of service is required. If advance notification is not practical, the telephone company will notify you as soon as possible. You will be advised of your right to file a complaint with the FCC if you believe such action is necessary.

If you experience trouble with this equipment (Model 2200), do not try to repair the equipment yourself. The equipment cannot be repaired in the field. Contact Westell for instructions on product return.

The telephone company may make changes to their facilities, equipment, operations, or procedures that could affect the operation of this equipment. If this happens, the telephone company will provide advance notice in order for you to make the modifications necessary to maintain uninterrupted service.

If your home has specially wired alarm equipment connected to the telephone line, ensure that the installation of this equipment (Model 2200) does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

This equipment cannot be used on public coin phone service provided by the telephone company. Connection of this equipment to party line service is subject to state tariffs.

3.2 Canada Certification Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operations and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The department does not guarantee the equipment will operate to the user's satisfaction.

This equipment meets the applicable Industry Canada Terminal Equipment Technical Specification. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specification were met. It does not imply that Industry Canada approved the equipment. The Ringer Equivalence Number (REN) is 0.0. The Ringer Equivalence Number that is assigned to each piece of terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local Telecommunication Company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Connection to a party line service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for information.

If your home has specially wired alarm equipment connected to the telephone line, ensure that the installation of this equipment (Model 2200) does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

If you experience trouble with this equipment (Model 2200), do not try to repair the equipment yourself. The equipment cannot be repaired in the field and must be returned to the manufacturer. Repairs to certified equipment should be coordinated by a representative, and designated by the supplier. Refer to section 12 in this User Guide for further details.

The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

Users should ensure, for their own protection, that the electrical ground connections of the power utility, telephone lines, and internal, metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION

Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

4. SYSTEM REQUIREMENTS

4.1 Minimum System Requirements for 10/100 Base-T/Ethernet Installation

The following system specifications are required for optimum performance of the Dual Connect NAT Router via 10/100 Base-T installation:

- Pentium® or equivalent and above class machines, Macintosh
- Microsoft® Windows® (98, 2000, ME, NT 4.0, or XP) or Macintosh® OS X installed
- Computer Operating System CD-ROM on hand
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- TCP/IP Protocol stack installed
- 10/100 Base-T Network Interface Card (NIC)

4.2 Minimum System Requirements for USB Installation

The following system specifications are required for optimum performance of the Dual Connect NAT Router via USB installation:

- Pentium® or equivalent and above class machines
- Microsoft® Windows® 98, 2000, ME, or XP installed
- Computer Operating System CD-ROM on hand
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- USB Version 1.0 or higher compliant bus
- An available USB Port

5. INSTALLING THE HARDWARE

5.1 Installation Requirements

To install the Dual Connect NAT Router, you will need the following:

- A Network Interface Card (NIC) installed in your PC or
- An available USB port installed on your PC.
- A DSL line (provided by your Service Provider).

STOP! Please wait until you have received notification from your Internet service provider (ISP) that your DSL line has been activated before installing this Router and software.

5.2 Before you begin:

Make sure that your kit contains the following items:

- Westell Dual Connect NAT Router
- Power Supply
- RJ-45 Ethernet cable (straight-through) (yellow)
- USB cable (blue)
- RJ-11 Phone cable

5.3 Microfilters

ADSL signals must be blocked from reaching each telephone, answering machine, fax machine, computer modem or any similar conventional device. Failure to do so may degrade telephone voice quality and ADSL performance. Install a microfilter if you desire to use the DSL-equipped line jack for telephone, answering machine, fax machine or other telephone device connections. Microfilter installation requires no tools or telephone rewiring. Just unplug the telephone device from the baseboard or wall mount and snap in a microfilter, next snap in the telephone device. You can purchase microfilters from your local electronics retailer, or contact the original provider of your DSL equipment.

5.4 Router Installations

This section explains the procedures for installing Westell's Dual Connect NAT Router via 10/100 Base-T/Ethernet or USB connection.

NOTE: Please wait until you have received notification from your Service Provider that your DSL line has been activated before installing your Dual Connect NAT Router.

NOTE: If you are using a Westell Dual Connect NAT Router in conjunction with an Ethernet Hub or Switch, refer to the manufacturer's instructions for proper installation and configuration. **Westell recommends the use of a surge suppressor to protect equipment attached to the AC power supply.**

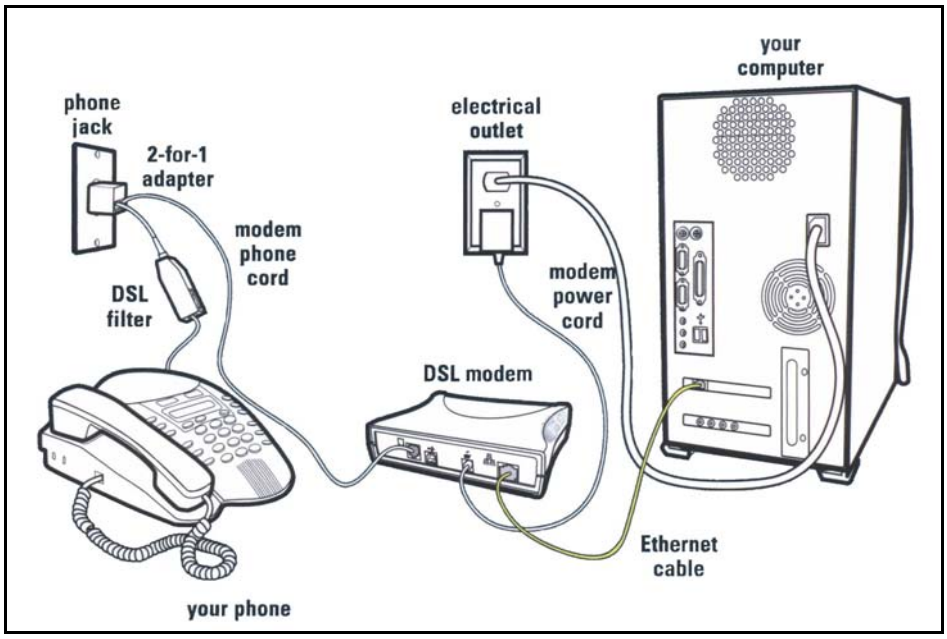
5.4.1 Router Installation via 10/100 Base-T Ethernet

NOTE: Before you connect the Dual Connect NAT Router via 10/100 Base-T, you must have an available Ethernet card installed in your computer. If your Ethernet card does not auto-negotiate, you must set it to half duplex. Refer to the Ethernet card manufacturer's instructions for installing and configuring your Ethernet card. If you do not have an Ethernet card installed in your computer, go to section 5.4.2.

1. Connect the power supply cord to the power connector marked ~ **12V** on the rear panel of the Router. Plug the other end of the power supply into an AC wall socket.
2. Connect the DSL phone cable from the jack marked on the rear panel of the Router to the DSL-equipped telephone line jack on the wall. **IMPORTANT:** Do not use a DSL filter on this connection. You must use the phone cord that was provided with the Router kit.

   NOTE: Your Westell modem is equipped with the latest in DSL modem technology. One of the innovative features included within your modem is a technology called Dynamic Multi-Hybrid or DMH™. This technology enables your modem to achieve the fastest possible connection under various loop (telephone wire) conditions. When the modem is reset, powered-up or connected to the DSL line there may be a "clicking" noise. This "clicking" is part of the DMH technology and will stop once the modem has successfully locked to the DSL signal.
3. Connect the Ethernet cable from the Ethernet jack marked on the rear panel of the Router to the Ethernet port on your computer.

Congratulations! You have completed the Ethernet hardware installation for your Dual Connect NAT Router. No software installation is required when using an Ethernet connection. **You must now proceed to step 7.**



***NOTE: Your modem's rear panel may have additional features. See* Figure 3**

Figure 1. Connection via 10/100 Base-T Ethernet

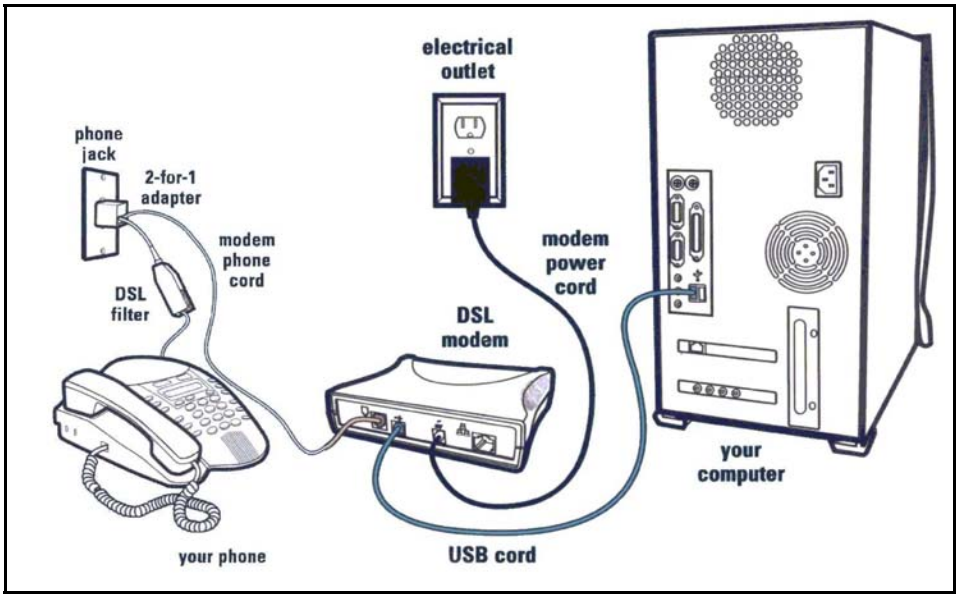
5.4.2 Router Installation via USB

NOTE: The USB installation will not function for Macintosh computers. Macintosh computers must install the Router via Ethernet connection. See section 5.4.1.

1. Connect the power supply cord to the power connector marked ~ 12V on the rear panel of the Router. Plug the other end of the power supply into an AC wall socket.
2. Connect the DSL phone cable from the connector marked on the rear panel of the Router to the DSL-equipped telephone line jack on the wall. **IMPORTANT:** Do not use a DSL filter on this connection**.** You must use the phone cord that was provided with the Router kit.

   NOTE: Your Westell modem is equipped with the latest in DSL modem technology. One of the innovative features included within your modem is a technology called Dynamic Multi-Hybrid or DMH™. This technology enables your modem to achieve the fastest possible connection under various loop (telephone wire) conditions. When the modem is reset, powered-up or connected to the DSL line there may be a "clicking" noise. This "clicking" is part of the DMH technology and will stop once the modem has successfully locked to the DSL signal.
3. Connect the USB cable from the USB connector marked on the rear panel of the Router to the USB port on the PC.

Congratulations! You have completed the USB hardware installation for your Dual Connect NAT Router. **You must now go to Section 6 to begin the USB driver software installation.**



***NOTE: Your modem's rear panel may have additional features. See* Figure 3**

Figure 2. Connection via USB

5.5 LED Indicators

The LED indicators are used to verify the unit's operation and status. LED states are described in Table 1.

Table 1. LED States and Descriptions

LED	State	Description
POWER	**Solid Green**	Power ON
	No Light	No Power
READY	**Slow Flashing Green**	Power ON and waiting for carrier detect signal (1 flash/sec)
	Moderate Flashing Green	Power ON and attempting synchronization (2 flashes/sec)
	Solid Green	Power ON and synchronized with ADSL line card
	Steady Red (less than 20 sec.)	Hardware power-up in process
	Flashing Yellow	Modem failed self-diagnostics
	Solid Yellow	Modem is in safe boot mode
	No Light	No Power
ETHERNET	**Solid Green**	Ethernet link established
	Flashing Green	Transmit or Receive Activity
	No Light	No link established
USB	**Solid Green**	USB link established
	Flashing Green	Transmit or Receive Activity
	No Light	No USB link established

5.6 Cable Connectors and Switch Locations

The following items are located on the rear panel of the Router. See Figure 3. Tables 2 through 5 list the connector types and pinout designations.

- DSL Connector (RJ-11)
- USB Connector
- ON/OFF Switch
- Power Connector
- Reset Button
- Ethernet Connector (RJ-45)

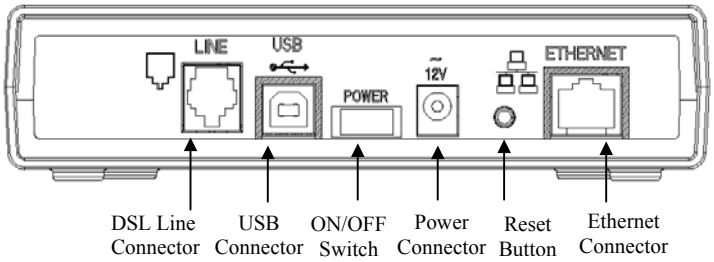


Figure 3. Dual Connect NAT Router Rear Panel (Model x99-220040-00)

Table 2. Connector Descriptions

SYMBOL	NAME	TYPE	FUNCTION
	LINE	6-pin RJ-11 modular jack	Connects to an ADSL-equipped telephone jack or DSL connection of a POTS splitter.
	USB	4-pin USB Series B connector	Connects the USB device to the PC.
~ 12V	POWER	Barrel connector	Power source.
	ETHERNET	8-pin (RJ-45) modular jack	Connects the Ethernet device to the PC.

Table 3. DSL Pinouts

Pinout	Description
1, 2, 5, 6	Not Used
3	DSL Tip
4	DSL Ring

Table 4. USB Series B Connector Pinouts

Pin	Name	Description	Cable Color
1	VBUS/Vcc	5 Vdc	Red
2	D –	Data –	White
3	D +	Data +	Green
4	GND	Ground	Black

Table 5. Ethernet Pinouts

Pinout	Description
1	Rx+
2	Rx-
3	Tx+
4,5,7,8	Not Used
6	Tx-

6. INSTALLING THE USB DRIVERS

This section explains how to install the USB modem drivers for the Dual Connect NAT Router. If you are using only Ethernet ports, USB driver installation is not necessary. The Microsoft® Plug and Play auto-detect feature recognizes when new hardware has been installed. After you connect the Router to the PC, the Router will automatically be detected.

6.1 CD-ROM Installation:

1. Place the CD-ROM that you received in the Router kit into the CD-ROM drive of the PC that is connected to the USB port.
2. Go to the USB driver installation section that matches your operating system and follow the procedures outlined in that section.
3. Verify the connection to the computer by observing the state of the USB LED. Once the USB drivers have been installed, the USB LED should be solid green. Solid green indicates a USB connection has been established. Refer to Table 1 (LED States and Descriptions).

Before you begin the USB driver software installation, determine which operating system is installed on your PC. Then, follow the instructions that match your operating system (e.g., Microsoft Windows 98-refer to the instructions in section 6.2). Next, begin the USB driver software installation. When the installation has completed, proceed to section 7. Table 6 provides a quick reference to the USB software driver instructions.

Table 6. USB Driver Software Installation

Your Operating System	Refer to this section for USB driver instructions
Windows 98 or 98 SE	6.2
Windows ME	6.3
Windows 2000	6.4
Windows XP	6.5

6.2 Installing the USB Drivers for Windows 98

IMPORTANT: Confirm that the Westell USB Driver CD-ROM is inserted in the appropriate drive before continuing this installation.

1. After you have connected the Westell Dual Connect Modem to your PC, the **Found New Hardware** window appears (Figure 4). In a few moments, the Add **New Hardware Wizard** window will open (Figure 5). Click **Next**.

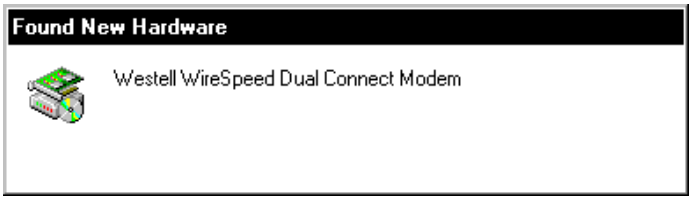


Figure 4. Windows 98

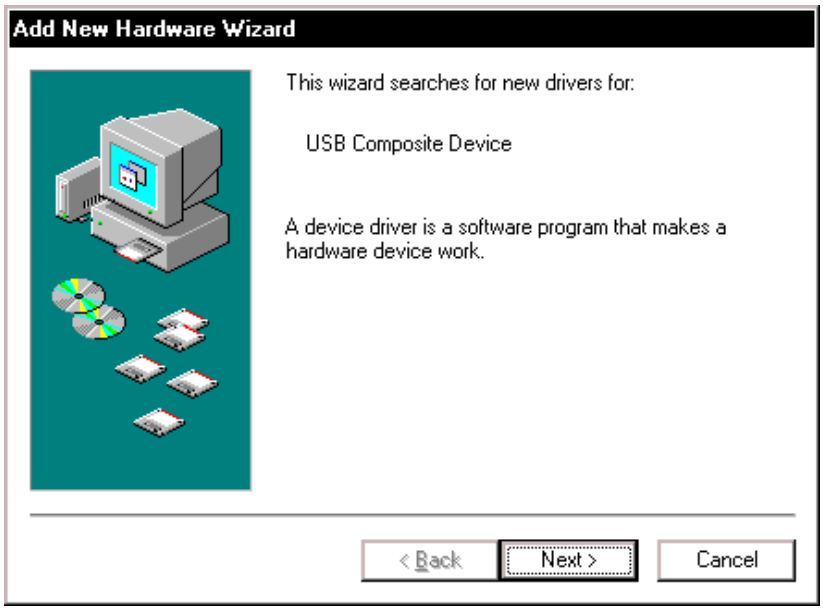


Figure 5. Add New Hardware

2. **Windows 98:** Click the option button for **Search for the best driver for your device. (Recommended)**. See Figure 6. Click **Next**.

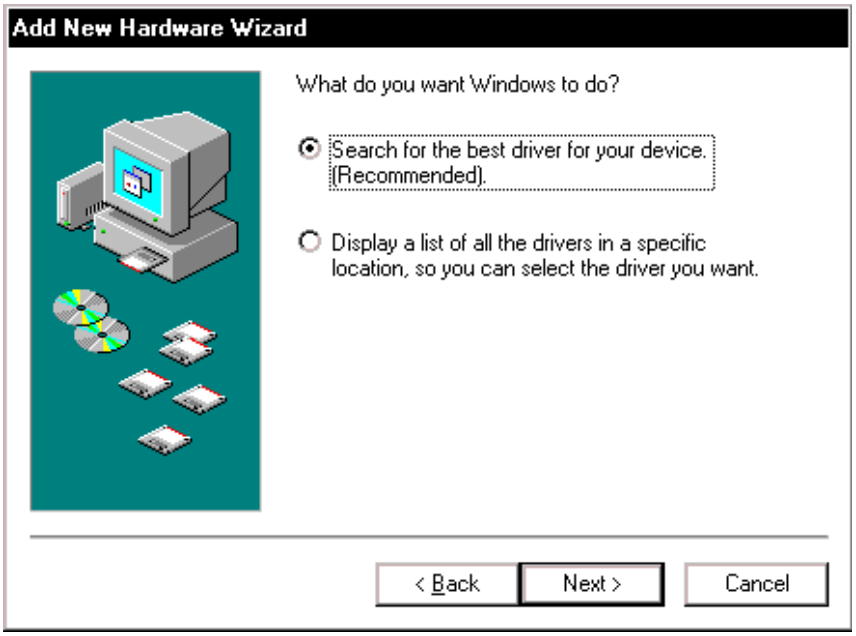


Figure 6. Windows 98

3. **Windows 98:** Select **CD-ROM drive** option. See Figure 7. Click **Next**. Windows will search for the driver.

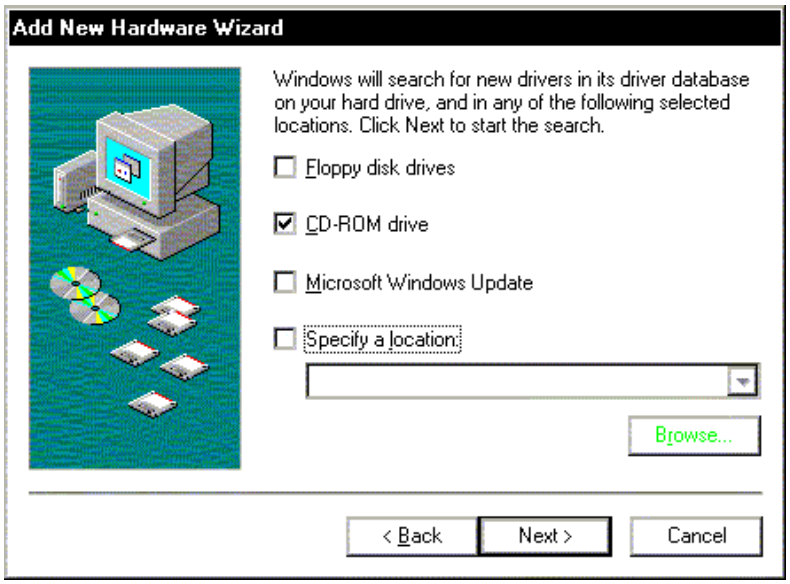


Figure 7. Windows 98

4. **Windows 98:** Select option button **The updated driver (Recommended) Westell Dual Connect Modem.** See Figure 8. Click **Next**.

Note: If Figure 8 does not appear at this step, and Figure 9 appears with the text 'USB Composite device', 'C:\Windows\Inf\USB.Inf', do not continue. Click **Back** to Step 3 and specify the location of the Westell CD-ROM.

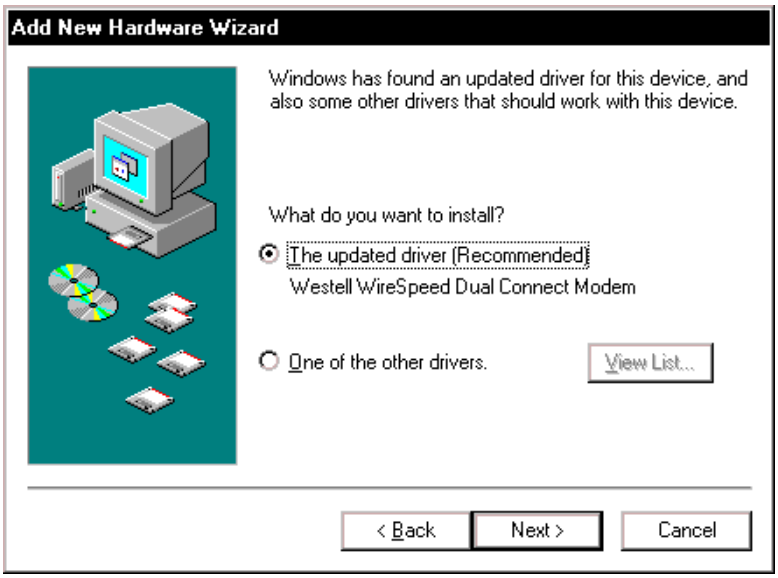


Figure 8. Windows 98

5. **Windows 98:** Windows will display the location of the driver. See Figure 9. Click **Next**.
   Note: The drive "letter" may vary.

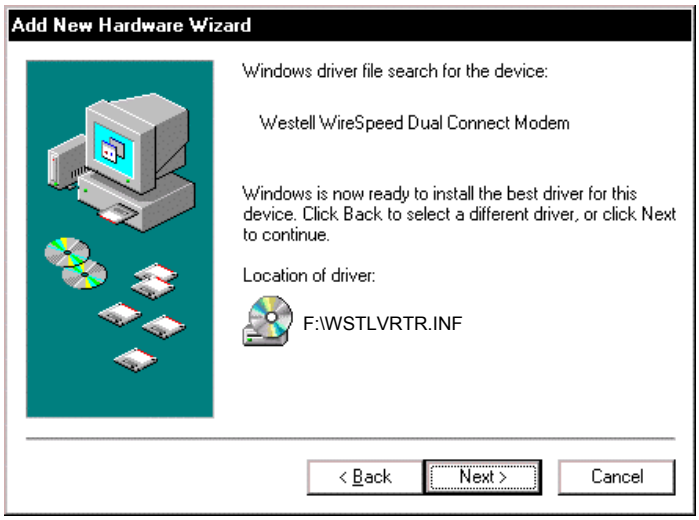


Figure 9. Windows 98

6. **Windows 98**: Remove the Westell CD from the CD-ROM Drive. Next, insert the Windows operating system CD into the CD-ROM Drive. See Figure 10. Click **OK**.

Figure 10. Windows 98

7. **Windows 98**: The system will begin copying files (Figure 11).

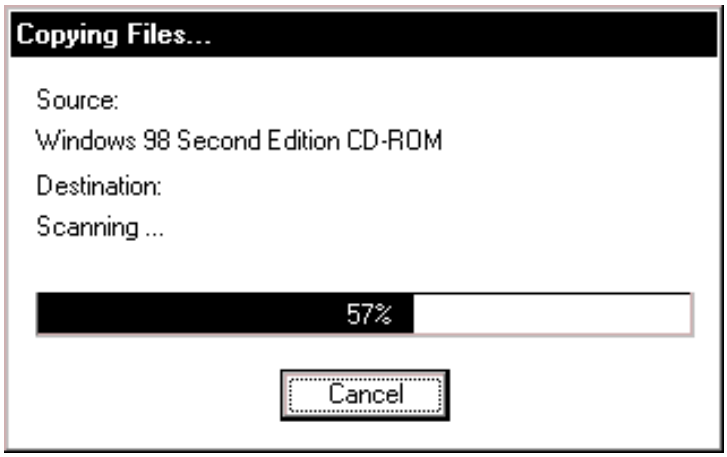


Figure 11. Windows 98

8. **Windows 98**: Figure 12 may pop up, depending on how Windows 98 was installed on the computer. The installation of the Westell modem requires files that are supplied by Microsoft for Windows 98. If Figure 13 pops up, insert the Windows 98 Operating System CD into the computers CD-ROM drive, wait a moment for the CD to be recognized by the system, and then click on **OK**. The system should find the required files on the Windows 98 CD and automatically complete the installation.

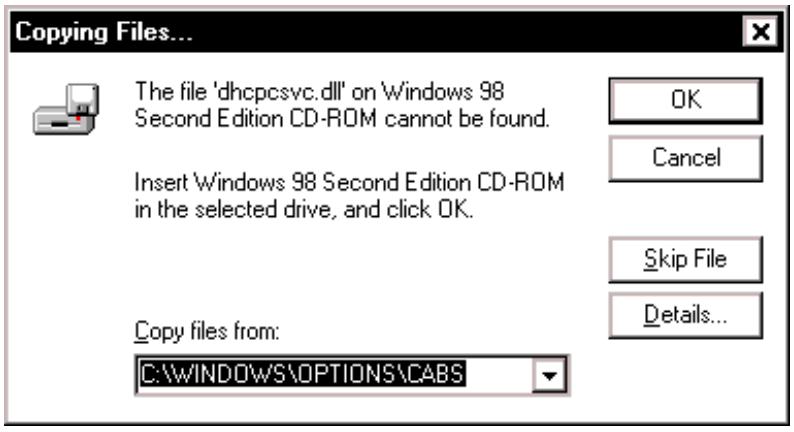


Figure 12. Windows 98

If the Operating System CD is not available, or if Figure 12 pops up again, you will have to manually specify the location of the files. The required files may be stored on your hard drive. A common location for these files is "C:\Windows\Options\Cabs." Try specifying this path or the path to your CD-ROM drive (usually "D:\") by clicking the **Browse…** button in the **Insert Disk** screen. When you have specified the correct path, click on **OK**. The system will begin copying the files. See Figure 14.

NOTE: It is very important that the Windows 98 files be installed. Do not click on **Cancel** or **Skip File** in the dialogs, doing so will result in an improper installation and the modem will not function correctly.

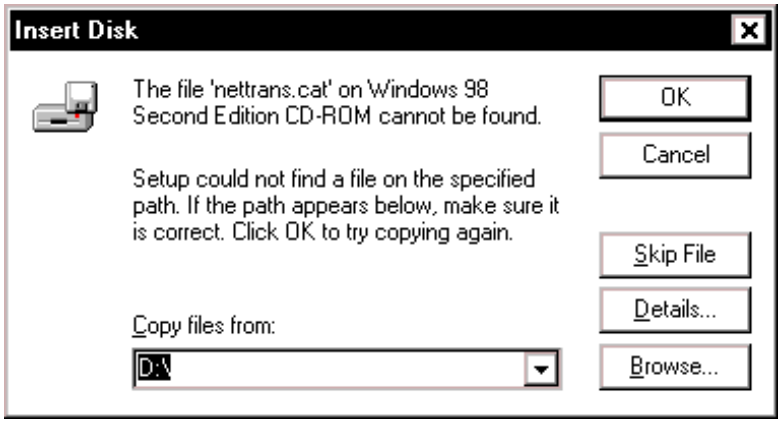


Figure 13. Windows 98

9. **Windows 98**: The window below confirms that the PC has finished loading the drivers (Figure 14). Click **Finish**.

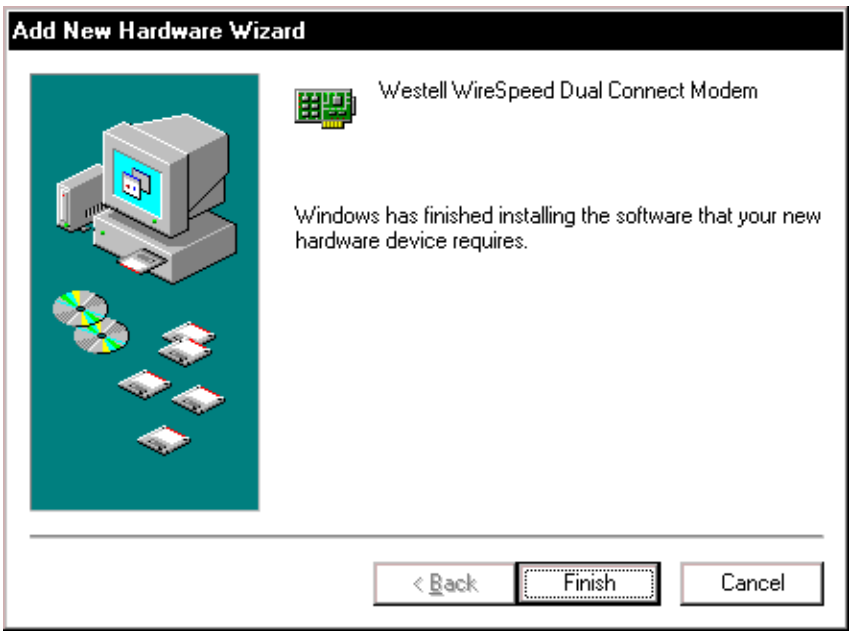


Figure 14. Windows 98

10. **Windows 98**: Click **Yes** to restart your computer. See Figure 15.

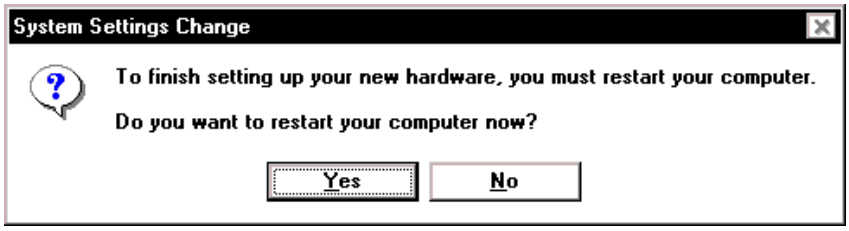


Figure 15. Windows 98

Congratulations! You have completed the software installation for the USB drivers. After the computer has restarted, the Router is ready for use. You must now go to section 7.

6.3 Installing the USB Drivers for Windows ME

1. **Windows ME:** After you have connected the Dual Connect Modem to your PC, the Found New Hardware window appears (Figure 16). In a few moments, the Add New Hardware Wizard window appears (Figure 17). Click the option button for Automatic search for a better driver (Recommended). Click **Next.**

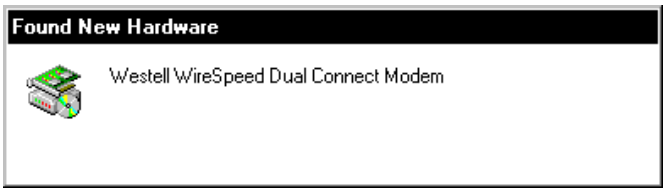


Figure 16. Windows ME

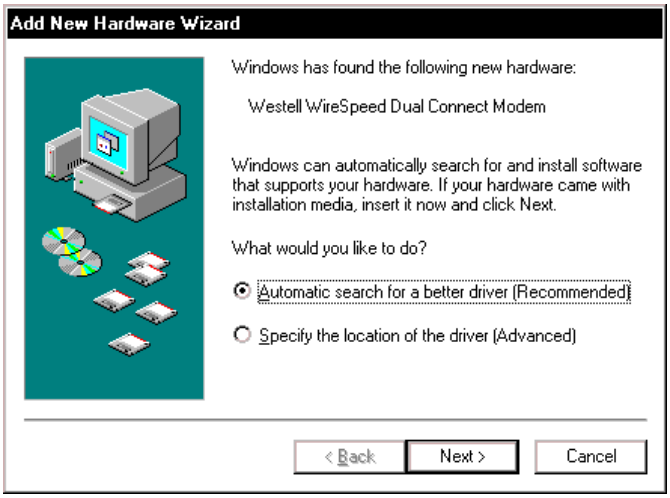


Figure 17. Windows ME

2. **Windows ME**: Windows will display the location of the driver. See Figure 18.

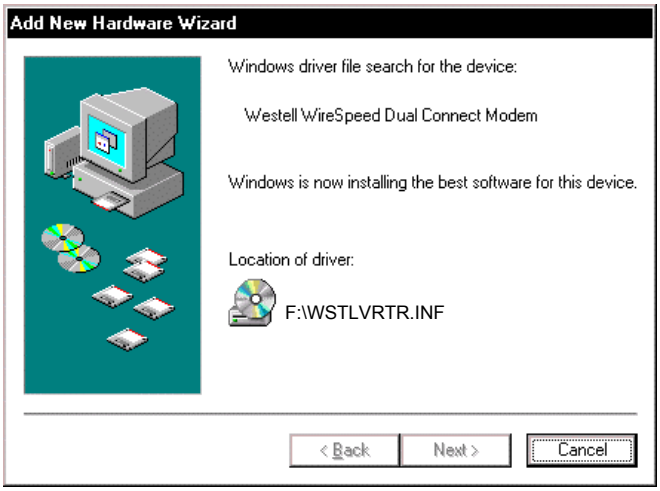


Figure 18. Location of Hardware Device Driver

3. **Windows ME**: The window below confirms that the PC has finished loading the drivers. See Figure 19. Click **Finish.**

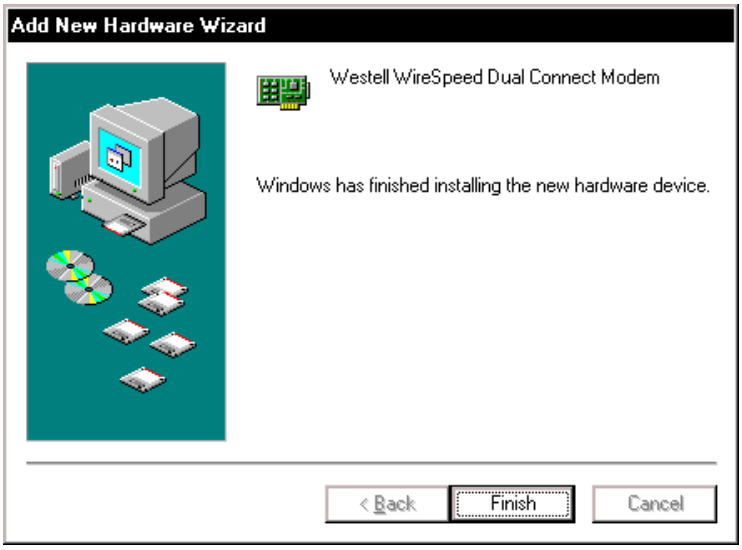


Figure 19. Found New Hardware

4. **Windows ME**: When the **System Settings Change** screen appears, the USB drivers are installed properly. See Figure 20. Click **Yes.**

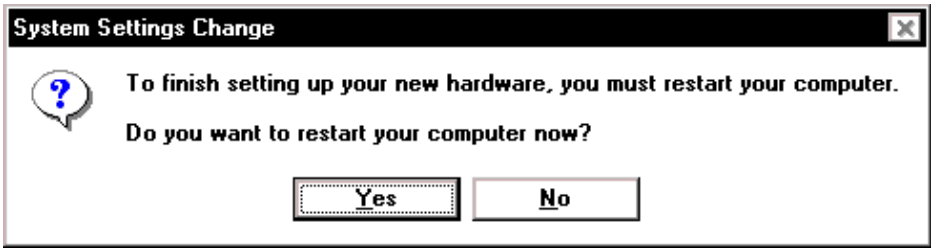


Figure 20. Restart the Computer

Congratulations! You have completed the software installation for the USB drivers. After the computer has restarted, the Router is ready for use. You must now go to section 7.

6.4 Installing the USB Driver for Windows 2000

1. **Windows 2000:** After you have connected the Westell Dual Connect Modem to your PC, the **Found New Hardware** window appears (Figure 21). In a few moments, the **Found New Hardware Wizard** window appears (Figure 22). Click **Next**.

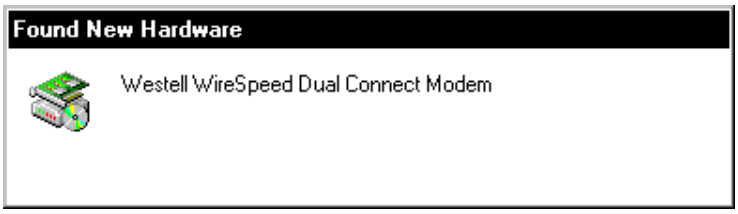


Figure 21. Found New Hardware

Figure 22. Welcome to Install Device Driver

2. **Windows 2000:** The **Install Hardware Device Drivers** window appears. Select **Search for a suitable driver for my device (recommended)** See Figure 23. Click **Next**.

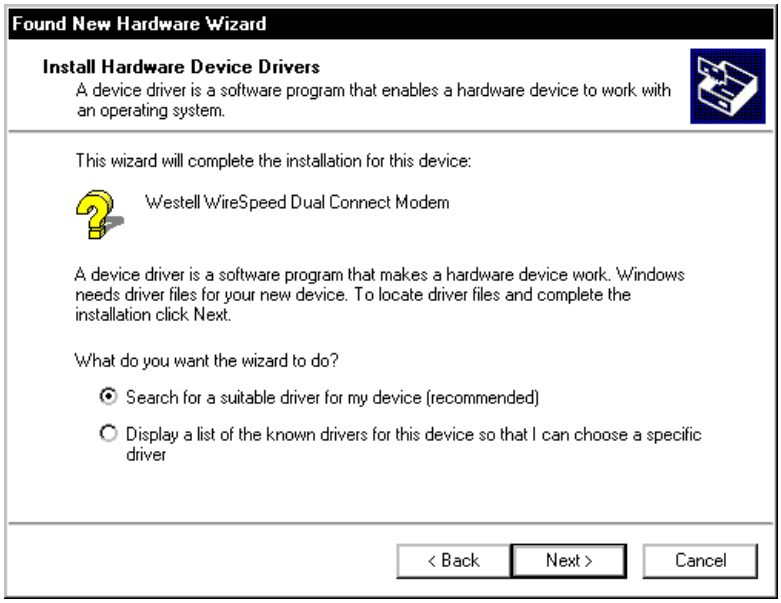


Figure 23. Search for Device Driver

3. **Windows 2000:** The **Driver Files Search Results** window appears. Select the **CD-ROM drives** option See Figure 24). Click **Next**.

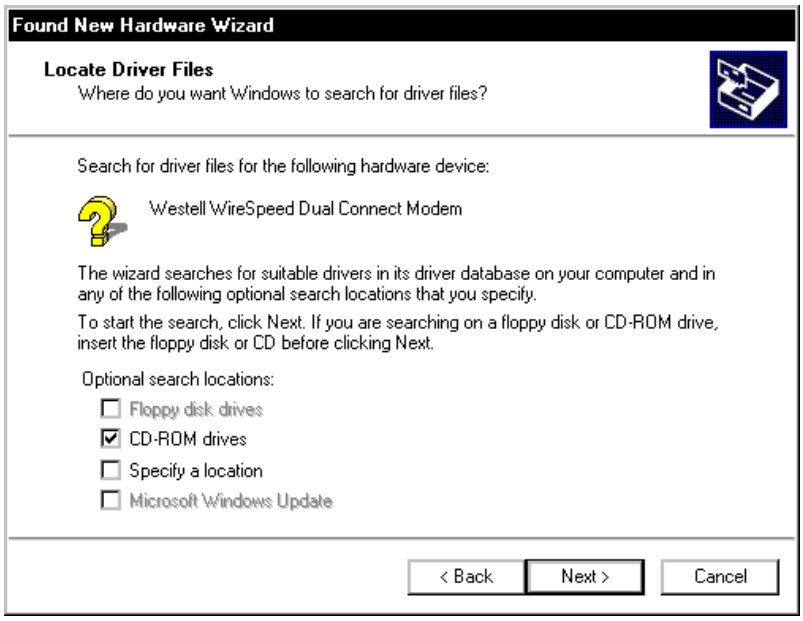


Figure 24. Locate Driver Files

4. **Windows 2000:** The **Driver Files Search Results** window appears (Figure 25). Click **Next**.
   Note: The drive "letter" may vary.

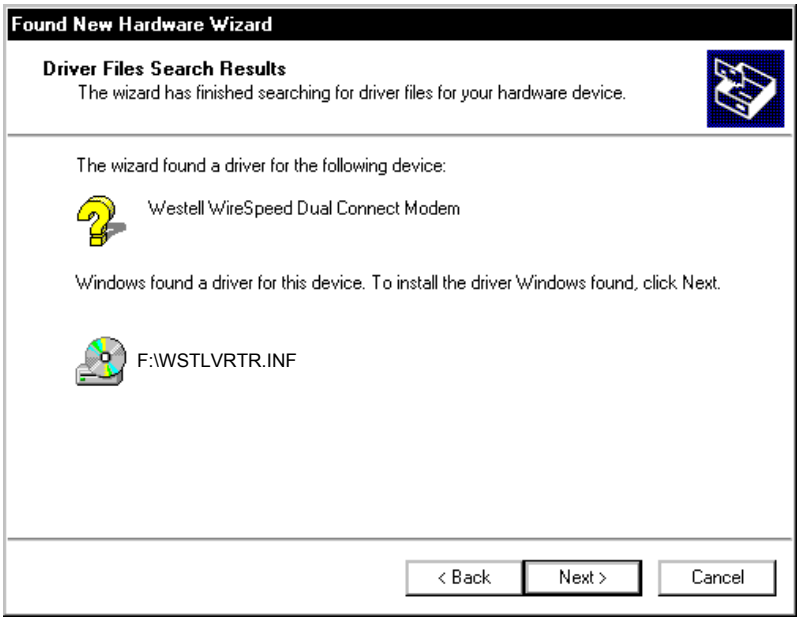


Figure 25. Driver Files Search Results

5. **Windows 2000:** The window below confirms that the PC has finished loading the drivers (Figure 26). Click **Finish**.

Figure 26. Drivers Loaded

6. **Windows 2000**: When the **System Settings Change** screen appears, the USB drivers are installed properly. See Figure 27. Click **Yes.**

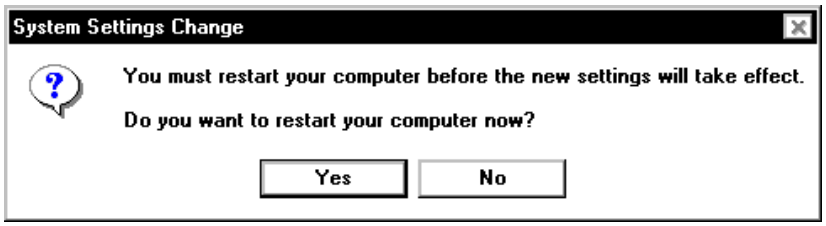


Figure 27. Restart Your Computer

Congratulations! You have completed the software installation for the USB drivers. After the computer has restarted, the Router is ready for use. You must now go to section 7.

6.5 Installing the USB Driver for Windows XP

1. **Windows XP:** After you have connected the Westell Dual Connect Modem to your PC, the **Found New Hardware Wizard** window will open. See Figure 28. Select option button **Install the software automatically (Recommended)**. Click **Next**.

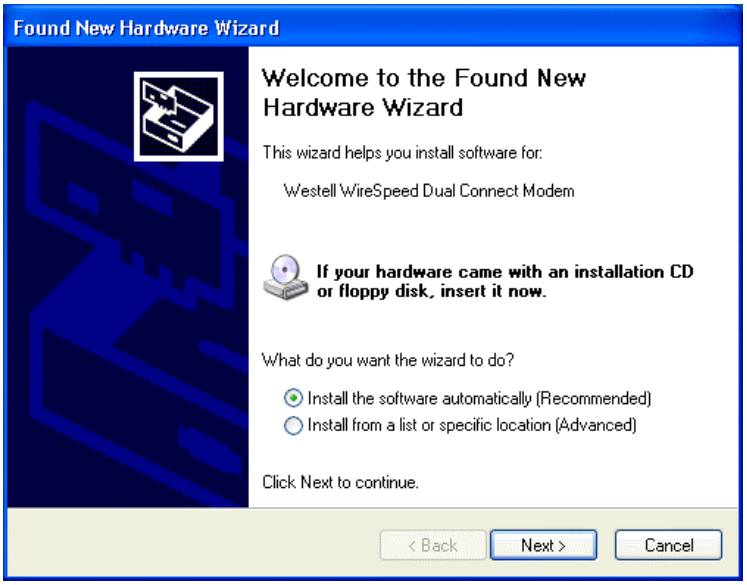


Figure 28. Windows XP

2. **Windows XP**: The window below confirms that the PC has finished loading the drivers (Figure 29). Click **Finish**.

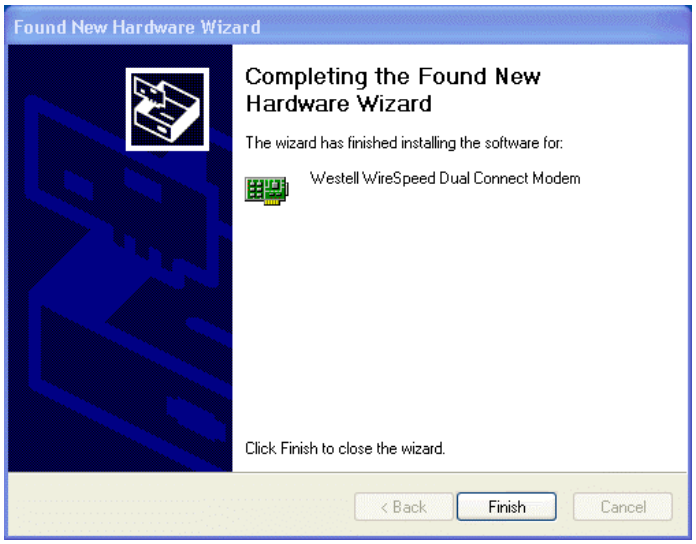


Figure 29. Windows XP

Congratulations! You have completed the software installation for the USB drivers. After the computer has restarted, the Router is ready for use. You must now go to section 7.

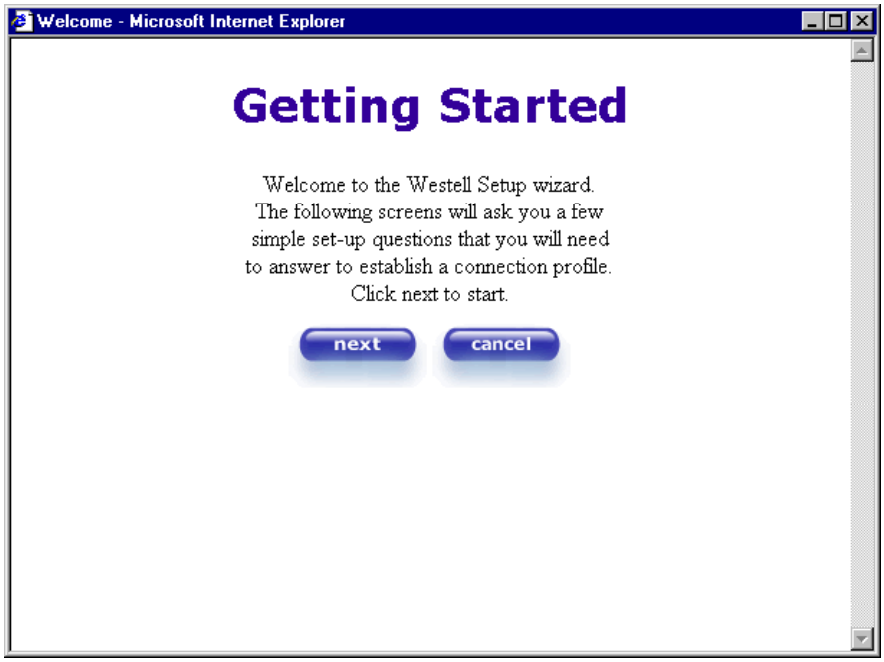
7. CONFIGURING THE ROUTER FOR INTERNET CONNECTION

To surf the Internet using your Westell Dual Connect NAT Router, you must set up your account profile, confirm your DSL sync, and establish a DHCP/PPP session with your Internet service provider (ISP). Refer to the Internet service provider's installation manual to install the software required for your Internet connection. After you have connected to the Internet, you may use the Router's Network Address Translation (NAT) feature to configure your Router for a specific NAT service, discussed later in this section.

NOTE: When viewing the screens, please note that the actual information displayed may vary.

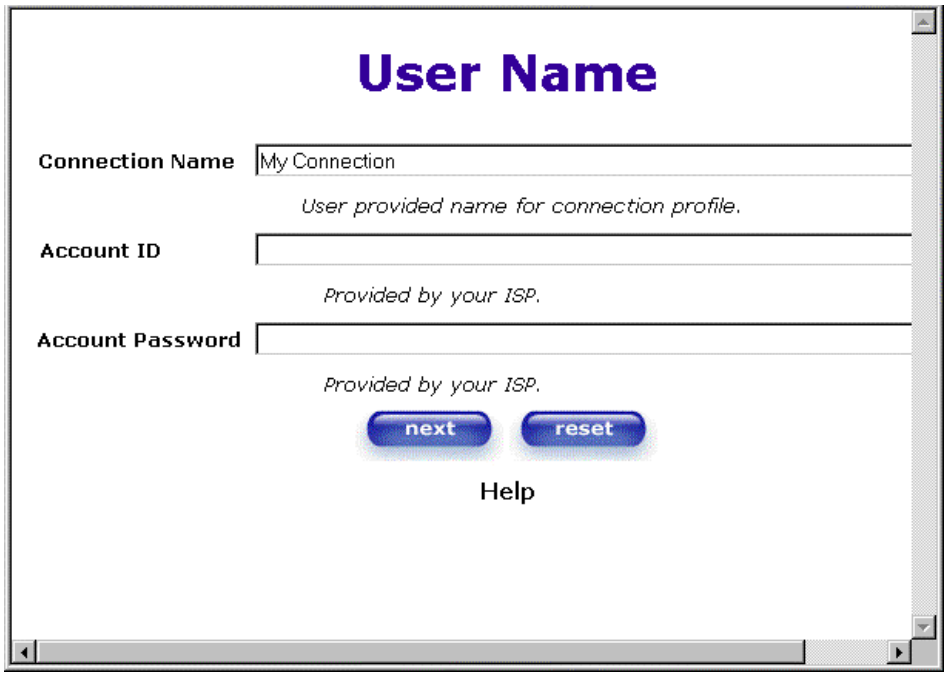
7.1 Setting Up an Account Profile

At the **Getting Started** screen, click on **next.**



If you clicked on **next,** the following screen will be displayed. This screen will allow you to set up your account profile.

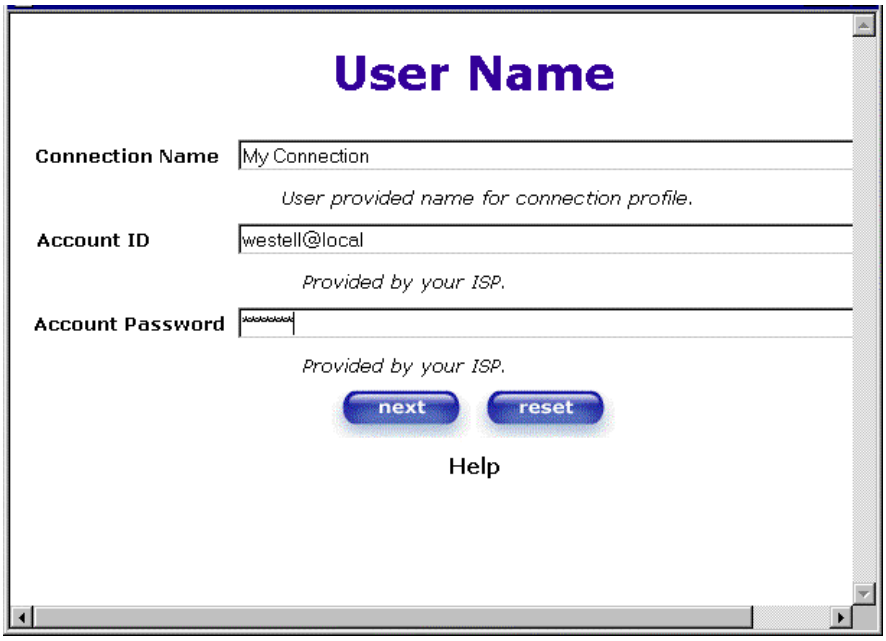
NOTE: Before you set up your account profile, you must obtain your **Account ID**, **Account Password,** and **VPI/VCI** values from your Internet service provider. You will use this information when you set up your account parameters. If you are at a screen and need help, click on the **Help** button to learn more about the screen.



Type in your account parameters. (Account parameters are required before connecting to the Internet.)
Account Parameters include:

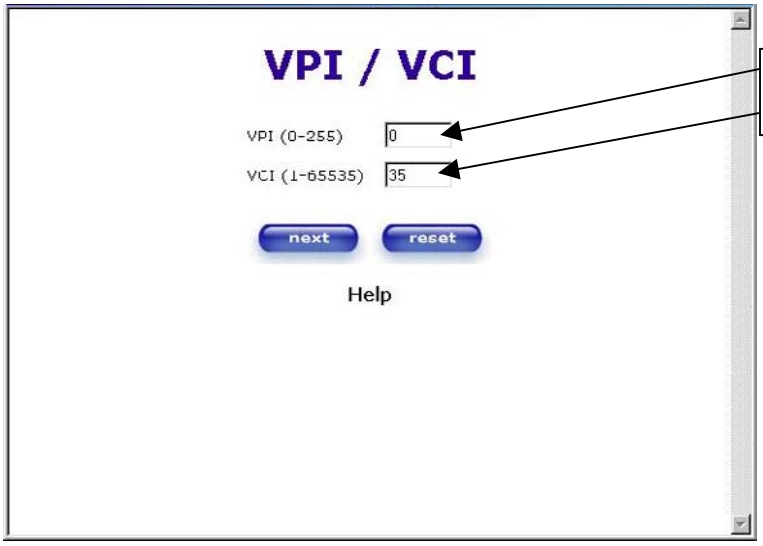
- **Connection Name**-the Connection Name is a word or phrase that you use to identify your account. (You may enter up 64 characters in this field.)
- **Account ID**-the Account ID is provided by your Internet Service Provider. (You may enter up 255 characters in this field.)
- **Account Password-**the Account Password is provided by your Internet Service Provider. (You may enter up 255 characters in this field.)

When you enter your account parameters at the **User Name** screen, they will be displayed as shown in the screen below. Click **next** if you want your account parameters to take effect. Click on **reset** if you do not want the account parameters that you entered to take effect or if you want to re-enter the parameters.



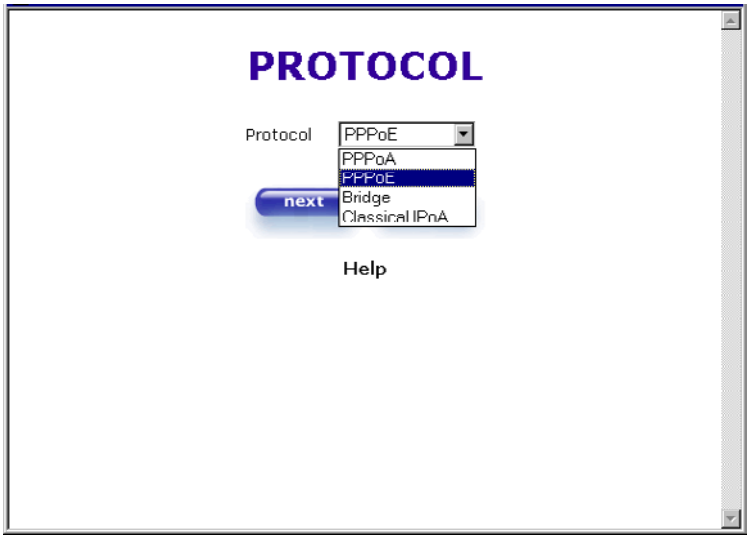
Enter the VPI and VCI values (**0** for VPI and **35** for VCI) you obtained from your Internet service provider. Click on **next**.

NOTE: Depending on your Internet Service Provider, the **VPI/VCI** screen may come pre-configured and it will be displayed here. In this case, you should not change any values in this screen. Click on **next** to go to the **PROTOCOL** screen.

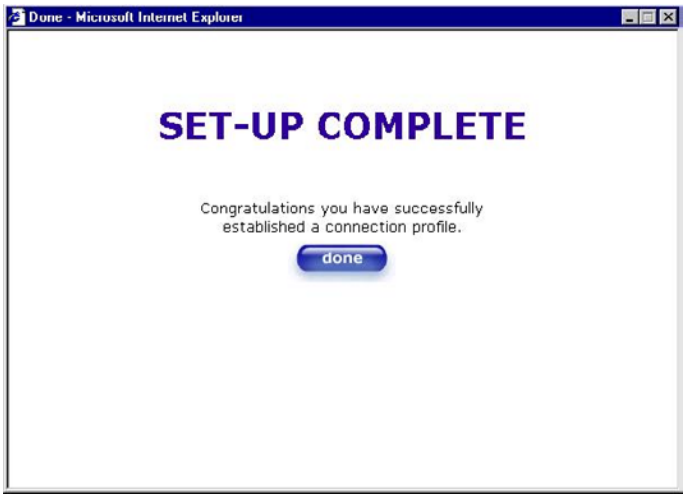


Select the Protocol type that you obtained from your Internet Service Provider. Click on **next**.

NOTE: Depending on your Internet Service Provider, the **PROTOCOL** screen may come pre-configured and it will be displayed here. In this case, you will need to click on **next** to go to the **SET-UP COMPLETE** screen.

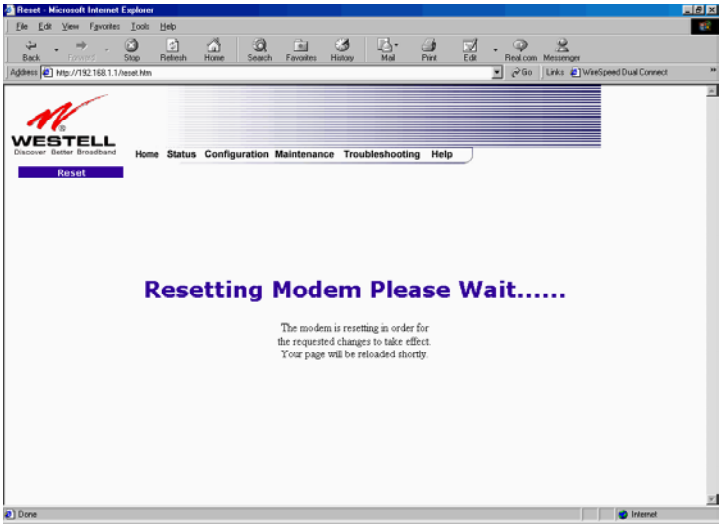


When the **SET-UP COMPLETE** screen appears, you have successfully completed your Account Profile setup. Click on **done**.



If you clicked on **done**, the following pop-up screen will be displayed. Click on **OK.** This will allow the modem to be reset and the new configuration will take effect.

If you clicked on **OK** in the preceding screen, the following screen will be displayed. This screen shows that the Router is being reset.

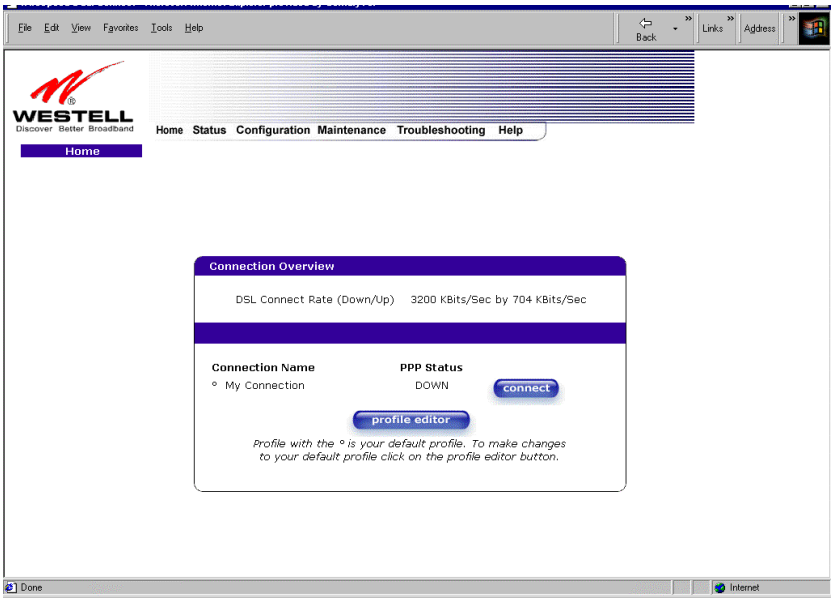


7.2 Establishing a PPP Session

View the **Connection Rate** at the **Connection Overview** section in the following Home page. If this status reads **No DSL Connection**, check the DSL physical connection, explained in section 5 (INSTALLING THE HARDWARE).

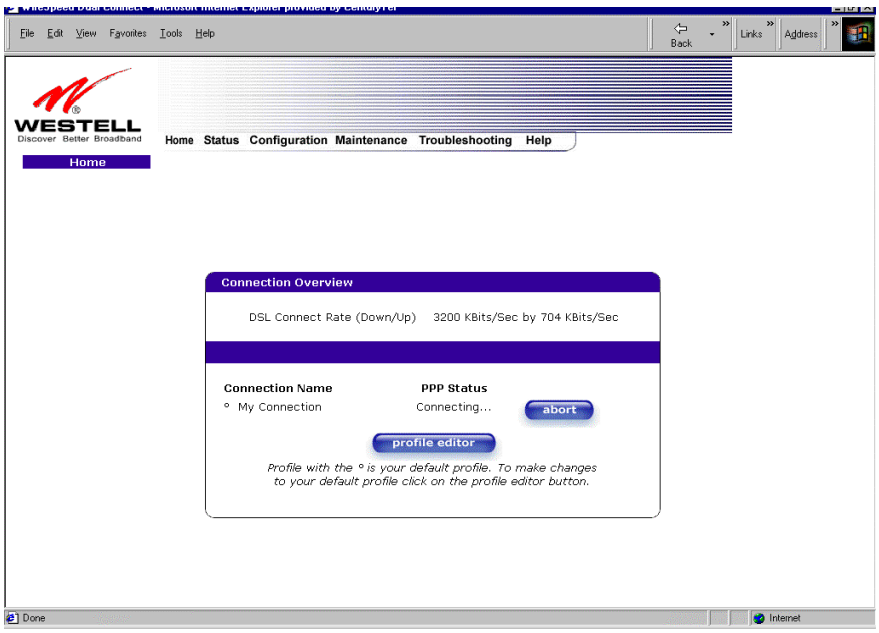
NOTE: If no DSL sync is established, the connect button will not be displayed. To determine if the DSL sync is established, check the Router's DSL LED. If the DSL LED is not solid green, you do not have a DSL link established. Contact your ISP for details.

The screen below shows the connection rate with values that indicate a successful SYNC has been established. The connection rate values represent the transmission speed of your DSL line. (The Router may take time to report the values.) Click on the **Connect** button to establish a PPP session.

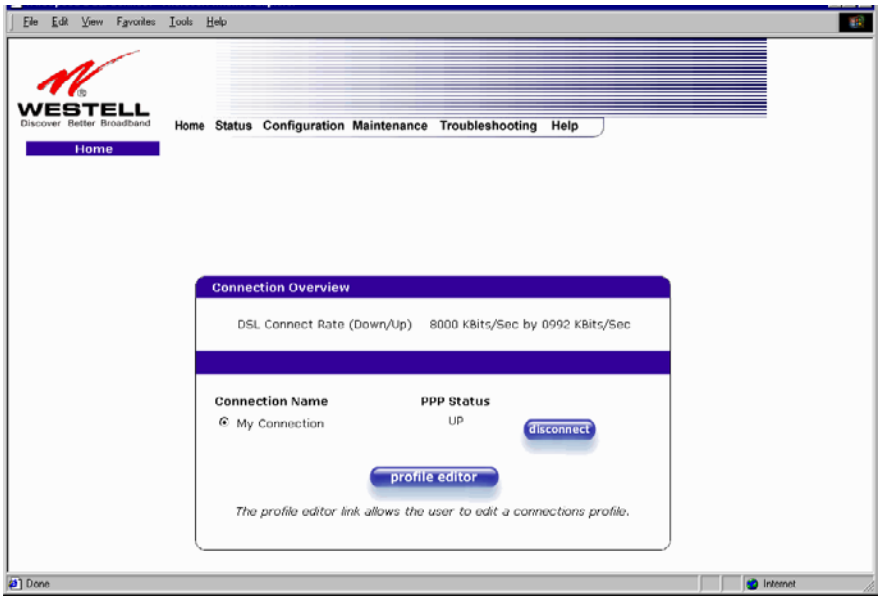


If you clicked on **connect**, the following screen will appear briefly. The **PPP Status** in the **Connection Overview** screen allows you to view the state of your ISP connection. When the **PPP Status** displays **Connecting…**, this means that you are establishing a PPP session.

NOTE: The Router will handle transmission rates up to 8 Mbps. Your actual DSL rates may vary depending on your Internet service provider.



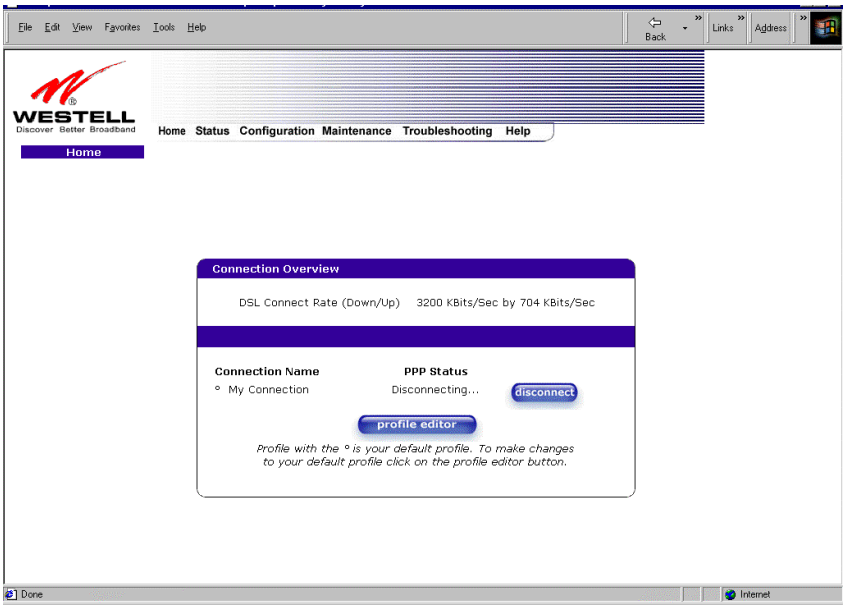
Once a PPP session has been established, the **PPP Status** will display **UP**. Congratulations! You may now surf the Internet.



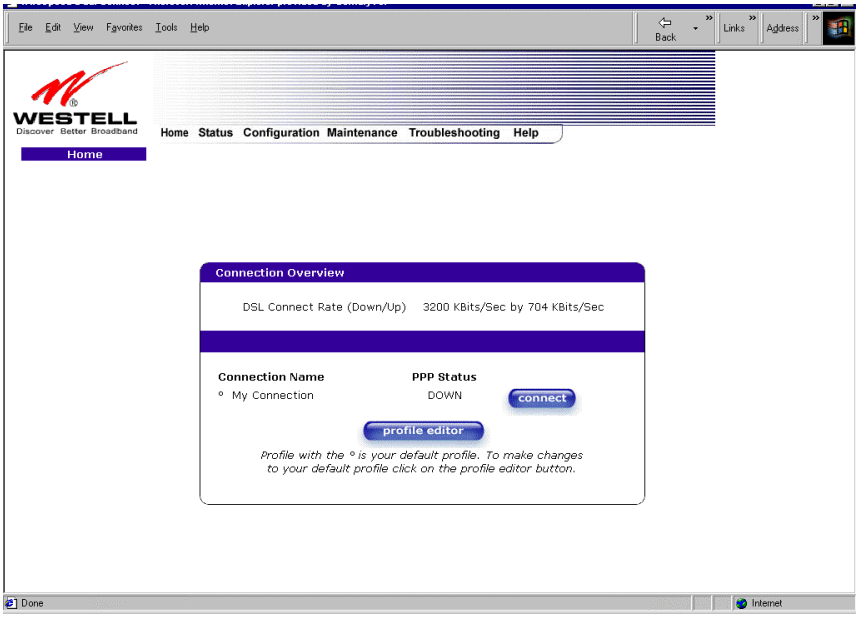
7.3 Disconnecting a PPP Session

If you are ready to disconnect from your Internet service provider, click on the **Disconnect** button in the **Connection Overview** screen (the preceding screen). The following pop-up screen will appear. Click on **OK** to disconnect the PPP session.

The screen below will appear briefly. When the **PPP Status** displays **Disconnecting…**, this means that you are disconnecting from your PPP session.



If you clicked the **Disconnect** button in the preceding **Connection Overview** screen, the **PPP Status** should display **DOWN**. This means that you no longer have an ISP connection. In this event, your Router will maintain its DSL connection. If you want to remove the DSL connection, power down the Router via the power switch on the rear of the Router.

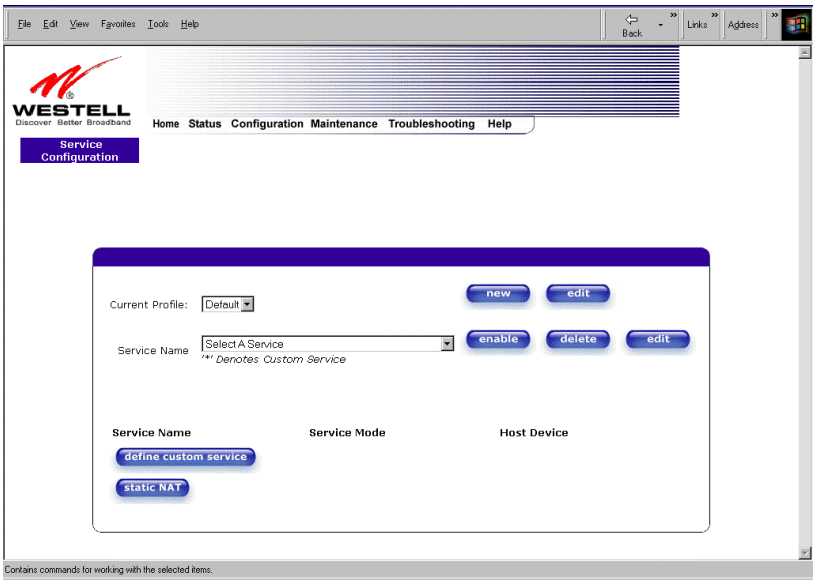


To re-establish your PPP session, click on **connect**. (If you powered down the Router, you will need to logon first.)

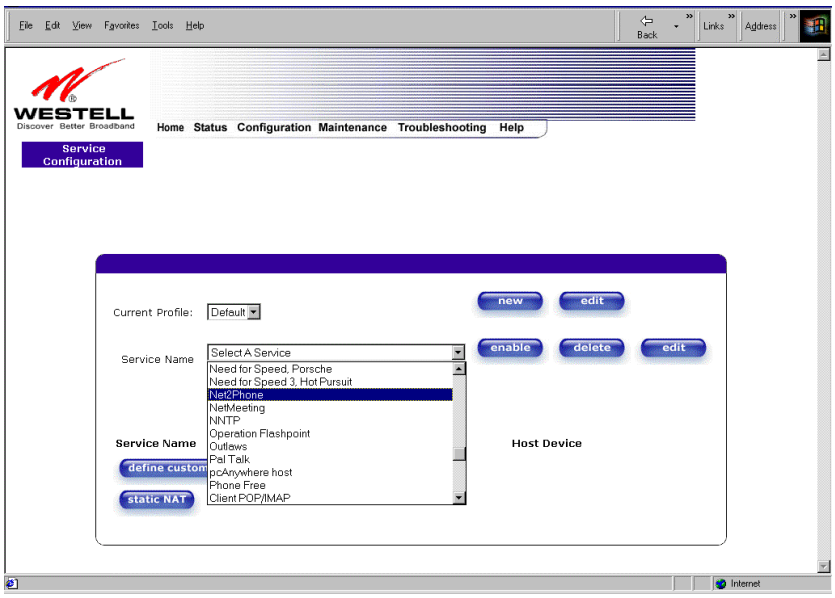
7.4 Service Configuration

To use an application that utilizes the NAT (Network Address Translation) protocol, you will have to configure your Router's NAT settings. Select **Service Configuration** from the **Configuration** menu.

Westell has developed an extensive list of NAT services, and you may select any service from this list. By selecting your specific NAT service and setting up a NAT service profile, you will ensure that the appropriate ports on your Router are open and that the required application traffic can pass through your LAN. For a list of supported NAT services, go to section 16 (NAT Services).

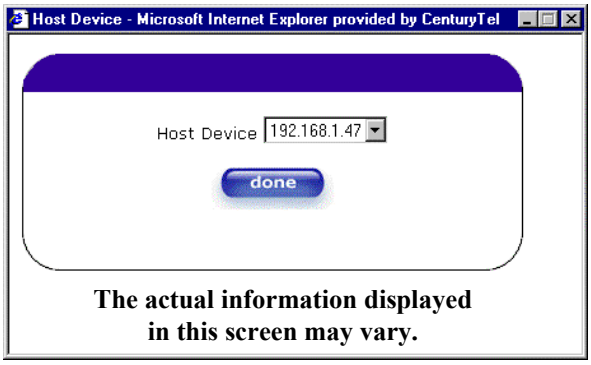


This screen allows you to attach a predefined NAT service to your default profile. Once you have selected a NAT service from the **Service Name** pull-down arrow, click on **enable.**



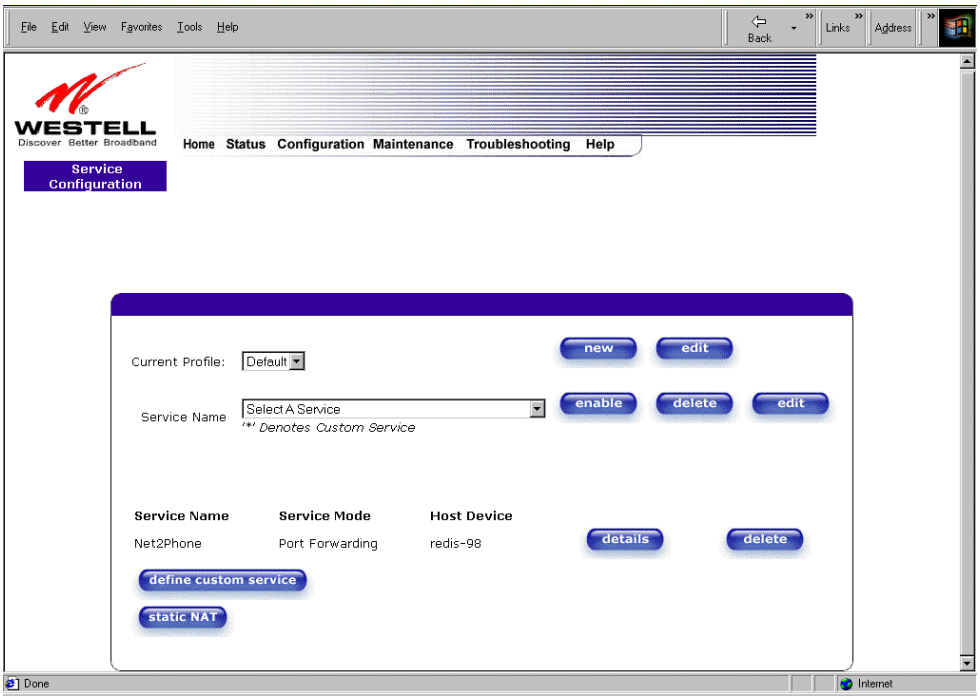
If you clicked on **enable**, the following **Host Service** screen will be displayed. Click on **OK.** This will load the new NAT Configuration and the settings will be saved automatically.

If you clicked on **OK** in the **Host Service?** screen, the **Host Device** screen will be displayed. The **Host Device** screen will allow you to select which device will host the NAT service you selected on your local area network. Select a device from the **Host Device** pull-down arrow and click on **done.**



NOTE: You can attach multiple NAT services to your profile. However, for each NAT service that you attach, you must first select the new NAT service. Next, you must load the new NAT Configuration, as explained in section 7.

If you want to view the details of the service you selected, click on **details**. If you want to delete the NAT service that is attached to your profile, click on **delete**.

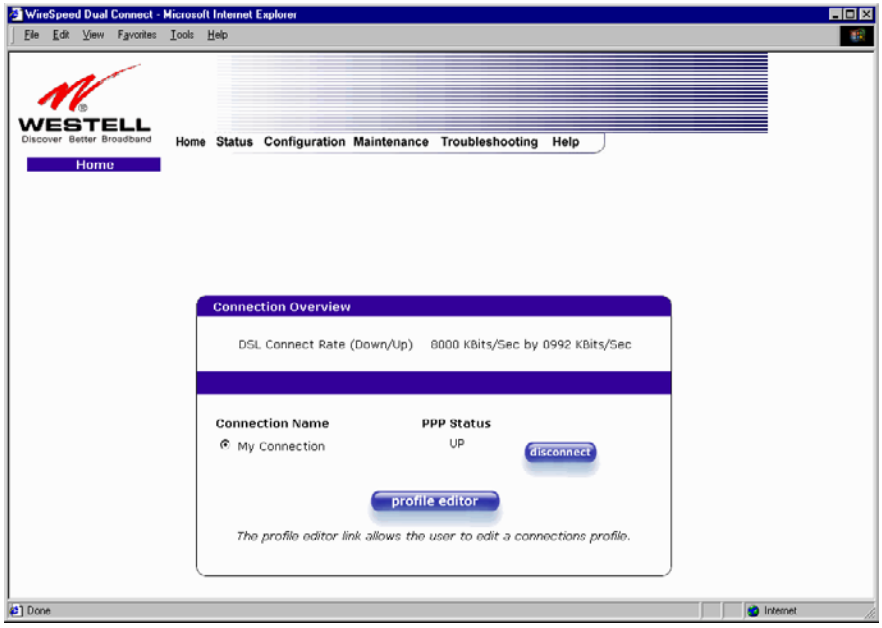


If you select **details**, the screen below will be displayed. It contains the service name, type, protocol, and port information for the NAT service you selected. Click on **close** to continue.

7.5 Exiting the Dual Connect NAT Router

When you are ready to exit this interface, click on **X** (close) in the upper right-hand corner of the homepage window.

NOTE: Closing this window will not affect your PPP Status (your PPP session will not be disconnected). You must click on the disconnect button to disconnect your PPP session.



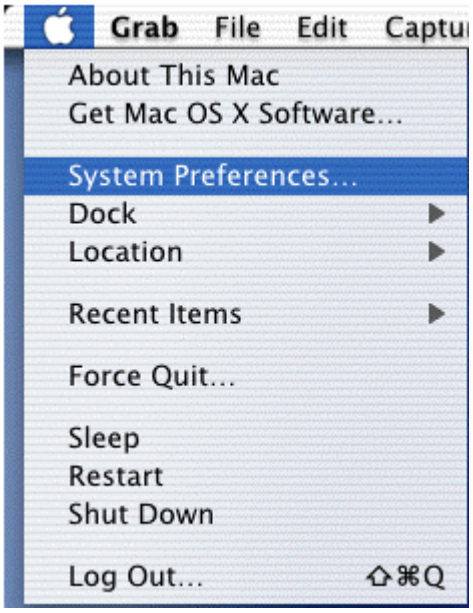
8. SETTING UP MACINTOSH OS X

This section provides instructions on how to use Macintosh Operating System 10 with the Westell Dual Connect NAT Router. Follow the instructions in this section to create a new network configuration for Macintosh OS X.

NOTE: The USB installation will not function for Macintosh Computers. Macintosh computers must use the Router's Ethernet installation. Refer to section 5.4.1 for installation instructions via Ethernet.

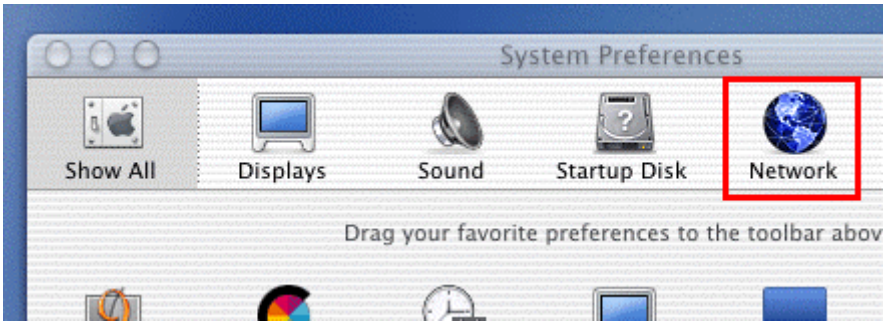
Open the System Preference Screen

After you have connected the Westell Router to the Ethernet port of your Macintosh, the screen below will appear. Click on the "**Apple**" icon in the upper right corner of the screen and select **System Preferences**.



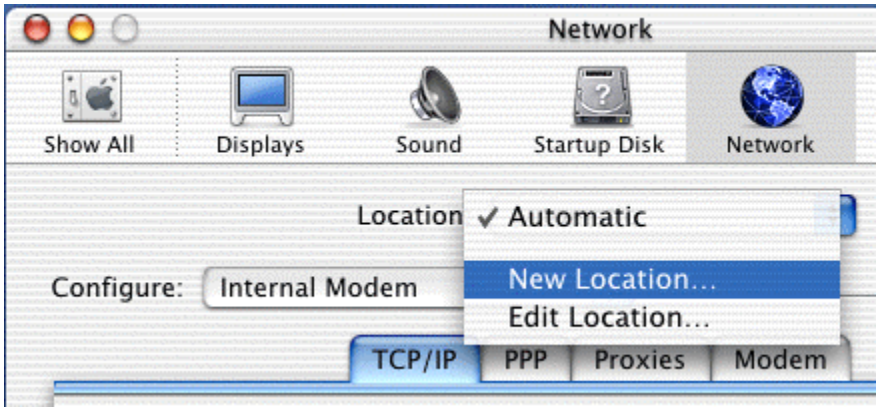
Choose the Network Preferences

After selecting **System Preferences…**, from the previous screen, the **System Preferences** screen will be displayed. From the **System Preferences** screen, click on the **Network** icon.



Create a New Location

After selecting the **Network** icon at the **System Preferences** screen, the **Network** screen will be displayed. Select **New Location** from the **Location** field.



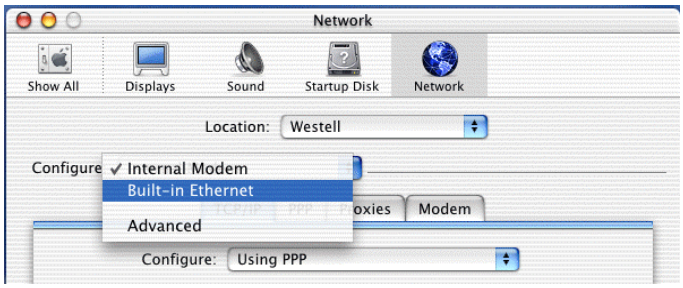
Name the New Location

After selecting **New Location** from the **Network** screen, the following screen will be displayed. In the field labeled **Name your new location:**, change the text from "**Untitled**" to "**Westell**." Click on **OK**.

Select the Ethernet Configuration

After clicking on **OK** in the previous step, the **Network** screen will be displayed. The **Network** screen shows the settings for the newly created location. From the **Configure** field in the **Network** screen, select **Built-in Ethernet**. Click on **Save**.

NOTE: Default settings for the Built-in Ethernet configuration are sufficient to operate the Router.

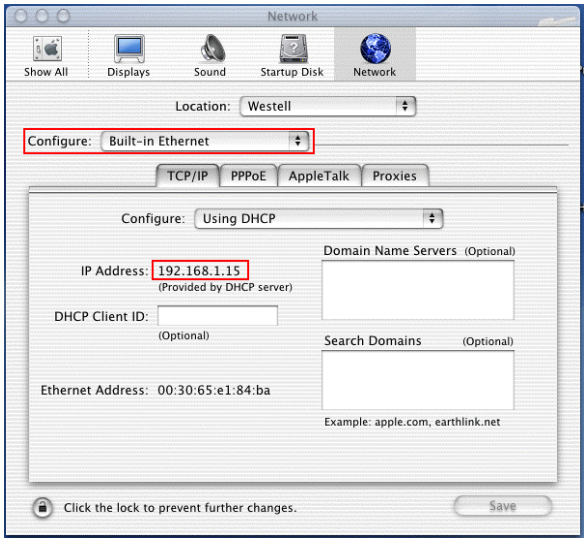


Check the IP Connection

To verify that the computer is communicating with the Router, follow the instructions below.

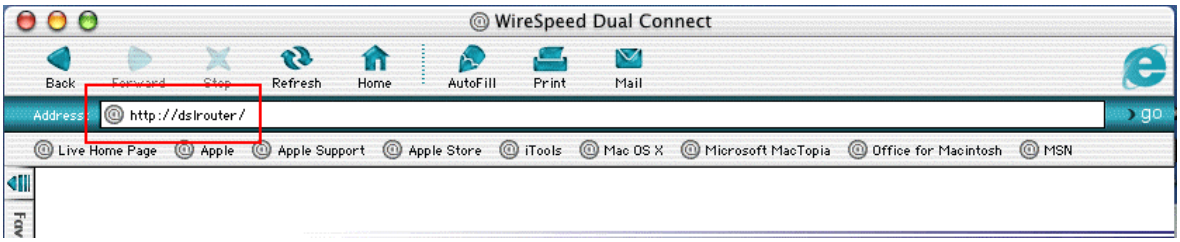
1. Go to the "**Apple**" icon in the upper right corner of the screen and select **System Preferences**.
2. From the **System Preferences screen**, click on the **Network** icon. The **Network** screen will be displayed.
3. From the **Configure** field in the **Network** screen, select **Built-in Ethernet**.
4. View the IP address field. An IP address that begins with **192.168.1** should be displayed.

NOTE: The DHCP server provides this IP address. If this IP address is not displayed, check the Router's wiring connection to the PC. If necessary, refer to section 5 for installation instructions.

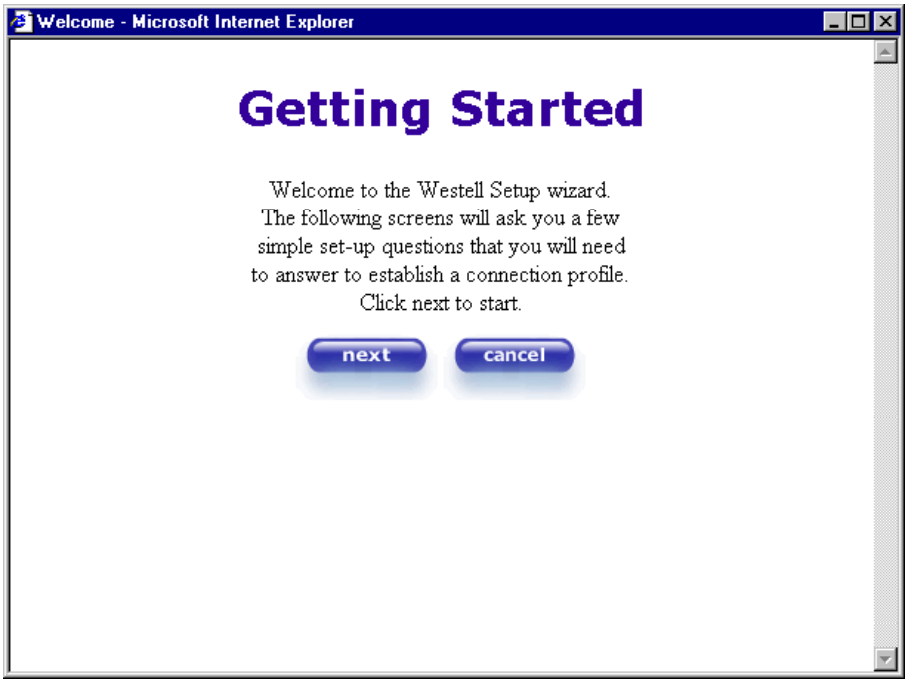


Create a user Account

In the address window of your Internet Explorer web browser, type **Http://dslrouter/**. Press enter on your keyboard.



The **Getting Started** screen will be displayed. You may now begin your Account Setup. Refer to section 7 of this User Guide to configure your Router.



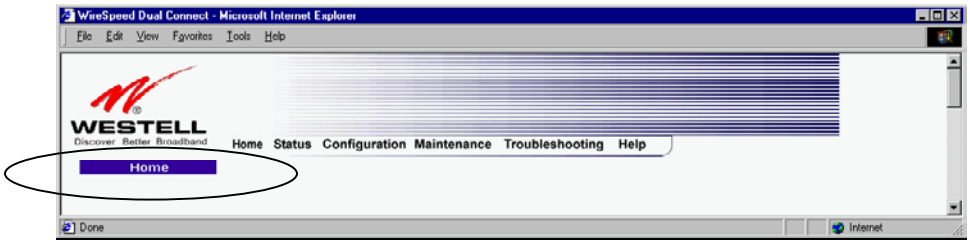
9. HOME

9.1 Setting Up Advanced Configuration

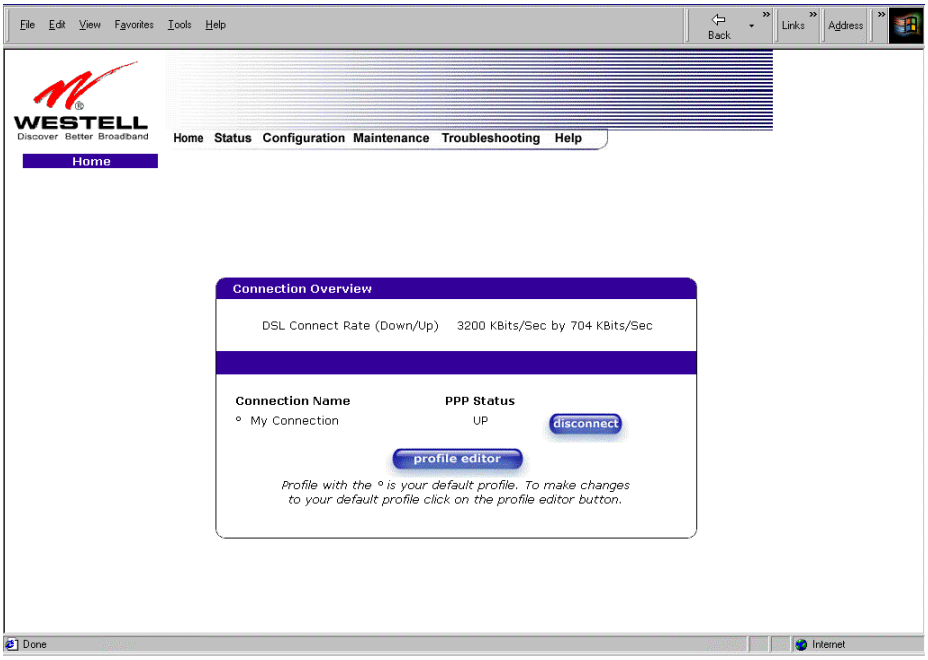
STOP! The following sections assume that you have active DSL and Internet service.

The Advanced Configuration section of your Westell Router allows you to make changes to features like your firewall settings. The following sections will explain each feature of your Router and show you how to make changes to your configuration. If you are at a screen and need help, click on the **Help** button to learn more about that screen.

NOTE: As you navigate through the various screens of your Westell Router, the name of the active page that you have selected will appear in the left-hand window of the homepage screen, as shown below.



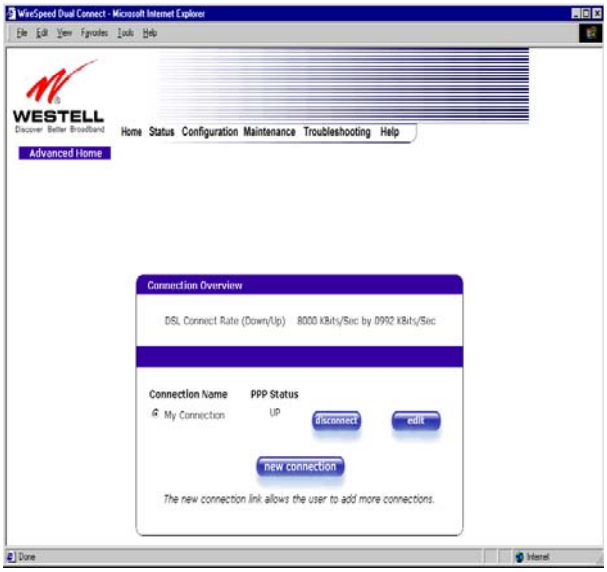
The following settings will be displayed on your Home page. To make your connection, click on **profile editor**.

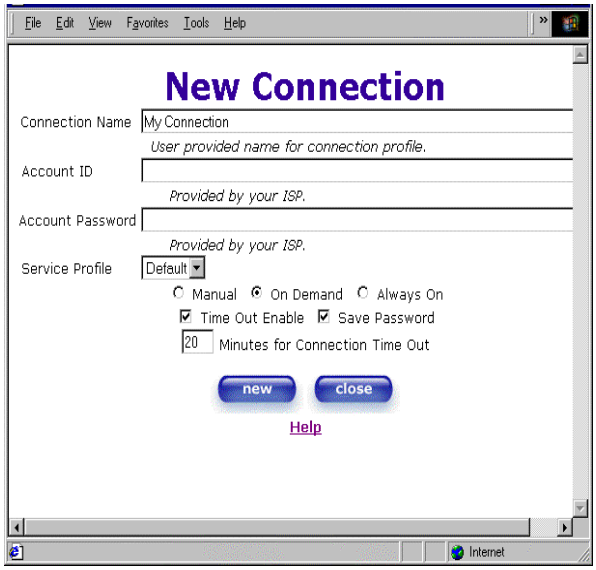


Connection Overview	Displays your DSL connection rate.
Connection Name	This Connection Name is from the connection profile that you established in section 7.
PPP Status	UP = PPP session established DOWN = No PPP session established.
Connect/Disconnect	CONNECT = Establish a PPP session DISCONNECT = Disconnect a PPP session
Profile Editor	This allows you to make changes to the profile that you created in section 7.

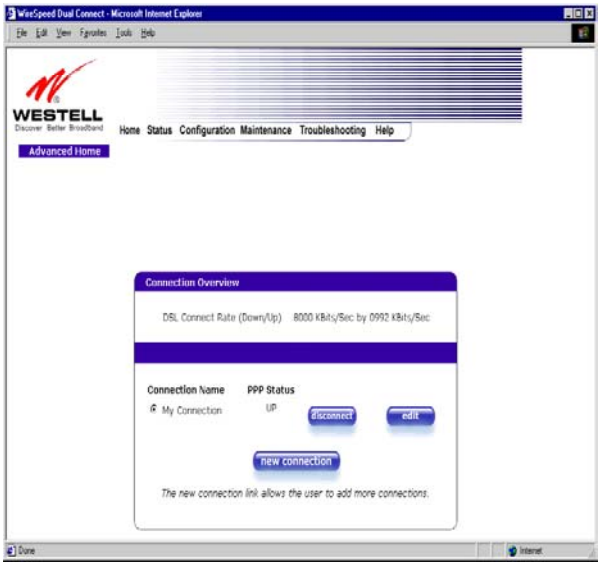
9.2 Adding Account Profiles

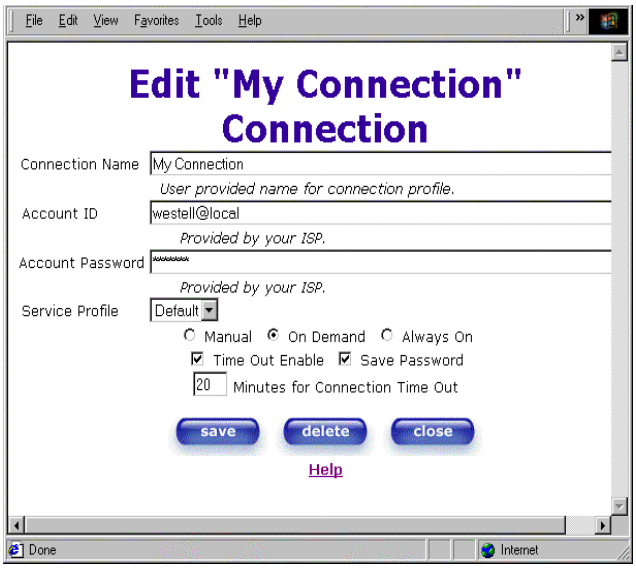
If you select the **Profile Editor** button from your **Home** page, the **Advanced Home** screen will appear, as shown below. Click on the **new connection** button in the **Advanced Home** screen. The **New Connection** screen will appear. Enter your account profile and click on **New**. Next, click on **OK** in the pop-up screen to save your new connection. If you do not want to add a connection profile, click on **Close** in the **New Connection** screen. You can store up to eight unique user profiles in your Router. Details on the **New Connection** screen are located at the end of this section.





If you select **Edit** from the **Connection Overview** screen, the **Edit "My Connection"** screen will appear. Follow the steps in the **Edit "My Connection"** screen to change your existing connection profile, which you set up in section 7. If you do not want to change your connection profile, click on **close** in the screen. Click on **delete** if you want to delete your connection profile.



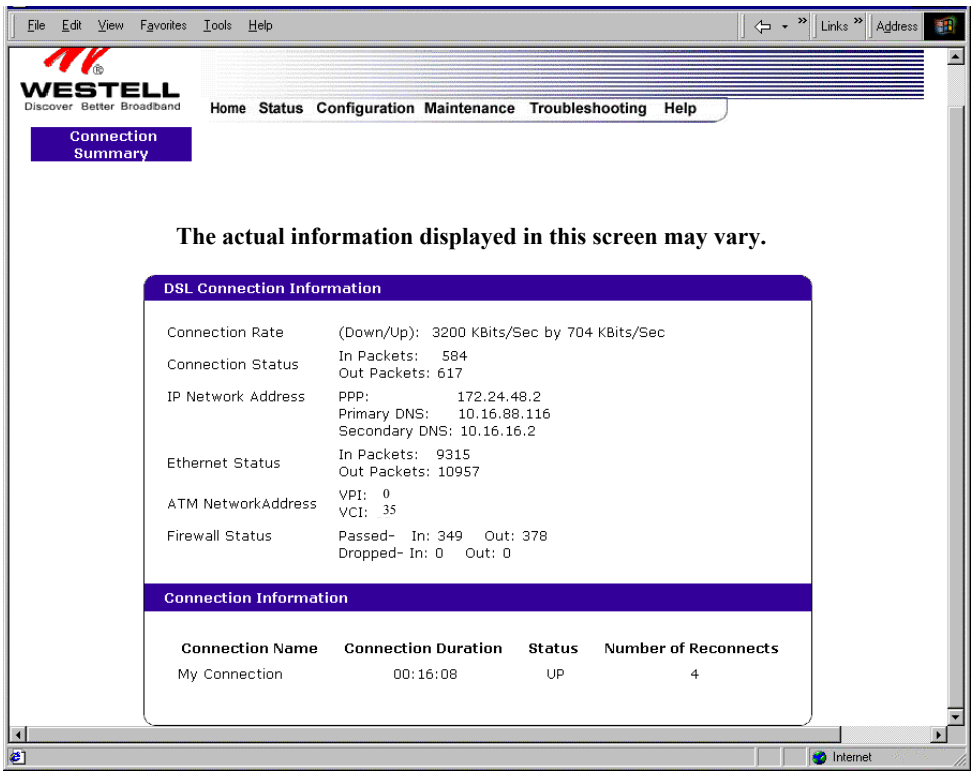


Connection Name	This field allows you to enter a new connection name of your choice (up to 64 characters).
Account ID	Use the same account ID that you used in section 7 if you are connecting to the same Service Provider. If you have multiple Service Providers, you can enter this information at this time.
Account Password	Use the same account password that you used in section 7 if you are connecting to the same Service Provider. If you have multiple Service Providers, you can enter this information at this time.
Service Profile	Westell recommends that you use the Default parameter.
Manual	Selecting this feature allows you to manually establish your PPP session.
On Demand	Factory default = On Demand Selecting this feature allows the Router to automatically re-establish your PPP session upon demand.
Always On	Selecting this feature allows the Router to establish an “always-on” PPP session if it goes down.
Time Out Enable	Selecting this feature allows you to enable the timeout parameter of your PPP session, which is set to a factory default of 20 minutes.
Save Password	Selecting this feature allows you to save the password for your new connection profile in your Router so that you will not have to re-enter it in case of a re-boot.
Minutes for Connection Time Out	This option allows you to specify the number of minutes that you want a PPP session to stay active before it is disconnected due to inactivity. (This feature works if you have selected the Time Out Enable feature explained above.)

10. STATUS

10.1 Connection Summary

The following settings will be displayed if you select **Connection Summary** from the **Status** menu.

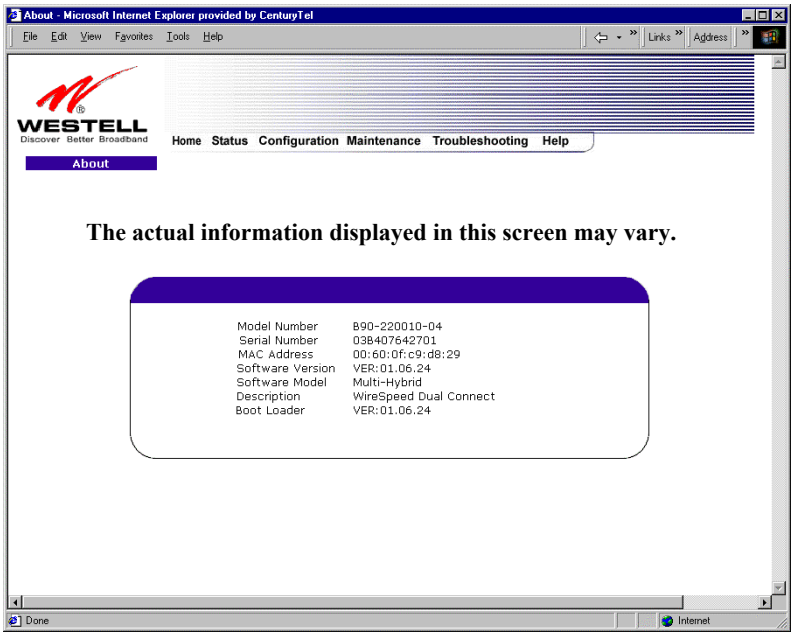


DSL Connection Information	
Connection Rate	This field will let you know if you have a DSL Sync (UP/DOWN) and the DSL rate at which you are connected.
Connection Status	This field will display how much information was received (IN) or sent (OUT) in packets.
IP Network Address	PPP = An IP address identifies your device on the Internet Primary DNS = Provided by your Service Provider Secondary DNS = Provided by your Service Provider
Ethernet Status	This field will display your Ethernet information that was received (IN) or sent (OUT) in packets on your Ethernet port.
ATM Network Address	This field will display your VPI and VCI values, which are provided by your Internet Service Provider.
Firewall Status	This field will display your firewall traffic in packets. Passed: Monitors information traffic that was successfully received (IN) or

	transmitted (OUT) in packets. Dropped: Monitors information traffic that was not successfully received (IN) or transmitted (OUT) due to your firewall settings.
PPP Connection Information	
Connection Name	This is from the connection profile that you established in section 7.
Connection Duration	This field will display how long your PPP session has been connected.
Status	This field will display the status of your PPP session. UP=Connected DOWN=Disconnected
Number of Reconnects	This field will display the number of attempts that were made to establish a PPP session.

10.2 About

The following settings will be displayed if you select **About** from the **Status** menu.



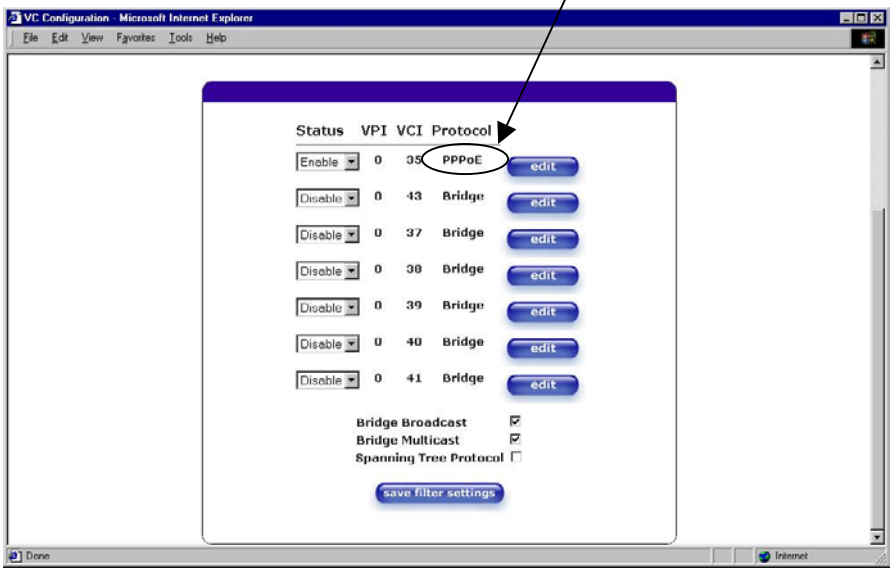
Model Number	Router manufacturer's model number.
Serial Number	Router manufacturer's serial number.
MAC Address	MAC address of this device.
Software Version	Version of Application Software.
Software Model	Router application type.
Description	Product description.
Boot Loader	Version of boot loader software

11. CONFIGURATION

11.1 VC Configuration

The following settings will be displayed if you select **VC Configuration** from the **Configuration** menu.

NOTE: The actual information displayed in this screen may vary, depending on the network connection established.



NOTE: If you experience any problems, please reset your Router via the external hardware re-set button or via the procedure defined under the **Maintenance** menu.

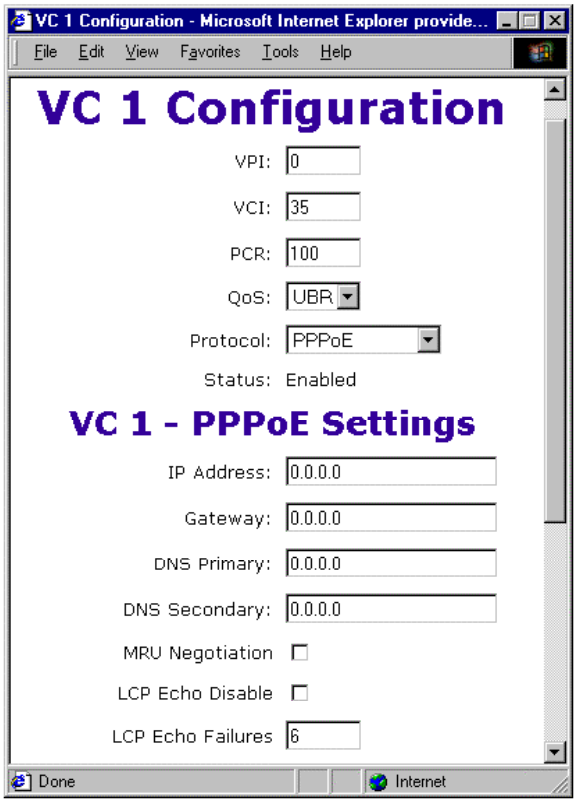
Status	Allows you to enable or disable your VC (Virtual Connection)
VPI	Displays the VPI (Virtual Path Indicator) value for a particular VC, which is defined by your Service Provider.
VCI	Displays the VCI (Virtual Channel Indicator) value for a particular VC, which is defined by your Service Provider.
Protocol NOTE: The configuration specified by your Service Provider will determine which Protocols are available to you.	Displays the Protocol for each VC, which is specified by your Service Provider. PPPoA = Point to Point Protocol over ATM (Asynchronous Transfer Mode) PPPoE = Point to Point Protocol over Ethernet Bridge = Bridge Protocol Classical IPoA = Internet Protocol over ATM (Asynchronous Transfer Mode). This is an ATM encapsulation of the IP protocol.
Bridge Broadcast	Factory Default = CHECKED When this setting is CHECKED, the Router will allow Broadcast IP packets to/from the WAN. When this setting is NOT CHECKED, the router will block Broadcast IP packets to/from the WAN. This setting is only valid if one of the Virtual Channels is configured for Bridge mode.
Bridge Multicast	Factory Default = CHECKED When this setting is CHECKED, the Router will allow Multicast IP packets to/from the WAN. When this setting is NOT CHECKED, the Router will block Multicast IP packets to/from the WAN. This setting is only valid if one of the Virtual Channels is configured for Bridge mode.
Spanning Tree Protocol	Factory Default = DISABLED Spanning Tree Protocol is a link management protocol that provides path redundancy while preventing undesirable loops in the network. For Ethernet network to function properly, only one active path can exist between two stations. When ENABLED, two bridges are used to interconnect the same two computer network segments. Spanning Tree Protocol will allow the bridges to exchange information so that only one of them will handle a given message that is being sent between two computers within the network.

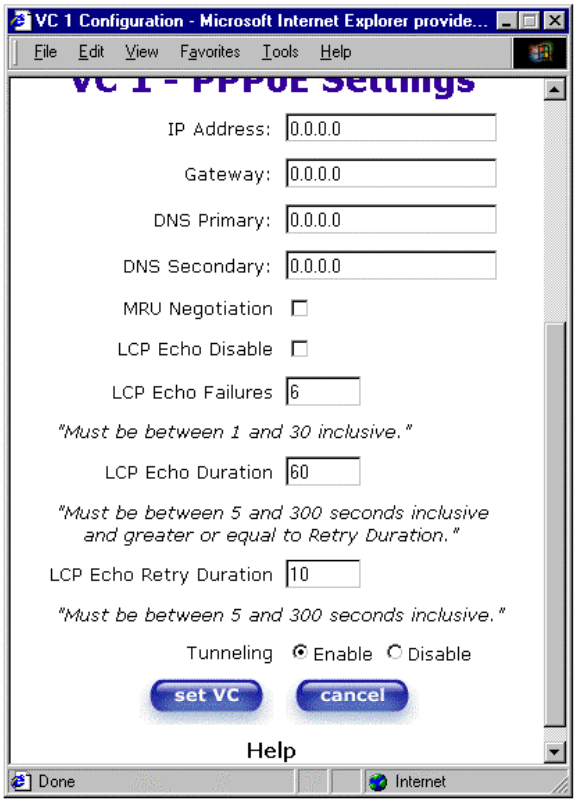
The following settings will be displayed if you select **edit** from your **VC Configuration** menu on any of your existing VC (Virtual Connections) settings. If you change any of your existing VC settings, click on **Set VC**.

NOTE: If you experience any problems, please reset your Router via the external hardware re-set button or via the procedure defined under the **Maintenance** menu.

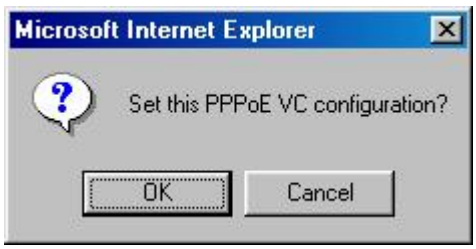
This screen is divided into two parts for illustrative purposes.

NOTE: The actual information displayed in this screen may vary, depending on network connection established.





If you have made any changes to your VC settings, you need to save them. To save the new VC settings, click on **OK** when asked **Set this PPPoE VC configuration?** If you click on **cancel**, the new VC settings will not be saved.

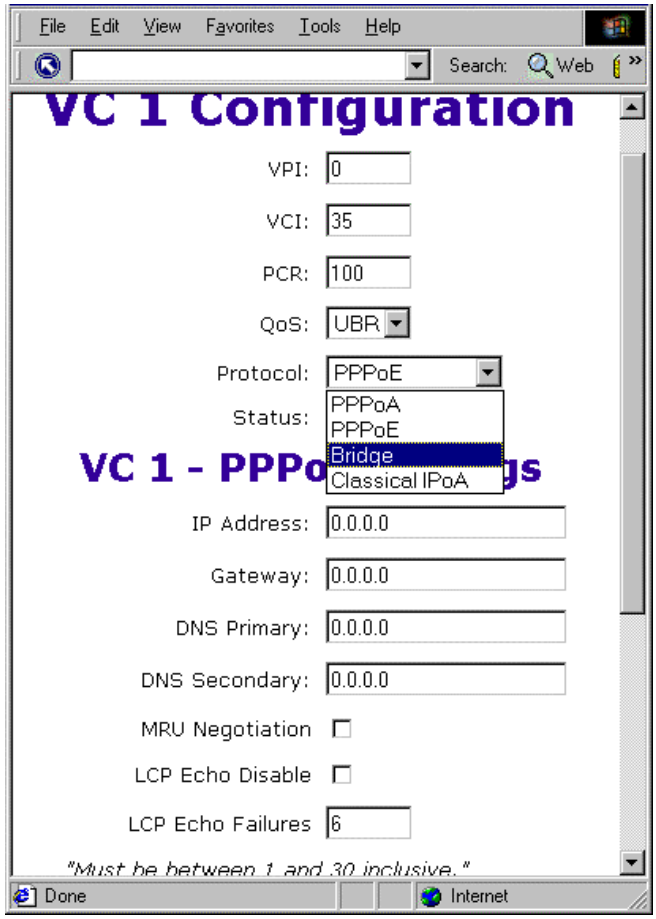


VC 1 Configuration	
VPI	This setting allows you to change your VPI (Virtual Path Indicator) value for a particular VC, which is defined by your Service Provider.
VCI	This setting allows you to change your VCI (Virtual Channel Indicator) value for a particular VC, which is defined by your Service Provider.
PCR	Factory Default = 100% Peak Cell Rate (PCR)-The maximum rate at which cells can be transmitted across a virtual circuit, specified in cells per second and defined by the interval between the transmission of the last bit of one cell and the first bit of the next. This value is a percentage of the current data rate. 100 allows this VC to use 100% of the available bandwidth. 80 allows this VC to use 80% of the available bandwidth.
QoS	Quality of Service, which is determined by your Service Provider. CBR = Constant Bit Rate UBR = Unspecified Bit Rate VBR = Variable Bit Rate
Protocol	The Protocol for each VC, which is specified by your Service Provider. PPPoA = Point to Point Protocol over ATM (Asynchronous Transfer Mode) PPPoE = Point to Point Protocol over Ethernet Bridge = Bridge Protocol Classical IPoA = Internet Protocol over ATM (Asynchronous Transfer Mode). This is an ATM encapsulation of the IP protocol.
Status	The protocol status.
VC x PPPoE Settings	
IP Address	Displays the IP network address that your modem is on.
Gateway	Displays the router IP Gateway address
DNS Primary	Provided by your Service Provider
DNS Secondary	Provided by your Service Provider
MRU Negotiation	Factory Default = DISABLED If ENABLED, the Maximum Received Unit (MRU) would enforce MRU negotiations. (NOTE: enable this option only at your Internet Service Provider's request.)
LCP Echo Disable	Factory Default = Enable If checked, this option will disable the modem LCP Echo transmissions.
LCP Echo Failures	Indicates number of continuous LCP echo non-responses received before the PPP session is terminated.
LCP Echo Retry Duration	Indicates the interval between LCP Echo transmissions with responses.
LCP Echo Retry Duration	Indicates the interval between LCP. Echo after no response.
Tunneling	Factory Default = ENABLE If ENABLED, this option allows PPP traffic to be bridged to the WAN. This feature allows you to use a PPPoE shim on the host computer to connect to the Internet Service Provider, by bypassing the Router's capability to do this.

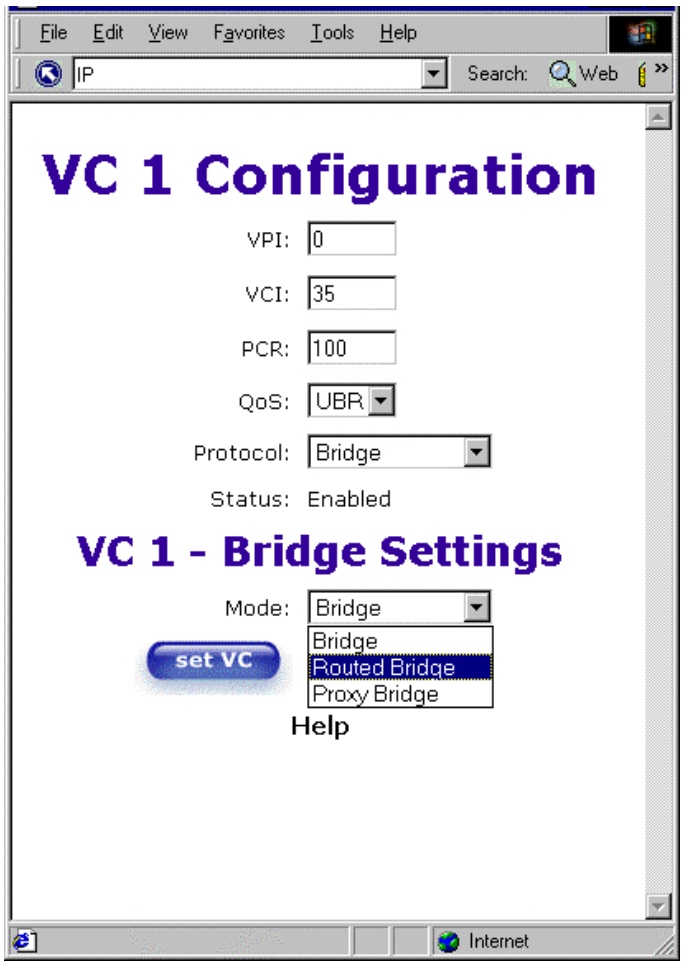
NOTE: The values for IP Address, Gateway, DNS Primary, and DNS Secondary are all "Override of the value obtained from the PPP connection," They default to "0.0.0.0," in which case the override is ignored. Westell recommends that you do not change these values unless you are instructed by the Internet Service Provider.

Configuring the Router's Protocol Settings

If you want to change your Router's protocol setting, select **VC Configuration** from the **Configuration** menu. Next, select **edit** from your **VC Configuration** menu on any of your existing VC (Virtual Connections) settings. The following screen will be displayed.



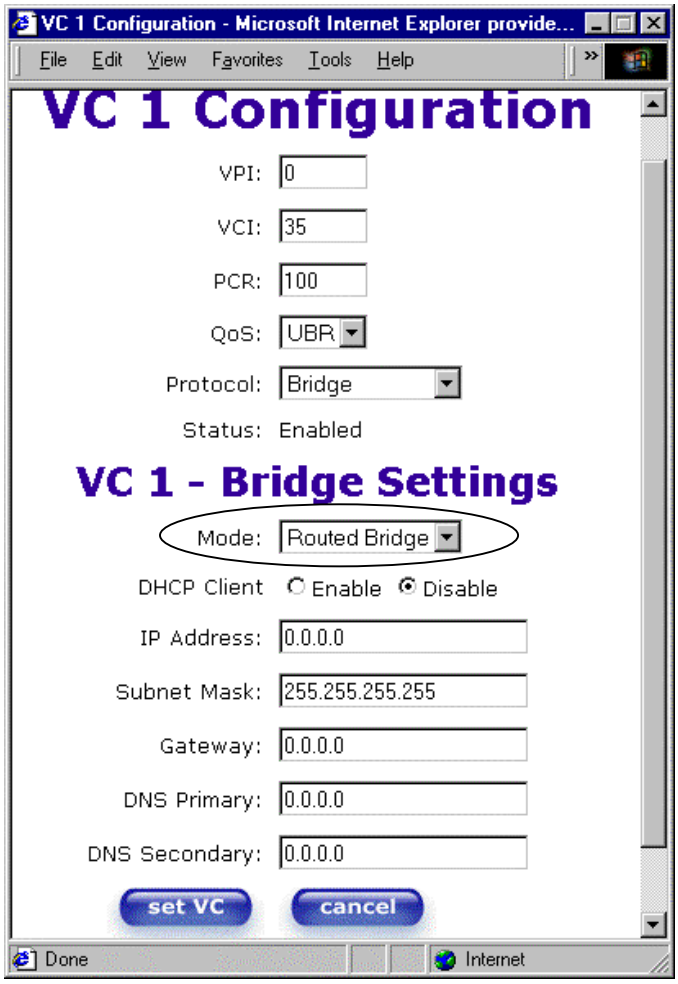
If you selected **Bridge** as the protocol you want to use, the following screen will be displayed. Select a mode from the options displayed at the **Mode** pull-down arrow under **VC – 1 Bridge Settings**.



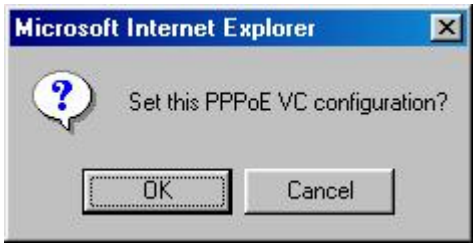
VC 1 Configuration	
VPI	This setting allows you to change your VPI (Virtual Path Indicator) value for a particular VC, which is defined by your Service Provider.
VCI	This setting allows you to change your VCI (Virtual Channel Indicator) value for a particular VC, which is defined by your Service Provider.
PCR	Factory Default = 100% Peak Cell Rate (PCR)-The maximum rate at which cells can be transmitted across a virtual circuit, specified in cells per second and defined by the interval between the transmission of the last bit of one cell and the first bit of the next. This value is a percentage of the current data rate. 100 allows this VC to use 100% of the available bandwidth. 80 allows this VC to use 80% of the available bandwidth.
QoS	Quality of Service, which is determined by your Service Provider. CBR = Constant Bit Rate UBR = Unspecified Bit Rate VBR = Variable Bit Rate

Protocol	The Protocol for each VC, which is specified by your Service Provider. PPPoA = Point to Point Protocol over ATM (Asynchronous Transfer Mode) PPPoE = Point to Point Protocol over Ethernet Bridge = Bridge Protocol Classical IPoA = Internet Protocol over ATM (Asynchronous Transfer Mode). This is an ATM encapsulation of the IP protocol.
Status	The protocol status.
VC 1 Bridge Settings	
Mode	Bridge = A bridge is a layer 2 device that connects two segments of the same LAN that use the same protocol such as Ethernet. The modem does not have a WAN IP address in this mode. The client PC will typically get an IP address form a DHCP server in the network or it can be assigned statically.
	Routed Bridge = Routed Bridged Encapsulation (RBE) is the process by which a bridged segment is terminated on a routed interface. Specifically, the router is routing on an IEEE 802.3 or Ethernet header carried over RFC 1483 bridged ATM. RBE was developed to address the known RFC1483 bridging issues, including broadcast storms and security. The modem will get a WAN IP address through DHCP or can be assigned statically. NAT will use the global address assigned to the modem.
	Proxy Bridge = Proxy Bridge is the process in which the modem acts as a proxy ARP agent for a local public subnet. The modem will be assigned an IP address from within that public subnet. The modem will direct all traffic to a gateway, which is configured statically. The gateway address must not reside within the modems assigned public subnet. All traffic will be sent via the gateway MAC address. The LAN may also have a private NAT'ed network. NAT will use the global address assigned to the modem.

If you select **Routed Bridge**, the following screen will be displayed. Click on **set VC** to save your VC settings.

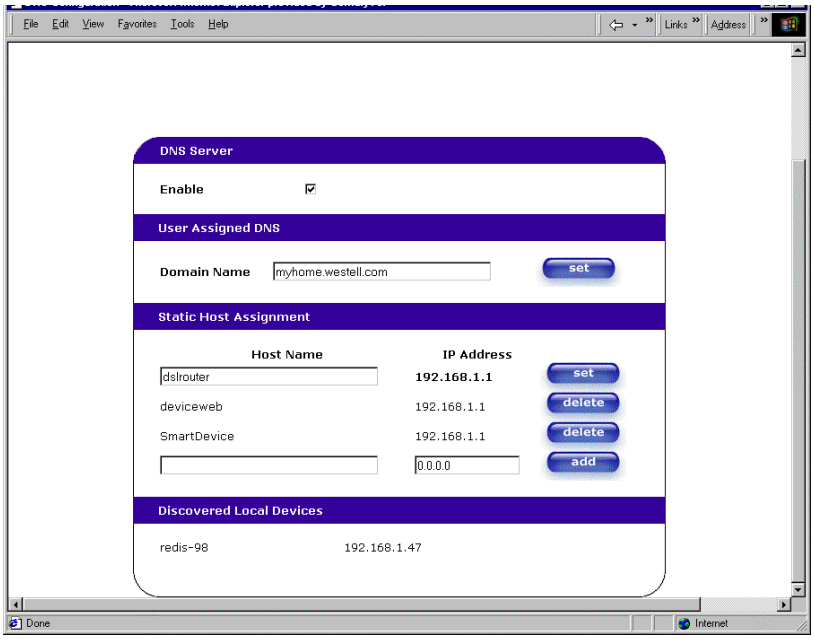


If you clicked on **set VC**, the following pop-up screen will be displayed. Click on **OK** when asked **Set this PPPoE VC configuration?** If you click on **cancel**, the new VC settings will not be saved.



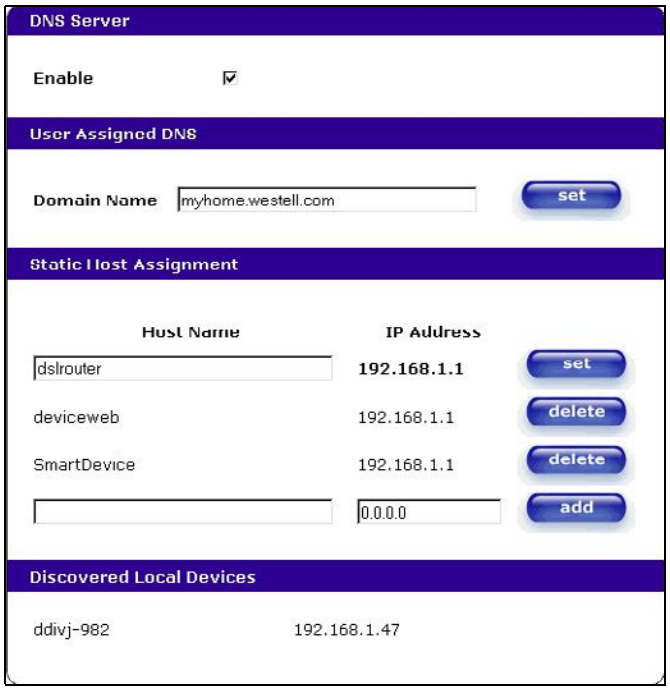
11.2 DNS Configuration

The following settings will be displayed if you select **DNS Configuration** from the **Configuration** menu.

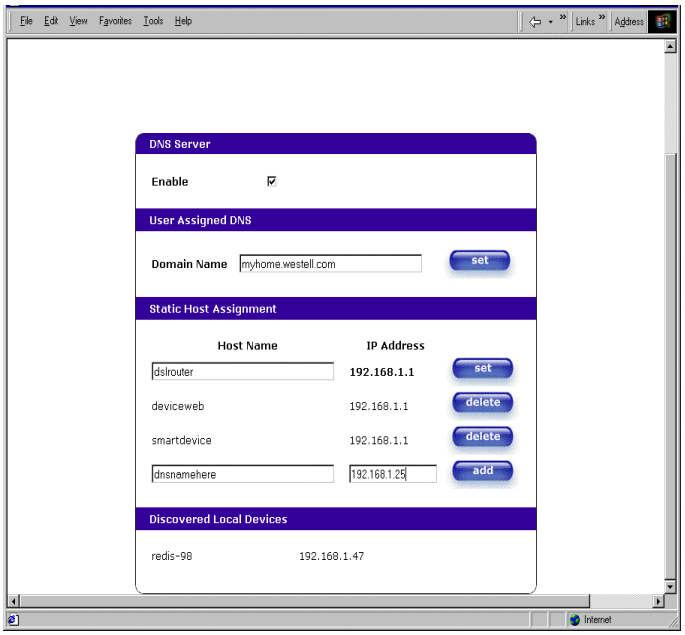


DNS Server	
Enable	Factory Default = CHECKED Displays the status of the DNS Server. If you disable this feature, the router will not automatically resolve the host name.
User Assigned DNS	
Domain Name NOTE: Some ISP's may require the name for identification purposes.	This field allows you to enter a Domain Name for your Router. To add a Domain Name, in the field under User Assigned DNS, type in your new domain name and click **Set.**
Static Host Assignment	
Host Name	This field allows you to enter a HOST name for your Router. To add a new Host name, in the field under Static Host Assignment, type in the Host Name and the IP address and click **Set.**
IP Address	Displays the IP address that is assigned to the Host Name.
Discover Local Devices	
This field displays a list of the computers on the LAN that were assigned a DHCP Address. The computer name, MAC address, and IP address of each discovered device is displayed.	

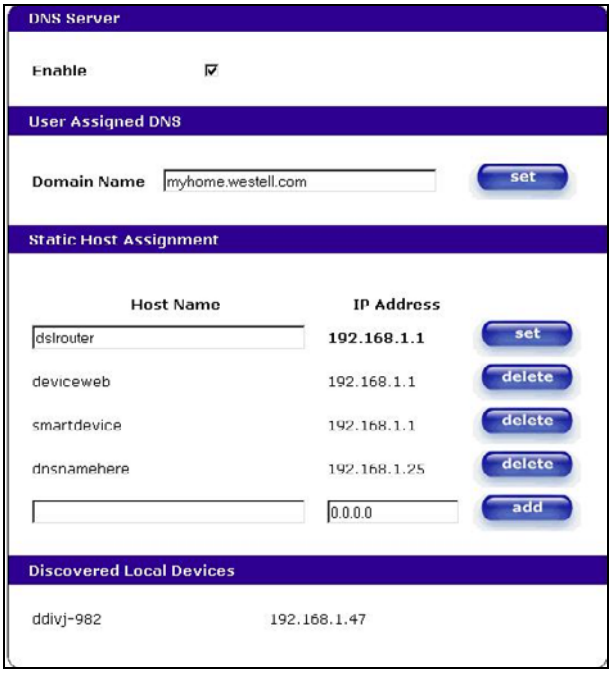
If you want to add a new Host Name and IP address to your DNS server, enter your Router's **Host Name** and **IP Address** in the fields provided in the **Static Host Assignment** section.



The following screen displays a **Host Name** and an **IP Address** in the fields. Now click on **add.**

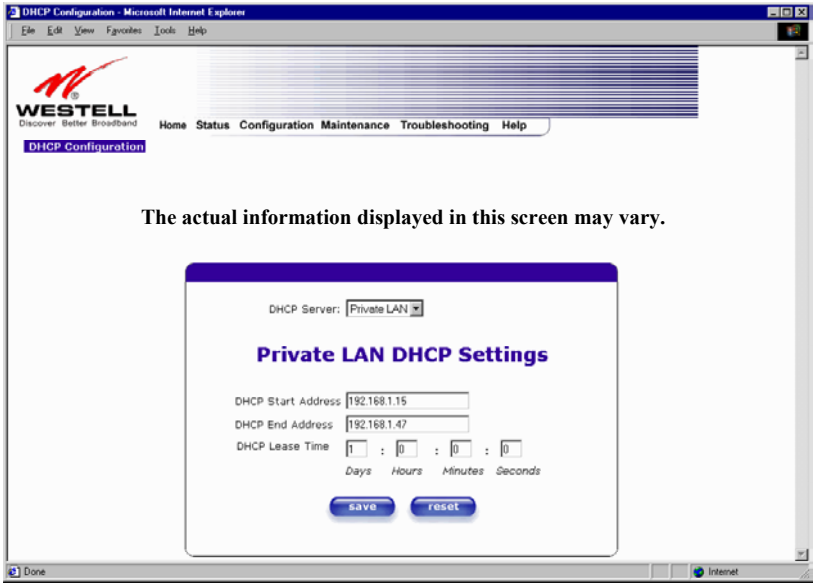


If you clicked on **add**, the following screen will be displayed. The **Host Name** and **IP Address** have been added to the Static Host Assignment.



11.3 DHCP Configuration (Private LAN)

The following settings will be displayed if you select **DHCP Configuration** from the **Configuration** menu.

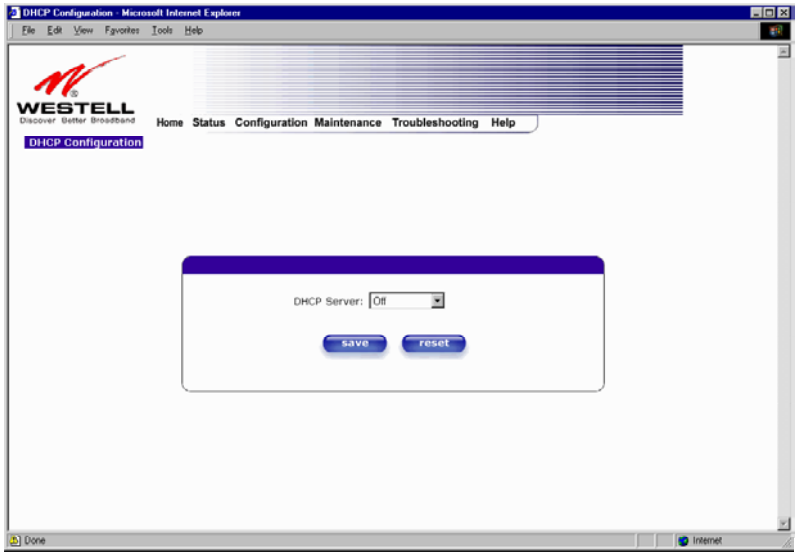


DHCP Server	This setting allows the ADSL router to automatically assign IP addresses to local devices connected on the LAN. Westell advises setting this to enabled for the private LAN. Off = DHCP Server is disabled Private LAN = DHCP addresses will be saved into the Private LAN configuration. Public LAN = DHCP addresses will be saved into the Public LAN configuration. This option is only available if the Public LAN DHCP server is enabled. NOTE: These addresses will be overwritten if the Internet Service Provider supports dynamic setting of these values.
DHCP Start Address	Factory Default = 192.168.1.15 This field displays the first IP address that the DHCP server will provide. The DHCP Start Address must be within the IP address and lower than the DHCP End Address. You may use any number from 0 to 254 in this address.
DHCP End Address	Factory Default = 192.168.1.47 This field displays the last IP address that the DHCP server will provide. The DHCP End Address must be within the IP address and higher than the DHCP Start Address. You may use any number from 0 to 254 in this address.
DHCP Lease Time	Factory Default = 01:00:00:00 Displays the amount of time the provided addresses will be valid, after which the DHCP client will usually re-submit a request. NOTE: DHCP Lease Time is displayed in the format (dd:hh:mm:ss)*. This value must be greater than 10 seconds. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23. *(dd = days, hh = hours, mm = minutes, ss = seconds)

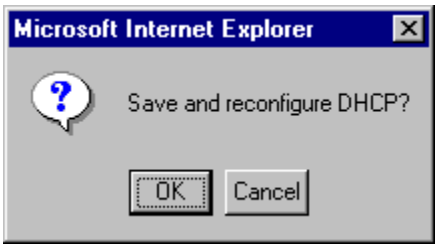
11.3.1 Disabling the DHCP Server

If you click on the pull-down arrow at **DHCP Server:,** a list of options will be displayed.
If you want to disable your DHCP server, select **Off** from the **DHCP Server** pull-down arrow. Click on **save.**

If you selected **Off** at **DHCP Server:,** the following screen will be displayed. Click on **save** to save the **DHCP Server** setting.

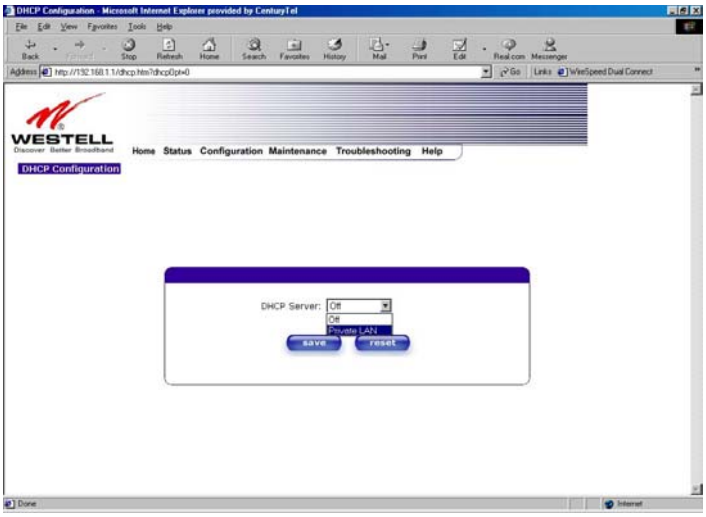


If you clicked on **save**, in the preceding **DHCP Configuration** screen**,** the following pop-up screen will appear. Click on **OK.**



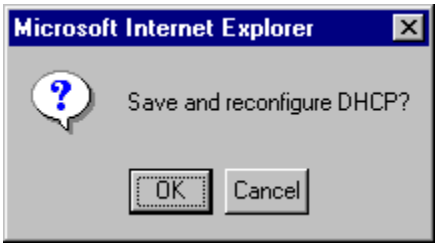
11.3.2 Enabling the DHCP Server

If you want to enable your DHCP Server settings, select **Private LAN** at the **DHCP Server** pull-down arrow.



If you selected **Private LAN**, the following screen will be displayed. Click on **save** to save your DHCP Server setting. If you click on **reset**, the DHCP Server will be reset to factory default. (Private LAN is the factory default for the DHCP Server.)

If you clicked on **save**, in the preceding **DHCP Configuration** screen**,** the following pop-up screen will appear. Click on **OK.**

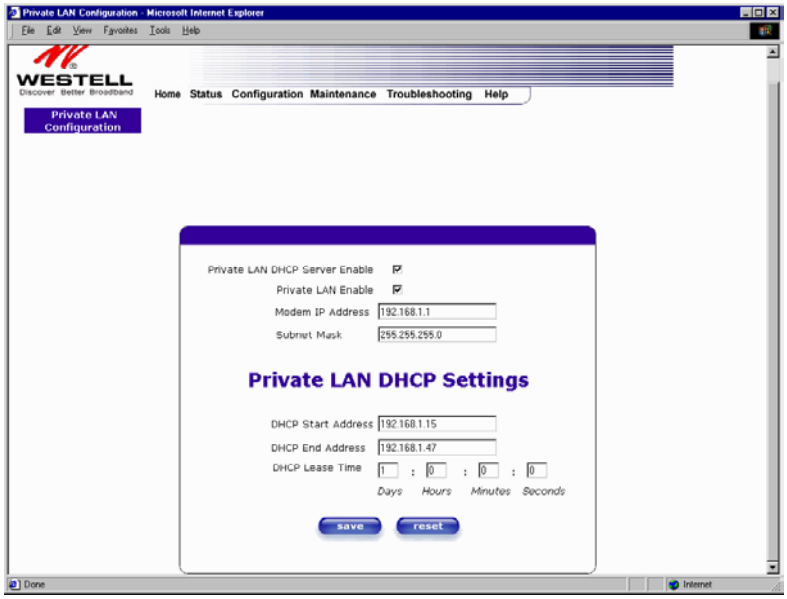


11.4 Private LAN Configuration

The following settings will be displayed if you select **Private LAN Configuration** from the **Configuration** menu. (Private LAN is the default configuration for this Router.)

NOTE: Private LAN allows you to set up a network behind your Router.

If you change the settings in this screen, click on **save**. If you click on **reset,** the changes will not take effect.



If you made changes and clicked on **save,** the following pop-up screen will be displayed. Click on **OK**. This will save your **Private LAN Configuration** settings. If you click on **Cancel**, your new settings will not take effect.

Private LAN DHCP Server Enable	Default = CHECKED If this box is CHECKED, it enables DHCP addresses to be served from the Private LAN pool.
Private LAN Enable	Default = CHECKED If this box is CHECKED, it enables the addresses from the Private LAN to use the NAT interface.
Modem IP Address	Displays the Router's IP address
Subnet Mask	Displays the Subnet Mask, which determines what portion of an IP address is controlled by the network, and which portion is controlled by the host.
DHCP Start Address	Displays the first IP address that the DHCP server will provide.
DHCP End Address	Displays the last IP address that the DHCP server will provide.
DHCP Lease Time	Displays the amount of time the provided addresses will be valid, after which the DHCP client will usually re-submit a request.

NOTE: DHCP Lease Time is displayed in the following format: (dd:hh:mm:ss)* This value must be greater than 10 seconds. The default = 01:00:00:00. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23.
*(dd = days, hh = hours, mm = minutes, ss = seconds).

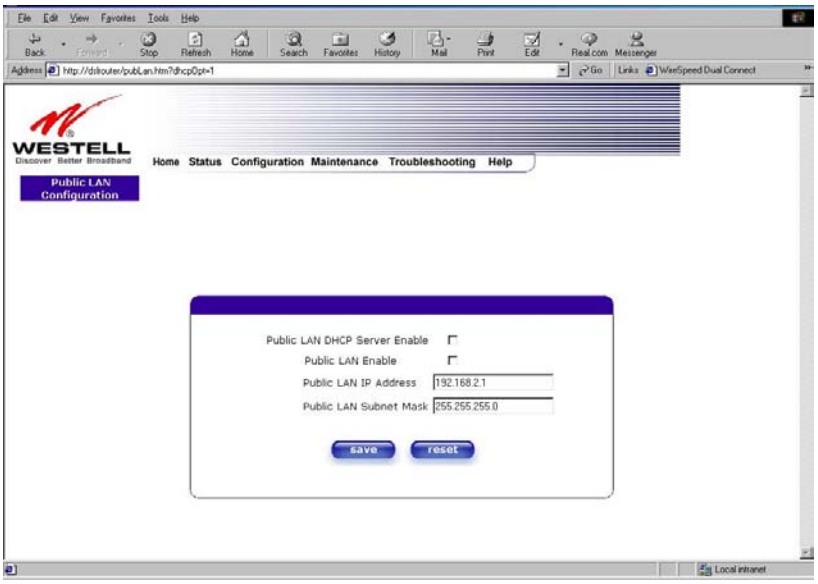
If the settings you have entered in the **Private LAN Configuration** screen are incorrect, the following warnings messages may be displayed via pop-up screens. If this occurs, check the settings in the **Private LAN Configuration** screen.

Warning Message	Check Private LAN DHCP Settings
Start Address is not part of the Subnet	Check the value in the DHCP Start Address field
End Address is not part of the Subnet	Check the value in the DHCP End Address field
End Address is below the Start Address	Check the value in the DHCP End Address field
Lease time must be greater than 10 seconds	Check the values in the DHCP Lease Time fields
Seconds must be between 0 and 53	Check the **Seconds** value in the DHCP Lease Time field
Minutes must be between 0 and 59	Check the **Minutes** value in the DHCP Lease Time field
Hours must be between 0 and 23	Check the **Hours** value in the DHCP Lease Time field

11.5 Public LAN Configuration

The following screen will be displayed if you select **Public LAN Configuration** from the **Configuration** menu. Click in the **Public LAN DHCP Server Enable** box. A check mark will appear in the box.

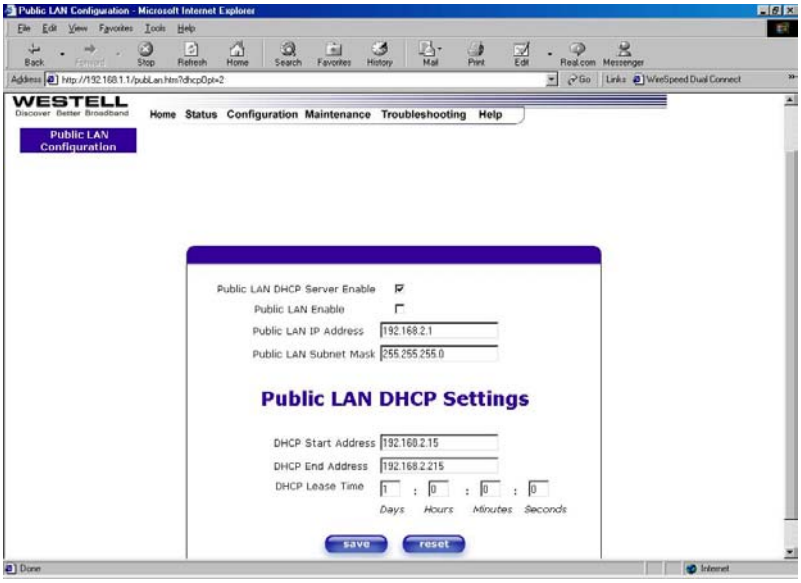
NOTE: The Public LAN feature, if available from your service provider, allows the Router to use LAN IP addresses that are accessible from the WAN. Public LAN allows your computer to have global address ability. To utilize the Public LAN feature on your Router, your ISP must support Public LAN and Static IP. Contact your ISP for details.



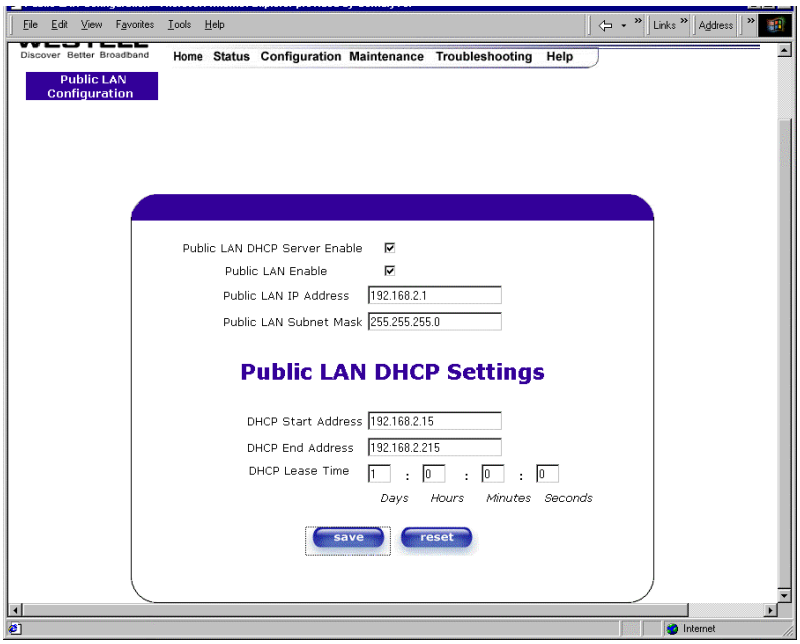
Public LAN DHCP Server Enable	Default = NOT CHECKED If this box is CHECKED, it enables DHCP addresses to be served from the Public LAN pool.
Public LAN Enable	Default = NOT CHECKED If this box is CHECKED, it enables the addresses from the Public LAN to bypass the NAT interface.
Public LAN IP Address	Provides a Public IP Address if the service provider does not automatically provide one.
Public LAN Subnet Mask	Provides a Public Subnet Mask if the service provider does not automatically provide one.

If you clicked on the **Public LAN DHCP Server Enable** box, the following screen will be displayed. Click on the **Public LAN Enable** box to enable Public LAN.

NOTE: By enabling the Public DHCP Server, you automatically disable the Private LAN DHCP Server on your Router.



If you clicked on the **Public LAN Server Enable** box, the following screen will be displayed. Click on **save.**



If you made changes and clicked on **save** in the **preceding** screen, the following pop-up screen will be displayed. Click on **OK.** This will save you **Public LAN Configuration** settings. If you click on **Cancel**, your new settings will not take effect.

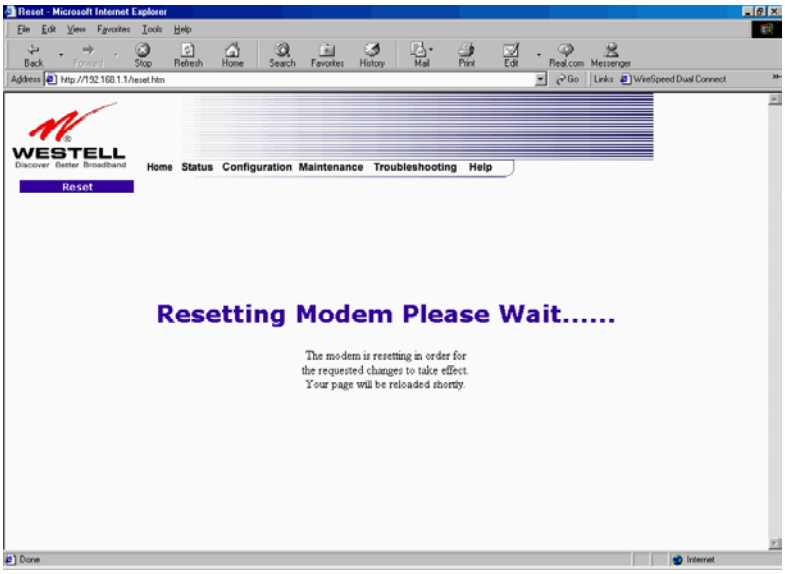
NOTE: DHCP Lease Time is displayed in the following format: (dd:hh:mm:ss)*. This value must be greater than 10 seconds. The default = 01:00:00:00. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23.
*(dd = days, hh = hours, mm = minutes, ss = seconds).

If the settings you have entered in the **Public LAN Configuration** screen are incorrect, the following warnings messages may be displayed via pop-up screens. If this occurs, check settings in the **Public LAN Configuration** screen.

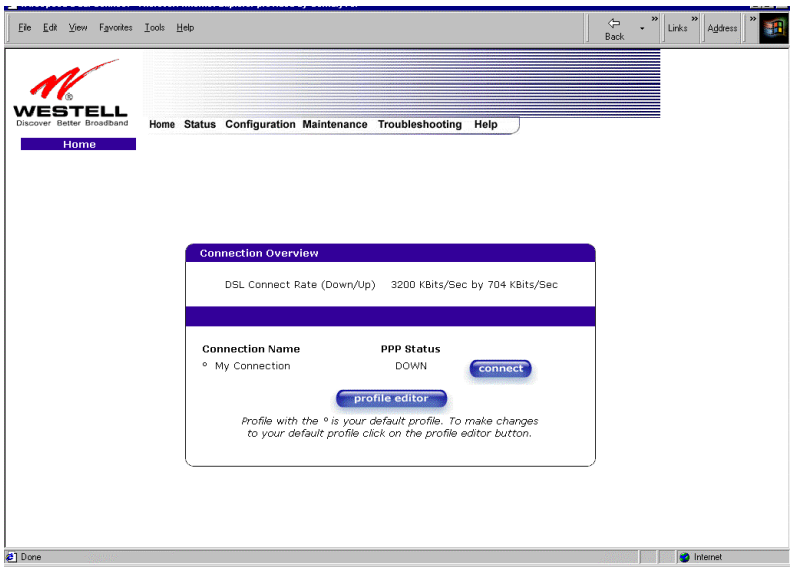
Warning Message	Check Public LAN DHCP Settings
Start Address is not part of the Subnet	Check the value in the DHCP Start Address field
End Address is not part of the Subnet	Check the value in the DHCP End Address field
End Address is below the Start Address	Check the value in the DHCP End Address field
Lease time must be greater than 10 seconds	Check the values in the DHCP Lease Time fields
Seconds must be between 0 and 53	Check the **Seconds** field at DHCP Lease Time
Minutes must be between 0 and 59	Check the **Minutes** field at DHCP Lease Time
Hours must be between 0 and 23	Check the **Hours** field at DHCP Lease Time

If you clicked on **OK** in the **Load new Public LAN configuration?** screen, the following pop-up screen will be displayed. Click on **OK.** This will allow the modem to be reset and the new configuration will take effect.

If you clicked on **OK** in the preceding screen, the following screen will be displayed. This screen shows that the Router is being reset.



After the modem has completed resetting, the following screen will be displayed. Confirm that you have a DSL sync and click on the **connect** button to establish a PPP session. When the PPP Status reads **UP**, you are ready to continue configuring your Router.



11.6 Single Static IP Configuration

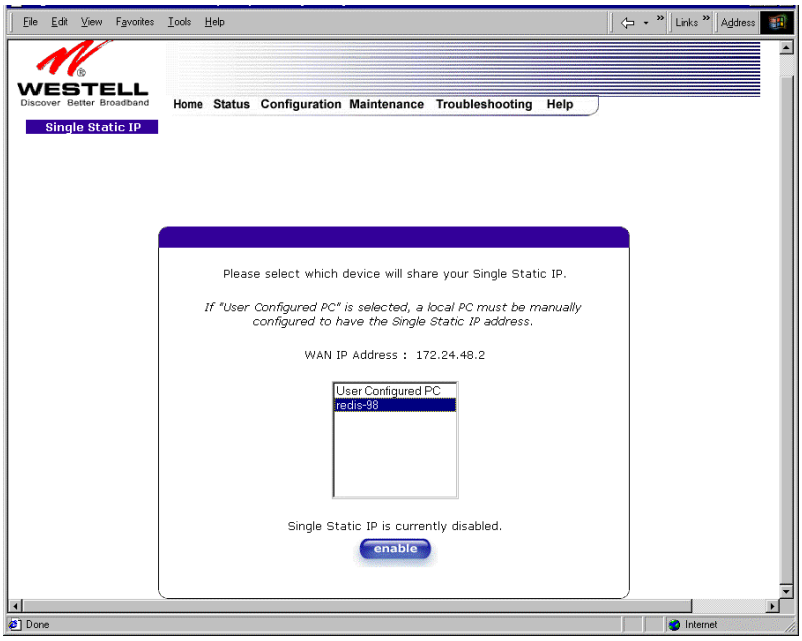
The following settings will be displayed if you select **Single Static IP Configuration** from the **Configuration** menu.

STOP: Static NAT must be disabled before you can enable **Single Static IP**. To disable Static NAT, select **Service Configuration** from the **Configuration** menu. Next, click on the **static NAT** button. Select the device from the **Static NAT Device** pull-down menu and click on **disable**. Return to Single Static IP Configuration by selecting **Single Static IP Configuration** from the **Configuration** menu.

11.7.1 Enabling Single Static IP Configuration

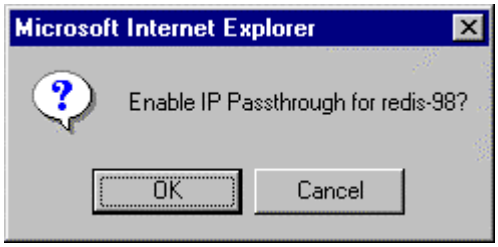
To enable Single Static IP, click on the device (from the options listed in the window) that will share your Single Static IP. Click on **enable.**

NOTE: The Single Static IP Configuration screen allows you to select the device on your LAN that will share your Single Static IP.



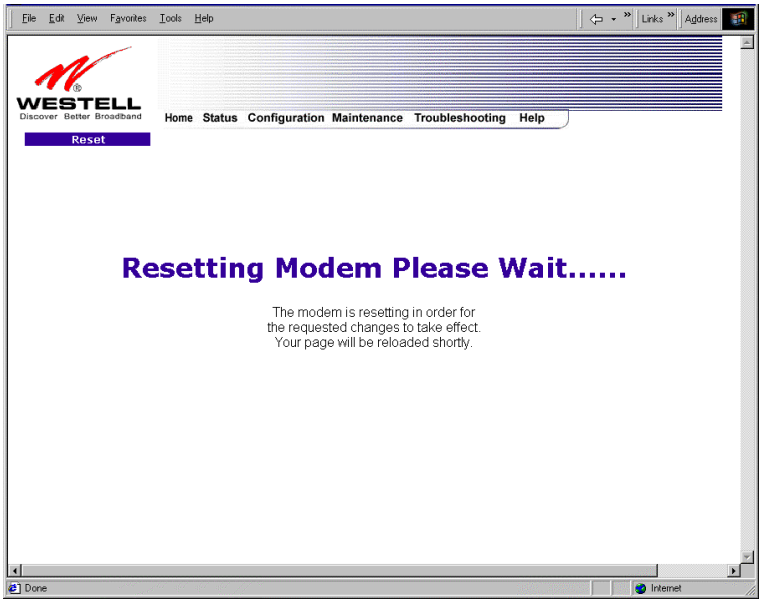
If you clicked on **enable,** the following pop-up screen will appear. Click on **OK** to enable this device for Single Static IP. Click on **Cancel** if you do not want to enable Single Static IP.

NOTE: The actual information displayed in this screen may vary.

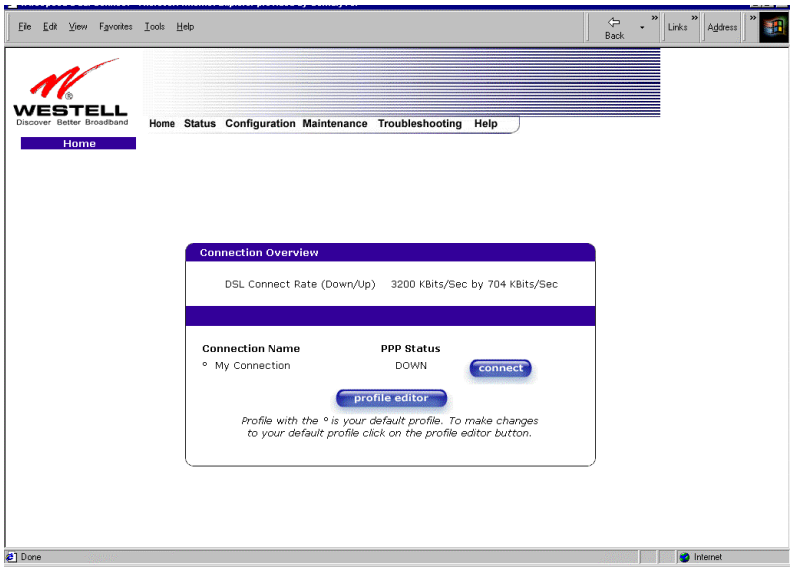


If you clicked on **OK** in the preceding pop-up screen, the following pop-up screen will appear. The Router must be reset in order for the new configuration to take effect. Click on **OK.**

If you clicked on **OK,** the following screen will be displayed. The Router will be reset and the new configuration will take effect.

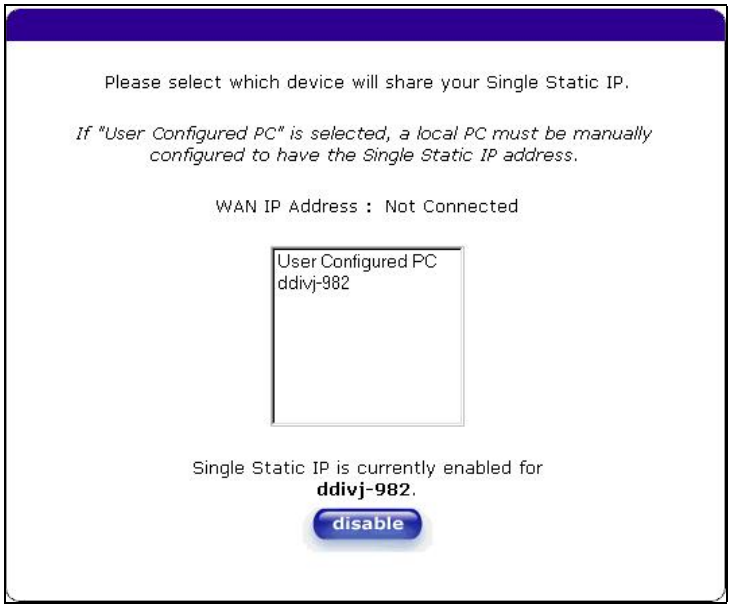


After the modem has completed resetting, the following screen will be displayed. Confirm that you have a DSL sync and click on the **connect** button to establish a PPP session. When the PPP Status reads **UP**, you are ready to continue configuring your Router.



11.7.2 Disabling Single Static IP

To disable Single Static IP, select **Single Static IP Configuration** from the **Configuration** menu. Next, select your device (from the options displayed in the window). Click on **disable.**

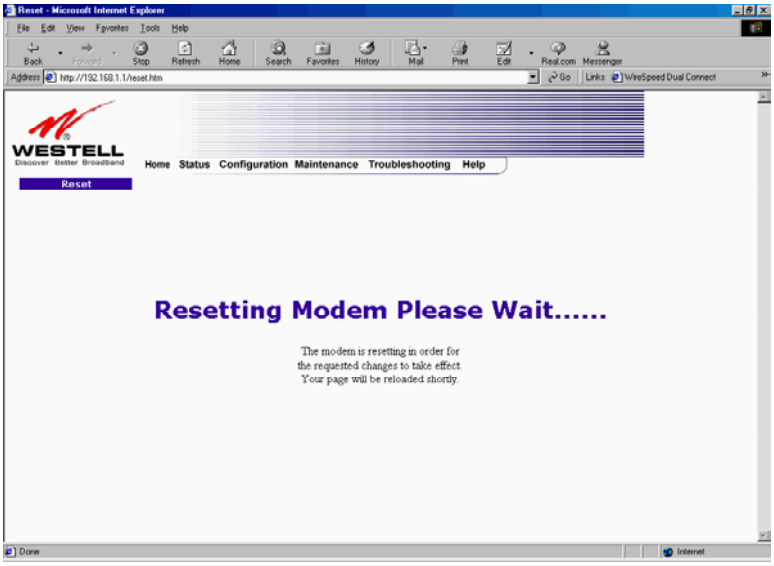


STOP! After you enable Single Static IP, you must reboot your computer.

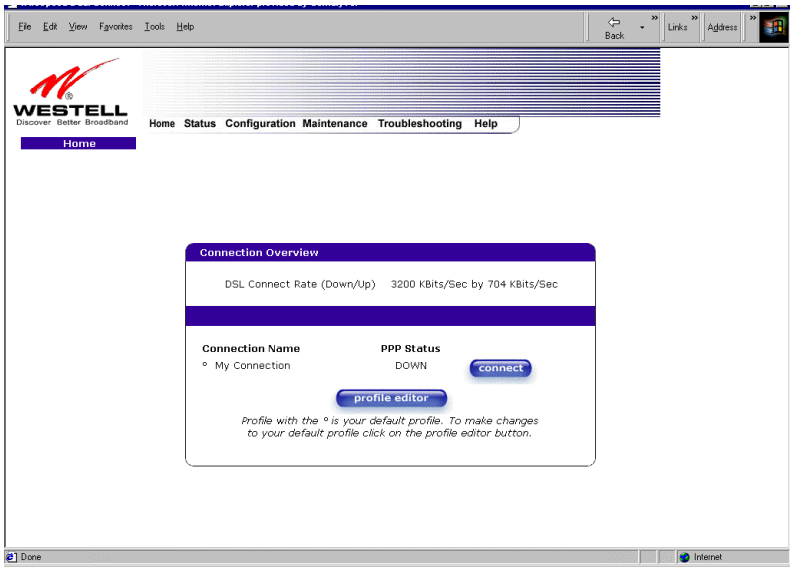
If you clicked on **disable** in the preceding screen, the following pop-up screen will be displayed. Click on **OK.**

If you clicked on **OK** in the **Disable IP Passthrough?** screen, the following pop-up screen will be displayed. Click on **OK.** This will allow the modem to be reset and the new configuration will take effect.

If you clicked on **OK**, the following screen will be displayed. The Router will be reset and the new configuration will take effect.



After the modem has completed resetting, the following screen will be displayed. Confirm that you have a DSL sync and click on the **connect** button to establish a PPP session. When the PPP Status reads **UP**, you are ready to continue configuring your Router.



11.7.3 Configuring Static IP on Your PC

If you have static IP service (your Internet service provider (ISP) supplies static IP addresses), you will need to perform the following steps to obtain Internet access:

1. Configure your PC settings to obtain an IP address automatically. (Refer to your Windows Help screen for instructions.)

2. Access the Router by following the instructions in section 7 (Configuring the Router for Internet Connection).

3. View the settings at the VPI/VCI screen (section 7). The values should read **0** (for VPI) and **35** (for VCI). If you type any other value in the fields and click on **next**, you will lose your DSL connection. The connection can't be restored until the VPI/VCI is set to 0/35.

4. Select **VC Configuration** from the **Configuration** menu.

5. Click on the **edit** button in the row that displays the VPI/VCI equal to 0/35. The **VC 1 Configuration** screen will be displayed.

6. Disable DHCP Client (if enabled) by clicking on the DHCP Client **Disable** button located in **VC –1 Bridge Settings.** Note: You must be in Routed Bridge mode (using Bridge Protocol) to access this function.

7. Replace the addresses in the fields labeled **IP address, Subnet Mask, Gateway, DNS Primary, and DNS Secondary** with the addresses you obtained from your Internet service provider.

8. Click on the **set VC** button.

9. Click on **OK** in the VC Configuration pop-up screen.

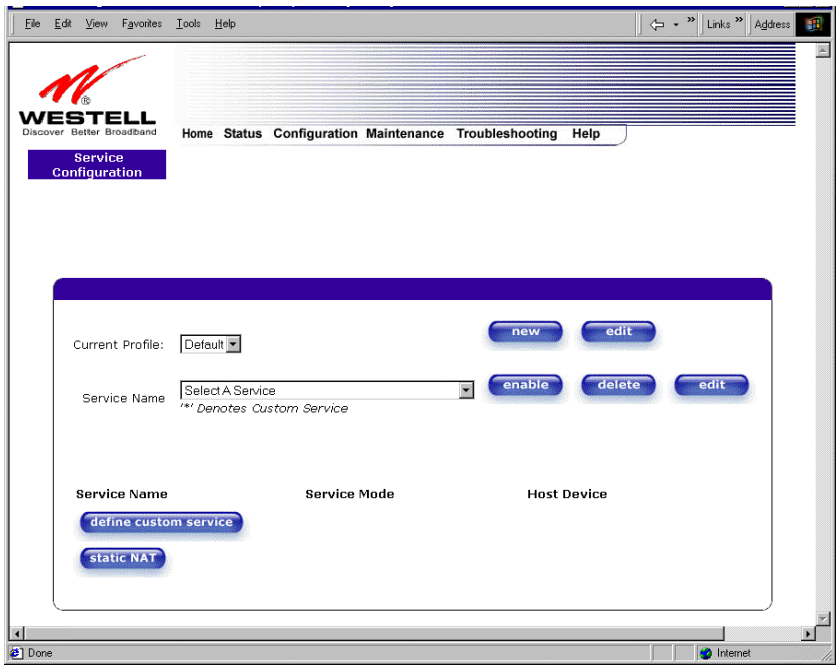
10. Click on **OK** in the reset modem pop-up screen.

After you complete the preceding steps, the Router will be reconfigured and your new settings will take effect. Ensure that the connection status is **UP** before continuing your Router's configuration.

11.7 Service Configuration

The following settings will be displayed if you select **Service Configuration** from the **Configuration** menu.

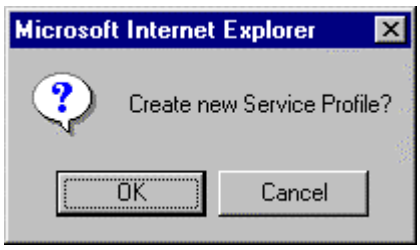
Westell has developed an extensive list of NAT services and you may select any service from this list. By selecting your specific NAT service and setting up a NAT profile, you will ensure that the appropriate ports on your Router are open and that the required application traffic can pass through your LAN. For a list of supported services, go to section 16 (NAT Services).



Current Profile	Displays the NAT (Network Address Translation) services that you have selected.
Service Name	Drop down selection menu of NAT (Network Address Translation) service you can select to configure you Router.

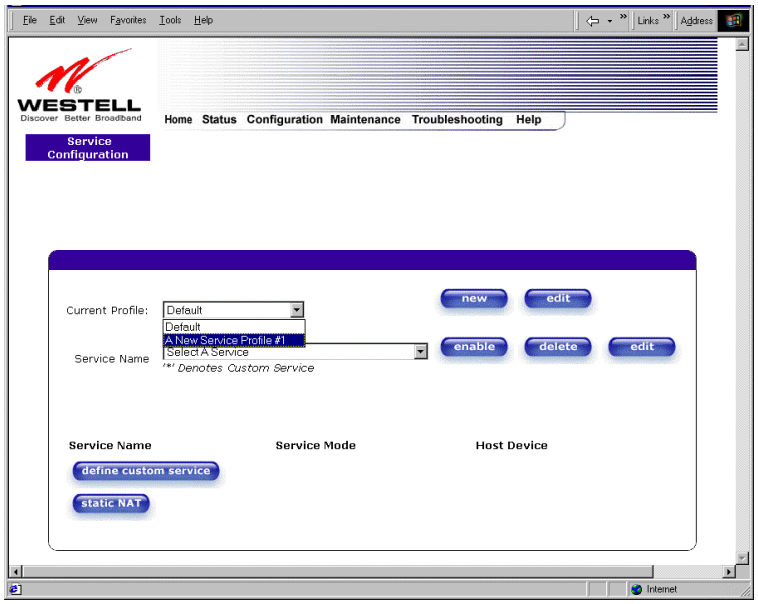
11.8.1 Creating a New NAT Service Profile

If you select **new** from the preceding **Service Configuration** screen, the **Create new Service Profile?** pop-up screen will be displayed. Click on **OK** to begin creating your new NAT service profile. Click **Cancel** if you do not want to create a new NAT service profile.

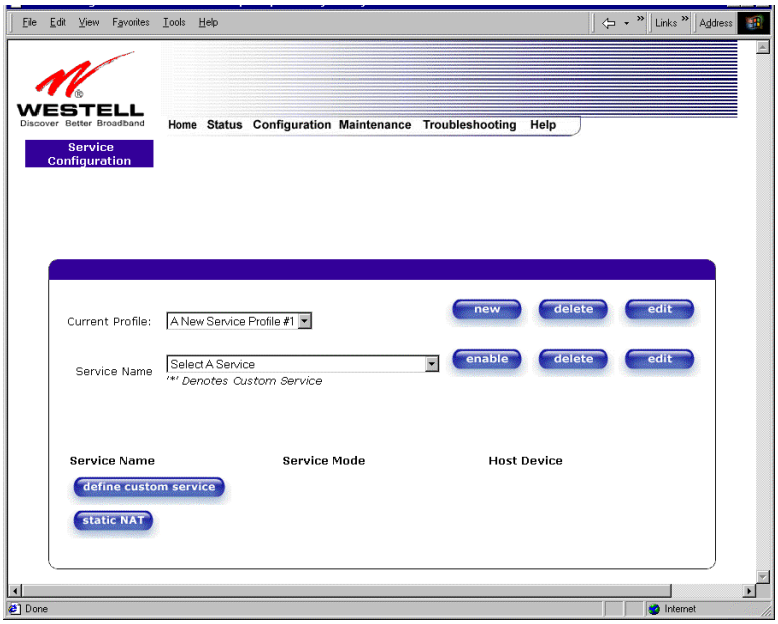


If you clicked on **OK**, the following screen will be displayed. Select **"A New Service Profile #1"** from the **Current Profile** pull-down arrow.

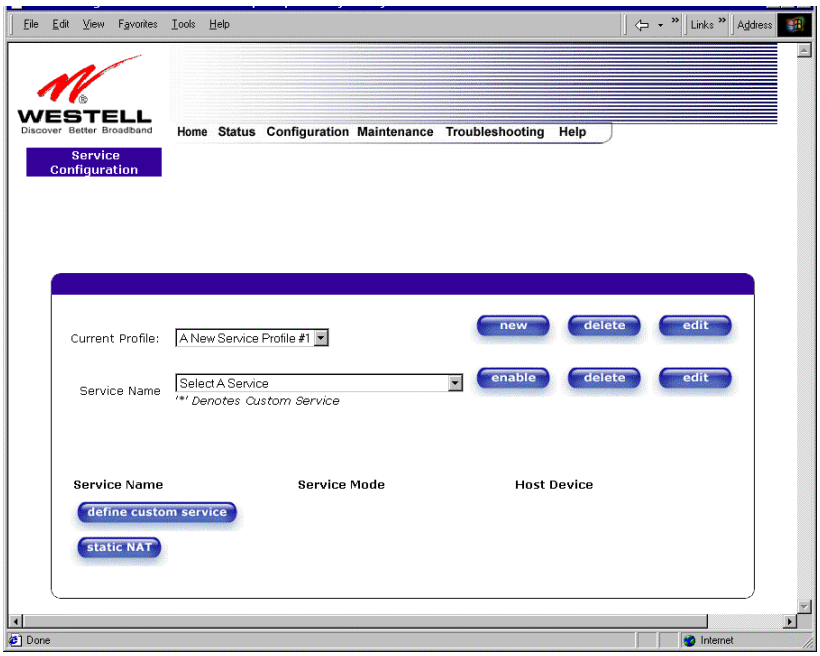
NOTE: You may create up to four NAT profiles and attach an unlimited number of services to each profile.



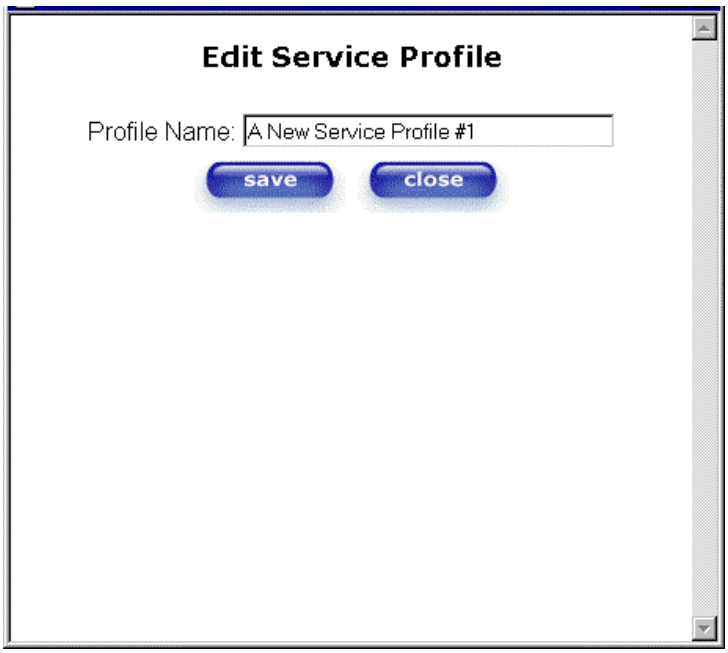
If you selected "**A New Service Profile #1**" from the **Current Profile** pull-down arrow, the following screen will be displayed. This screen shows that you have chosen to create a new NAT service profile. You may create up to four NAT service profiles and attach an unlimited number of services to each profile.



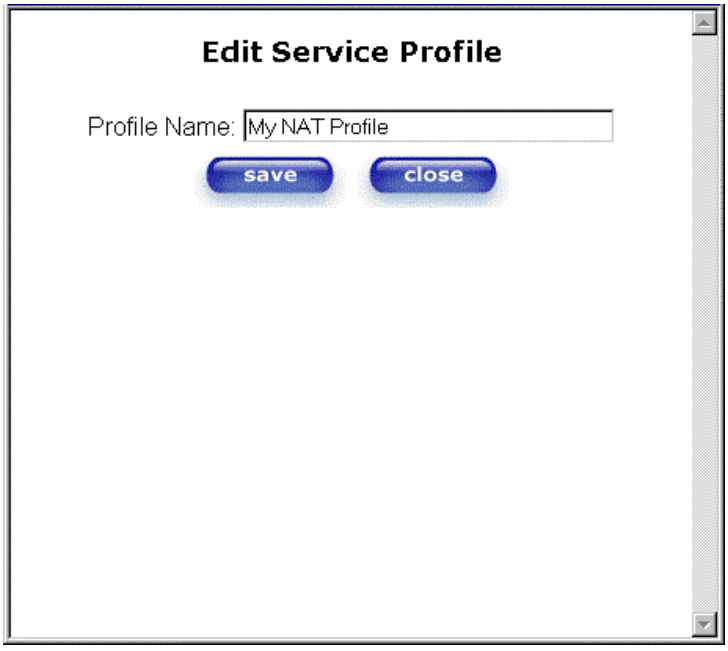
11.8.2 Editing a NAT Service Profile



Once you have created a NAT service profile, you may edit the profile. If you select **edit** from the **Service Configuration** screen, the following screen will be displayed. By selecting the **edit** button, you can make changes to your NAT profile by adding or deleting NAT applications that will work with your Router. Type your new NAT service profile name into the field labeled **Profile Name**.



The following screen shows that a new profile name called '**My NAT Profile**' was entered into the **Profile Name** field. If you want save the new NAT profile, click on **save**. If you do not want to save the new NAT profile, click on **close**.

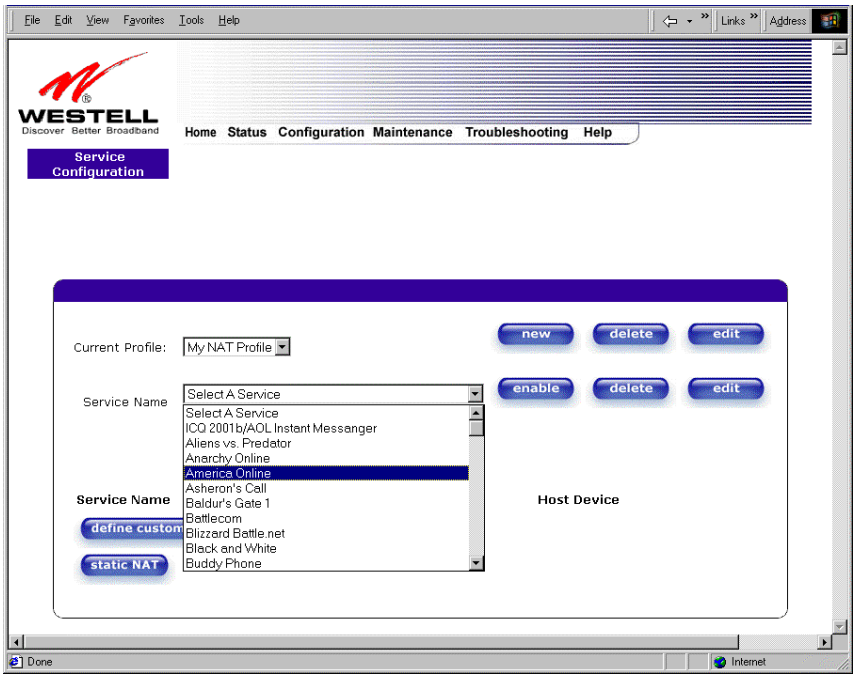


If you clicked on **save** in the **Edit NAT Profile** screen, the following pop-up screen will be displayed. Click **OK** to save your new profile settings. If you click on **Cancel**, your new profile settings will not be saved.

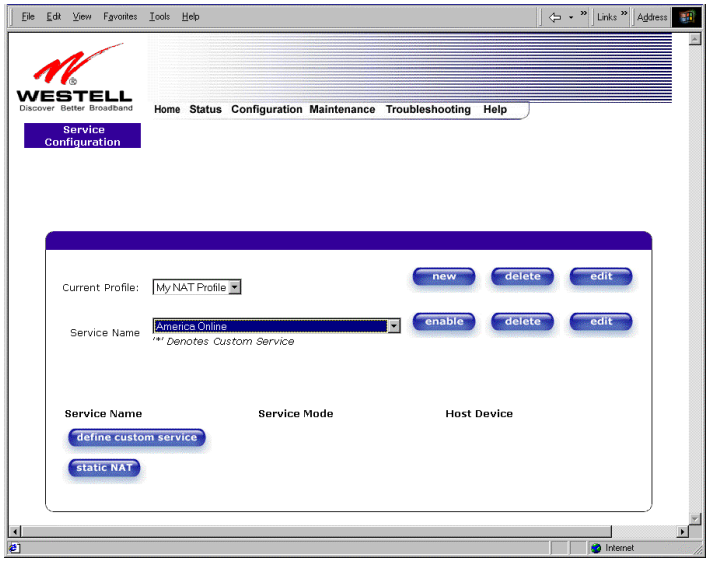
11.8.3 Adding NAT Services to a Profile

This section explains how to add NAT services to your NAT service profile. Remember, you may attach an unlimited number of NAT services to your profile.

To add a NAT service to your NAT service profile, select a service from the options provided at the **Service Name** pull-down arrow.

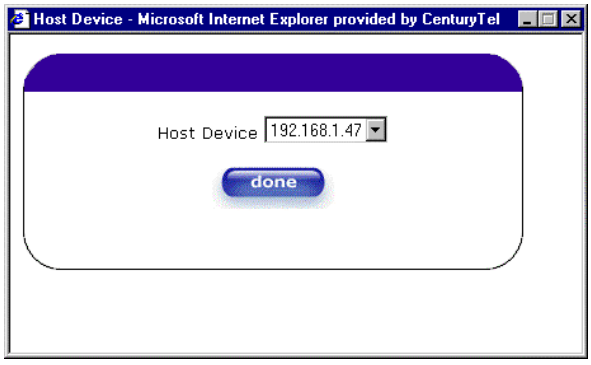


For example, the screen below displays **America Online** as the NAT service selected. Once you have selected a service, click on **enable.**



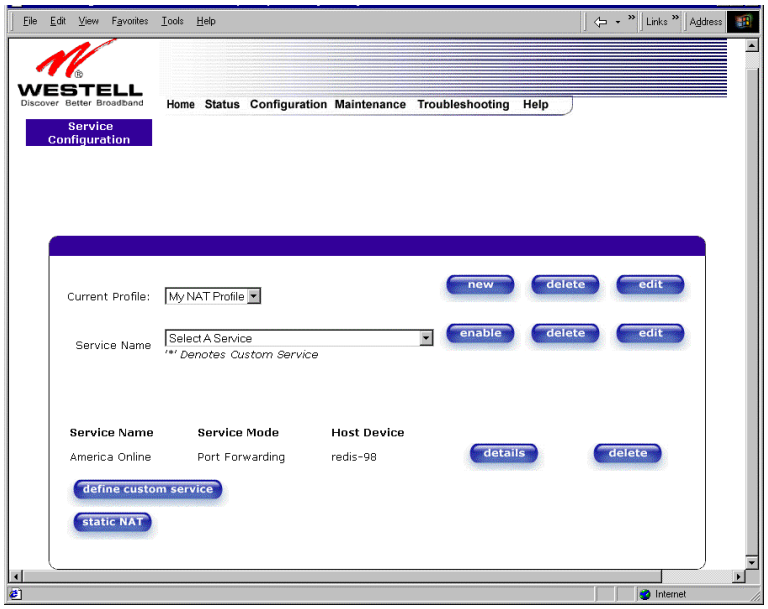
If you clicked on **enable**, the following **Host Service** screen will be displayed. Click on **OK.** This will load the new NAT Configuration and the settings will be saved automatically.

If you clicked on **OK** in the preceding pop-up screen, the **Host Device** screen will be displayed. The **Host Device** screen will allow you to select which device will host the NAT service you selected on your local area network. Select the device from the **Host Device** pull-down arrow and click on **done.**

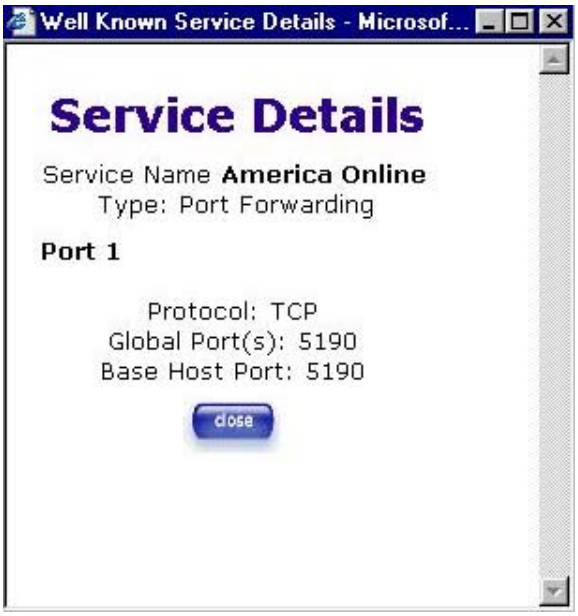


NOTE: You can attach multiple NAT services to your profile. However, for each NAT service that you attach to your profile, you must first select the new NAT service. Then, you must load the new NAT Configuration, as explained earlier in this section.

Once you have selected a NAT service and you have saved it to your NAT service profile, the following screen will be displayed. It shows which NAT service is active for the selected profile.



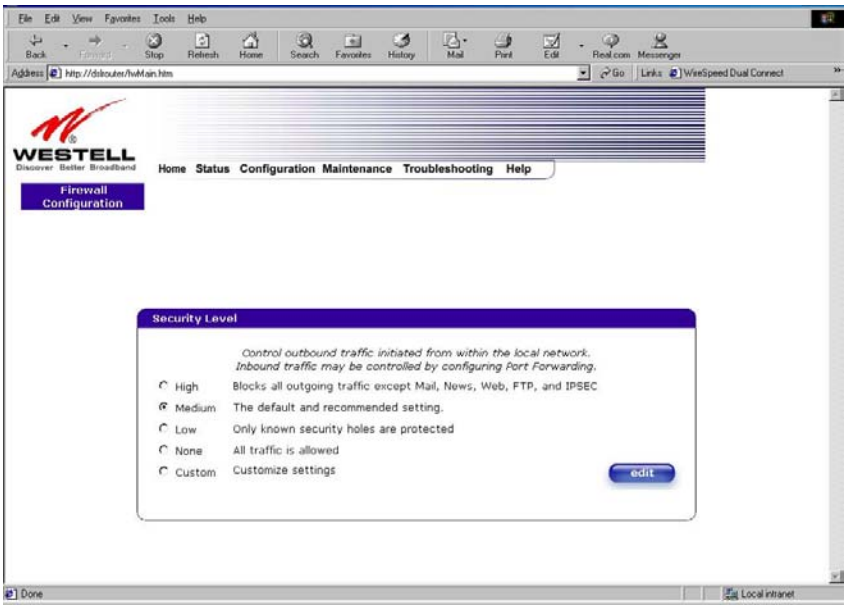
If you select **details**, the screen below will display the details of the selected NAT service. Click on **close** to continue. If you click on **delete**, you will remove that NAT service from your NAT service profile.



NOTE: If you would like to set up additional Advanced Service Configuration options, please refer to section 12 (Setting Up Advanced Service Configuration).

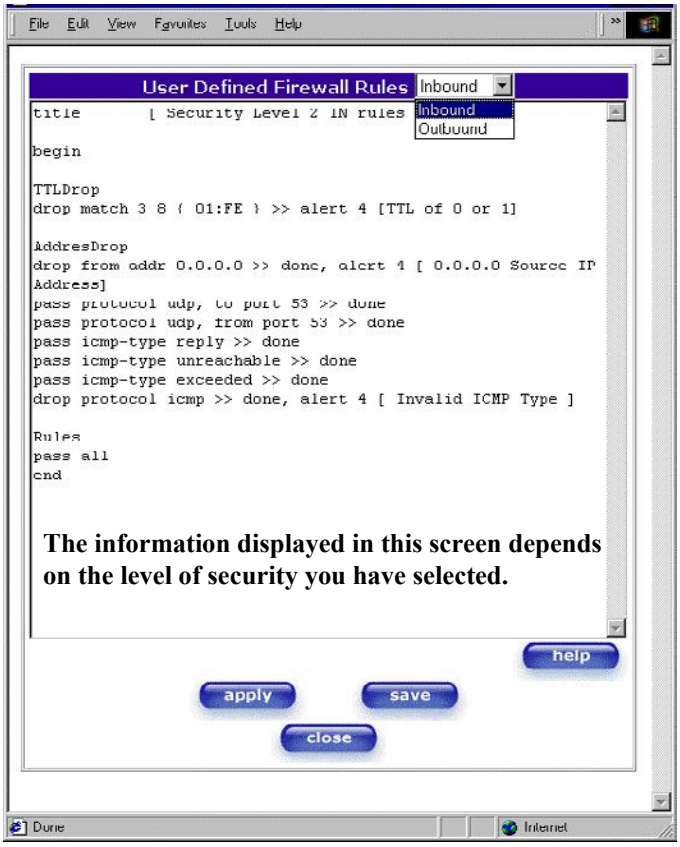
11.8 Firewall Configuration

The following settings will be displayed if you select **Firewall Configuration** from the **Configuration** menu.



High	High security level only allows basic Internet functionality. Only Mail, News, Web, FTP, and IPSEC are allowed. All other traffic is prohibited.
Medium	Factory Default = MEDIUM Like High security, Medium security only allows basic Internet functionality by default. However, Medium security allows customization through NAT configuration so that you can enable the traffic that you want to pass.
Low	The Low security setting will allow all traffic except for known attacks. With Low security, your Router is visible to other computers on the Internet.
None	Firewall is disabled. (All traffic is passed)
Custom	Custom is an advanced configuration option that allows you to edit the firewall configuration directly. NOTE: only the most advanced users should try this.

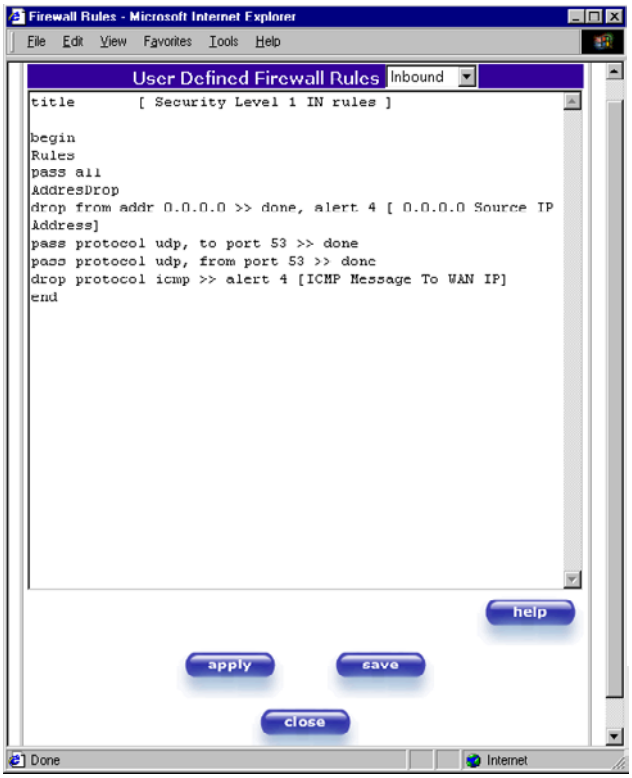
If you select **Edit** in the preceding **Firewall Configuration** screen, the **User Defined Firewall Rules** screen will be displayed. This screen allows you to change the security parameters on your Inbound and Outbound Firewall rules via the **User Defined Firewall Rules** pull-down arrow. To apply the new settings, click on **Apply** in the screen labeled **User Defined Firewall Rules**.



If you clicked **Apply** in the **User Define Firewall Rules** screen, the following pop-up screen will be displayed. Click on **OK** if you want your new firewall setting to take effect. If you click on **Cancel**, your new firewall settings will not take effect.

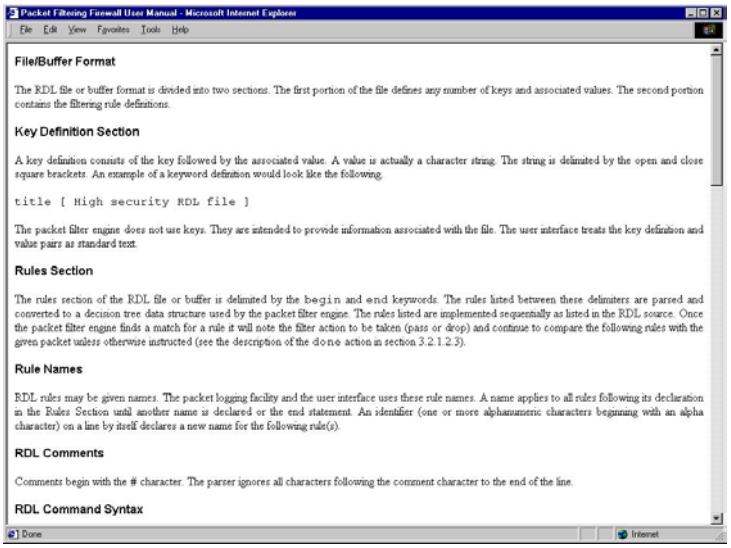
If you want to save your new firewall settings, click on **save** in the screen labeled **User Define Firewall Rules**.

NOTE: Westell recommends that you do not change the settings in the **User Defined Firewall Rules** screen. If you need to reset the Router to factory default settings, push the reset button on the rear of the Router.



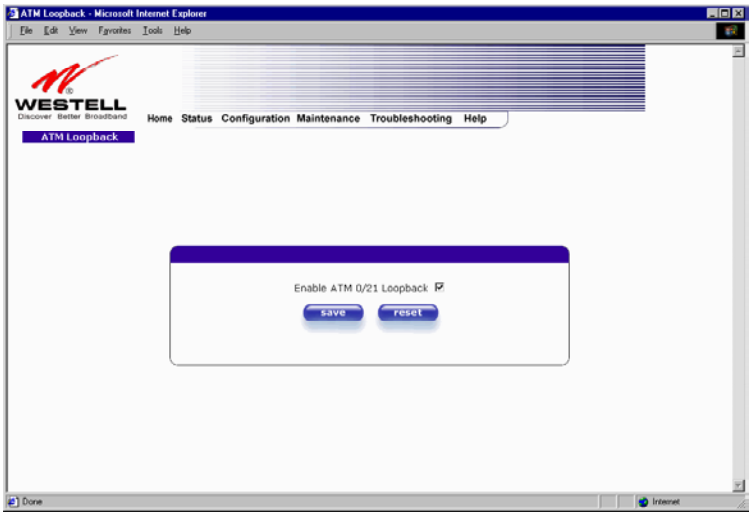
If you clicked **save** in the **User Define Firewall Rules** screen, the following pop-up screen will be displayed. Click **OK** when asked **Do you wish to save these Rules to Flash and switch you Security Level to "User"?** This will save your new firewall settings. If you click **Cancel**, your new firewall settings will not be saved.

If you select **Help** in the screen labeled **User Defined Firewall Rules**, the following screen will be displayed. This screen gives a detailed explanation of the Firewall Rules.



11.9 ATM Loopbacks

If you select **ATM Loopbacks** from the **Configuration** menu, the following settings will be displayed.



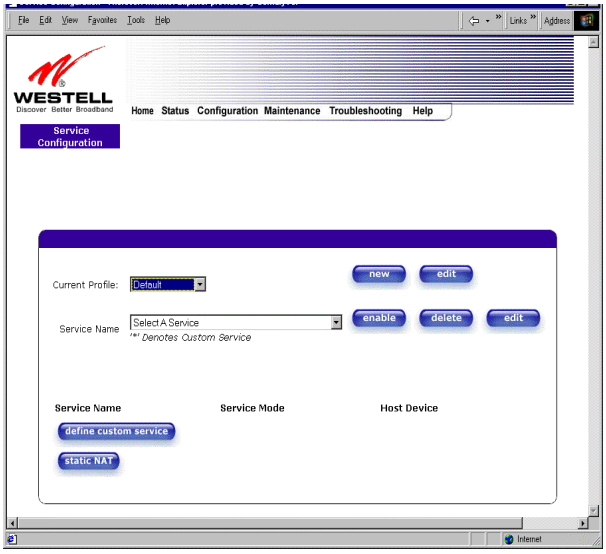
Enable ATM 0/21 Loopback:	Factory Default = ENABLED This option enables the 0/21 loopback , which is used by your ISP. NOTE: Westell does not recommend that you change this setting.

12. SETTING UP ADVANCED SERVICE CONFIGURATION

You can set up additional Service Configuration options for your NAT Router that allow you to enter the port forwarding and trigger ports ranges of your choice. Go to **Configuration** at the homepage menu and select **Service Configuration.**

When you click on **define custom service** in the **Service Configuration** screen, the Custom Service screen will guide you through the steps of creating an advanced NAT service entry via the **define custom service** button.

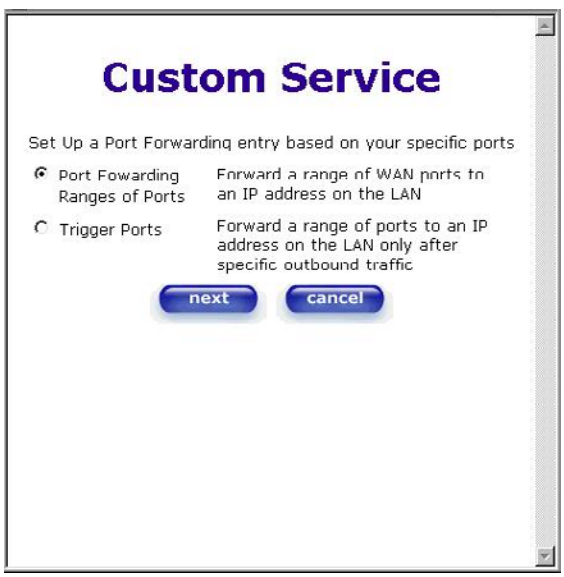
NOTE: Westell strongly recommends that you do not change any values in this section. If you experience any problems, please reset your Router via the external hardware re-set button or the procedure defined under the **Maintenance** menu.

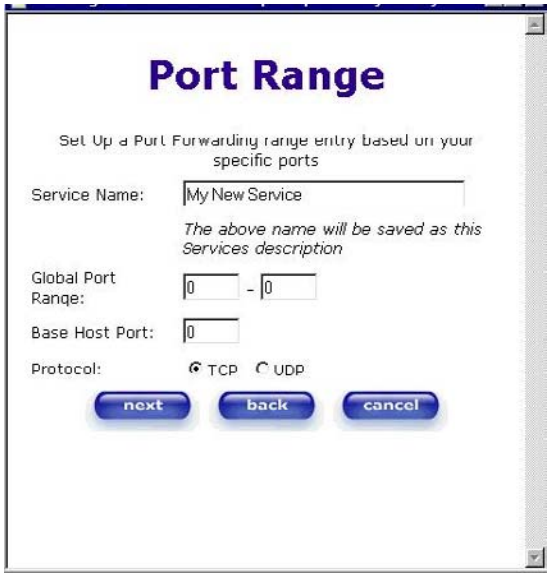


Port Forwarding Ranges of Ports	This option allows you to forward a range of WAN ports to an IP address on the LAN.
Trigger Ports	This option allows you to forward a range of ports to an IP address on the LAN only after specific outbound traffic.

12.1 Port Forwarding Ranges of Ports

To select **Port Forwarding Ranges of Ports**, click on **define custom service** from the **Service Configuration** screen, and then select **Port Forwarding Ranges of** Ports from the **Custom Service** screen. Click on **Next**. The follow settings will be displayed in the **Port Range** screen. Enter your values in the **Global Port Range** fields and click on **next** to continue.





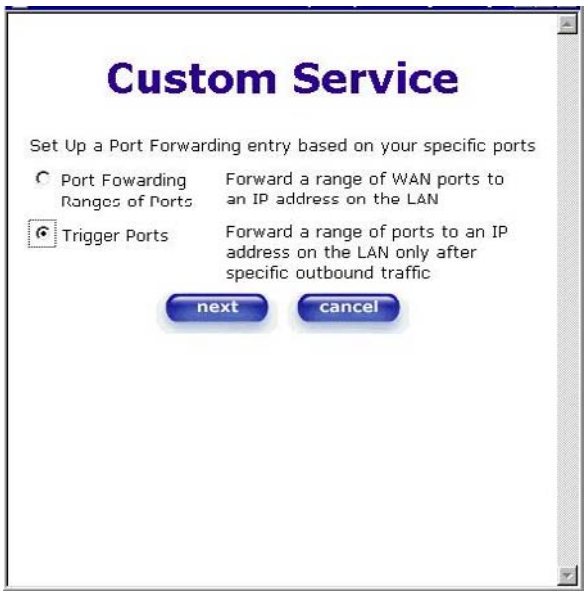
12.2 Adding Port Forwarding Ports

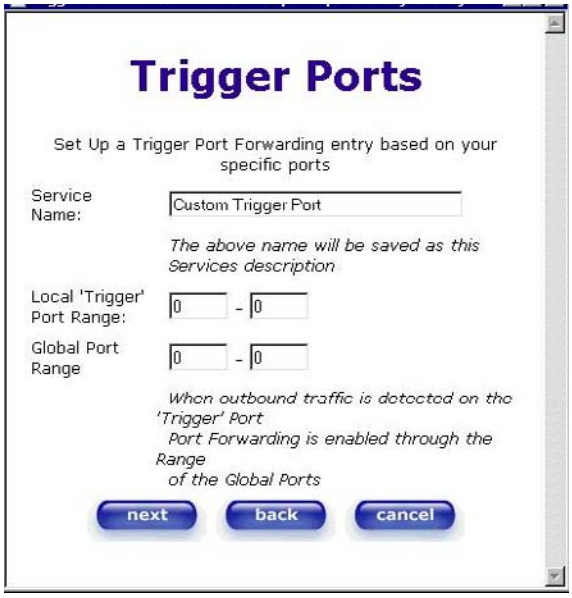
If you made changes in the **Global Port Range** screen and clicked on **next**, the following screen will be displayed. You may either click on **close** to accept the changes, or click on **add** to go back to **Global Port Range** screen, enter additional port range values, and click on **next**. You can repeat this step for each range of ports that you want to add (up to 62 port forwarding ranges). When you are finished adding ports to the Global Port Range, you must click on **close** to accept the information you have entered and return to the **Service Configuration** screen.

Service Name	The NAT service for which you are configuring Port Forwarding.
Type	The type of NAT service configuration you selected.
Protocol	The type of Protocol that is used to run this NAT service. TCP- Transmission Control Protocol. UDP-User Datagram Protocol (UDP).
Local IP Address	If a static IP address has been assigned, it will be displayed here.
Base Host Port	The port on the WAN that will host the NAT service selected.

12.3 Port Forwarding Trigger Ports

To select **Port Forwarding Trigger Ports**, click on **define custom service** from the **Service Configuration** screen, and then select **Trigger Ports** from the **Custom Service** screen. Click on **next**. The follow settings will be displayed in the **Trigger Ports** screen. Enter your values in the **Local 'Trigger' Port Range** fields and click on **next** to continue.

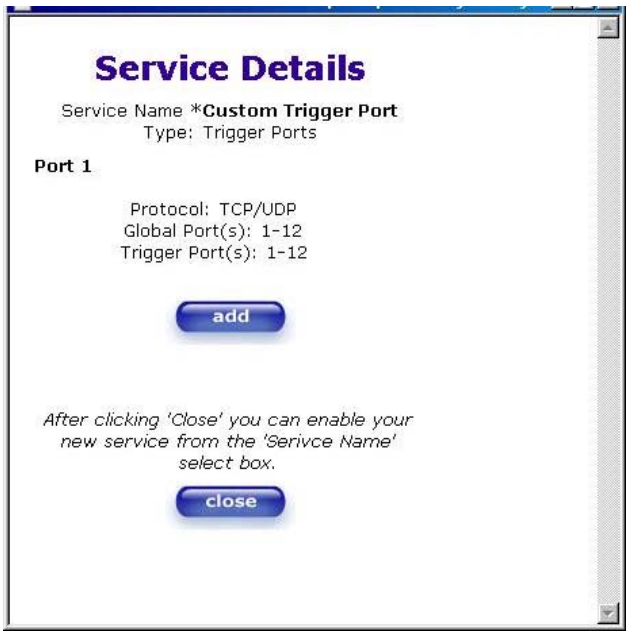




Service Name	The NAT service you selected.
Local Trigger Port Range	The local LAN side TCP/UDP port.
Global Port Range	The WAN side TCP/UDP port range.

12.4 Adding Local Trigger Ports

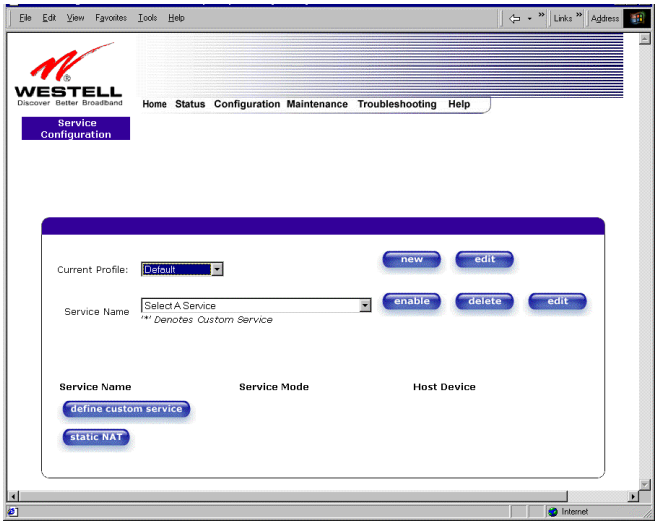
If you made changes in the **Local 'Trigger' Port Range** screen and clicked **next**, the following screen will be displayed. You may either click on **close** to accept the changes, or click on **add** to go back to the **Trigger Ports** screen, enter additional port range values, and click on **next**. You can repeat this step for each port range that you want to add (up to 10 trigger ports). When you are finished adding ports to the Local 'Trigger" Port Range, you must click on **close** to accept the information you have entered and to return to the **Service Configuration** screen.



12.5 Static NAT

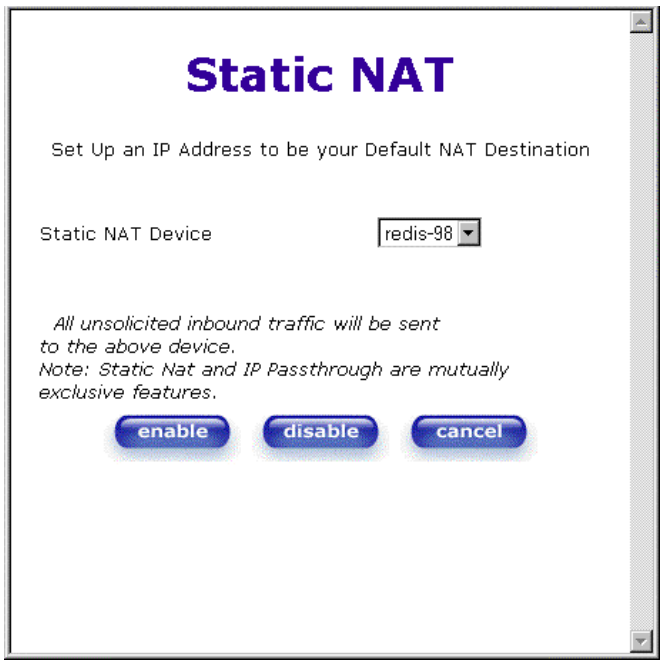
To configure you Router for Static NAT, click on the **static NAT** button in the **Service Configuration** screen.

NOTE: Static NAT will allow you to configure your Router to work with the special NAT services.

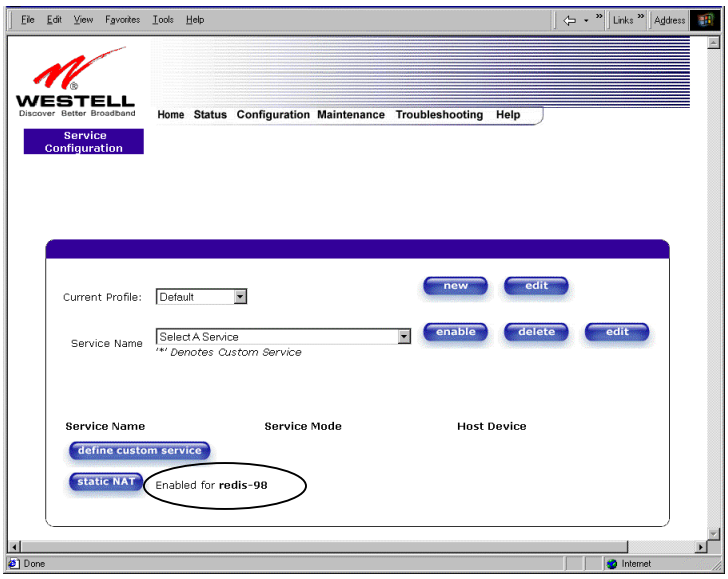


12.6 Enabling Static NAT

If you clicked on **static NAT** in the **Service Configuration** screen, the following screen will be displayed. Select your device name from the **Static NAT Device** pull-down arrow and click on **enable** in the Static NAT screen. This will automatically enable the Static NAT feature for that device. Then, the **Service Configuration** screen will be displayed.

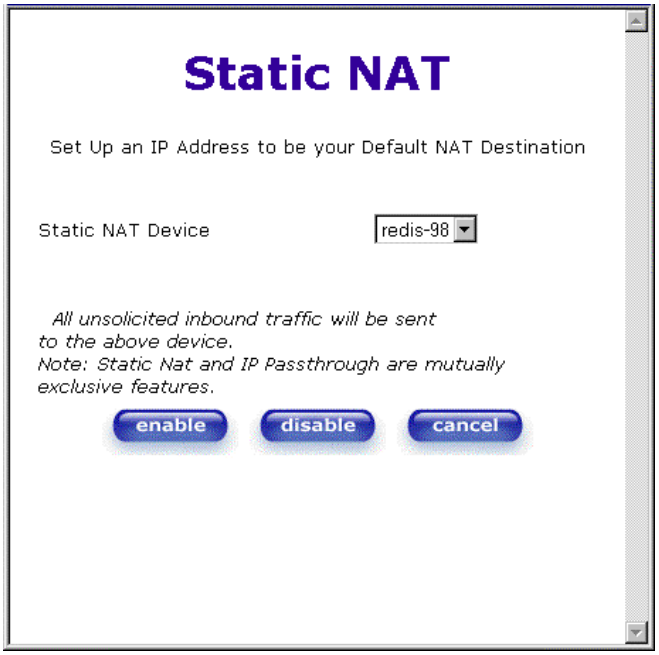


This following screen shows Static NAT enabled.

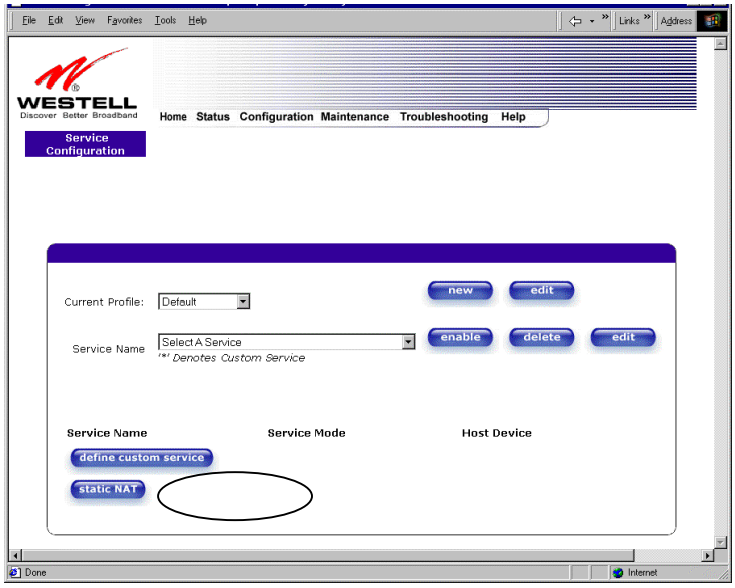


12.7 Disabling Static NAT

If you click on **static NAT** in the **Service Configuration** screen, the following screen will be displayed, select a device name from the **Static NAT Device** pull-down arrow and click on **disable.** This will automatically disable the Static NAT feature for that device. Then, the **Service Configuration** screen will be displayed.



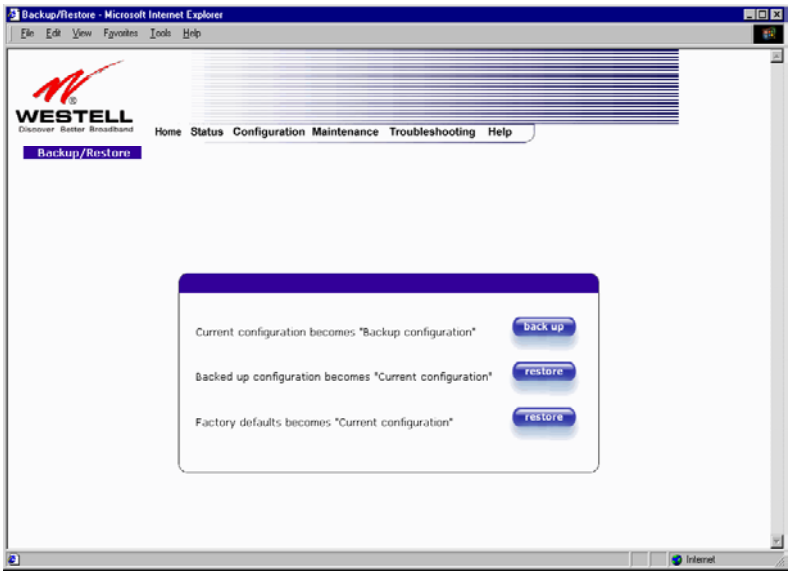
The following screen shows Static NAT disabled (No device is displayed in the field adjacent to the static Nat button.)



13. MAINTENANCE

13.1 Backup/Store

The following settings will be displayed if you select **Backup/Restore** from the **Maintenance** menu.

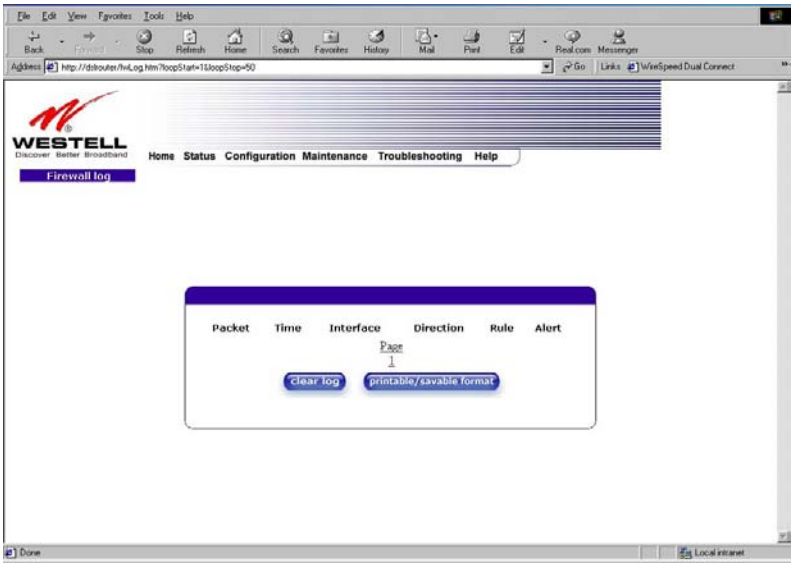


Current configuration becomes Backup Configuration	Select this button if you want to store all of the current configuration data such that it can be recalled later.
Backed up configuration becomes Current configuration	Select this button if you want to retrieve the last back up copy of all configuration parameters and make these values current.
Factory default becomes Current configuration	Select this button if you want set all user configurable parameters back to the factory default.

13.2 Firewall Log

The following settings will be displayed if you select **Firewall Log** from the **Maintenance** menu.

This screen is an advanced diagnostics screen. It alerts you of noteworthy information sent to your Router from the Internet. The screen can contain 1000 entries, but a maximum of 50 entries are displayed at a time. Once 1000 entries have been logged, the oldest entry is removed to make space for the new entries as they occur. The following settings are displayed.



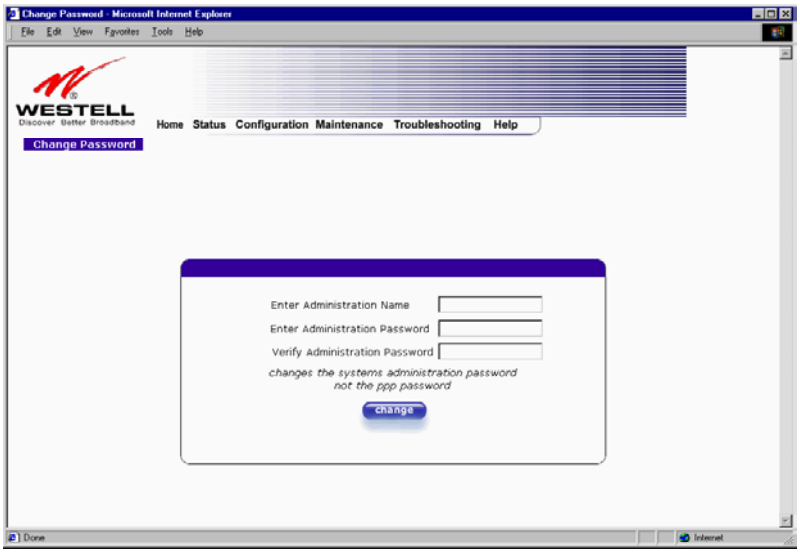
Packet	The packet number.
Time	The time that the packet was sent.
Interface	The type of protocol interface.
Direction	The direction of transmission.
Rule	The internal rule that caused the logged event. The internal rule is setup under Firewall rules.
Alert	A description of the logged event.

To clear the Firewall log, click **clear log** in the **Firewall Log** screen. The following pop-up screen will be displayed. Click **OK** when asked "**Do you wish to clear the Firewall log file?"** If you click **Cancel**, the firewall log will not be cleared.

To obtain a printable format of the Firewall Log, at the **Firewall Log** screen, click **Printable/Savable Format**. This will allow you to send a copy of the Firewall log to your designated printer.

13.3 Change Password

The following settings will be displayed if you select **Change Password** from the **Maintenance** menu. After you enter your data into the appropriate settings, click on **change**.

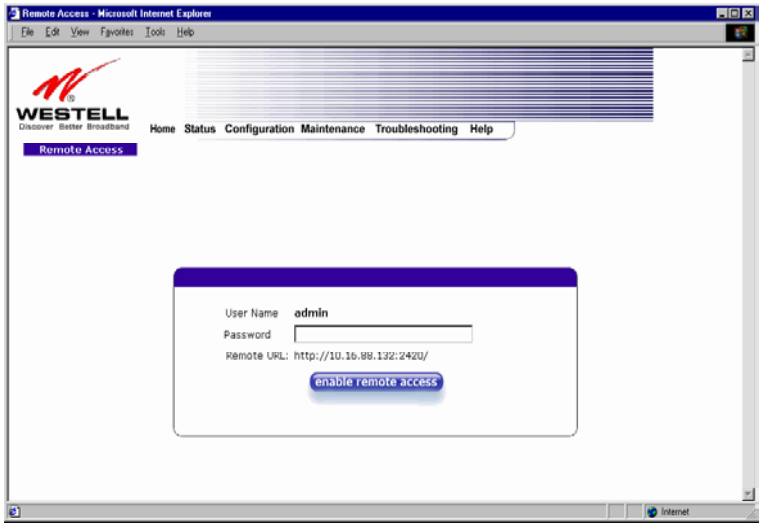


Enter Administrative Name NOTE: This changes the Systems Administrator password not the PPP password.	Type the name of your network administrative.
Enter Administrative Password	Type your network administrator's password.
Verify Administrative Password	Re-type your network administrator's password.

13.4 Remote Access

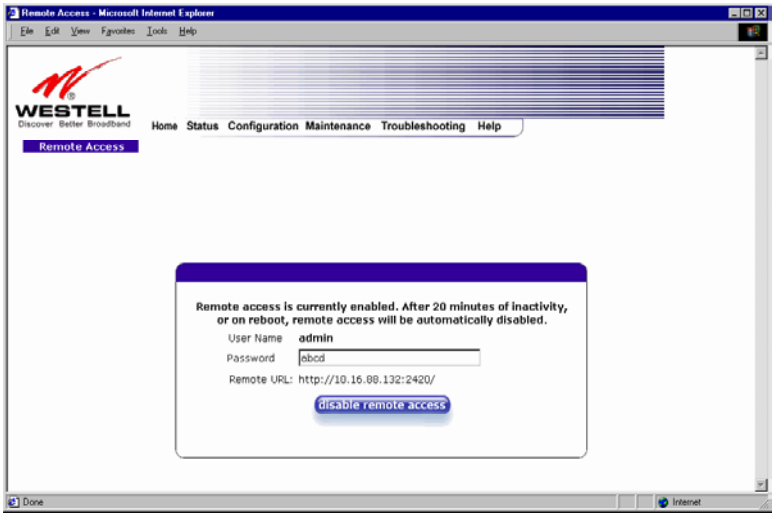
The following screen will appear if you select **Remote Access** from the **Maintenance** menu. To enable Remote Access, type in a password and click the enable remote access button.

NOTE: The password should be at least 4 characters long and should not exceed 32 characters. Do not type a blank space or asterisks in the Password field. The password is also case sensitive.



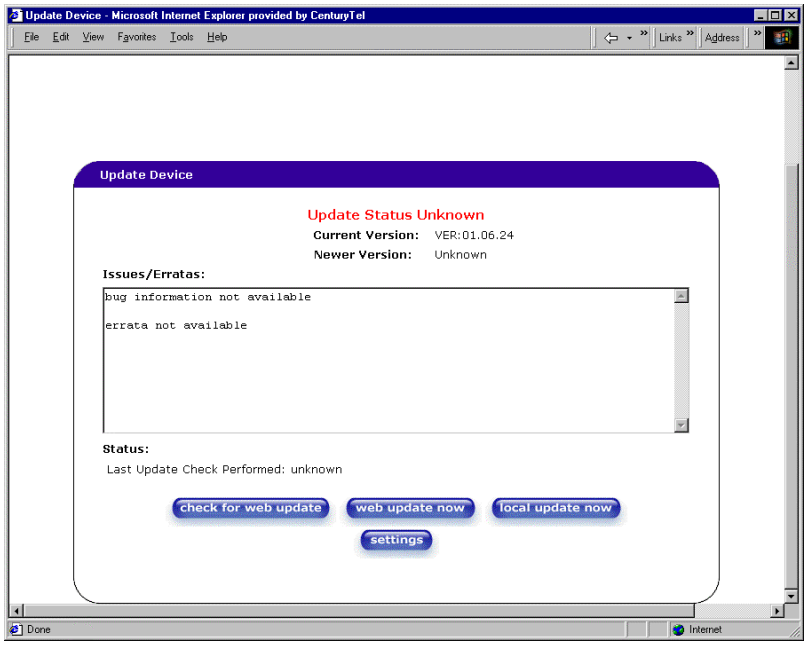
User Name	Displays your current User Name (Static field)
Password	Field for entering your password
URL	Displays the IP address of the remote management gateway

The following screen displays a message that the remote access is currently enabled. After 20 minutes of inactivity, or on reboot, remote access will be automatically disabled. To disable remote access, click on the **disable remote access** button.



13.5 Update Device

The following screen will be displayed if you click on **Update Device** from the **Maintenance** menu. This screen is used to update the firmware that controls the operation of the DSL Router. The updated firmware may be loaded from either a file that is located on your PCs hard drive or from update files stored on an Internet server.

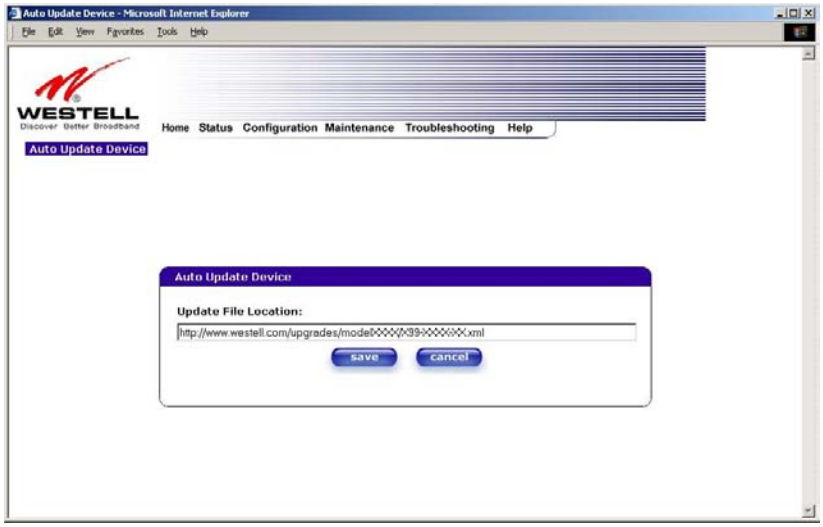


Click on the **check for web update** button in the **Update Device** screen to check the web for possible software updates. This screen will retrieve the software update file and display any available update information. You must be connected to the Internet to use this option.

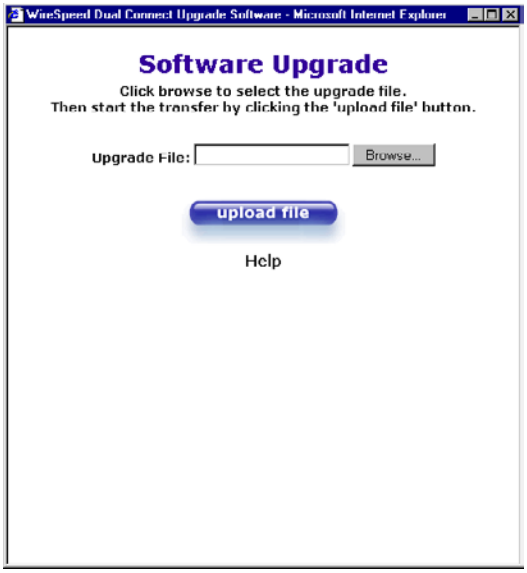
NOTE: If you click on check for web update and the page returns a “page not found” message, this indicates that the software update file is not available. Go back to the previous screen to continue.

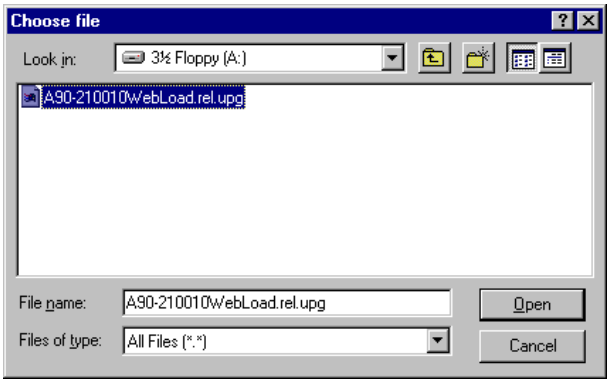
Click on the **web update now** button in the **Update Device** screen to download the software update file and automatically update the modem firmware if an update is available and applicable. You must be connected to the Internet to use this option.

If you click on the **settings** button in the **Update Device** screen, the following screen will appear. This screen displays the location of the software update file.



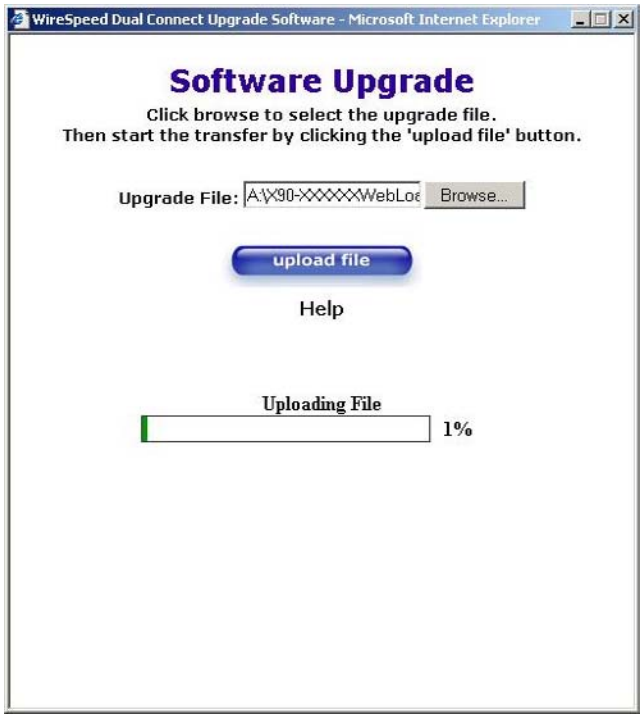
Click on the **local update now** button in the **Update Device** screen to select the upgrade file from your PC's hard drive. This screen allows you to upgrade the software on your Router. Click **Browse…** and go to the location where the upgrade file is stored.



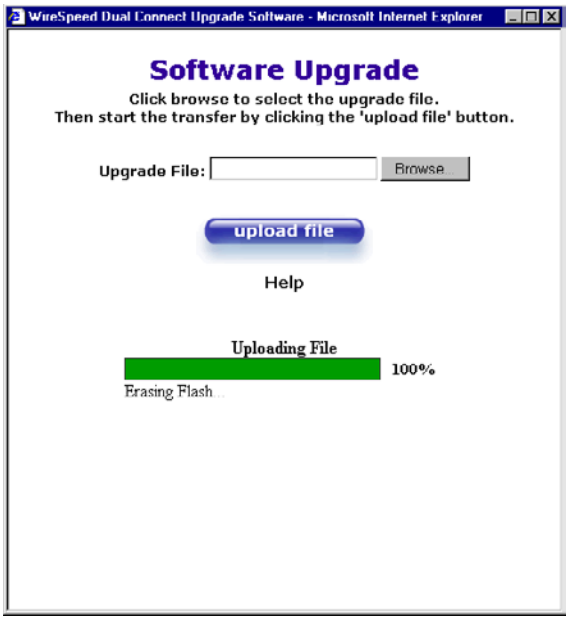


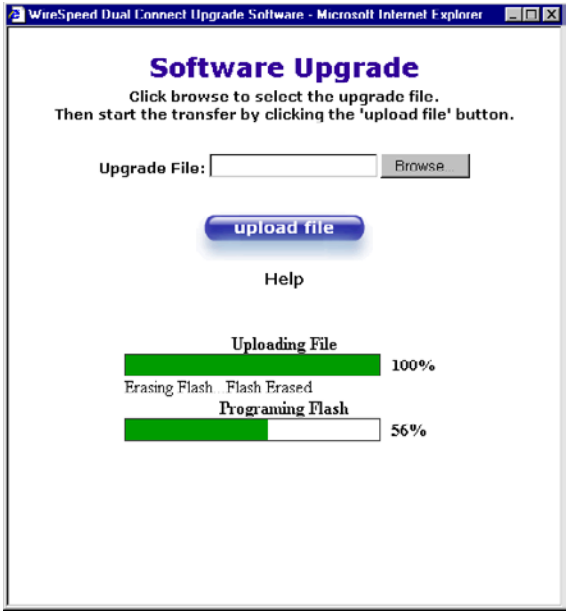
Select the appropriate upgrade file from your browser. The file name will appear in the field labeled **Upgrade File**. Click on **upload file.**

This screen shows that the file is being uploaded to your Router.

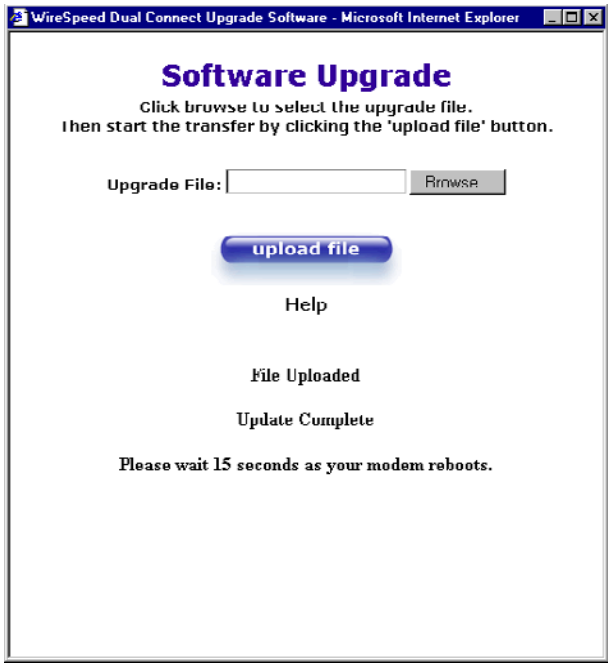


The screens below show that the file upload has completed and that the Programming Flash is being erased to prepare the Flash storage area for upload of the new file. (Programming Flash is a temporary storage area for uploaded files.)

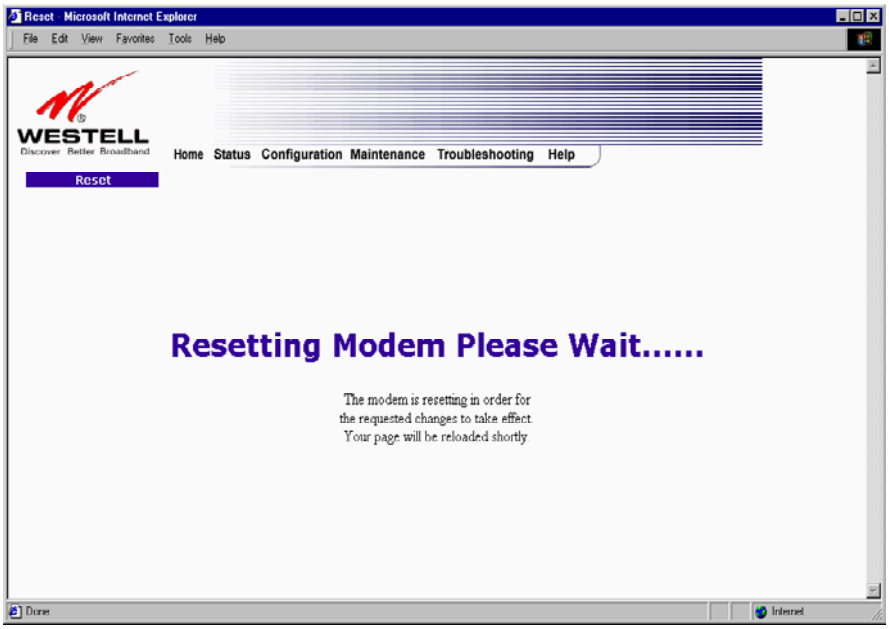




The screen below shows that the upload was successful. The modem will now reboot.



The screen below shows that the Router is being reset.

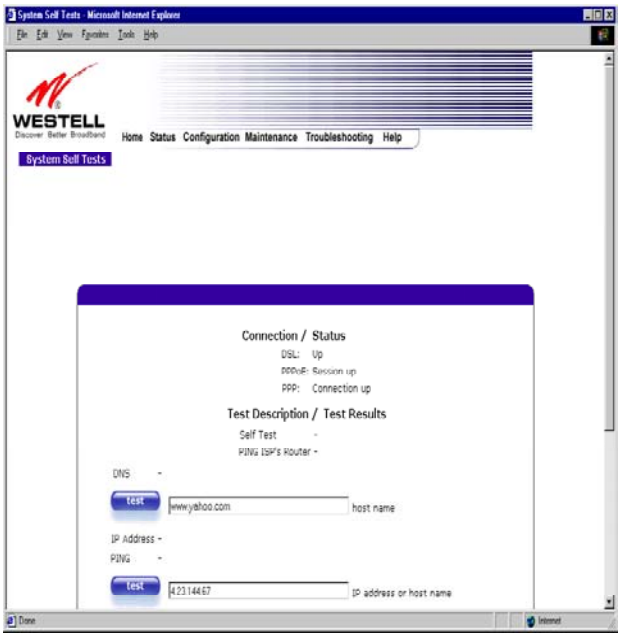


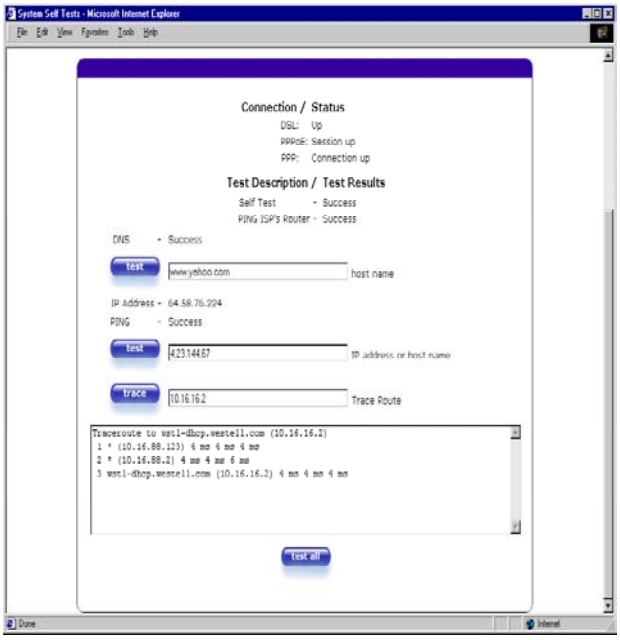
14. TROUBLESHOOTING

14.1 System Self Tests

The following settings will be displayed if you select **System Self Tests** from the **Troubleshooting** menu. Click on **test all** to run a diagnostic test on your Router's connection.

This screen had been displayed in two parts for illustrative purposes. **The actual information displayed in this screen may vary.**





If you want to PING using the System Self Test screen (diagnostics page) shown above, enter your **DNS** or **IP** address in the fields provided and click on the **test** button. The System Self Test will run a diagnostic test that executes independent of firewall security settings. See the following table for test descriptions and possible responses.

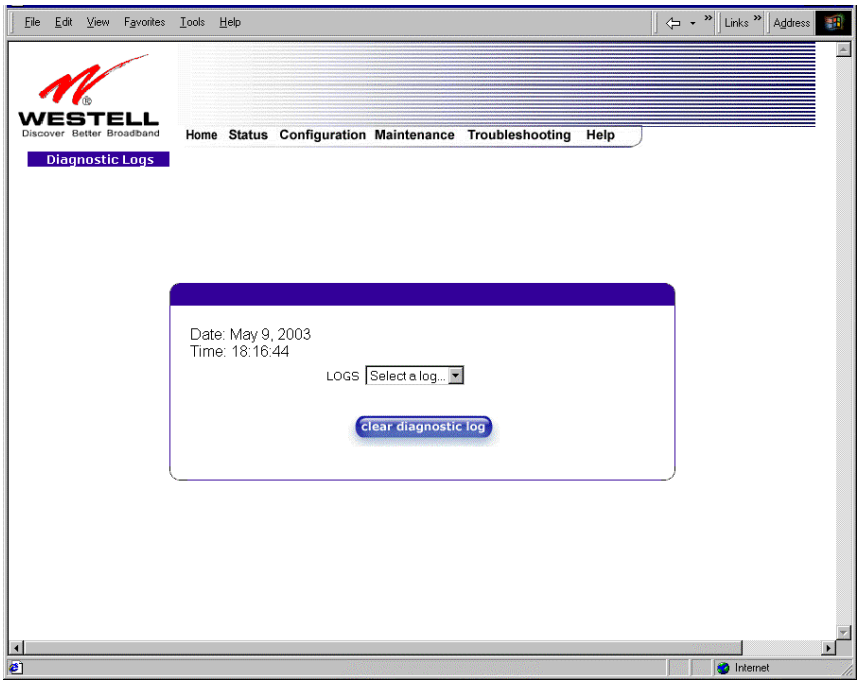
If you want to PING using the MS-DOS (shell) window, first you will need to check your firewall security setting. (If you PING via DOS shell you are susceptible to firewall rules, as this PING is dependent on your Router's firewall settings.) If your firewall is set to **Medium** or **High**, you will not be able to PING. You must set your firewall security setting to **Low** or **None**.

Connection/Status	
DSL	The Router checks the status of the Router connection. Possible responses are: UP: The Router is operating correctly and has obtained synchronization with the opposing network device. DOWN: The Router is operating correctly, but has not synchronized with the opposing device.
PPPoE	Indicates that a PPPoE session is or is not established. Possible responses are: Session UP: A valid PPPoE session has been detected. No Session: Currently there is no active PPPoE session established. Initiating Session: A PPP session must be connected from the homepage screen.
PPP	Indicates that a PPPoE or PPPoA session must already be established. Possible responses are: Connection UP: The Router has established a connection No Connection: There is no PPP connection Initiating Connection: The PPP connection process has been initiated Connection Halted: A successful PPP connection was halted Cannot Connect: A PPP connection could not be made because of a PPPoE session failure. Authorization Failure: The user name or password is incorrect. Link Control Protocol Failed: Re-establish the session (from the home page).
Test Description / Test Results	
Self Test	Performs an integrity check of certain internal components of the Router.
PING ISP's Router	Performs an IP network check (i.e., an IP Ping) of the Service Provider's Router. This test verifies that the Router can exchange IP traffic with an entity on the other side of the DSL line. Possible responses are: Success: The Router has detected an IP Remote Router connection. No Response: The IP Remote Router does not answer the IP Ping. Could not test: The test could not be executed due to Router settings. Check your DSL sync or your PPP session. You must have both a DSL sync and a PPP connection established to execute a PING.
DNS	Performs a test to try to resolve the name of a particular host. The host name is entered in the input box. Possible responses are: Success: The Router has successfully obtained the resolved address. The IP address is shown below the host name input box. No Response: The Router has failed to obtain the resolved address. Host not found: The DNS Server was unable to find an address for the given host name. No data, enter host name: No host name is specified. Could not test: The test could not be executed due to Router settings. Check your DSL sync or your PPP session. You must have both a DSL sync and a PPP connection established to execute a PING.
IP Address	IP Address of the Host Name.
PING	Performs an IP connectivity check to a remote computer either within or beyond

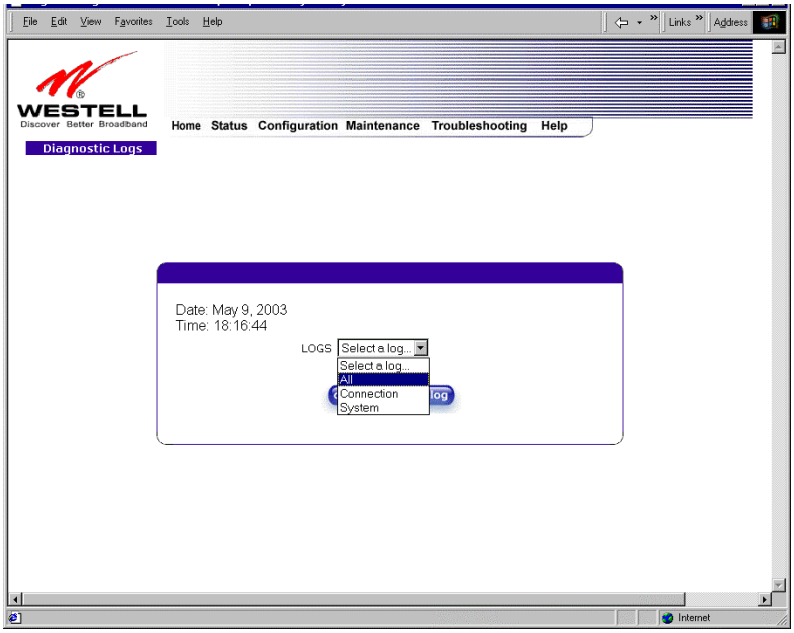
	the Service Provider's network. You can PING a remote computer via the IP address or the DNS address. If your PING fails, try a different IP or DNS address. Possible responses are: Success: The Remote Host computer was detected. No Response: There was no response to the Ping from the remote computer. No name or address to PING: No host name or IP address was specified. Could not test: The test could not be executed due to Router settings. Check your DSL sync or your PPP session. You must have both a DSL sync and a PPP connection established to execute a PING.
Trace Route	Determines the route taken to destination by sending Internet Control Message Protocol (ICMP) echo packets with varying IP Time-To-Live (TTL) values to the destination. Trace Route is used to determine where the packet is stopped on the network.

14.2 Diagnostic Logs

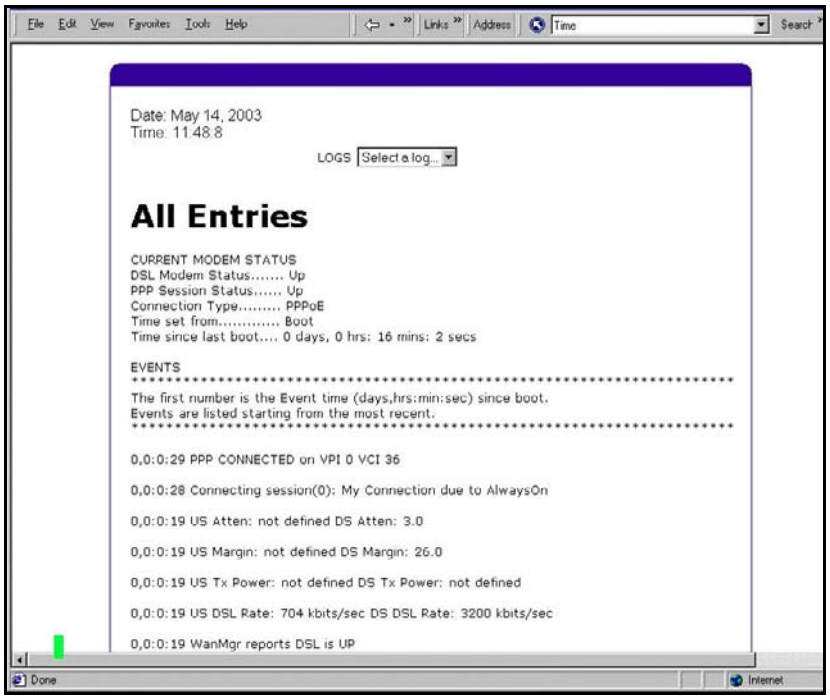
If you select **Diagnostic Log**, from the **System Self Test** menu, the following screen will be displayed.



To see a list of the log options, click on the arrow at the LOGS pull-down menu. Select an option from the list provided at the **Diagnostics Logs** screen.

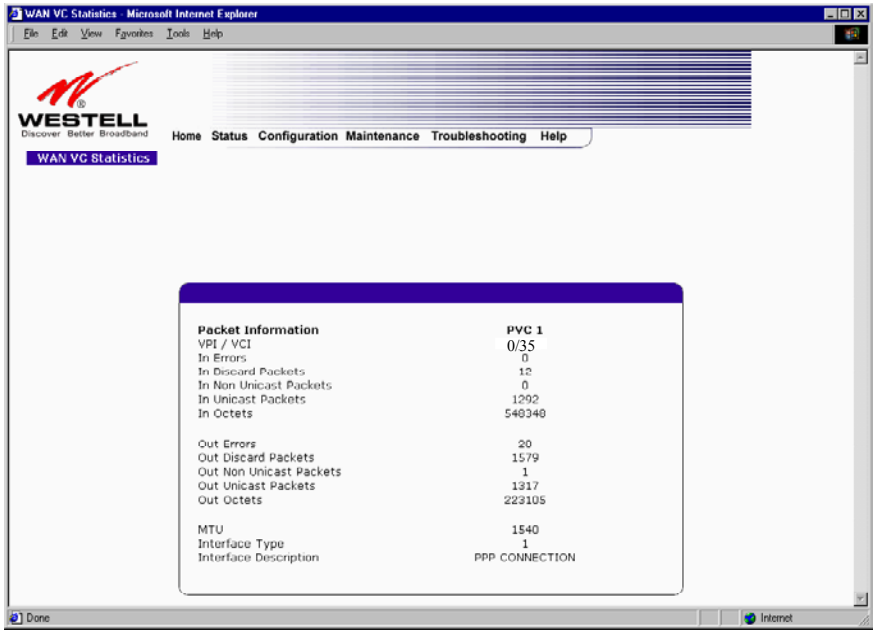


If you clicked on **All,** the following screen will be displayed. This screen provides a detailed list of the Router's connection status and system information. Click on **clear diagnostic log** to clear the diagnostic log information.



14.3 WAN VC Statistics

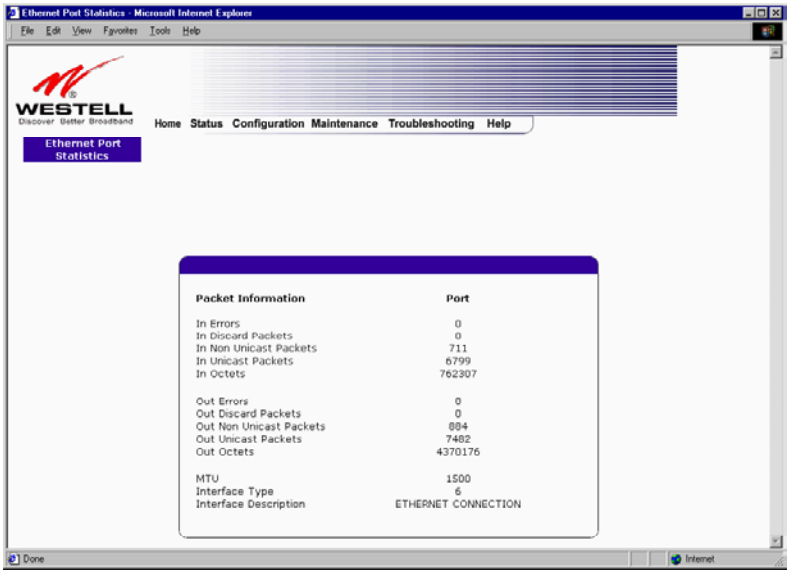
The following settings will be displayed if you select **WAN VC Stats** from the **Troubleshooting** menu.



VPI/VCI	Displays the VPI/VCI values obtained from your Internet Service Provider.
In Errors	The number of error packets received on the ATM port.
In Discard Packets	The number of discarded packets received.
In Non Unicast Packets	The number of non-Unicast packets received on the ATM port.
In Unicast Packets	The number of Unicast packets received on the ATM port.
In Octets	The number of bytes received on the ATM port.
Out Errors	The number of outbound packets that could not be transmitted due to errors.
Out Discard Packets	The number of outbound packets discarded.
Out Non Unicast Packets	The number of non-Unicast packets transmitted on the ATM port.
Out Unicast Packets	The number of Unicast packets transmitted on the ATM port.
Out Octets	The number of bytes transmitted on the ATM port.
MTU	Maximum Transmission Unit -The number of data bytes contained in the ATM frame.
Interface Type	A unique identifier that represents the interface type.
Interface Description	A description field that refers to the interface type.

14.4 Ethernet Statistics

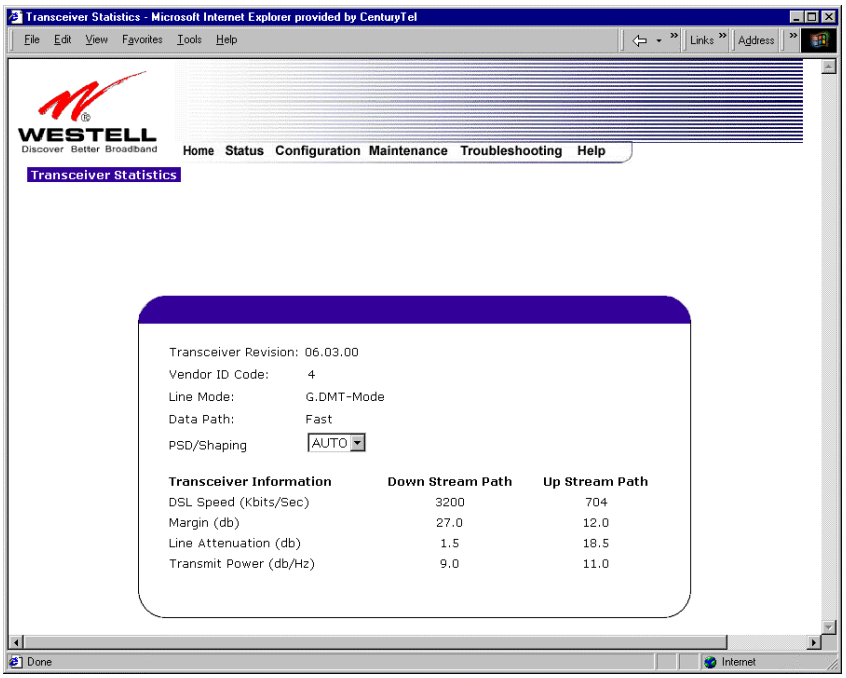
The following settings will be displayed if you select **Ethernet Stats** from the **Troubleshooting** menu.



In Errors	The number of error packets received on the Ethernet interface.
In Discard Packets	The number of discarded packets received.
In Non Unicast Packets	The number of non-Unicast packets received on the Ethernet interface.
In Unicast Packets	The number of Unicast packets received on the Ethernet interface.
In Octets	The number of bytes received on the Ethernet interface.
Out Errors	The number of outbound packets that could not be transmitted due to errors.
Out Discard Packets	The number of outbound packets discarded.
Out Non Unicast Packets	The number of non-Unicast packets transmitted on the Ethernet interface.
Out Unicast Packets	The number of Unicast packets transmitted on the Ethernet interface.
Out Octets	The number of bytes transmitted on the Ethernet interface.
MTU	Maximum Transmission Unit- The number of data bytes contained in the Ethernet frame.
Interface Type	A unique identifier that represents the interface type.
Interface Description	A description field that refers to the interface type.

14.5 Transceiver Statistics

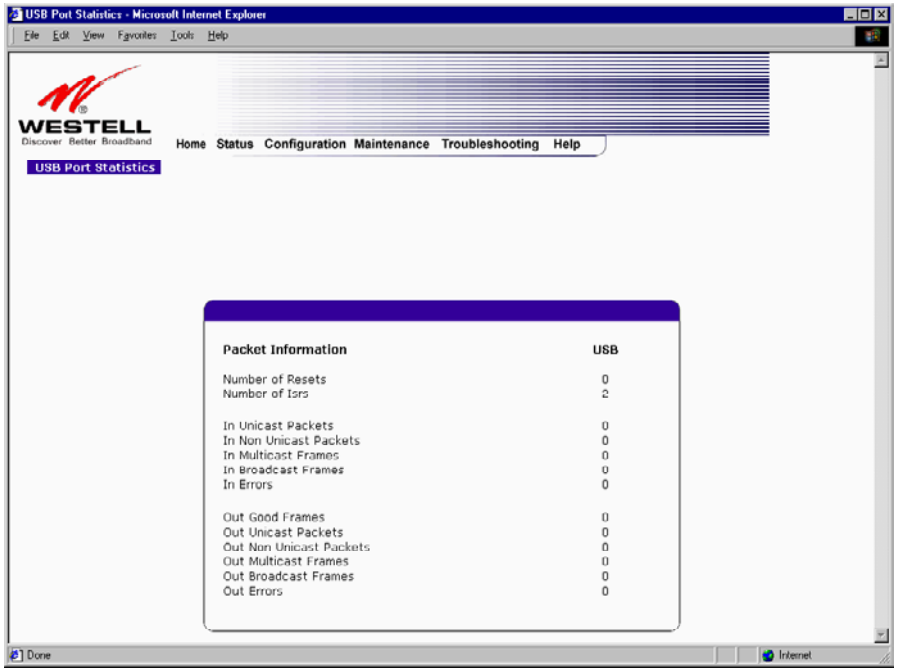
The following settings will be displayed if you select **Transceiver Stats** from the **Troubleshooting** menu.



Transceiver Revision	The transceiver software version number.
Vendor ID Code	The CPE Vendor's ID code for their chipset.
Line Mode	The operational mode. Modes supported are No Mode, Multi Mode, T.1413 Mode, G.DMT Mode, and G.LITE Mode.
Data Path	The data path used (either Fast or Interleaved).
PSD/Shaping	Factory Default = AUTO Possible responses are: ON: Turn on power density OFF: Turns off power density
Transceiver Information-Down Stream/Up Stream Path	
DSL Speed (Kbits/Sec)	The transmission rate that is provided by your Internet Service Provider (ISP).
SNR Margin (db)	The Signal-to-Noise Ratio (S/N) where 0 db = $1x10^{-7}$, which inhibits your DSL speed.
Line Attenuation (dB)	The DSL line loss.
Transmit Power (db/Hz)	The transmitted signal strength.

14.6 USB Port Statistics

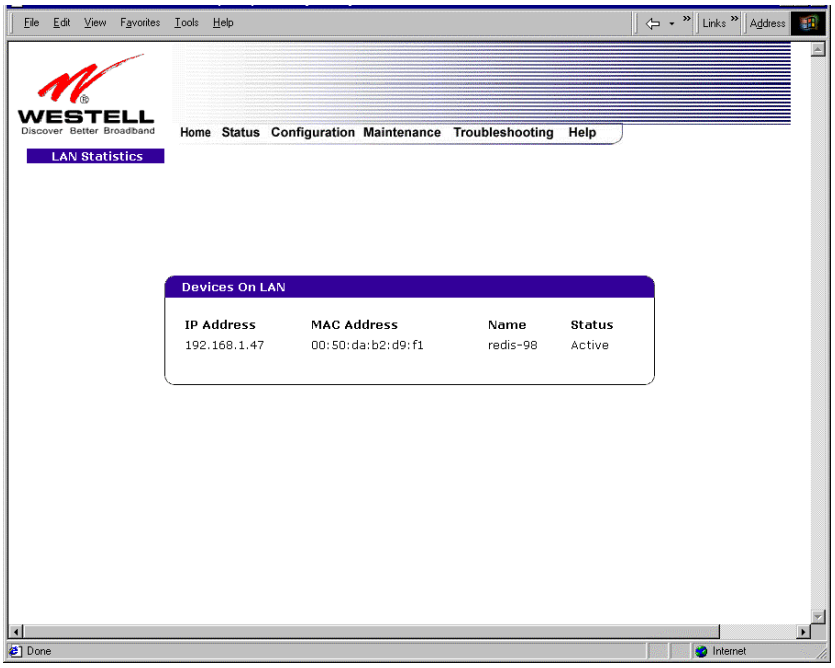
The following settings will be displayed if you select **USB Port Stats** from the **Troubleshooting** menu.



Number of Resets	The number of times the Host PC reset the USB interface.
Number of Isrs	The number of times the Host PC requested communication with the Router.
In Unicast Packets	The number of packets received that did not have a Multicast or Broadcast class destination IP address.
In Non Unicast Packets	The number of packets received that had a Multicast or Broadcast class destination IP address.
In Multicast Frames	The number of frames received that had a Multicast class destination IP address.
In Broadcast Frames	The number of frames received that had a Broadcast class destination IP address.
In Errors	The number of packets received with an invalid format
Out Good Frames	The number of frames sent to the Host PC.
Out Unicast Packets	The number of packets sent that did not have a Multicast or Broadcast class destination IP address
Out Non Unicast Packets	The number of packets sent that had a Multicast or Broadcast class destination IP address.
Out Multicast Frames	The number of frames sent that had a Multicast class destination IP address.
Out Broadcast Frames	The number of frames sent that had a Broadcast class destination IP address.
Out Errors	The number of packets received by the Router but not sent to PC due to an error condition.

14.7 LAN Statistics

The following settings will be displayed if you select **LAN Stats** from the **Troubleshooting** menu.



Device IP Address	Displays the IP address of the devices on the LAN.
DHCP NetMask	Displays the Subnet Mask, which determines what portion of an IP address that is controlled by the network and what portion is controlled by the host.
DHCP Start Address	Displays the first IP address that the DHCP server will provide.
DHCP End Address	Displays the last IP address that the DHCP server will provide.
DHCP Server Status	Displays the status, "ON" or "OFF" of the DHCP Server.
DHCP Server	This setting allows the ADSL router to automatically assign IP addresses to local devices connected to the LAN. Westell advises setting this to enabled for the private LAN. OFF=DHCP Server is disabled Private LAN=DHCP addresses will be saved into the Private LAN configuration. Public LAN=DHCP addresses will be saved into the Public LAN configuration. This option is only available if the Public LAN DHCP server is enabled. NOTE: These addresses will be overwritten if the Internet service provider supports dynamic setting of these values.
Devices on LAN	
IP Address	Displays the IP network address that your Router is on.
MAC Address	Media Access Controller (MAC) address of this device.
Name	Displays the ASCII (text) name of the devices connected to the LAN.
Status	Displays the status of the devices connected to the LAN.

15. HELP

If you select **Help** from the menu bar, a message from the help screens will be displayed. The type of message displayed depends on the menu that you are viewing. If you are viewing a pop-up screen, click the **help** link in the pop-up screen to obtain help messages.

A

About

This screen provides information about the Router. The following settings are displayed.

About	
Model Number	Router manufacturer's model number.
Serial Number	Router manufacturer's serial number.
MAC Address	Ethernet MAC (i.e., hardware) Address of the Router.
Software Version	Router application software version number.
Software Model	Router application type.
Description	Description of the Router protocol processing application software.
Boot Loader	Router boot loader version number.

Advanced Home Page

The advanced home page offers the same functionality as the home page but adds the ability to change the connection profile settings defined in the Router.

About	
Edit	An “Edit” link is added for each connection profile. Selecting this link will pop-up a window that allows the connection profile settings to be changed.
New Connection	The “New Connection” link will pop-up a window to allow the creation of a new connection profile.

ATM Loopback

ATM Loopback	
ATM Loopback	This setting enables 0/21 loopback. Westell recommends that you do not change this setting.

B

Backup/Restore

This option allows the Router configuration to be backed up to or restored from a secure location in flash. The following options are displayed.

Backup/Restore	
Current becomes Back-up	Selecting this command button will backup the current active configuration to the secure flash location.
Back-up becomes Current	This command button will restore the previously stored configuration from the flash location.
Factory becomes Current	This option will restore the Router to the state that it arrived in from the factory.

C

Change Administration Password

The Router has an administrator password. This password protects the Router from any unauthorized modifications to the configuration setting in the Router. The following settings are displayed.

Change Administration Password	
Enter Administration Name	This field specifies the Administrator's name. Only one administrator can be defined.
Enter/Verify Administration Password	This field specifies the password required to enable administrator access. The password must be entered twice to ensure that the password has been entered correctly.

Connection Summary

Connection Summary	
Connection Summary	The connection profile screen displays summary information about the Router. The connection state is shown along with the amount of traffic has passed through the Router. Each connection profile is listed with its associated usage information.

D

Diagnostics Help

This screen provides tools for diagnosing PPP connection problems. Some tests depend on the Router status and the capabilities exercised by previous tests, which may prevent other types of testing.

Beginning of Diagnostics Help screens

DSL
The Router status checks the Router connection. The following is a list of the possible responses:

DSL	
Up	The Router is operating correctly and has obtained synchronization with the opposing modem.
Down	Explanation: The Router is operating correctly, but has not synchronized with the opposing DSLAM. Solution: First, check to be sure that the cable connecting your Router to the ADSL wall jack is properly connected at both ends. If the cable is properly connected and the Router does not synchronize, try another phone cable. Next, wait for the Router to train. It can sometimes take as long as two minutes for the Router to train. If it still has not come into synchronization, power cycle the Router. If you have tried the approach above and the Router still does not synchronize, contact your service provider.

PPPoE
The PPPoE status indicates if a PPPoE session is established (i.e., if the PPPoE Discovery procedure has completed). The following is a list of the possible responses:

PPPoE	
Session up	A valid PPPoE session has been detected.
no session	Currently there is no active PPPoE session. A PPP session must be connected from the homepage screen.
initiating session	The connection process for a PPPoE session has been initialized. It can sometimes take a few seconds for the PPPoE Discovery procedure to complete. Wait 10-15 seconds and try again. If the PPPoE Discovery still cannot complete, there may be a configuration issue with your service provider's equipment. Verify your VPI/VCI settings (on the LAN Advanced page) and contact your ISP provider.
Session halted	A successful PPPoE session was halted. A PPP session must be connected from the homepage screen.
passed	A valid PPPoE session was established.
Session failure	A PPPoE session could not be made. There may be a configuration issue with your service provider's equipment. Verify your VPI/VCI settings (on the LAN Advanced page) and contact your provider.

PPP
This field displays the PPP Connection status. A PPPoE or PPPoA session must already be established. The following is a list of the possible responses:

PPP	
Connection up	The Router has established a PPP connection.
no connection	There is no PPP connection. A PPP session must be connected from the homepage screen.
initiating connection	The PPP connection process has been initialized.
Connection halted	A successful PPP connection was halted. Solution: A PPP session must be connected from the homepage screen.
Cannot connect	Explanation: A PPP connection could not be made because of a PPPoE session failure.
Authorization failure	The username or password is incorrect. Verify that the username and password your Service Provider issued are entered correctly.
Link control protocol failed	Try re-establishing the session (from the home page). If this doesn't help, there may be a configuration issue or other failure with your provider's equipment. Contact your service provider.

Self Test
The Self Test performs an integrity check of certain internal components of the Router. The following is a list of the possible responses:

Self Test	
Success	The Router is operating correctly.
Flash Corrupt	Explanation: The self-test process has detected a problem with internal flash memory. Solution: Restart the Router. If the error persists, contact your service provider.

PING ISPs' Router
The IP remote router test performs an IP network check (i.e., an IP Ping) of the Service Provider's Router. This test verifies that the Router can exchange IP traffic with an entity on the other side of the DSL line. The following is a list of the possible responses:

PING ISP's Router	
Success	The Router has detected an IP remote router connection.
No Response	Explanation: This message will occur when an IP remote Router does not answer the IP Ping. Solution: This test fails when the provider's Router does not give its IP address to the Router during session establishment. Try Pinging another host, using the Ping test near the bottom of the Diagnostic screen. If you are able to Ping any host, or even if you are able to find an IP address for a given host name (try "www.yahoo.com"), then the failure of the "IP Remote Router" test is moot, because the success of the Ping demonstrates that you are getting IP traffic across the DSL line. If the separate Ping fails as well, contact your service provider.
could not test	Explanation: Test could not be executed because of Router status.

DNS
The DNS test issues a request to try to resolve the name of a particular host. The host name is entered in the input box. The following is a list of the possible responses:

DNS	
Success	The Router has successfully obtained the resolved address. The IP address is shown below the host name input box
No Response	Explanation: The Router has failed to successfully obtain the resolved address. Solution: Determine the IP addresses of your DNS servers (from the home page, click "Edit" and then "Advanced"), and then use the Ping test near the bottom of the Diagnostic screen to try to Ping those addresses. This may provide useful information when you contact your service provider and speak with Technical Support.
Host not found	Explanation: The DNS Server was unable to find an address for the given host name. Solution: That host may no longer be available on the Internet. Try entering a different host name.
No data, enter host name	Explanation: There must be a host name entered in the input box.
could not test	Explanation: Test could not be executed because of Router status.

PING
Select **PING** to check IP continuity to a remote computer either within or beyond the Service Providers network.

Enter either the IP address or the hostname of the remote host computer into the input box to the right of the Test button. If you Ping by name, DNS will be used to look up the appropriate IP address for that name.
The following is a list of the possible responses:

PING	
Success	The Remote Host Computer was detected.
No Response	Explanation: This message will occur when there was no response to the Ping from the remote computer. Solution: Bear in mind that many hosts on the Internet are configured for security reasons to not respond to IP Ping messages. If you get a success from the DNS test using the same host name, chances are good that your connection is fine, whether you can Ping the named host or not.
No name or address to PING	Explanation: There must be a host name or IP address entered in the input box in order for the Router to Ping.
could not test	Explanation: Test could not be executed because of Router status.

End of Diagnostic Help Screens

DHCP Configuration

This screen contains the settings which control how the ADSL router interacts with the local devices connected to the router. Westell does not recommend that you change these settings. The following settings are displayed.

DHCP	
DHCP Server	Dynamic Host Configuration Protocol (DHCP) is an Internet standard that allows the ADSL router to automatically assign IP addresses to devices connected on the LAN network. It is advised that this is enabled for Private LAN.
DHCP Start Address (If DHCP is enabled)	This setting specifies the start of the IP address pool that the modem uses to assign IP addresses to local devices.
DHCP End Address (If DHCP is enabled)	This setting specifies the end address of the IP address pool used for automatic configuration of local devices.
DHCP Lease (If DHCP is enabled)	This setting specifies the DHCP lease time.

DNS Configuration

The Router has a built-in DNS server. The Router has a feature called "Dynamic DNS." When an IP address is assigned, the Router will interrogate the new device for a machine name using several well-known networking protocols. Any names learned will dynamically be added to the DNS server's table of local hosts. A static host assignment is needed only if the new device does not support any of the well-known protocols. The following settings are displayed.

DNS Configuration Screen	
Domain Name	The name of your network. This uses the internet standard for delineating domain names.
Static Host Assignment	This table allows the creation and maintenance of manually configured DNS entries.
Dynamic Host Assignment	This table shows the current list of devices that have automatically provided information.

E

Edit Connection Profiles

This screen facilitates the changing of connection profile parameters. The following settings are displayed.

Edit Connection Profiles	
Connection Name	This field is a description of the default connection profile that the Router will use. Feel free to use whatever description you desire.
Account ID	Your account ID is supplied by your ISP. This text string uniquely identifies you with your ISP.
Account Password	The Account Password is a key phrase or text string that verifies your identity to the ISP.
Service Profile	The Router stores several service profiles. A service profile is a collection of settings for the built-in firewall and NAT. These settings control which applications are enabled to talk through the Router. This selection specifies which service profile is used when the Router is using this connection.
Manual/Auto/Always ON	These radio buttons specify how this connection profile is used. A manual setting requires that this connection must be manually established through the "homepage" connection button. When this is set to auto, the Router will monitor the network traffic and determine when a connection needs to be made. The connection process will happen automatically the "Always ON" selection causes the Router to aggressively establish a connection with your ISP. Whenever the Router detects that the connection to your ISP is down, it will try to re-establish that connection.
Time Out Enable/Connection Time Out	Selecting this option will enable the disconnect timeout. If this option is enabled the Router will monitor the ISP connection for activity. If there is no activity for the timeout period, the Router will disconnect from the ISP.
Edit VC Connection	This screen is an advanced screen. Modifying parameters identified on this screen can cause severe disruption of your service. VC stands for "Virtual Connection." A VC identifies a connection through the service provider's ATM network to your ISP. It is not recommended that you change anything on these pages unless explicitly instructed by your service provider.

F

Firewall Settings

This screen is an advanced configuration screen. It allows you to set the level of security you wish to have on your local network. All security levels except "None" protect against known Internet attacks and devices that attempt to gain remote access to your Router. The following settings are displayed.

Firewall Settings	
High	This security level only allows basic Internet functionality. Only Mail, News, Web, FTP, and IPSEC are allowed. No other traffic is allowed. Another restriction of high security is that it can't be modified by NAT configuration options. With High security, you are guaranteed to only pass the previously mentioned traffic.
Medium	This security level only allows basic Internet functionality by default. Like High

	security, Medium security, allows customization through NAT configuration, so you can enable the traffic that you want to pass.
Low	The low security setting will allow all traffic except for known attacks. With low security, your Router is visible by other computers on the Internet.
Custom	Custom is a very advanced configuration option that allows you to edit the firewall configuration directly. Only the most expert users should try this.

H

Home Page

The home page gives you a quick summary of the Router's state. The following settings are displayed.

Home Page	
Connection Overview	The Connection Overview section displays the status of the DSL connection. The DSL must show a state of "**UP**" in order for the Router to communicate with your service provider's network.
Connection Name	The Connection Name section displays all of the connection profiles that are defined by the Router. A connection profile is information that the Router needs to establish a connection to your ISP. The "PPP Status" columns will show a status of "**UP**" if the Router is currently using that profile to communicate. The command button allows you to control the connection state.
Profile Editor	Selecting the "Profile Editor" link will allow you to define or change any of the connection profile settings.

L

LAN Configuration

This screen contains the setting that controls how the Router interacts with the local devices connected to the Router. Westell does not recommend that you change these settings. The following settings are displayed.

LAN Configuration	
Router IP Address	This controls the IP address that the Router uses for local communication.
Subnet Mask	This setting specifies the subnet mask to use to determine if an IP address belongs to your local network.
DHCP Start Address	This setting specifies the start of the IP address pool that the Router uses to assign IP addresses to local devices.
DHCP End Address	This setting specifies the end address of the IP address pool used for automatic configuration of local devices.
DNS Server Enable	DNS stands for Domain Name System. This is an Internet standard that facilitates communication among devices. This allows a name to be used when specifying a device instead of an IP address. Normally you want this enabled.
DHCP Server Enable	DHCP stands for Dynamic Host Configuration Protocol. This is an Internet standard that allows the Router to automatically assign IP addresses to devices connected on the LAN network. It is advised that this opt ion is set to Enabled.

LAN Statistics

This page contains information regarding the configuration and status of your Local LAN. The following settings are displayed.

LAN Configuration	
Device IP Address	This displays the IP address that the ADSL router uses for local communication.
DHCP NetMask	This displays the subnet address that the ADSL router's DHCP server issues in DHCP responses.
DHCP Start Address	This setting specifies the start of the IP address pool that the modem uses to assign IP addresses to local devices.
DHCP End Address	This setting specifies the end address of the IP address pool used for automatic configuration of local devices.
DHCP Server Status	Displays the status, "ON" or "OFF" of the DHCP Server
DHCP Server	Displays which network "Public" or "Private" the DHCP server is serving IP addresses for.
Devices on LAN	This page displays the current devices the modem has found on your LAN. The name of the device, the Ethernet MAC address, and the status, "Active" or "Inactive" is displayed in the table.

P

Private LAN

This page contains the settings that control how the ADSL router interacts with the local devices connected to the router. It is not recommended that these settings be changed. The following settings are displayed.

Private LAN	
Private LAN DHCP Server Enable	Dynamic Host Configuration Protocol (DHCP) is an Internet standard that allows the ADSL router to automatically assign IP addresses to devices connected on the LAN network. It is advised that this is enabled for Private LAN.
Private LAN Enable	This setting enables the Private NAT'ed interface. It is advised to leave this enabled.
Modem IP Address	This controls the IP address that the ADSL router uses for local communication.
Subnet Mask	This setting specifies the subnet mask to use to determine if an IP address belongs to your local network.
DHCP Start Address (If DHCP is enabled for Private LAN)	This setting specifies the start of the IP address pool that the modem uses to assign IP addresses to local devices.
DHCP End Address (If DHCP is enabled for Private LAN)	This setting specifies the end address of the IP address pool used for automatic configuration of local devices.
DHCP Lease (If DHCP is enabled for Private LAN)	This setting specifies the DHCP lease time.

Protocol

Protocol	
Protocol	This screen informs the Router which networking protocol to use when communicating with your ISP. This information is provided by your ISP.

Public LAN

This screen contains the settings that control how the ADSL router interacts with the local devices connected to the router. It is not recommended that these settings be changed. The following settings are displayed.

Public LAN	
Public LAN DHCP Server Enable	Dynamic Host Configuration Protocol (DHCP) is an Internet standard that allows the ADSL router to automatically assign IP addresses to devices connected on the LAN network. It is advised that this is enabled for Private LAN.
Public LAN Enable	This setting enables the Public interface. This feature allows a global subnet to exist behind your modem.
Modem IP Address	This controls the IP address that the ADSL router uses for local communication.
Subnet Mask	This setting specifies the subnet mask to use to determine if an IP address belongs to your local network.
DHCP Start Address (If DHCP is enabled for Public LAN)	This setting specifies the start of the IP address pool that the modem uses to assign IP addresses to local devices.
DHCP End Address (If DHCP is enabled for Public LAN)	This setting specifies the end address of the IP address pool used for automatic configuration of local devices.
DHCP Lease (If DHCP is enabled for Public LAN)	This setting specifies the DHCP lease time.

R

Remote Access

This page allows you to configure your modem so that it can be configured remotely. Once enabled, this feature can be manually disabled, or it will automatically disable after 20 minutes of configuration inactivity. NOTE: This feature is not available in Bridge Mode.

Remote Access	
Password	The password is used to enter the modem's web interface. It must be at least 4 characters long and contain no spaces.
URL	The URL must be placed in a remote PC's web browser in order to communicate with your modem. If this field says "Not Connected," you are not currently connected to the Internet.
Enable Remote Access	Remote Access is enabled after you have entered a valid password and connected to the Internet.

S

Single Static IP

This page contains the settings that would allow the PPP address received from the network to be propagated to a single LAN device behind the modem.

Single Static IP	
WAN IP Address	This is the PPP IP address the ISP has assigned the modem.
Selection box	This box contains the devices available to share the Single Static IP address the ISP has assigned the modem. The names listed in the select box will be populated by the modem's DHCP server based on DHCP requests. If a device's name cannot be determined, the current IP address of the device will be placed in the list. When the feature is enabled, the active machine will be highlighted in the select box and be displayed at the bottom of the page with the "disable" button. When the feature is disabled, no device in the select box will be highlighted and the "enable" button will be available. When the "User Configured PC" is selected, a local PC must be configured manually with the WAN IP address as its Ethernet adapter's address.

T

Trace

The Trace feature allows you to perform an IP trace route to a remote computer either within or beyond the Internet service provider's network. Enter either the IP address or the hostname of the remote host computer into the input box to the right of the Trace button. If you trace by name, DNS will be used to look up the appropriate IP address for that name.

Trace	
Success	Trace will display its progress in the text box. Trace will show three round trip times and the DNS name (if available) of each intermediate router.
Failure	Trace will display "*" when it does not receive a response or cannot determine the DNS name of an intermediate router. This is not necessarily an error, as some routers are configured to ignore trace route packets or do not have DNS name.

U

Update Device

Update Device (Software Upgrade)	
Update Device (Software Upgrade)	This screen is used to upgrade the Router's application image. The application image is specified by entering in the filename or by using the browse button.

User Name

This screen is asks for information that will allow the Router to make a connection to the ISP on your behalf. The Router will need to know your Account ID and Account Password. This information is stored in the Router.

User Name	
Connection Name	This is a description of the default connection profile, which the Router will use. Feel free to use whatever description you desire.
Account ID	Your Account Id is supplied by your ISP and is a text string that uniquely identifies you with your ISP.
Account Password	The Account Password is a key phrase or text string that verifies your identify to the ISP.

V

VC Configuration

VC Configuration Screen	
VC Configuration	This screen is an advanced screen. Modifying parameters on this screen can cause severe disruption of your service. VC stands for "Virtual Connection." A VC identifies a connection through the service provider's ATM network to your ISP. It is not recommended that anything be changed on these pages unless explicitly instructed by your service provider.

VPI/VCI

VPI/VCI	
VPI/VCI	This screen asks for information that the Router needs to establish a communication channel to your ISP. The VPI and VCI values are supplied by your ISP.

16. NAT SERVICES

Table 7. Applications/Games/VPN Support

Application/Game	Port/Protocol
Aliens vs. Predator	80 UDP, 2300 UDP, 8000-8999 UDP
America Online	5190 TCP/UDP
AoE II: Conquors	47624 TCP/UDP, 6073 TCP/UDP, 2300-2400 TCP/UDP
AOL Instant Messenger	4099 TCP, 5190 TCP
Asheron's Call	9000-9013 UDP, 28800-29000 TCP
Battlecom	2300-2400 TCP/UDP, 47624 TCP/UDP
Black and White	2611-2612 TCP, 6667 TCP, 6500 UDP, 27900 UDP
Blizzard Battle.net (Diablo II)	4000 TCP, 6112 TCP/UDP
Buddy Phone	700, 701 UDP
Bungie.net, Myth, Myth II Server	3453 TCP
Calista IP Phone	3000 UDP, 5190 TCP
Citrix Metaframe	1494 TCP
Client POP/IMAP	110 TCP
Client SMTP	25 TCP
Counter Strike	27015 TCP/UDP, 27016 TCP/UDP
Dark Reign 2	26214 TCP/UDP
Delta Force (Client and Server)	3568 UDP, 3100-3999 TCP/UDP
Delta Force 2	3568-3569 UDP
DeltaForce: Land Warrior	UDP 53 TCP 21 TCP 7430 TCP 80 UDP 1029 UDP 1144 UDP 65436 UDP 17478
DNS	53 UDP
Elite Force	2600 UDP, 27500 UDP, 27910 UDP, 27960 UDP
Everquest	1024-7000 TCP/UDP
F-16, Mig 29	3863 UDP
F-22 Lightning 3	4660-4670 TCP/UDP, 3875 UDP, 4533-4534 UDP, 4660-4670 UDP
F-22 Raptor	3874-3875 UDP
Fighter Ace II	50000-50100 TCP/UDP
Fighter Ace II for DX play	50000-50100 TCP/UDP, 47624 TCP, 2300-2400 TCP/UDP
FTP	20 TCP, 21 TCP
GameSpy Online	UDP 3783 UDP 6515 TCP 6667 UDP 12203 TCP/UDP 13139 UDP 27900 UDP 28900 UDP 29900 UDP 29901

Application/Game	Port/Protocol
Ghost Recon	TCP 80 UDP 1038 UDP 1032 UDP 53 UDP 2347 UDP 2346
GNUtella	6346 TCP/UDP, 1214 TCP
Half Life Server	27005 UDP(client only) 27015 UDP
Heretic II Server	28910 TCP
Hexen II	26900 (+1) each player needs their own port. Increment by one for each person
Hotline Server	5500, 5503 TCP 5499 UDP
HTTPS	443 TCP/UDP
ICMP Echo	4 ICMP
ICQ OLD	4000 UDP, 20000-20019 TCP
ICQ 2001b	4099 TCP, 5190 TCP
ICUII Client	2000-2038 TCP, 2050-2051 TCP, 2069 TCP, 2085 TCP, 3010-3030 TCP
ICUII Client Version 4.xx	1024-5000 TCP, 2050-2051 TCP, 2069 TCP, 2085 TCP, 3010-3030 TCP, 2000-2038 TCP6700-6702 TCP, 6880 TCP, 1200-16090 TCP
IMAP	119 TCP/UDP
IMAP v.3	220 TCP/UDP
Internet Phone	22555 UDP
IPSEC ESP	PROTOCOL 50
IPSEC IKE	500 UDP
Ivisit	9943 UDP, 56768 UDP
KALI, Doom & Doom II	2213 UDP, 6666 UDP (EACH PC USING KALI MUST USE A DIFFERENT PORT NUMBER STARTING WITH 2213 + 1
KaZaA	1214 TCP/UDP
Limewire	6346 TCP/UDP, 1214 TCP
Medal Of Honor: Allied Assault	TCP 80 UDP 53 UDP 2093 UDP 12201 TCP 12300 UDP 2135 UDP 2139 TCP/UDP 28900
mIRC Chat	6660-6669 TCP
Motorhead Server	16000 TCP/UDP, 16010-16030 TCP/UDP
MSN Game Zone	6667 TCP, 28800-29000 TCP
MSN Game Zone (DX 7 & 8 play)	6667 TCP, 6073 TCP, 28800-29000 TCP, 47624 TCP, 2300-2400 TCP/UDP
MSN Messenger	6891-6900 TCP, 1863 TCP/UDP, 5190 UDP, 6901 TCP/UDP

Application/Game	Port/Protocol
Napster	6699 TCP
Need for Speed 3, Hot Pursuit	1030 TCP
Need for Speed, Porsche	9442 UDP
Net2Phone	6801 UDP
NNTP	119 TCP/UDP
Operation FlashPoint	47624 UDP, 6073 UDP, 2300-2400 TCP/UDP, 2234 TCP
Outlaws	5310 TCP/UDP
Pal Talk	2090-2091 TCP/UDP, 2095 TCP, 5001 TCP, 8200-8700 TCP/UDP, 1025-2500 UDP
pcAnywhere host	5631 TCP, 5632 UDP, 22 UDP
Phone Free	1034-1035 TCP/UDP, 9900-9901 UDP, 2644 TCP, 8000 TCP
Quake 2	27910 UDP
Quake 3	27660 UDP Each computer playing QuakeIII must use a different port number, starting at 27660 and incrementing by 1. You'll also need to do the following: 1. Right click on the QIII icon 2. Choose "Properties" 3. In the Target field you'll see a line like "C:\Program Files\Quake III Arena\quake3.exe" 4. Add the Quake III net_port command to specify a unique communication port for each system. The complete field should look like this: "C:\Program Files\Quake III Arena\quake3.exe" +set net_port 27660 5. Click OK. 6. Repeat for each system behind the NAT, adding one to the net_port selected (27660,27661,27662)
Quicktime 4/Real Audio	6970-32000 UDP, 554 TCP/UDP
Rainbow Six & Rogue Spear	2346 TCP
RealOne Player	TCP - 554, 7070 to 7071 UDP - 6970 to 7170
Real Audio	6970-7170 UDP
Roger Wilco	TCP/UDP 3782 UDP 3783 (BaseStation)
ShoutCast Server	8000-8005 TCP
SSH Secure Shell	22 TCP/UDP
Starcraft	2346 TCP
Starfleet Command	2300-2400 TCP/UDP, 47624 TCP/UDP
Telnet	23 TCP
Tiberian Sun & Dune 2000	1140-1234, 4000 TCP/UDP
Ultima Online	5001-5010 TCP, 7775-7777 TCP, 8800-8900 TCP, 9999 UDP, 7875 UDP
Unreal Tournament server	7777 (default gameplay port) 7778 (server query port 7779,7779+ are allocated dynamically for each helper UdpLink objects, including UdpServerUplin objects. Try starting with 7779-7781 and add ports if needed 27900 server query, if master server uplink is enabled. Home master servers use other ports like 27500 Port 8080 is for UT Server Admin. In the

Application/Game	Port/Protocol
	[UWeb.WebServer] section of the server.ini file, set the ListenPort to 8080 and ServerName to the IP assigned to the router from your ISP.
USENET News Service	143 TCP
VNC, Virtual Network Computing	5500 TCP, 5800 TCP, 5900 TCP
Westwood Online, C&C	4000 TCP/UDP, 1140-1234 TCP/UDP
World Wide Web (HTTP)	80 TCP 443 TCP (SSL) 8008 OR 8080 TCP (PROXY)
XBOX Live	TCP/UDP 88 and 3074
Yahoo Messenger Chat	5000-5001 TCP
Yahoo Messenger Phone	5055 UDP
VPN Protocol	**Comments**
IPSec Encryption	IPSec using AH can not be supported through NAT. IPSec using ESP and L2TP can be supported via an ALG
L2TP	IPSec using ESP and L2TP can be supported via an ALG.
PPTP	Works through NAT.

17. TECHNICAL SUPPORT INFORMATION

Westell Technical Support

If technical assistance is required, contact Westell by using one of the following options:

North America
Phone: 1-630-375-4500

U.K./Europe
Phone: (44) 01256 843311

18. WARRANTY INFORMATION

Warranty

Westell warrants this product free from defects at the time of shipment. Westell also warrants this product fully functional for the period specified by the terms of the warranty. Any attempt to repair or modify the equipment by anyone other than an authorized Westell representative will void the warranty.

Repairs

Westell will repair any defective Westell equipment without cost during the warranty period if the unit is defective for any reason other than abuse, improper use, or improper installation, or acts of nature. Before returning the defective equipment, request a Return Material Authorization (RMA) number from Westell. Once an RMA number is obtained, return the defective unit, freight prepaid, along with a brief description of the problem to:

North America
Westell, Inc.
ATTN: R.G.M. Department
750 N. Commons Drive
Aurora, IL 60504-7940 USA

U.K./Europe
Westell, Ltd.
Ringway House
Bell Road
Daneshill
Basingstoke
RG24 8FB
United Kingdom

Westell will continue to repair faulty equipment beyond the warranty period for a nominal charge. Contact a Westell Technical Support Representative for details.

19. PRODUCT SPECIFICATIONS

ADSL
- DSL Line Code: Discrete Multi-Tone (DMT)
- DSL Rates: 32 kbps to 8 Mbps downstream and 32 kbps to 800 Kbps upstream
- Power spectral density: -40 dBm/Hz
- DSL Impedance: 100 Ohms
- DSL Performance: Performance: per G.992.1, ANSI T1.413.

Protocol Features
- Bridge Encapsulation per RFC2684 (Formerly RFC1483)
- Logical Link Control/Subnetwork Access Protocol (LLC/SNAP)
- Software Upgradeable
- PPPoE Support
- ATM SAR: Internal to Modem

System Requirements for USB
- Pentium or equivalent and above class machines
- Microsoft Windows 98, 2000, ME, or XP installed
- Operating system CD on hand
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- USB Version 1.0 or higher compliant bus

System Requirements for 10/100 Base-T/Ethernet
- Pentium® or equivalent and above class machines, Macintosh
- Microsoft® Windows® (98, 2000, ME, NT 4.0, or XP) or Macintosh® OS X installed
- Computer Operating System CD-ROM on hand
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- TCP/IP Protocol stack installed
- 10/100 Base-T Network Interface Card (NIC)

Dimensions
- Weight Height: 1.6 in. (4.0 cm)
- Width: 7.3 in. (16.0 cm)
- Depth: 6.1 in. (12.8 cm)

Weight
- Approx. 2.0 lbs. (0.90 kg)

Environmental
- Ambient Operating Temperature: +32 to +104°F (0 to +40°C)
- Relative Humidity: 5 to 95%, non-condensing

Power Supply
- 120 VAC to 12 VAC wall-mount power supply

Power Consumption
- Less than 8 watts typical, from 120 VAC

Connectors
- DSL/LINE: 6-pin modular jack
- PC: USB Series B connector
- Power connector
- Ethernet: 8-pin RJ-45 modular jack

EMC Compliance
- FCC, Part 15 Class B

Safety
- Conforms to UL Standard 60950, 3rd Edition
- Certified to CAN/CSA Standard C22.2 No. 60950

Regulatory Approval
- UL
- CSA
- TIA/EIA/IS-968A
- Industry Canada CS03

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21. PUBLICATION INFORMATION

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