D-Link®

DSL-2740B
Wireless ADSL2+ Router
User Guide

September 2006

ESL2740BEUA1G

FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This 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 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 receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
-

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Table Of Contents

About This User Guide

This user's guide provides instructions on how to install the DSL-2740B Wireless ADSL Router and use it to connect a computer or Ethernet LAN to the Internet.


Note

You must have an ADSL account setup in order to use this device for Internet access. Contact your preferred broadband Internet service provider to set up an account.

If you are using a computer with a functioning Ethernet port, the quickest and easiest way to set up the DSL-2740B is to insert the Installation CD into the CD-ROM drive of your computer and follow the instructions provided in the **Quick Installation Guide**.

Before You Start

Please read and make sure you understand all the prerequisites for proper installation of your new Router. Have all the necessary information and equipment on hand before beginning the installation.

Installation Overview

The procedure to install the Router can be described in general terms in the following steps:

1. You must have an established ADSL Internet account before this device will be able to connect your computer or private network to the Internet.
2. Gather information and equipment needed to install the device. Before you begin the actual installation make sure you have all the necessary information and equipment.
3. Install the hardware, that is, connect the cables (Ethernet and telephone) to the device and connect the power adapter to power on the Router.
4. There are two options available to configure the Router: use your computer to open the Configuration Utility found on the CD-ROM and follow the step-by-step instructions; or, use a web browser to access the web pages used for setting up and managing the Router. In order to access the Router's web-based manager, you will need to change the IP settings on your computer to "Obtain an IP address automatically." Instructions are provided below on how to properly configure IP settings for Windows XP. This User Manual contains instruction on how to change IP settings on other Windows operating systems. If you purchased this Router to share your high-speed Internet connection with other computers, you must have an established Internet account from an Internet Service Provider (ISP).
5. Use the web-based management software to configure the device to suit the requirements of your ADSL account.

Setup Wizard

Many users will be able to configure all the settings necessary to use the DSL-2740B with the Setup Wizard. For ADSL connections that use PPPoE or PPPoA connections, the simplest way to set up the DSL-2740B is to use the Setup Wizard to configure the Internet connection. Once you access the web interface used to configure the device, just launch the Setup Wizard to configure your Internet connection.

Packing List

Open the shipping carton and carefully remove all items. Make sure that you have the items listed here.

- One DSL-2740B Wireless ADSL Ethernet Router
- One CD-ROM containing the User's Guide and Quick Installation Guide
- One twisted-pair telephone cable used for ADSL connection
- One straight-through Ethernet cable
- One AC power adapter suitable for your electric service
- One Quick Installation Guide

Installation Notes

In order to establish a connection to the Internet it will be necessary to provide information to the Router that will be stored in its memory. For some users, only their account information (Username and Password) is required. For others, various parameters that control and define the Internet connection will be required. You can print out the two pages below and use the tables to list this information. This way you have a hard copy of all the information needed to setup the Router. If it is necessary to reconfigure the device, all the necessary information can be easily accessed. Be sure to keep this information safe and private.

Low Pass Filters

Since ADSL and telephone services share the same copper wiring to carry their respective signals, a filtering mechanism may be necessary to avoid mutual interference. A low pass filter device can be installed for each telephone that shares the line with the ADSL line. These filters are easy to install passive devices that connect to the ADSL device and/or telephone using standard telephone cable. Ask your service provider for more information about the use of low pass filters with your installation.

Operating Systems

The DSL-2740B uses an HTML-based web interface for setup and management. The web configuration manager may be accessed using any operating system capable of running web browser software, including Windows 98 SE, Windows ME, Windows 2000, and Windows XP.

Web Browser

Any common web browser can be used to configure the Router using the web configuration management software. The program is designed to work best with more recently released browsers such as Opera, Microsoft Internet Explorer® version 6.0, Netscape Navigator® version 6.2.3, or later versions. The web browser must have JavaScript enabled. JavaScript is enabled by default on many browsers. Make sure JavaScript has not been disabled by other software (such as virus protection or web user security packages) that may be running on your computer.

Ethernet Port (NIC Adapter)

Any computer that uses the Router must be able to connect to it through the Ethernet port on the Router. This connection is an Ethernet connection and therefore requires that your computer be equipped with an Ethernet port as well. Most notebook computers are now sold with an Ethernet port already installed. Likewise, most fully assembled desktop computers come with an Ethernet NIC adapter as standard equipment. If your computer does not have an Ethernet port, you must install an Ethernet NIC adapter before you can use the Router. If you must install an adapter, follow the installation instructions that come with the Ethernet NIC adapter.

802.11 Wireless LAN Configuration

All the 802.11 wireless LAN settings may be configured on a single page using the web-based manager. For basic wireless communication you need to decide what channel to use and what SSID to assign. These two settings must be the same for any wireless workstations or other wireless access point that communicate with the DSL-2740B through the wireless interface.

Security for wireless communication can be accomplished in a number of ways. The DSL-2740B supports WPA (Wi-Fi Protected Access), WPA2, and mixed WPA/WPA2. Wireless access can also be controlled by selecting MAC addresses that are allowed to associate with the device. Please read the section on Wireless Configuration.

Additional Software

It may be necessary to install software on your computer that enables the computer to access the Internet. Additional software must be installed if you are using the device a simple bridge. For a bridged connection, the information needed to make and maintain the Internet connection is stored on another computer or gateway device, not in the Router itself.

If your ADSL service is delivered through a PPPoE or PPPoA connection, the information needed to establish and maintain the Internet connection can be stored in the Router. In this case, it is not necessary to install software on your computer. It may however be necessary to change some settings in the device, including account information used to identify and verify the connection.

All connections to the Internet require a unique global IP address. For bridged connections, the global IP settings must reside in a TCP/IP enabled device on the LAN side of the bridge, such as a PC, a server, a gateway device such as a router or similar firewall hardware. The IP address can be assigned in a number of ways. Your network service provider will give you instructions about any additional connection software or NIC configuration that may be required.

Information you will need from your ADSL service provider:

Username	This is the Username used to log on to your ADSL service provider's network. It is commonly in the form – user@isp.co.uk Your ADSL service provider uses this to identify your account.	Record info here
Password	This is the Password used, in conjunction with the Username above, to log on to your ADSL service provider's network. This is used to verify the identity of your account.	
WAN Setting / Connection Type	These settings describe the method your ADSL service provider uses to transport data between the Internet and your computer. Most users will use the default settings. You may need to specify one of the following WAN Setting and Connection Type configurations (Connection Type settings listed in parenthesis): PPPoE/PPoA (PPPoE LLC, PPPoA LLC or PPPoA VC-Mux) Bridge Mode (1483 Bridged IP LLC or 1483 Bridged IP VC-Mux) IPoA/MER (Static IP Address) (Bridged IP LLC, 1483 Bridged IP VC-Mux, 1483 Routed IP LLC, 1483 Routed IP VC-Mux or IPoA) MER (Dynamic IP Address) (1483 Bridged IP LLC or 1483 Bridged IP VC-Mux)	
Modulation Type	ADSL uses various standardized modulation techniques to transmit data over the allotted signal frequencies. Some users may need to change the type of modulation used for their service. The default DSL modulation (ADSL2+ Multi-Mode) used for the Router automatically detects all types of ADSL, ADSL2, and ADSL2+ modulation. However, if you are instructed to specify the modulation type used for the	

	Router, you may choose among the numerous options available on the Modulation Type drop-down menu on the **ADSL Configuration** window (**Advanced** > **ADSL**)	
Security Protocol	This is the method your ADSL service provider will use to verify your Username and Password when you log on to their network. Your Router supports the PAP and CHAP protocols.	
VPI	Most users will not be required to change this setting. The Virtual Path Identifier (VPI) is used in conjunction with the Virtual Channel Identifier (VCI) to identify the data path between your ADSL service provider's network and your computer. If you are setting up the Router for multiple virtual connections, you will need to configure the VPI and VCI as instructed by your ADSL service provider for the additional connections. This setting can be changed in the WAN Settings window of the web management interface.	
VCI	Most users will not be required to change this setting. The Virtual Channel Identifier (VCI) used in conjunction with the VPI to identify the data path between your ADSL service provider's network and your computer. If you are setting up the Router for multiple virtual connections, you will need to configure the VPI and VCI as instructed by your ADSL service provider for the additional connections. This setting can be changed in the WAN Settings window of the web management interface.	
IP Address (RADIUS server)	For WPA security.	
Port	For WPA security.	
Key	For WPA security.	


Note

The Setup Wizard can be used to configure the Internet connection for most users.

Information you will need about your DSL-2740B Wireless ADSL Router:

Username	This is the Username needed access the Router's management interface. When you attempt to connect to the device through a web browser you will be prompted to enter this Username. The default Username for the Router is "admin." The user cannot change this.	Record info here
Password	This is the Password you will be prompted to enter when you access the Router's management interface. The default Password is "admin." The user may change this.	
LAN IP addresses for the DSL-2740B	This is the IP address you will enter into the Address field of your web browser to access the Router's configuration graphical user interface (GUI) using a web browser. The default IP address is **192.168.1.1**. This may be changed to suit any IP address scheme the user desires. This address will be the base IP address used for DHCP service on the LAN when DHCP is enabled.	
LAN Subnet Mask for the DSL-2740B	This is the subnet mask used by the DSL-2740B, and will be used throughout your LAN. The default subnet mask is **255.255.255.0**. This can be changed later.	

Information you will need about your LAN or computer:

Ethernet NIC	If your computer has an Ethernet NIC, you can connect the DSL-2740B to this Ethernet port using an Ethernet cable. You can also use the Ethernet ports on the DSL-2740B to connect to other computer or Ethernet devices.	Record info here
DHCP Client status	Your DSL-2740B ADSL Router is configured, by default, to be a DHCP server. This means that it can assign an IP address, subnet mask, and a default gateway address to computers on your LAN. The default range of IP addresses the DSL-2740B will assign are from **192.168.1.2** to **192.168.1.254**. Your computer (or computers) needs to be configured to **Obtain an IP address automatically** (that is, they need to be configured as DHCP clients.)	

It is recommended that your collect and record this information here, or in some other secure place, in case you have to re-configure your ADSL connection in the future.

Once you have the above information, you are ready to setup and configure your DSL-2740B Wireless ADSL Router.

1

Introduction

This section provides a brief description of the Router, its associated technologies, and a list of Router features.

Router Description and Operation

The DSL-2740B Wireless ADSL Router is designed to provide connectivity for your private Ethernet LAN, and 802.11b/g/n-draft wireless LAN to the Internet via an ADSL connection.

The Router is easy to install and use. Standard Ethernet ports are used to connect to computer or other Ethernet devices. The 802.11 wireless interface provides connectivity to 802.11b/g/n-draft wireless devices.

802.11n-draft Wireless

The embedded 802.11 wireless access point provides Internet access and connectivity to the Ethernet for 802.11b, 802.11g, and 802.11n-draft wireless workstations. IEEE 802.11n-draft is fully compatible with IEEE 802.11b/g wireless devices. The 802.11n-draft standard supports data transfer rates of up to 270 Mbps. The wireless Router supports 64-bit and 128-bit WEP encryption.

ADSL

Asymmetric Digital Subscriber Line (ADSL) is a broadband network technology that utilizes standard twisted-pair copper wire telephone lines to enable broadband high-speed digital data transmission and bandwidth hungry applications for business and residential customers.

ADSL routers and modems provide faster downloads and more reliable connectivity to the user without loss of quality or disruption of voice/fax telephone capabilities.

ADSL2+ provides a dedicated service over a single telephone line operating at speeds of up to 24Mbps downstream and up to 1Mbps upstream, depending on local telephone line conditions. A secure point-to-point connection is established between the user and the central office of the service provider.

D-Link ADSL devices incorporate the recommendations of the ADSL Forum regarding framing, data format, and upper layer protocols.

Router Features

The DSL-2740B ADSL Router utilizes the latest ADSL enhancements to provide a reliable Internet portal suitable for most small to medium sized offices. DSL-2740B advantages include:

- **PPP (Point-to-Point Protocol) Security –** The DSL-2740B ADSL Router supports PAP (Password Authentication Protocol) and CHAP (Challenge Handshake Authentication Protocol) for PPP connections.
- **DHCP Support –** Dynamic Host Configuration Protocol automatically and dynamically assigns all LAN IP settings to each host on your network. This eliminates the need to reconfigure every host whenever changes in network topology occur.
- **Network Address Translation (NAT) –** For small office environments, the DSL-2740B allows multiple users on the LAN to access the Internet concurrently through a single Internet account. This provides Internet access to everyone in the office for the price of a single user.

  NAT improves network security in effect by hiding the private network behind one global and visible IP address. NAT address mapping can also be used to link two IP domains via a LAN-to-LAN connection.
- **TCP/IP (Transfer Control Protocol/Internet Protocol) –** The DSL-2740B supports TCP/IP protocol, the language used for the Internet. It is compatible with access servers manufactured by major vendors.
- **RIP-1/RIP-2 –** The DSL-2740B supports both RIP-1 and RIP-2 exchanges with other routers. Using both versions lets the Router to communicate with all RIP enabled devices.
- **Static Routing –** This allows you to select a data path to a particular network destination that will remain in the routing table and never "age out". If you wish to define a specific route that will always be used for data traffic from your LAN to a specific destination within your LAN (for example to another router or a server) or outside your network (to an ISP defined default gateway for instance).
- **Default Routing –** This allows you to choose a default path for incoming data packets for which the destination address is unknown. This is particularly useful when/if the Router functions as the sole connection to the Internet.
- **ATM (Asynchronous Transfer Mode) –** The DSL-2740B supports Bridged Ethernet over ATM (RFC1483), IP over ATM (RFC1577) and PPP over ATM (RFC 2364).
- **Precise ATM Traffic Shaping –** Traffic shaping is a method of controlling the flow rate of ATM data cells. This function helps to establish the Quality of Service for ATM data transfer.
- **High Performance –** Very high rates of data transfer are possible with the Router. Up to 24Mbps downstream bit rate using the G.dmt standard. (For ADSL2+)
- **Full Network Management –** The DSL-2740B incorporates SNMP (Simple Network Management Protocol) support for web-based management and text-based network management via Telnet connection.
- **Telnet Connection –** The Telnet enables a network manager to access the Router's management software remotely.
- **Easy Installation –** The DSL-2740B uses a web-based graphical user interface program for convenient management access and easy set up. Any common web browser software can be used to manage the Router.

Standards Compatibility and Compliance

The DSL-2740B complies with or is compatible with the following standards as recognized by their respective agencies.

- ITU G.992.1 (G.DMT) compliant
- ITU G.992.2 (G.lite "Splitterless ADSL") compliant
- ITU-T Rec. I.361 compliant
- RFC 791 Internet Protocol compliant
- RFC 792 UDP compliant
- RFC 826 Address Resolution Protocol compliant (ARP) compliant
- RFC 1058 Routing Information Protocol (RIP) compliant
- RFC 1334 PPP Authentication Protocol compliant
- RFC 1389 Routing Information Protocol 2 (RIP2) compliant
- RFC 1483 IP over AAL5/ Bridged Ethernet over AAL5 compliant
- RFC 1661 Point to Point Protocol (PPP) compliant
- RFC 1877 Automatic IP assignment compliant
- RFC 1994 Challenge Handshake Authentication Protocol compliant
- Supports DHCP functions including: automatic assignment of IP address, use of subnet mask and default gateway and provision of DNS server address for all hosts
- RFC 2364 PPP over ATM compliant (PPPoA) compliant
- RFC 2516 PPP over Ethernet compliant (PPPoE) compliant
- RFC 2684 Bridged/Routed Ethernet over ATM compliant
- IEEE 802.3 compliant
- IEEE 802.3u compliant
- IEEE 802.1d compliant
- IEEE 802.3x compliant
- Embedded web server support
- Supports Dynamic Learning
- Supports Static Routing
- Supports NAPT for up to 4096 connections
- Supports DHCP for up to 253 hot connections
- Supports IGMP
- Supports DVMRP
- Supports ATM Forum UNI 3.1/4.0
- Supports ATM VCC (Virtual Channel Circuit) for up to eight sessions
- Supports Telnet and TFTP
- Supports back pressure for half-duplex

Front Panel Display

Place the Router in a location that permits an easy view of the LED indicators on the front panel.

The LED indicators on the front panel include **Power, LAN 1-4**, **WLAN**, **DSL**, and **Internet**. The **LAN, WLAN,** and **Internet** indicators monitor link status and activity.

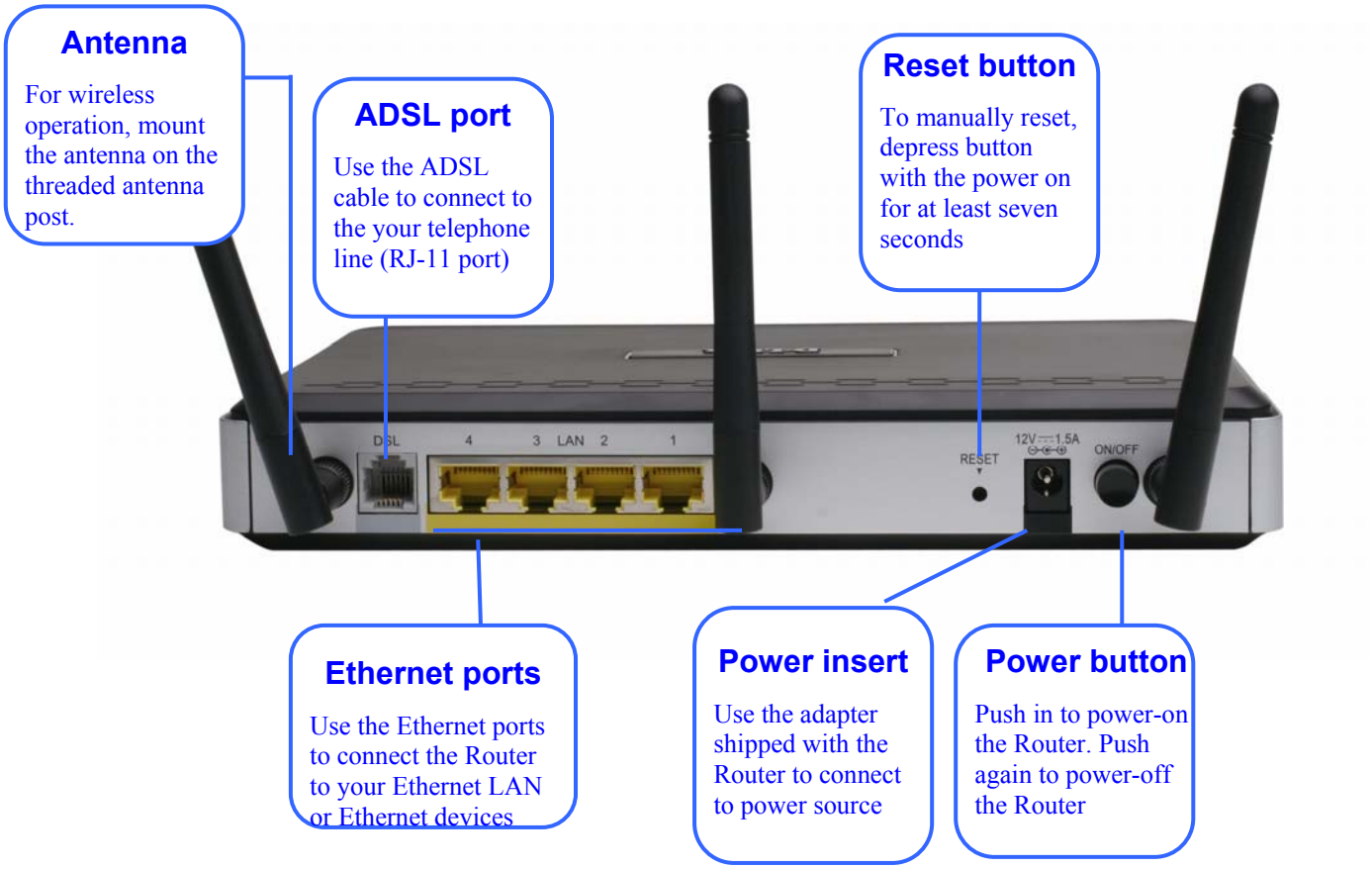
Power	Steady green light indicates the unit is powered on. When the device is powered off this remains dark.
LAN	A solid green light indicates a valid link on startup. These lights blink when there is activity currently passing through the Ethernet port.
WLAN	Steady green light indicates a wireless connection. A blinking green light indicates activity on the WLAN interface
DSL	Steady green light indicates a valid ADSL connection. This will light after the ADSL negotiation process has been settled. A blinking green light indicates activity on the WAN (ADSL) interface.
Internet	Steady green light indicates a successful Internet connection. Steady red light indicates failed Internet connection. Dark if no WAN protocol is configured.

Rear Panel Connections

All cable connections to the Router are made at the rear panel. Connect the power adapter here to power on the Router. Use the Reset button to restore the settings to the factory default values in the next chapter for instructions on using the reset button).

Connect network cables:

1. Insert the ADSL (telephone) cable included with the Router into the ADSL port and then connect the cable to your telephone line.
2. Insert one end of the Ethernet cable into one of the LAN ports on the back panel of the Router and the other end of the cable to an Ethernet Adapter or available Ethernet port on your computer.



Note

To manually reboot the Router, disconnect and then reconnect the power.

WARNING!

Using a power supply with a different voltage rating will damage the device and void the warranty of this product.

Setting Up a Wireless Network

In order to get the best performance from the wireless component of the Router, you should have some basic understanding of how wireless networks operate. Wireless networking is a relatively new technology and there are more factors to consider when setting up or designing a wireless network than designing a wired network. If you are setting up a wireless network, especially if you are using multiple access points and/or covering a large area, good planning from the outset can ensure the best possible reliability, performance, coverage and effective security.

Radio

Wireless local network (as called WI-FI) devices such as notebook computers and wireless access points use electromagnetic waves within a broad, unlicensed range of the radio spectrum (between 2.4GHz and 2.5GHz) to transmit and receive radio signals. A wireless access point (AP) becomes a base station for the wireless nodes (notebook computer for example) in its broadcast range. Often a wireless access point such as the AP embedded in the DSL-2740B, will also provide a connection to a wired network - usually Ethernet - and ultimately an Internet connection. The IEEE 802.11 standard precisely defines the encoding techniques used to digitally used for data transmission. The DSL-2740B can be used by IEEE 802.11g and 802.11b devices. These two standards are compatible but use different algorithms for data transmission.

802.11g uses a method called Orthogonal Frequency Division Multiplexing (OFDM) for transmitting data at higher data rates. OFDM is a more efficient encoding method than Direct Sequence Spread Spectrum (DSSS) transmission, the method used by 802.11b devices. However, in order to support different data transmission rates while also be compatible with 802.11b, 802.11g uses a combination of OFDM and DSSS when 802.11b devices are present.

Range

An access point will send and receive signals within a limited range. Also, be aware that the radio signals are emitted in all directions giving the access point a spherical operating range. The physical environment in which the AP is operating can have a huge impact on its effectiveness. If you experience low signal strength or slow throughput, consider positioning the Router in a different location. See the discussion below concerning the wireless environment and location of the AP (DSL-2740B).

SSID and Channel

Wireless networks use an SSID (Service Set Identifier) as means of identifying a group of wireless devices, similar to a domain or subnet. This allows wireless devices to roam from one AP to another and remain connected. Wireless devices that wish to communicate with each other must use the same SSID. Several access points can be set up using the same SSID so that wireless stations can move from one location to another without losing connection to the wireless network.

The embedded wireless access point of the Router operates in *Infrastructure* mode. It controls network access on the wireless interface in its broadcast area. It will allow access to the wireless network to devices using the correct SSID after a negotiation process takes place. By default, the DSL-2740B broadcasts its SSID so that any wireless station in range can learn the SSID and ask permission to associate with it. Many wireless adapters are able to survey or scan the wireless environment for access points. An access point in Infrastructure mode allows wireless devices to survey that network and select an access point with which to associate. You may disable SSID broadcasting in the web manager's wireless menu.

In addition, the AP can use different channels (frequency bands) to avoid unwanted overlap or interfere between control zones of separate APs. Wireless nodes must use the same SSID and the same channel as the AP with which it wishes to associate. However, because of the nature of the CSMA/CA (carrier sense multiple access with collision avoidance) protocol, using the same channel on two different APs can contribute significantly to wireless congestion. If you are using multiple APs on your network and are experiencing low throughput or significant transmission delay, carefully consider how channels are assigned to the different APs.

Wireless Security

Various security options are available on the DSL-2740B including WPA, WPA2, and mixed WPA/WPA2 (including PSK). Authentication may use an open system or a shared key. Read below for more information on configuring security for the wireless interface.

Location and Wireless Operation

Many physical environmental factors can impact wireless networks. Radio waves are used to carry the encoded data between devices. These radio transmissions can become degraded due to signal attenuation, multi-path distortion and interference or noise. Attenuation simply means that the strength of the signal weakens with the distance it travels, even if the transmission path is unobstructed. Multi-path distortion occurs when radio signals bounce off objects like walls, ceilings, metal appliances, etc. This may cause a signal to be duplicated, with each separate yet identical signal arriving at a receiver at different times. Interference and noise from electrical devices such as microwave ovens, fluorescent lights, automobile engines and other radio emitting devices can cause signal degradation. With all this in mind, choose a location for all your access points including the DSL-2740B.

The access point can be placed on a shelf or desktop, ideally you should be able to see the LED indicators on the front if you need to view them for troubleshooting.

Wireless networking lets you access your network from nearly anywhere you want. However, the number of walls, ceilings, or other objects that the wireless signals must pass through can limit signal range. Typical ranges vary depending on the types of materials and background RF noise in your home or business. To range and signal strength, use these basic guidelines:

1. **Keep the number of walls and ceilings to a minimum:** The signal emitted from Wireless LAN devices can penetrate through ceilings and walls. However, each wall or ceiling can reduce the range of Wireless LAN devices from 1 to 30M. Position your wireless devices so that the number of walls or ceilings obstructing the signal path is minimized.
2. **Consider the direct line between access points and workstations:** A wall that is 0.5 meters thick, at a 45-degree angle appears to be almost 1 meter thick. At a 2-degree angle, it is over 14 meters thick. Be careful to position access points and client adapters so the signal can travel straight through (90º angle) a wall or ceiling for better reception.
3. **Building Materials make a difference:** Buildings constructed using metal framing or doors can reduce effective range of the device. If possible, position wireless devices so that their signal can pass through drywall or open doorways, avoid positioning them so that their signal must pass through metallic materials. Poured concrete walls are reinforced with steel while cinderblock walls generally have little or no structural steel.
4. **Position the antennas for best reception:** Play around with the antenna position to see if signal strength improves. Some adapters or access points allow the user to judge the strength of the signal.
5. **Keep your product away (at least 1-2 meters) from electrical devices:** Position wireless devices away from electrical devices that generate RF noise such as microwave ovens, monitors, electric motors, etc.

2

Hardware Installation

The DSL-2740B Wireless ADSL Router maintains three separate interfaces, an Ethernet LAN, a wireless LAN and an ADSL Internet (WAN) connection. Carefully consider the Router's location suitable for connectivity for your Ethernet and wireless devices. You must have a functioning broadband connection via a bridge device such as a Cable or ADSL modem in order to use the Router's WAN function.

Place the Router in a location where it can be connected to the various devices as well as to a power source. The Router should not be located where it will be exposed to moisture, direct sunlight or excessive heat. Make sure the cables and power cord are placed safely out of the way so they do not create a tripping hazard. As with any electrical appliance, observe common sense safety procedures.

The Router can be placed on a shelf, desktop, or other stable platform. If possible, you should be able to see the LED indicators on the front if you need to view them for troubleshooting.

Power on Router

CAUTION: The Router must be used with the power adapter included with the device.

To power on the Router:

1. Insert the AC Power Adapter cord into the power receptacle located on the rear panel of the Router and plug the adapter into a suitable nearby power source.
2. Push down the Power buton, and you should see the Power LED indicator light up and remain lit.
3. If the Ethernet port is connected to a working device, check the Ethernet Link/Act LED indicators to make sure the connection is valid. The Router will attempt to establish the ADSL connection, if the ADSL line is connected and the Router is properly configured this should light up after several seconds. If this is the first time installing the device, some settings may need to be changed before the Router can establish a connection.

Factory Reset Button

The Router may be reset to the original factory default settings by using a ballpoint or paperclip to gently push down the reset button in the following sequence: 1. Press and hold the reset button while the device is powered off. 2. Turn on the power. 3. Wait for 5~8 seconds and then release the reset button. Remember that this will wipe out any settings stored in flash memory including user account information and LAN IP settings. The device settings will be restored to the factory default IP address **192.168.1.1** and the subnet mask is **255.255.255.0**, the default management Username is "admin" and the default Password is "admin."

Network Connections

Wired network connections are provided through the ADSL port and the four Ethernet ports on the back of the Router. See the Rear Panel diagram above and the illustrations below for examples

Connect ADSL Line

Use the ADSL cable included with the Router to connect it to a telephone wall socket or receptacle. Plug one end of the cable into the ADSL port (RJ-11 receptacle) on the rear panel of the Router and insert the other end into the RJ-11 wall socket. If you are using a low pass filter device, follow the instructions included with the device or given to you by your service provider. The ADSL connection represents the WAN interface, the connection to the Internet. It is the physical link to the service provider's network backbone and ultimately to the Internet.

Connect Router to Ethernet

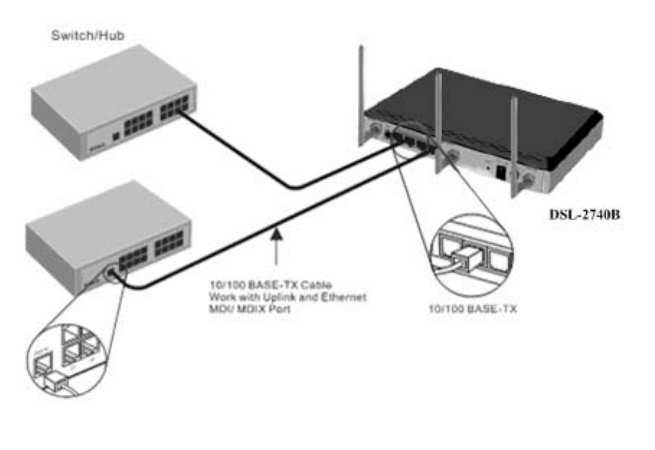
The Router may be connected to a single computer or Ethernet device through the 10BASE-TX Ethernet port on the rear panel. Any connection to an Ethernet concentrating device such as a switch or hub must operate at a speed of 10/100 Mbps only. When connecting the Router to any Ethernet device that is capable of operating at speeds higher than 10Mbps, be sure that the device has auto-negotiation (NWay) enabled for the connecting port.

Use standard twisted-pair cable with RJ-45 connectors. The RJ-45 port on the Router is a crossed port (MDI-X). Follow standard Ethernet guidelines when deciding what type of cable to use to make this connection. When connecting the Router directly to a PC or server use a normal straight-through cable. You should use a crossed cable when connecting the Router to a normal (MDI-X) port on a switch or hub. Use a normal straight-through cable when connecting it to an uplink (MDI-II) port on a hub or switch.

The rules governing Ethernet cable lengths apply to the LAN to Router connection. Be sure that the cable connecting the LAN to the Router does not exceed 100 meters.

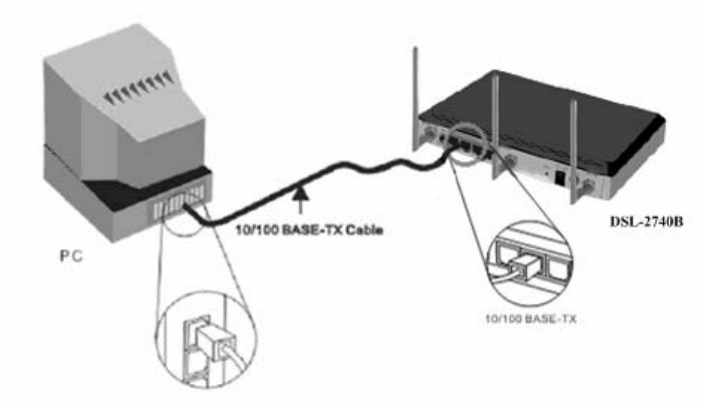
Hub or Switch to Router Connection

Connect the Router to an uplink port (MDI-II) on an Ethernet hub or switch with a straight-through cable as shown in the diagram below:



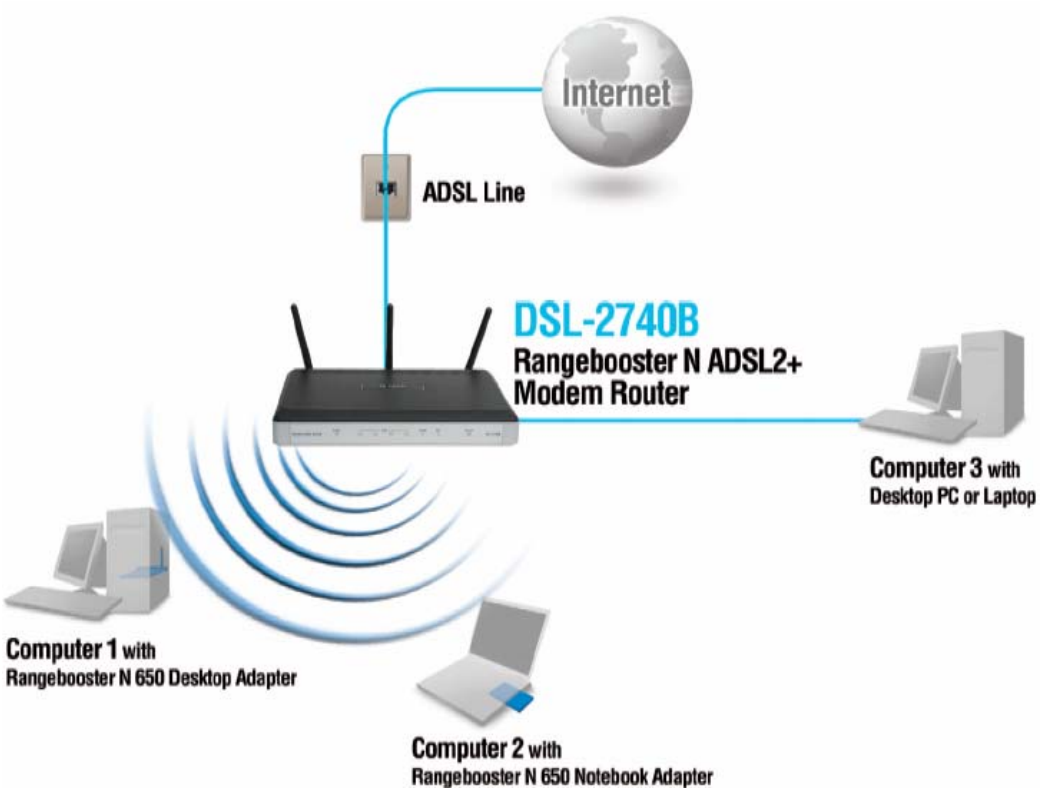
If you wish to reserve the uplink port on the switch or hub for another device, connect to any on the other MDI-X ports (1x, 2x, etc.) with a crossed cable.

Computer to Router Connection



You can connect the Router directly to a 10/100BASE-TX Ethernet adapter card (NIC) installed on a PC using the Ethernet cable provided as shown in this diagram.

The illustration below shows the DSL-2740B connected to Ethernet LAN devices, Wireless LAN devices, and the Internet.



3

Basic Router Configuration

The first time you set up the Router it is recommended that you configure the ADSL (WAN) connection using a single computer making sure that both the computer and the Router are not connected to the LAN. Once the WAN connection is functioning properly, you may continue to make changes to Router configuration including IP settings and DHCP setup. This chapter is concerned with using your computer to configure the WAN connection. The following chapter describes the various windows used to configure and monitor the Router including how to change IP settings and DHCP server setup.

Configuration Summary

1. **Connect to the Router** To configure the WAN connection used by the Router it is first necessary to communicate with the Router through its management interface, which is HTML-based and can be accessed using a web browser. To access the management software your computer must be able to "see" the Router. Your computer can see the Router if it is in the same "neighborhood" or subnet as the Router. This is accomplished by making sure your computer has IP settings that place it in the same subnet as the Router. The easiest way to make sure your computer has the correct IP settings is to configure it to use the DHCP server in the Router. The next section describes how to change the IP configuration for a computer running a Windows operating system to be a DHCP client.
2. **Configure the WAN Connection** Once your are able to access the configuration software you can proceed to change the settings required to establish the ADSL connection and connect to the service provider's network. There are different methods used to establish the connection to the service provider's network and ultimately to the Internet. You should know what Encapsulation and connection type you are required to use for your ADSL service. It is also possible that you must change the PVC settings used for the ADSL connection. Your service provider should provide all the information you need to configure the WAN connection.

Configuring IP Settings on Your Computer

In order to configure your system to receive IP settings from the Router your computer must first have the TCP/IP protocol installed. If you have an Ethernet port on your computer, it probably already has TCP/IP protocol installed. If you are using Windows XP the TCP/IP is enabled by default for standard installations. Instructions for configuring your computer to receive IP settings from the Router are provided in Appendix B on page 98.

For computers running non-Windows operating systems, follow the instructions for your OS that configure the system to receive an IP address from the Router, that is, configure the system to be a DHCP client.


Note

If you are not sure how to configure your Windows computer to be a DHCP client, see Configuring IP Settings on Your Computer beginning on page 98.

Access the Configuration Manager

In order to make sure your computer's IP settings allow it to communicate with the Router, it is advisable to configure your system be a DHCP client – that is, it will get IP settings from the Router. Appendix B describes how to configure different Windows operating systems to "Obtain IP settings automatically".

Note

Be sure that the web browser on your computer is not configured to use a proxy server in the Internet settings. In Windows Internet Explorer, you can check if a proxy server is enabled using the following procedure:

1. In Windows, click on the **Start** button and choose **Control Panel**.
2. In the **Control Panel** window, click on the **Network and Internet Options** icon.
3. In the **Network and Internet Connections** window, click the **Internet Options** icon.
4. In the **Internet Properties** window, click on the **Connections** tab and click on the **LAN Settings** button
5. Verify that the "Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections)." option is NOT checked. If it is checked, click in the checked box to deselect the option and click **OK**.

*Alternatively, you can access this **Internet Options** menu using the **Tools** pull-down menu in Internet Explorer.*

Login to Home Page

To use the web-based management software, launch a suitable web browser and direct it to the IP address of the Router. Type in **http://** followed by the default IP address, **192.168.1.1** in the address bar of the browser. The URL in the address bar should read: **http://192.168.1.1**.

A dialog box prompts for the User Name and Password. Type in the default User Name "admin," and the default Password "admin" then click the **OK** button to access the web-based manager.

Enter Password

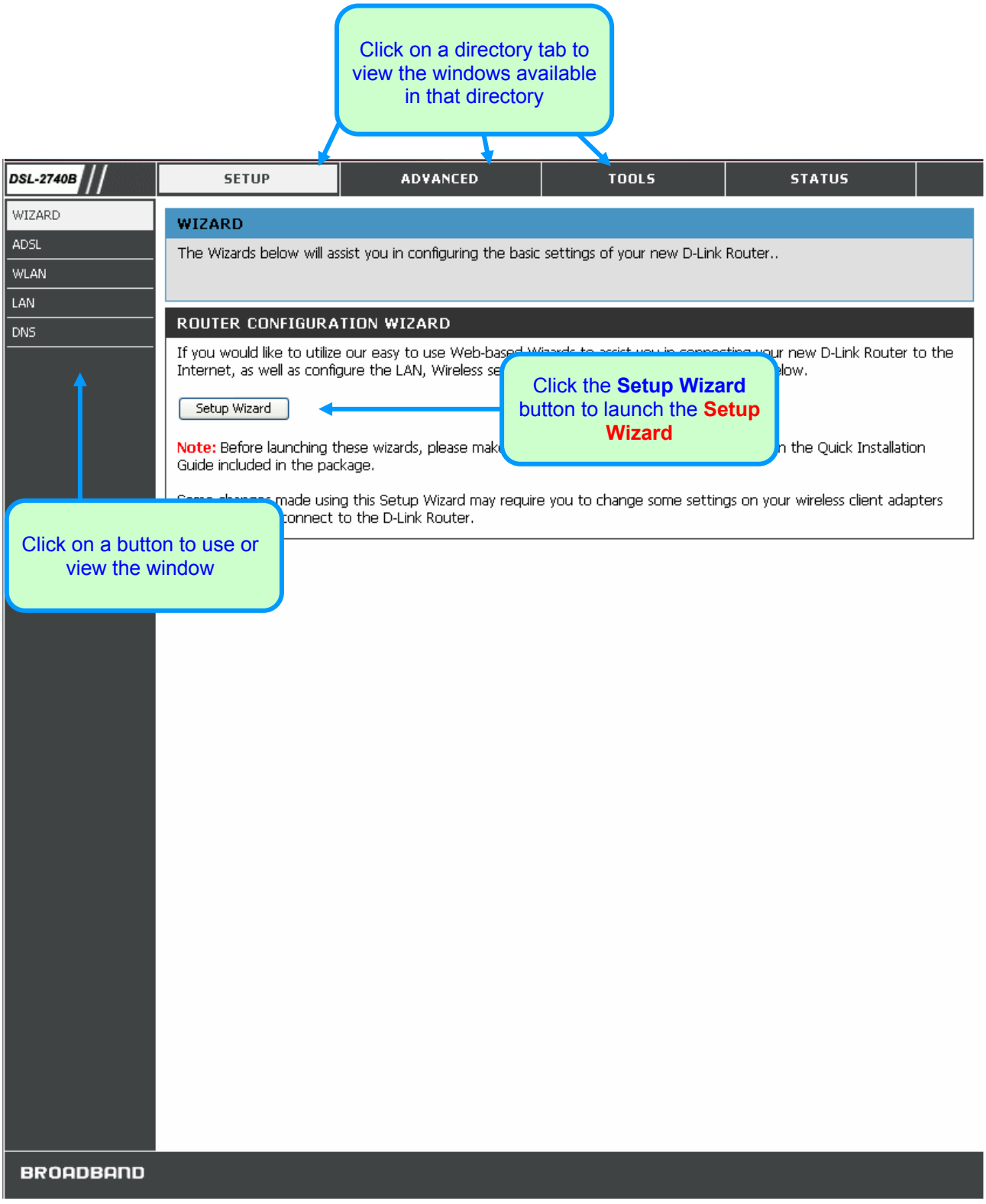
You should change the web-based manager access user name and password once you have verified that a connection can be established. The user name and password allows any PC within the same subnet as the Router to access the web-based manger.

Note

The user name and password used to access the web-based manager is NOT the same as the ADSL account user name and password needed for PPPoE/PPPoA connections to access the Internet.

Configure the Router

When you successfully connect to the web manager, the **Home** directory tab will display the **Setup Wizard** window. You can launch the Setup Wizard from this page or use the buttons located in the left panel of the web page to view other windows used for basic configuration.



Web Manager – First Time Log On

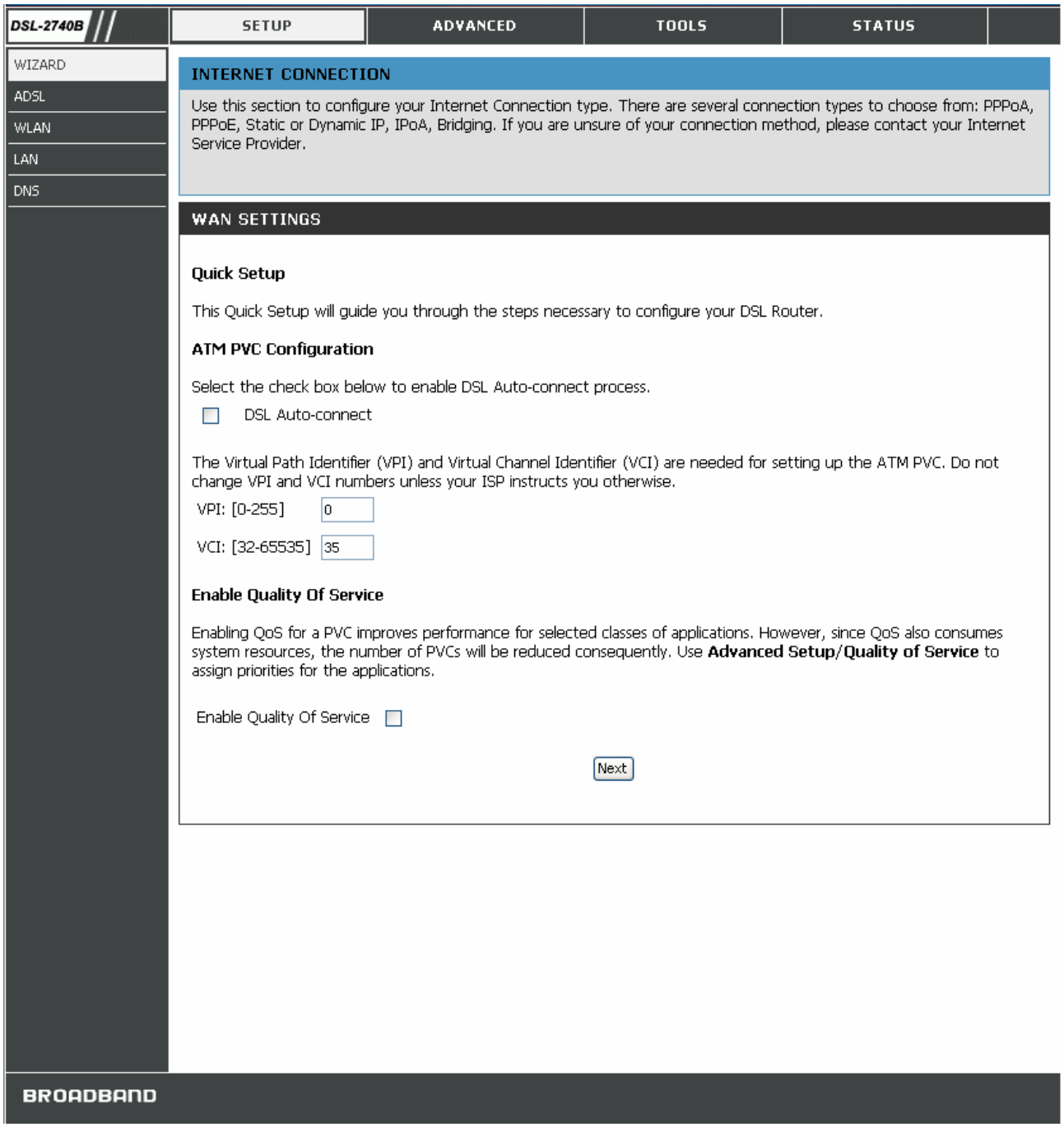
All configuration and management of the Router is done using the web-based management interface pictured in the above example. The configuration windows are accessed by clicking on the directory tabs: **Home**, **Advanced**, **Tools**, and **Status**. Each tab has associated window buttons in the left hand panel of the web interface. Basic setup of the Router can be completed in the windows accessed from the **Home** directory including: (Setup) **Wizard**, **WLAN**, **WAN** (Internet), **LAN** (to configure the IP address of the Router), **DNS** and **Dynamic DNS**.

Wizard

To use the Setup Wizard, click the **Setup Wizard** button in the first browser window and follow the instructions.

Using the Setup Wizard – WAN Settings – PVC Settings

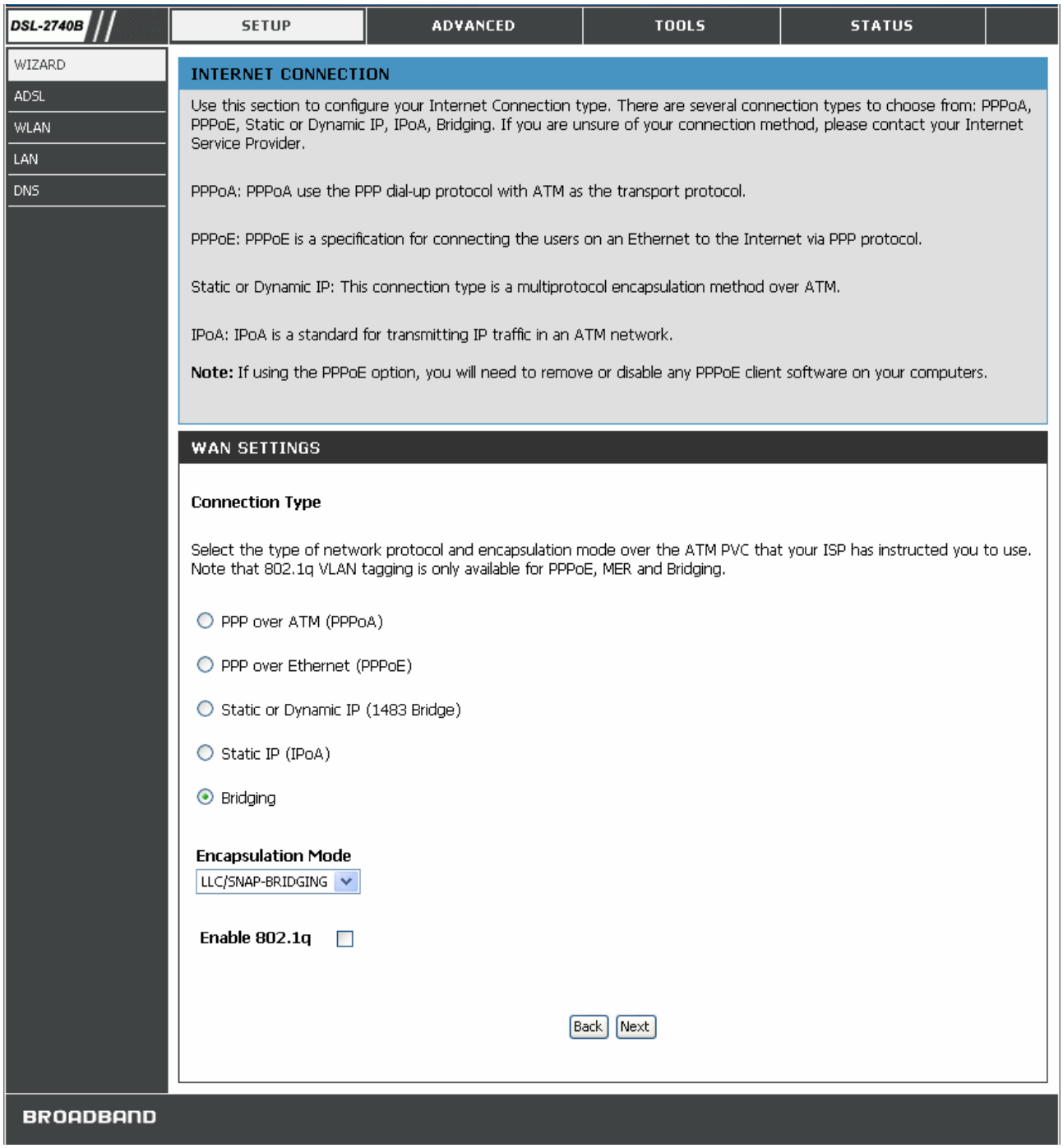
First configure **VPI** and **VCI** for your ADSL connection. Your ISP has given this information to you. Or select **DSL Auto-connect** and allow router to detect the available VPI/VCI for you. You can also enable QoS (Quality of Service) by checking **Enable Quality Of Service**.



Click **Next** to go to the next **Setup Wizard** window.

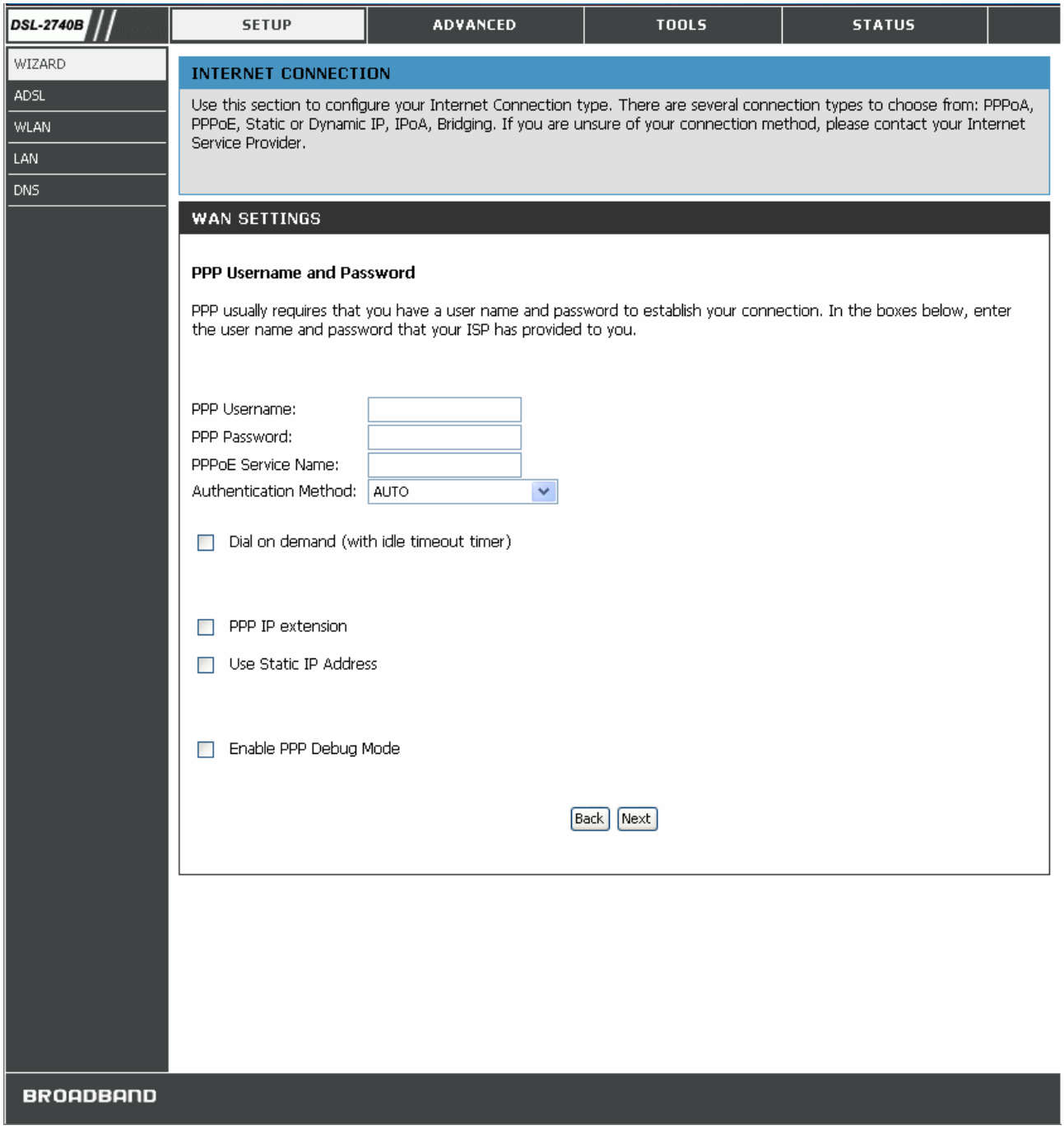
Using the Setup Wizard – WAN Settings - Choose Connection Type

Now select the Connection Type used for the Internet connection. Your ISP has given this information to you. The connection types available are **PPPoA, PPPoE**, **MER**, **IPoA** and **Bridge Mode**. The Encapsulation Mode includes **LLC/SNAP-BRIDGING** and **VC/MUX**. Each connection type has different settings that are configured in the next **Setup Wizard** window.


DSL-2740B
SETUP
ADVANCED
TOOLS
STATUS
WIZARD
ADSL
WLAN
LAN
DNS
INTERNET CONNECTION
Use this section to configure your Internet Connection type. There are several connection types to choose from: PPPoA, PPPoE, Static or Dynamic IP, IPoA, Bridging. If you are unsure of your connection method, please contact your Internet Service Provider.
PPPoA: PPPoA use the PPP dial-up protocol with ATM as the transport protocol.
PPPoE: PPPoE is a specification for connecting the users on an Ethernet to the Internet via PPP protocol.
Static or Dynamic IP: This connection type is a multiprotocol encapsulation method over ATM.
IPoA: IPoA is a standard for transmitting IP traffic in an ATM network.
Note: If using the PPPoE option, you will need to remove or disable any PPPoE client software on your computers.
WAN SETTINGS
Connection Type
Select the type of network protocol and encapsulation mode over the ATM PVC that your ISP has instructed you to use. Note that 802.1q VLAN tagging is only available for PPPoE, MER and Bridging.
PPP over ATM (PPPoA)
PPP over Ethernet (PPPoE)
Static or Dynamic IP (1483 Bridge)
Static IP (IPoA)
Bridging
Encapsulation Mode
LLC/SNAP-BRIDGING
Enable 802.1q
Back
Next
BROADBAND

Using the Setup Wizard - For PPPoE/PPPoA connection:

1. Select the specific **Connection Type** and **Encapsulation Mode**.
2. Type in the **Username** and **Password** (and **PPPoE Service Name**, if required by your ISP) used to identify and verify your account to the ISP.
3. Select the specific **Authentication Method** from the drop-down menu (**PAP** or **CHAP**). Or user default **AUTO** to allow Router to negotiate with PPP server automatically.
4. Click **Next** to go to the next **Setup Wizard** window.

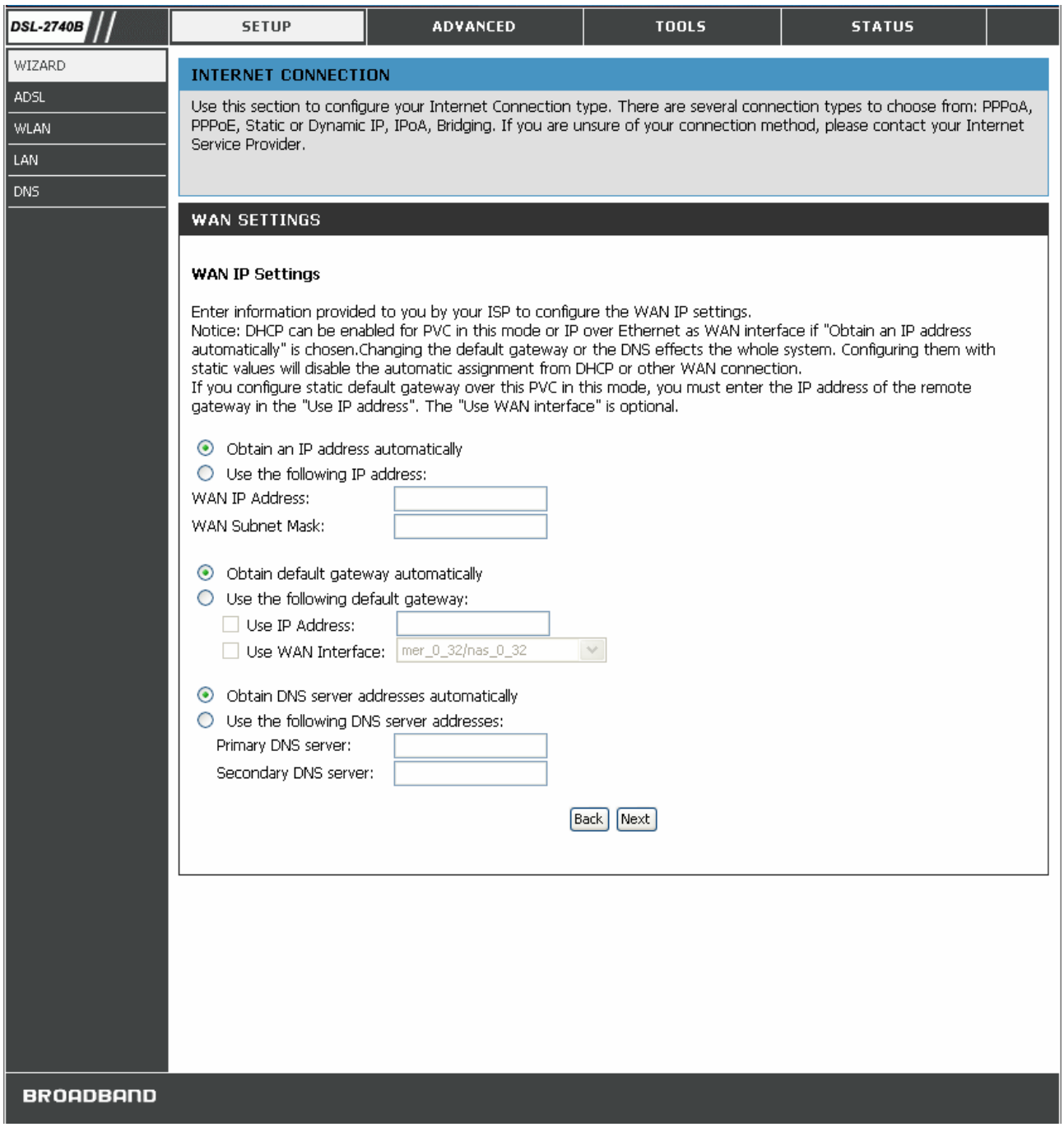


Additional configurations available for PPP connection:

PPP Connection Parameters	Description
Dial on demand	The **Dial on demand** function, if checked, will tear down the PPP link automatically when there is no incoming/outgoing packet via WAN interface for the programmed period of time that is set below (in minutes). Router activates PPPoE connection automatically when user wants to access Internet and there is no active PPPoE connection.
PPP IP extension	Router passes the obtained IP address to the local PC and acts as a bridge only modem.
Use Static IP Address	Type in the IP address given by your ISP in this field if your Router's IP address is not dynamically assigned.
Enable PPP Debug Mode	Enable PPP debug mode so you can see the PPP authentication process from Router **Status** → **System Log**.

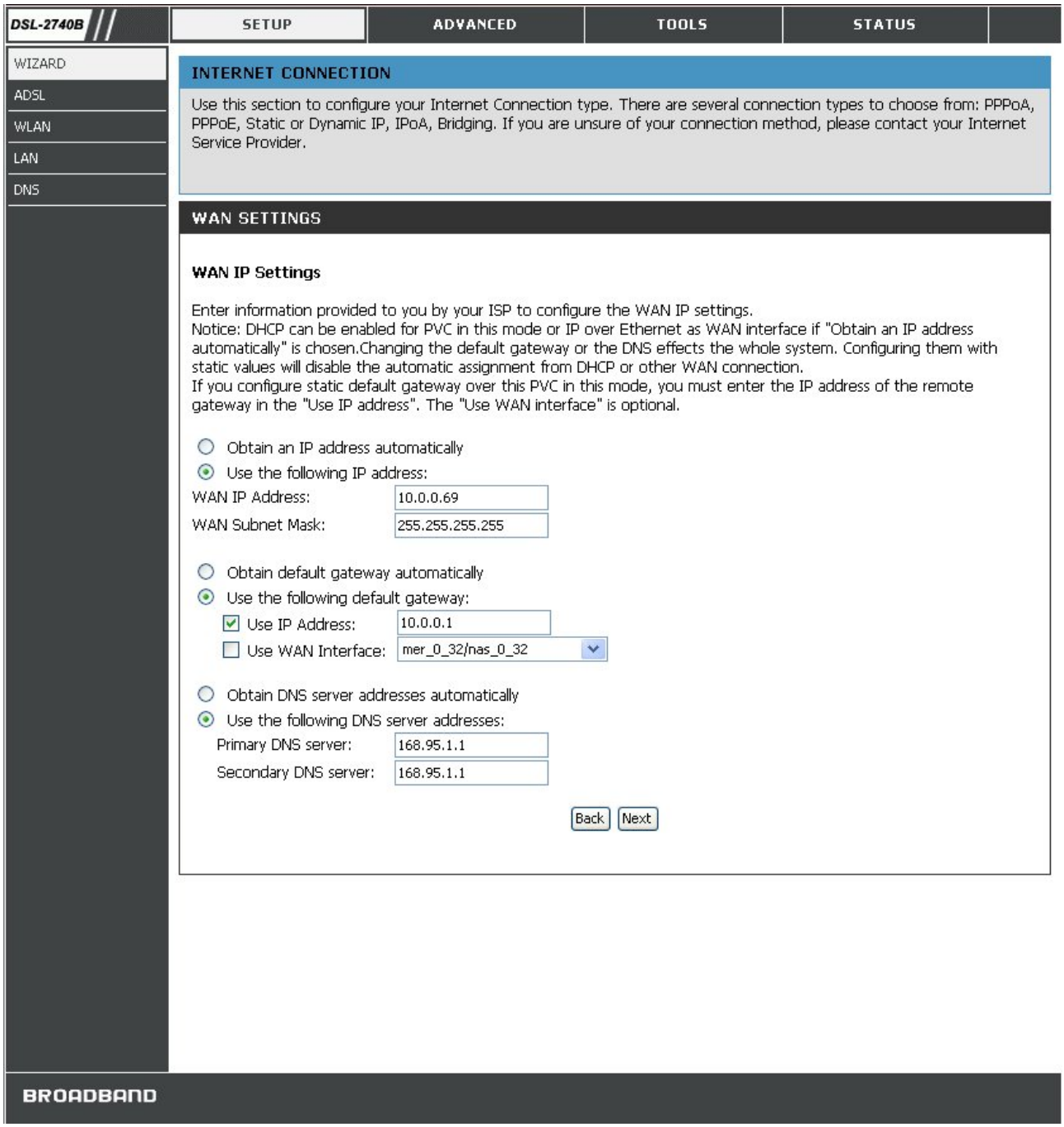
Using the Setup Wizard - For Dynamic IP (1483 Bridge) connection:

1. Select the specific **Connection Type** and **Encapsulation Mode**.
2. Select **Obtain an IP address/Default gateway/DNS server automatically**.
3. Click **Next** to go to the next **Setup Wizard** window.



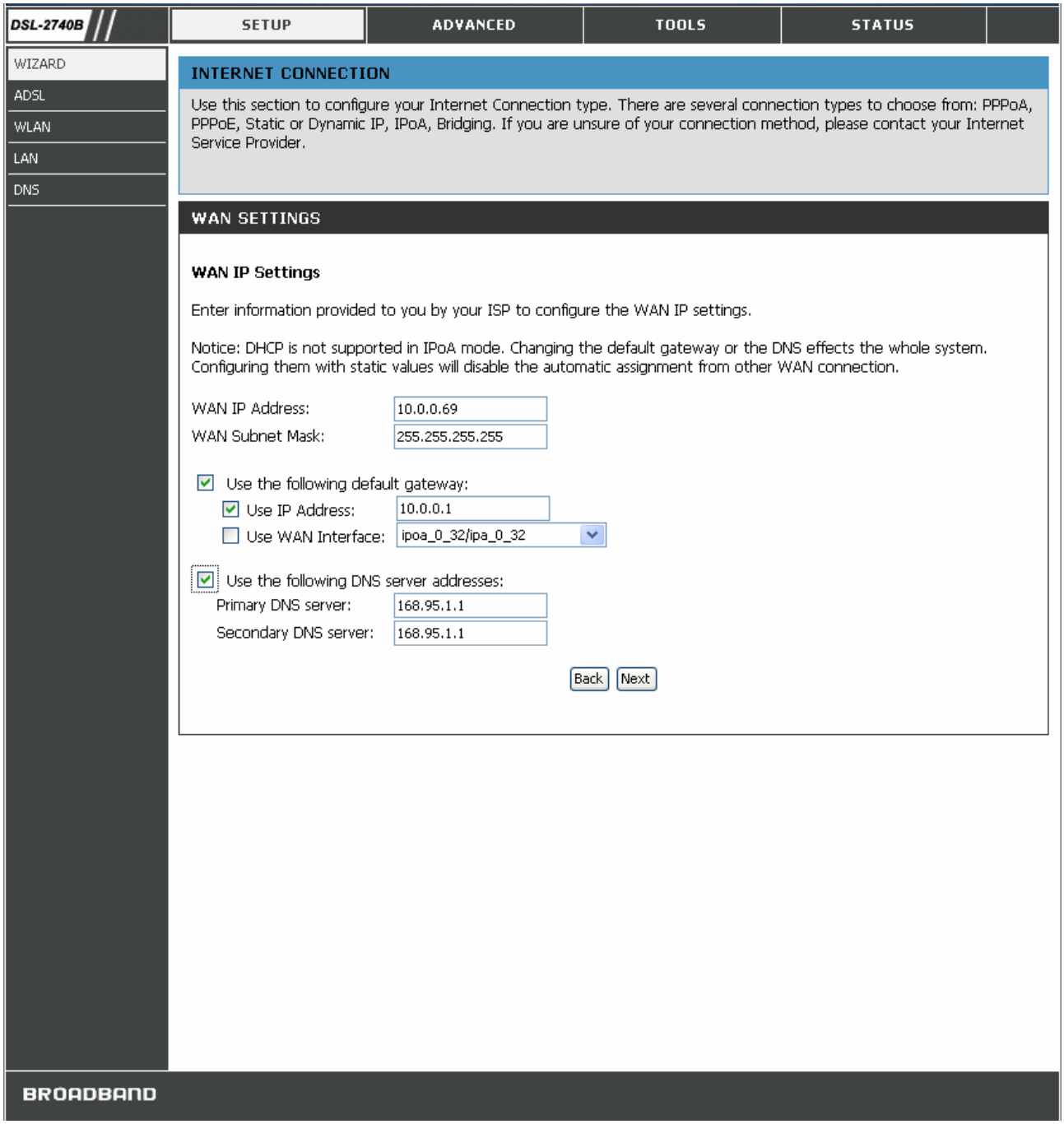
Using the Setup Wizard - For Static IP Address (1483 Bridge) connection:

1. Select the specific **Connection Type** and **Encapsulation Mode**.
2. Enter the **WAN IP Address**, **WAN Subnet Mask** provided by your ISP.
3. Select **Use the following default gateway/DNS server addresses** and enter the **ISP Gateway Address**, **Primary DNS Address**, and **Secondary DNS** Server IP **Address** as instructed by your ISP.
4. Click **Next** to go to the next **Setup Wizard** window.



Using the Setup Wizard - For Static IP Address (IPoA) connection:

5. Select the specific **Connection Type** and **Encapsulation Mode**.
6. Enter the **WAN IP Address**, **WAN Subnet Mask** provided by your ISP.
7. Select **Use the following default gateway/DNS server addresses** and enter the **ISP Gateway Address**, **Primary** and **Secondary DNS Server** IP Address as instructed by your ISP.
8. Click **Next** to go to the next **Setup Wizard** window.

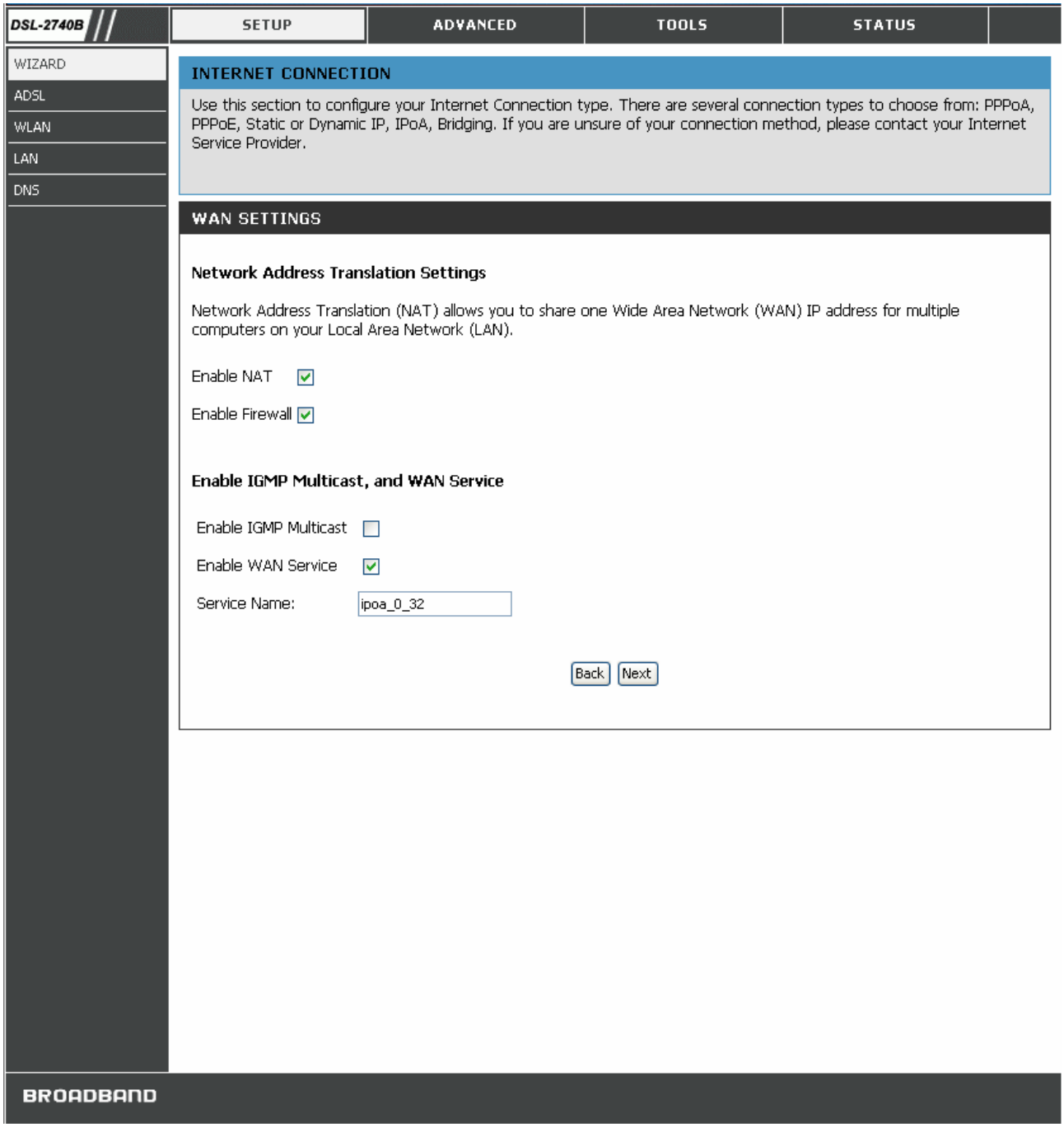


Using the Setup Wizard - For Bridge Mode connections:

1. Select the specific **Connection Type** and **Encapsulation Mode**.
2. Click **Next** to go to the next **Setup Wizard** window.

Using the Setup Wizard - For WAN Connection Settings:

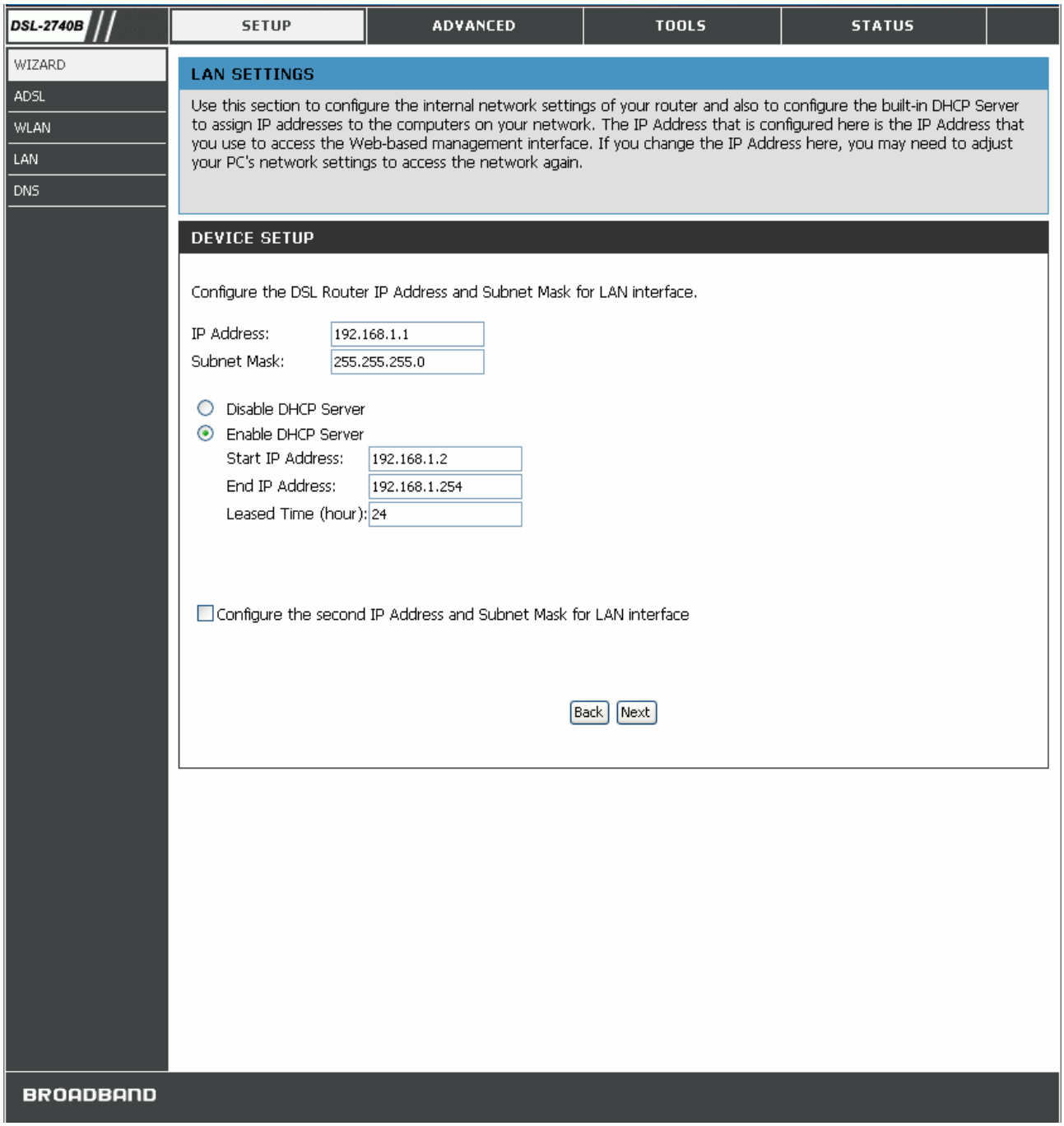
1. Select the specific functions to be enabled.
2. Click **Next** to go to the next **Setup Wizard** window.



Using the Setup Wizard - For LAN Settings:

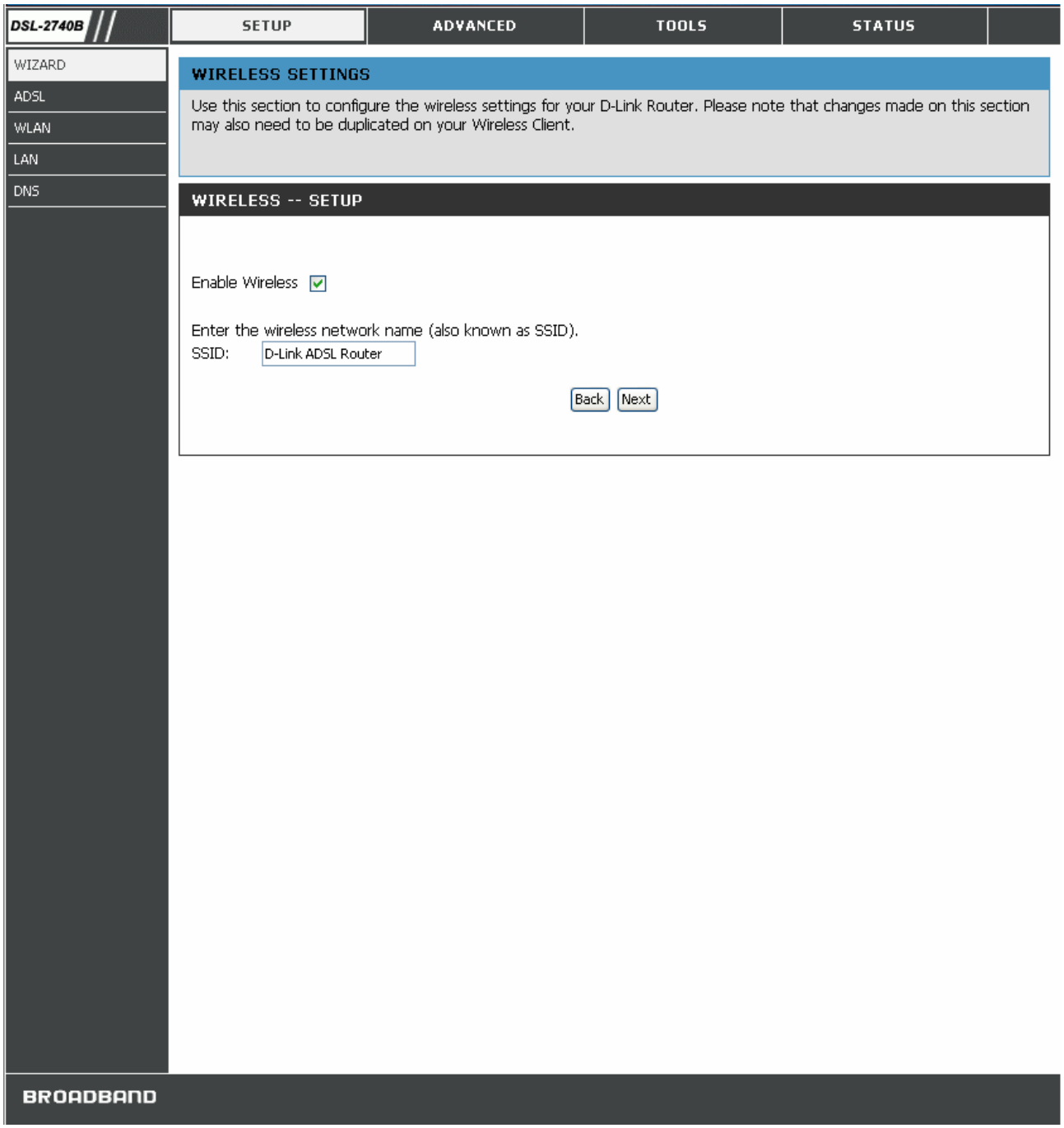
You can configure the LAN IP address to suit your preference. Many users will find it convenient to use the default settings together with DHCP service to manage the IP settings for their private network. The IP address of the Router is the base address used for DHCP. In order to use the Router for DHCP on your LAN, the IP address pool used for DHCP must be compatible with the IP address of the Router. The IP addresses available in the DHCP IP address pool will change automatically if you change the IP address of the Router.

1. Enter the desired **IP address** and **Subnet Mask**.
2. Enter the **Start** and **Stop IP Address** for the **DHCP Server**, or disable **DHCP Server**.
3. Click **Next** to go to the next **Setup Wizard** window.



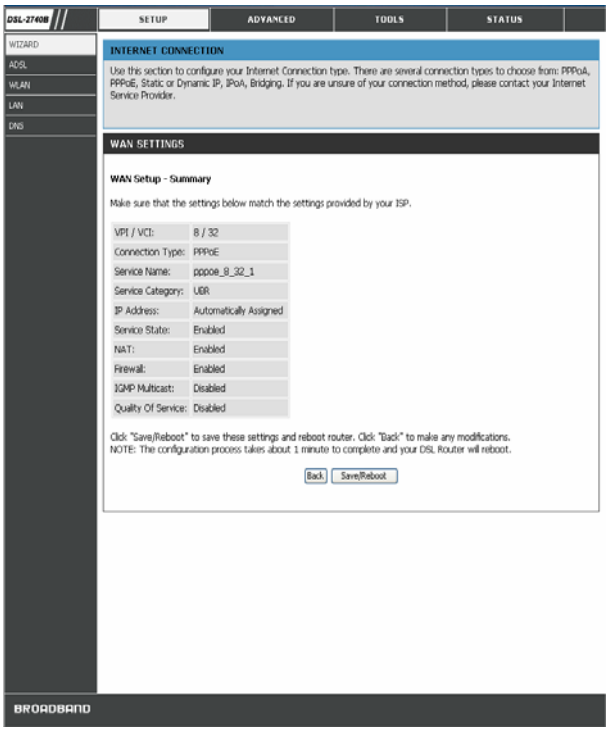
Using the Setup Wizard - For Wireless LAN Settings:

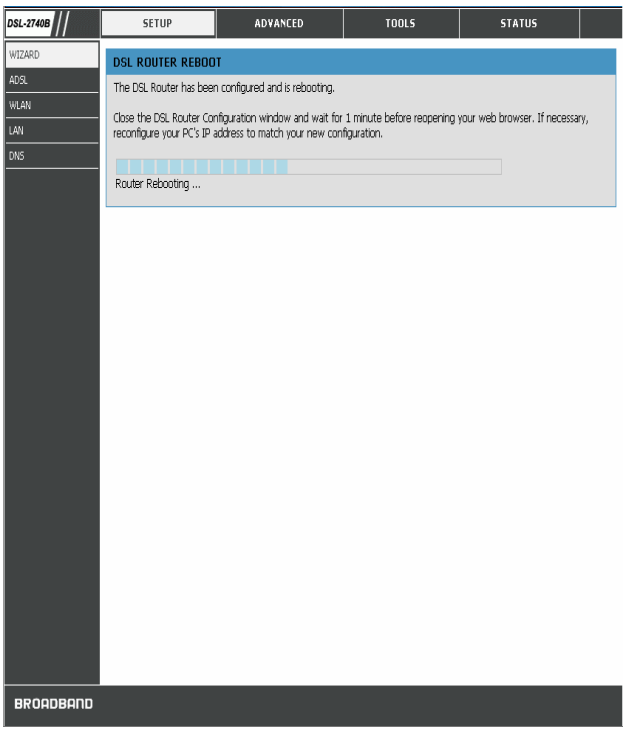
1. Click the **Enable Wireless** box to allow the router to operate in the wireless environment.
2. The **SSID** identifies members of the Service Set. Accept the default name or change it to something else. If the default SSID is changed, all other devices on the wireless network must use the same SSID.
3. Click **Next** to go to the next window and complete the Setup Wizard.



Using the Setup Wizard - Finish and Restart

Finally you can confirm that the setup process is completed. If you are satisfied that you have entered all the necessary information correctly, click the **Save/Reboot** button to save the new configuration settings and restart the Router. If you need to change settings from a previous window, click the **Back** button.





Do not turn the Router off while it is restarting. After the Router is finished restarting, you are now ready to continue to configure the Router as desired. You may want to test the WAN connection by accessing the Internet with your browser.

ADSL

To access the ADSL (WAN) Settings window, click on the **ADSL** link button on the left side of the first window that appears when you successfully access the web manager.

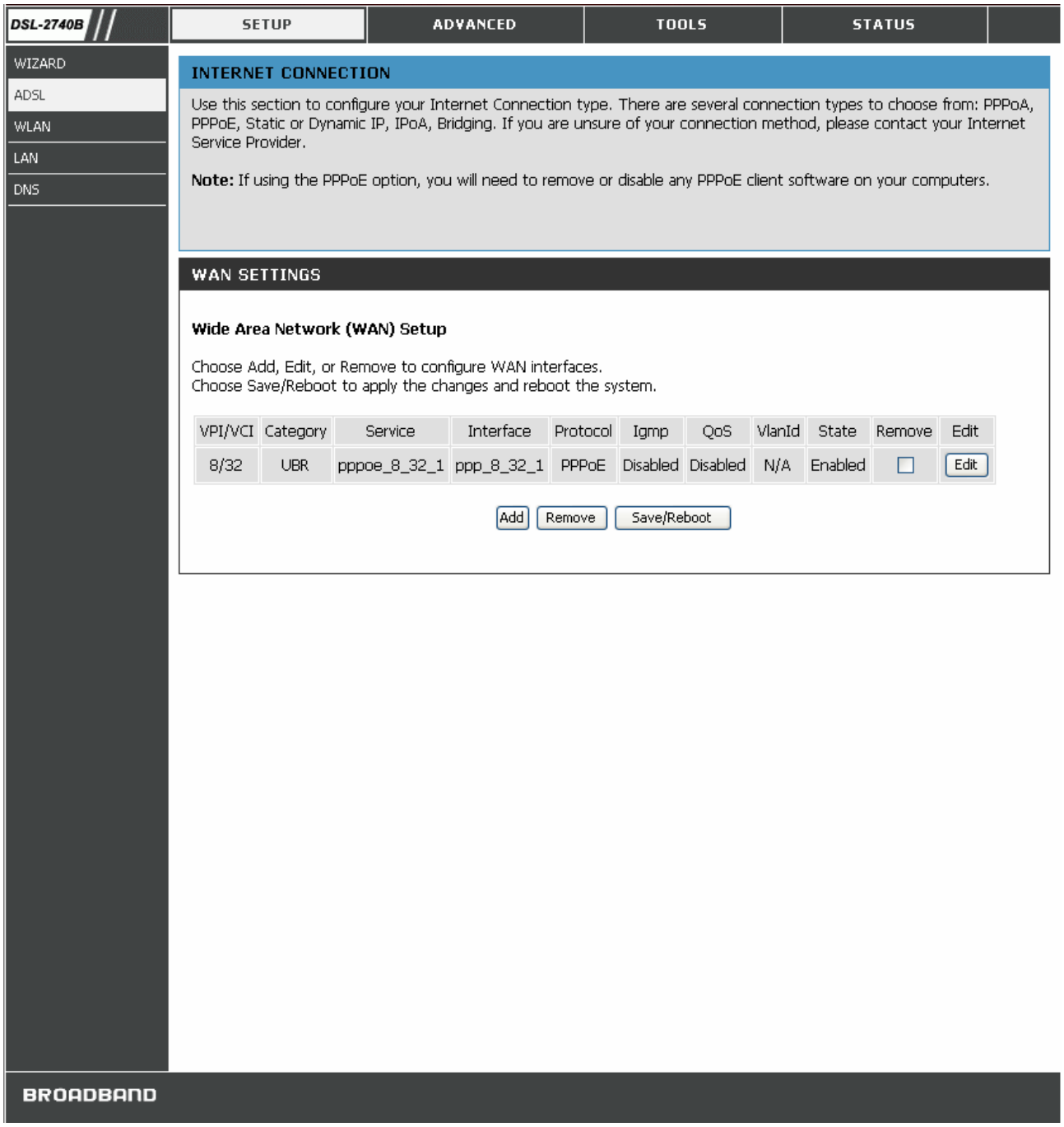
You can add, remove and edit the WAN interface from this page:

To add a WAN connection, click the **Add** button and follow the step-by-step instruction as in **WIZARD**.

To delete a WAN connection, select the specific **Remove** box and then click **Remove** button.

To edit a WAN connection, click the specific WAN interface **Edit** button and follow the step-by-step instruction as in **WIZARD**.

Click the **Save/Reboot** button to apply your settings.



ADSL Settings Window

Additional information for you to help you configure your WAN connections:

ATM Settings:

The ATM settings in the ADSL Settings windows for the different connection types can be used to adjust QoS parameters for ADSL clients. This may not be available to all ADSL accounts.

ATM Parameters	Description
PVC	The Router supports using up to eight multiple virtual connections. This window allows the user to configure WAN settings for all the available connections (see instructions below on how to set up Multiple Virtual Connections). Use the PVC drop-down menu to select the connection (Pvc0 to Pvc7) you want to configure. Since most users will use only a single connection, the default setting *Pvc0* can be used for any changes made to the WAN settings.
VPI	The Virtual Path Identifier is used with the VCI to define a dedicated circuit on the ATM network portion of the connection to the Internet and WAN. Most users will not need to change this setting.
VCI	The Virtual Channel Identifier is used with the VPI to define a dedicated circuit on the ATM network portion of the connection to the Internet and WAN. Most users will not need to change this setting.
Virtual Circuit	As with the PVC setting, this is mainly for use by clients who are configuring the Router for multiple virtual connections. Use this to enable or disable the PVC you are currently configuring. By default, the Pvc0 is *Enabled* and the remaining PVCs are disabled.
Service Category	The ATM settings allow the user to adjust ATM Quality of Service (QoS) or traffic parameters to suit specific traffic requirements. For applications or circumstances where packet loss or packet delay is a concern, ATM QoS can be adjusted to minimize problems. For most accounts, it will not be necessary to change these settings. Altering QoS settings can adversely affect performance of some commonly used Internet applications. If you plan to change QoS or traffic parameters, contact your ISP or network services provider for information on what types of adjustment are available or possible for your account. Your ISP may not support the class of service you want to use. To adjust ATM QoS parameters, select one of the Service Categories listed here and type in the PCR value in the entry field below. For the VBR service category, an additional parameter (SCR) must also be defined. *UBR* – Unspecified Bit Rate, this is the default category used for general-purpose Internet traffic where normal levels of packet loss and delay are acceptable. For some applications or for multiple connection accounts, it may be desirable to specify the PCR. *CBR* – Constant Bit Rate, usually used in circumstances where very low packet loss and very low Cell Delay Variable (CDV) are desirable. *VBR* – Variable Bit Rate, usually used when network traffic is characterized

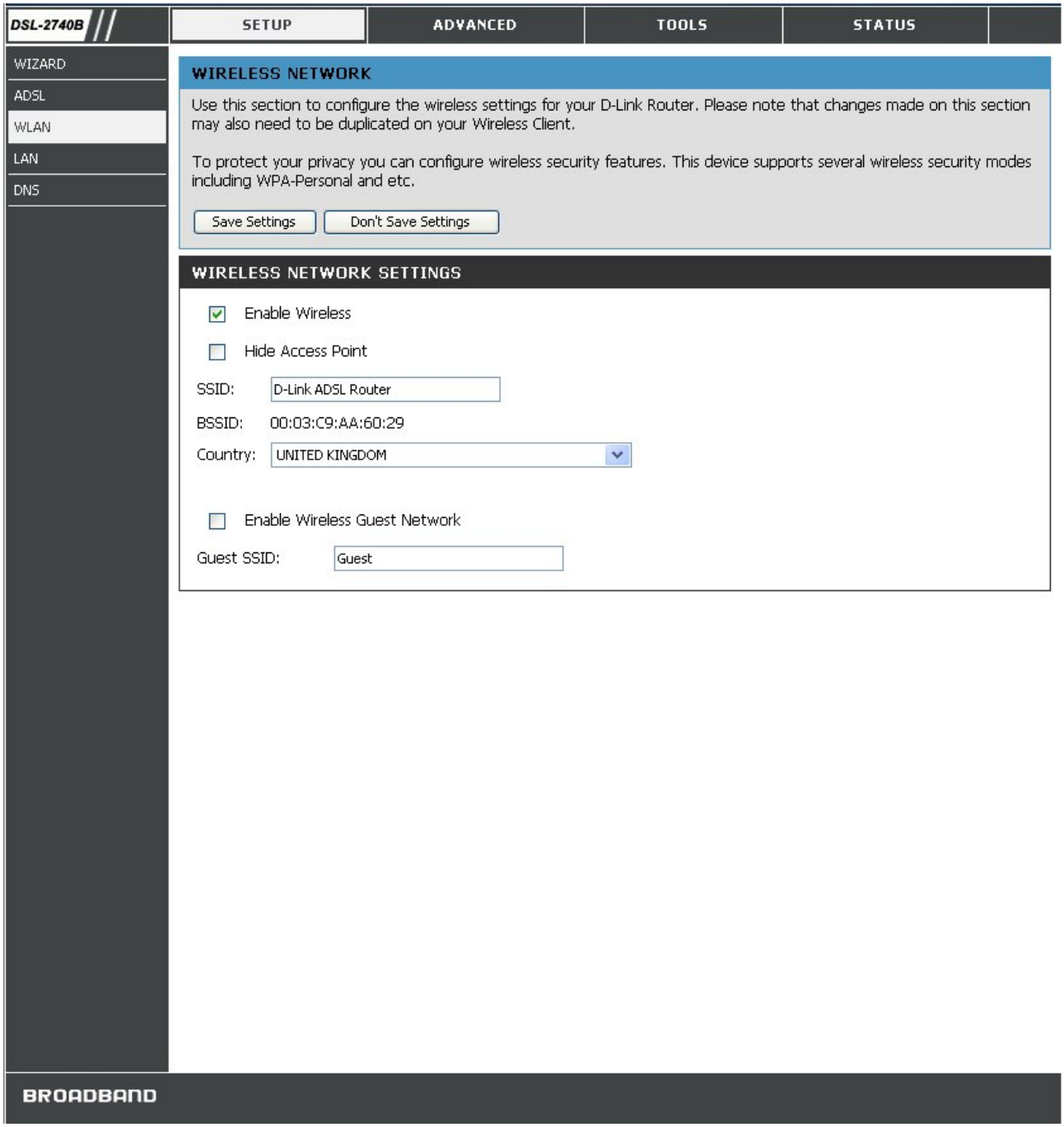
	by bursts of packets at variable intervals, and some moderate packet loss and delay is acceptable. This category is typically used for audio and video applications such as teleconferencing. The network must support QoS Class 2 to use VBR.
PCR	Peak Cell Rate – The PCR is inversely related to the time interval between ATM cells. It is specified for all three service categories (UBR, CBR and VBR) in Kbps.
SCR	Sustainable Cell Rate – The SCR is defined for the VBR service category. This is the rate that can be sustained for "bursty", on-off traffic sources. It is a function of Maximum Burst Size (MBS) and the time interval (between cells).
CDVT	Cell Delay Variation Tolerance – CDVT is a measure of the cell clumping phenomenon by which cells are delayed in the network and are clumped together and arrive at a system at a faster rate than negotiated. Increasing the CDVT creates greater bucket depth.
MBS	Maximum Burst Size – The MBS is the maximum number of bytes that can be sent continuously from the source to the destination dropping any packets. Some ATM providers set the MBS and CDVT very low and adjust up if problems occur.

Router Settings:

Parameters	Description
Default Route	When this is enabled, the Router will be considered to be the primary gateway to the Internet and WAN for systems on your network. If you are using the Router on a network with one or more alternative gateway routers, you may prefer to disable this if you will use another router as the primary gateway.
NAT	Network Address Translation may be enabled or disabled with the pull-down menu. Keep in mind that disabling NAT allows only a single computer to be used for Internet access through the Router. NAT is enabled and disabled for the Router on all connections (i.e. Pvc0 – Pvc7) if your Router is set up for multiple virtual connections.
Firewall	Use this to universally enable or disable the Firewall and Filter features available in the Router. If you disable this you will not be able to configure settings in the **Firewall Configuration** window or **Filters** window in the **Advanced** directory.
Primary DNS Address	This is the IP address of the first choice for Domain Name Service (DNS) used to match the named URL web address used by most browsers with the actual global IP address used for a web server. Usually this will be a server owned by the ISP. Get this IP address from your ISP.
Secondary DNS Address	This is the second choice for a DNS server. Get this IP address from your ISP.

WLAN

To access the **WLAN Settings** window, click on the **WLAN** link button on the left side of the first window that appears when you successfully access the web manager.



WLAN Settings Window

Click the **Enable Wireless** box to allow the router to operate in the wireless environment.

Click the **Hide Access Point** box to allow the router to stop broadcasting its SSID.

The **SSID** identifies members of the Service Set. Accept the default name or change it to something else. If the default SSID is changed, all other devices on the wireless network must use the same SSID.

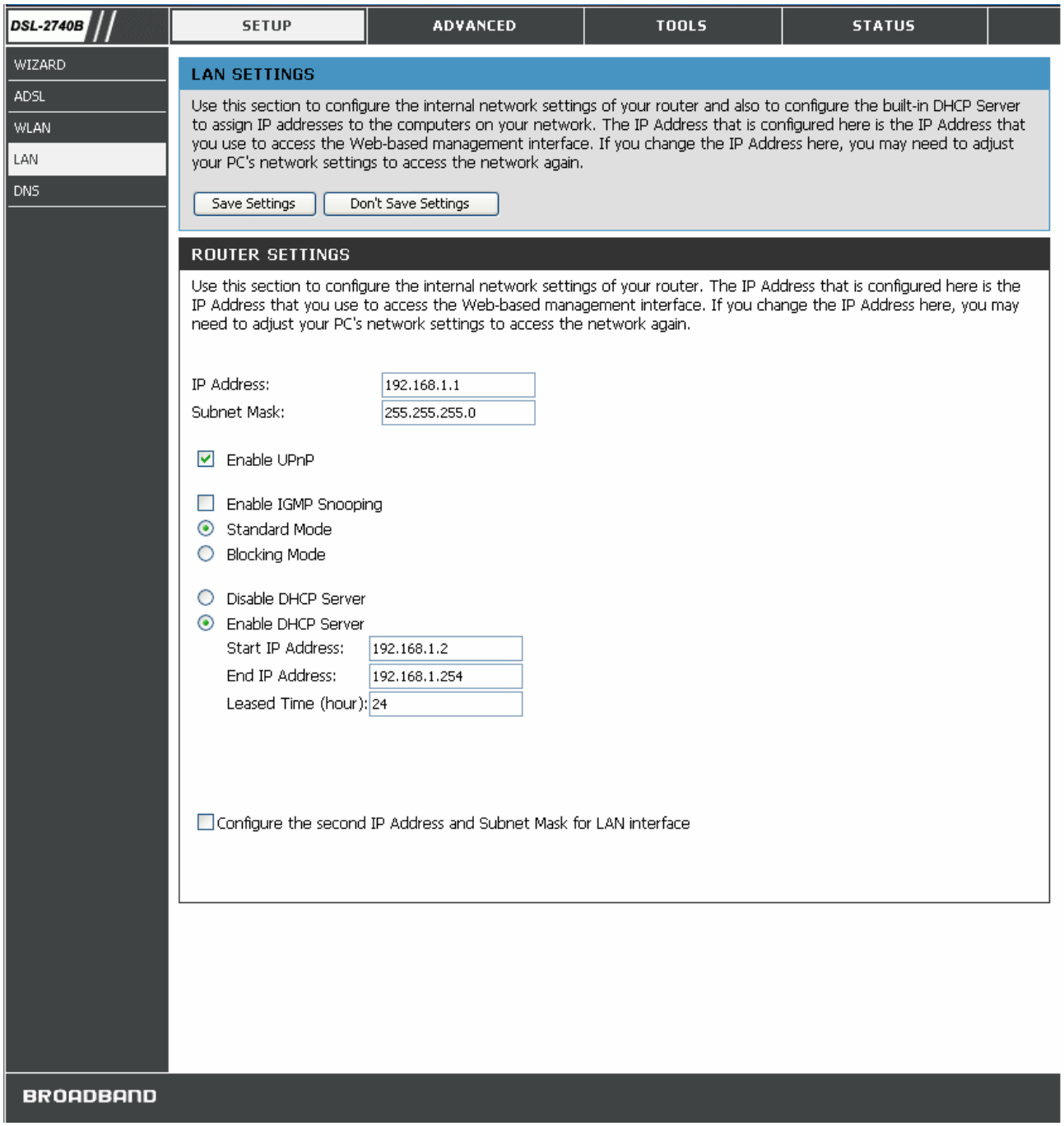
Select your region form the **Country** drop down list. Operating channels are different for different country/region based on regulation.

Please go to **Advanced** section for more wireless settings.

LAN

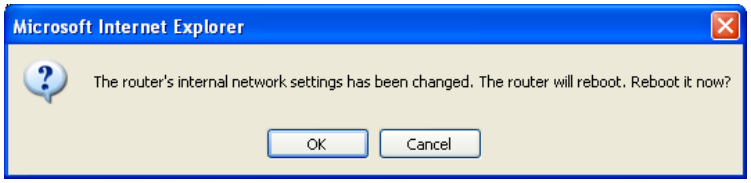
You can configure the LAN IP address to suit your preference. Many users will find it convenient to use the default settings together with DHCP service to manage the IP settings for their private network. The IP address of the Router is the base address used for DHCP. In order to use the Router for DHCP on your LAN, the IP address pool used for DHCP must be compatible with the IP address of the Router. The IP addresses available in the DHCP IP address pool will change automatically if you change the IP address of the Router.

To access the LAN setting window, click the **LAN** button in the **Setup** directory.



LAN Settings Window

To change the LAN **IP Address** or **Subnet Mask**, type in the desired values and click the **Save Settings** button. You will be asked to reboot by a pop-up window. Click **OK** to reboot the router.

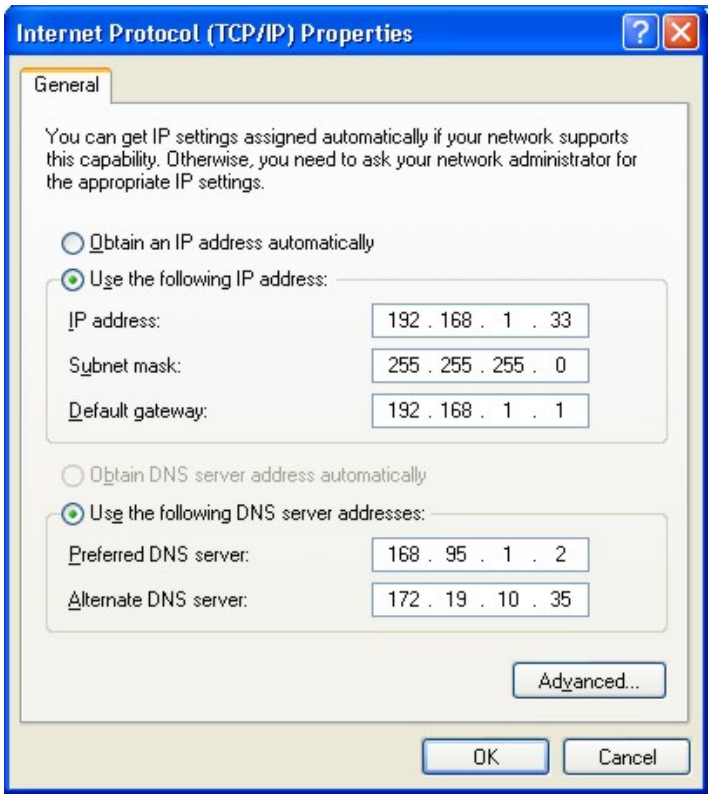


You might need to re-configure your PC NIC seetings to enter the Router's web manager after reboot.

Parameters	Description
UPnP	UPnP supports zero-configuration networking and automatic discovery for many types of networked devices. When enabled, it allows other devices that support UPnP to dynamically join a network, obtain an IP address, convey its capabilities, and learn about the presence and capabilities of other devices. DHCP and DNS service can also be used if available on the network. UPnP also allows supported devices to leave a network automatically without adverse effects to the device or other devices on the network.
IGMP Snooping	IGMP snooping is a feature that allows the layer-2 device (switch) to "listen in" on the IGMP conversation between hosts and routers. By doing so, this device can forwards the multicast packets to the hosts which have joined the multicast group, instead of flooding to all hosts. **Standard Mode**: Listen and forward **Blocking Mode**: Listen and block
DHCP	The DHCP server is enabled by default for the Router's Ethernet LAN interface. DHCP service will supply IP settings to workstations configured to automatically obtain IP settings that are connected to the Router though the Ethernet port. When the Router is used for DHCP it becomes the default gateway for DHCP client connected to it. Keep in mind that if you change the IP address of the Router the range of IP addresses in the pool used for DHCP on the LAN will also be changed. The IP address pool can be up to 253 IP addresses.

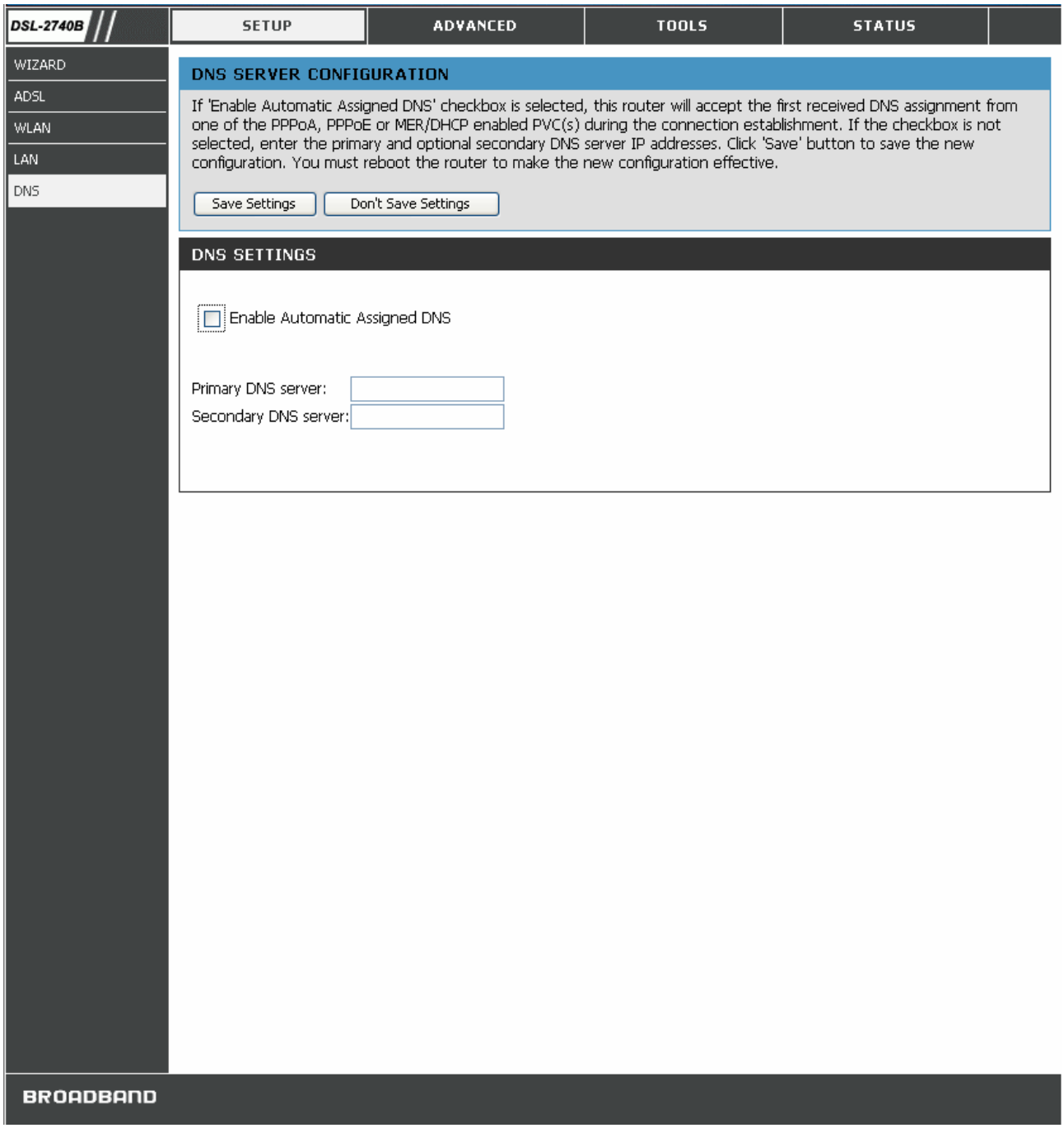
Note

To manually configure IP settings on Windows workstations, open the TCP/IP Properties menu and select the "Use the following IP address" option. You will need to supply the IP addres, Subnet mask and Defualt gateway (use IP address of DSL-2740B) for each workstation. The example here also uses manually configured DNS settings.



DNS

The Router can be configured to relay DNS settings from your ISP or another available service to workstations on your LAN. When using DNS relay, the Router will accept DNS requests from hosts on the LAN and forward them to the ISP's, or alternative DNS servers. DNS relay can use auto discovery or the DNS IP address can be manually entered by the user. Alternatively, you may also disable the DNS relay and configure hosts on your LAN to use DNS servers directly. Most users who are using the Router for DHCP service on the LAN and are using DNS servers on the ISP's network, should check **Enable Automatic Assigned DNS** box.



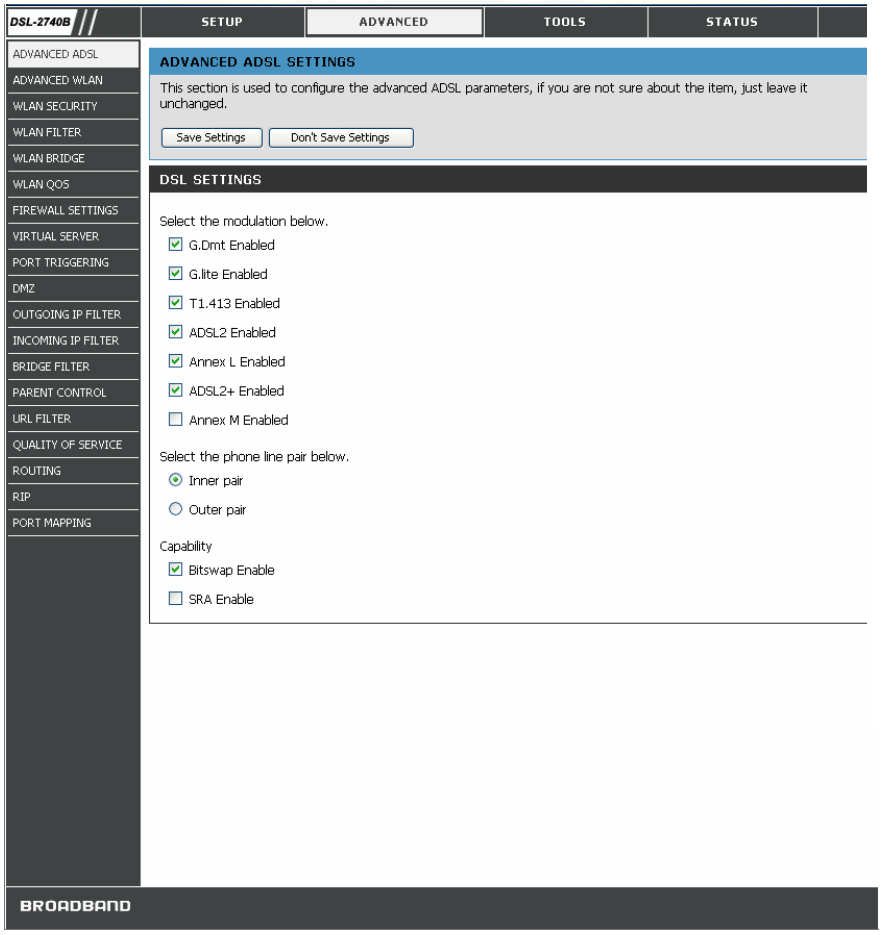
DNS Configuration window

If you have DNS IP addresses provided by your ISP, enter these IP addresses in the available entry fields for the **Primary DNS Server** and the **Secondary DNS Server**.

When you have configured the DNS settings as desired, click the **Save Settings** button.

4

Advanced Router Management



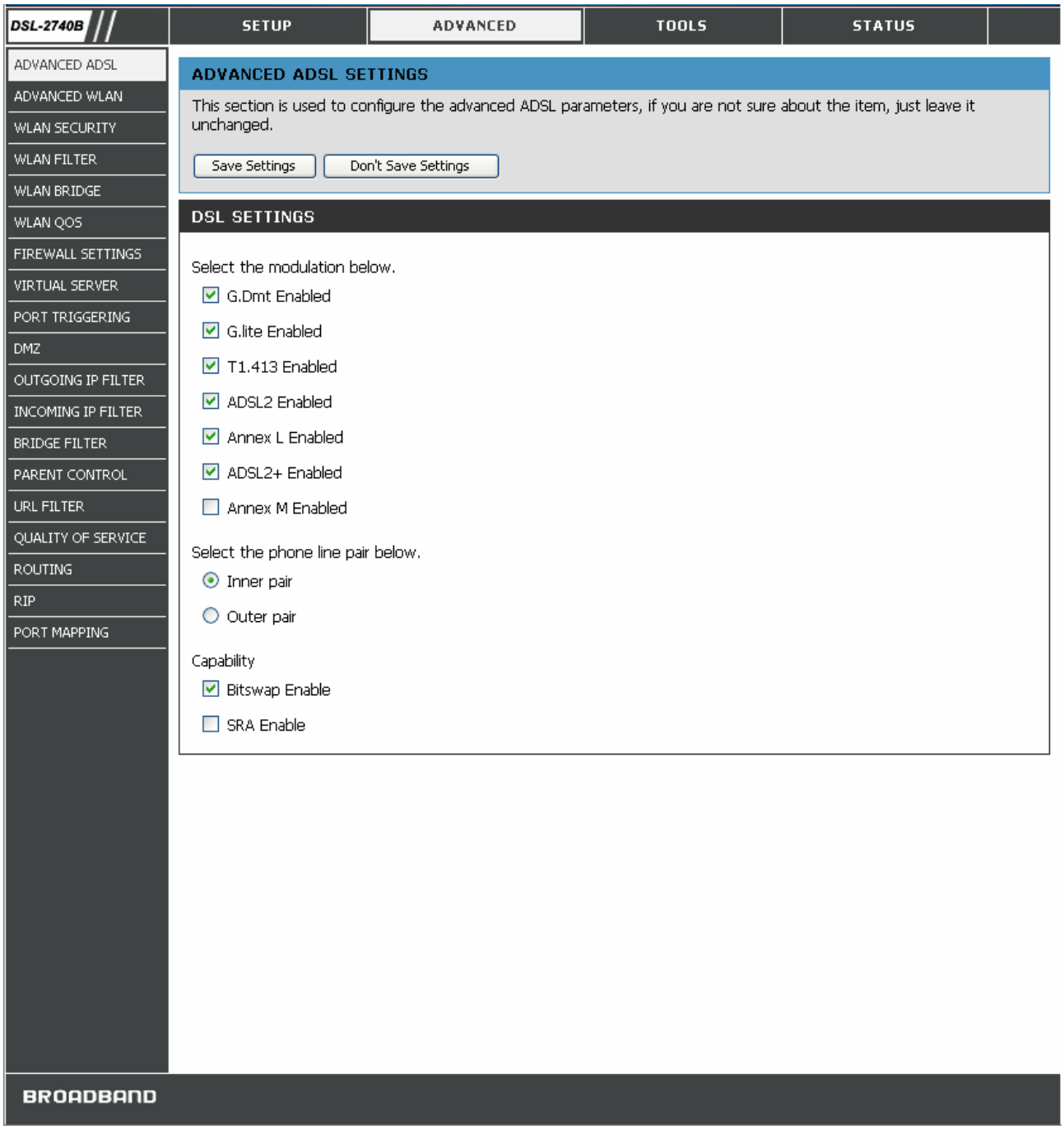
This chapter introduces and describes the management features that have not been presented in the previous chapter. These include the more advanced features used for network management and security as well as administrative tools to manage the Router, view statistics and other information used to examine performance and for troubleshooting.

Use your mouse to click the directory tabs and window buttons in order to display the various configuration and read-only windows discussed below. The table below summarizes again the directories and menus available in the management web interface. In this chapter you will find descriptions for the windows located in the Advanced, Tools and Status directories.

Directory	Configuration and Read-only Windows
Setup	Click the Setup tab to access the Wizard, ADSL Settings, WLAN Settings, LAN Settings, and DNS Setup. See the previous chapter for a description of the Setup directory windows.
Advanced	Click the Advanced tab to access the Advanced ADSL, Advanced WLAN, WLAN Security, WLAN Filter, WLAN Bridge, WLAN QoS, Firewall Settings, Virtual Server, Port Trigering, DMZ, Outgoing/Incoming IP Filter, Bridge Filter, Parent Control, URL Filter, Quality Of Service, Routing, RIP, and Port Mapping.
Tools	Click the Tools tab to access the Diagnostics, Backup Settings, Update Settings, Restore Default, TR069 Client, SNMP Configuration, DDNS, Time, Access Service, Access IP, Password, Update Firmware, and Save/Reboot.
Status	Click the Status tab to view the Device Information, ADSL, LAN, WAN, ATM,

ADVANCED ADSL

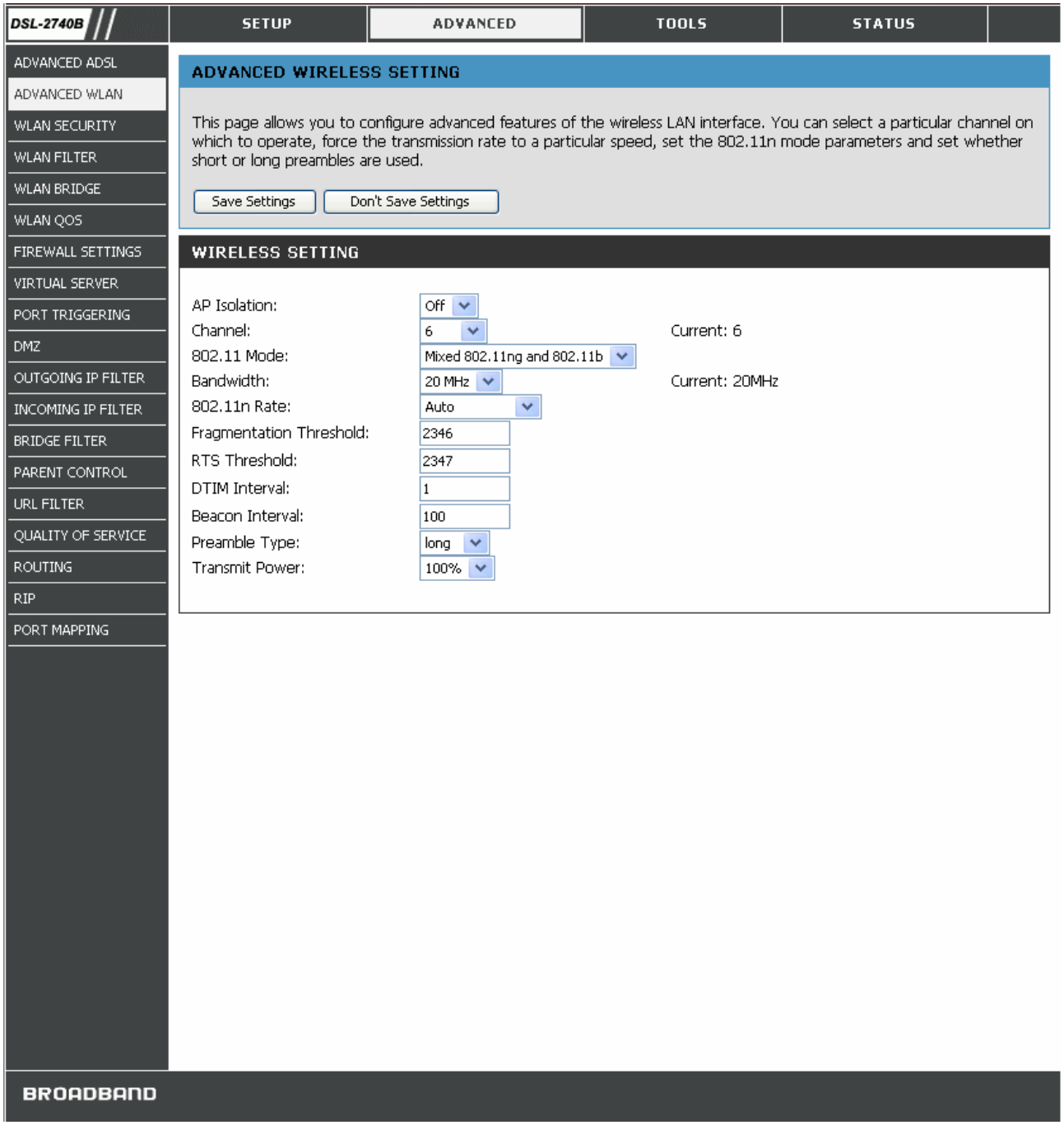
The **ADSL Configuration** window allows the user to set the configuration for ADSL protocols. For most ADSL accounts the default settings ***(ADSL2+)*** will work. This configuration works with all ADSL implementations. Do not change any settings unless you have been instructed. To make ADSL settings, select the desired items and click the **Save Settings** button.



ADVANCED ADSL Window

ADVANCED WLAN

ADVANCED WLAN page allows you to tweek more advanced wireless settings. Most users will do just fine using default settings.



ADVANCED WLAN Window

Configure these parameters for your router:

WLAN Parameters	Description
AP Isolation	This is used to islolate wireless clients which connect to different APs.

Channel	Operation channel of your access point. Channel availability is different for different countries due to their regulation.
802.11 Mode	Select **Mixed 802.11ng and 802.11b** to operate in b/g/n mode. Or select specified mode to use.
Bandwidth	Channel bandwidth. Maximum rate for **20 MHz** is 130 Mbps. Maximum rate for **40 MHz** is 270 Mbps.
802.11n Rate	Select **Auto** to operate in all available transmission rates. Or select specified rate to use.
Fragmentation Threshold	Maximum frame size. Frame larger than the threshold are fragmented into multiple packets and transmitted. The range is **256~2346** bytes.
RTS Threshold	If a network packet is smaller than the preset RTS threshold size, the RTS/CTS mechanism will not be enabled. The router sends Request to Send (RTS) frames to a particular receiving station and negotiates the sending of a data frame. After receiving an RTS, the wireless station responds with a Clear to Send (CTS) frame to acknowledge the right to begin transmission. The range is **0~2347** bytes.
DTIM Interval	Interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the router has buffered broadcast or multicast for associated clients, it sends the next DTIM with a DTIM Interval value. Its clients hear the beacons and awaken to receive the broadcast and multicast message. The range is **1~255** milliseconds,
Beacon Interval	The **Beacon Interval** value indicates the frequency interval of the beacon. A beacon is a packet broadcast by the router to synchronize the wireless network. The value is **1~65535** milliseconds.
Preamble Type	The **preamble** is used to synchronize the transmitter and receiver and derives common timing releationship. The **Short** preamble improves throughput but not all wireless clients support short preamble type.
Transmit Power	5-level of transmit power are available: **20%**, **40%**, **60%**, **80%**, and **100%**.

WLAN SECURITY

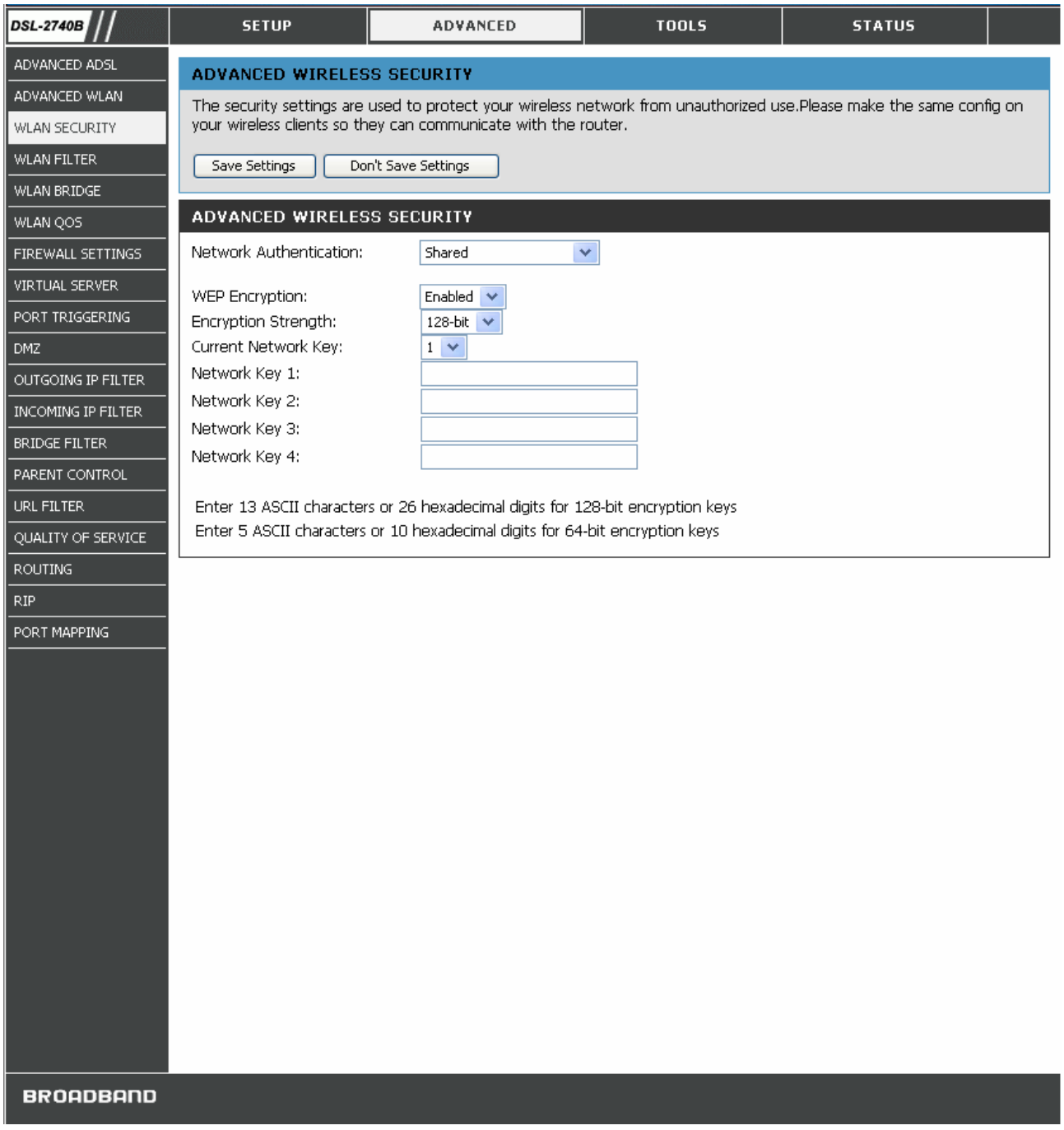
In the **WLAN Security** window, select the type of security you want to configure. The window will change to present the settings specific to the method being configured. The Router's wireless security options include WEP, 802.1x, WPA, WPA-PSK(Pre- Shared Key), WPA2, WPA2-PSK, Mixed WPA/WPA2, Mixed WPA/WPA2-PSK.

WEP

WEP (Wireless Encryption Protocol) encryption can be enabled for security and privacy. WEP encrypts the data portion of each frame transmitted from the wireless adapter using one of the predefined keys. The router offers 64-, or 128-bit encryption with four keys available.

1. Select **Network Authentication** type from the drop-down list. (**Shared** is bettern than **Open**)
2. Select **Encryption Strength** from the drop-down list. (**128-bit** is stronger than **64-bit**)
3. Specify the encryption key from the **Current Network Key** drop-down list.
4. Enter the key into the **Network Key** field 1~4. (Key length is outlined at the bottom of the window.)

5. Click the **Save Settings** button to apply settings.



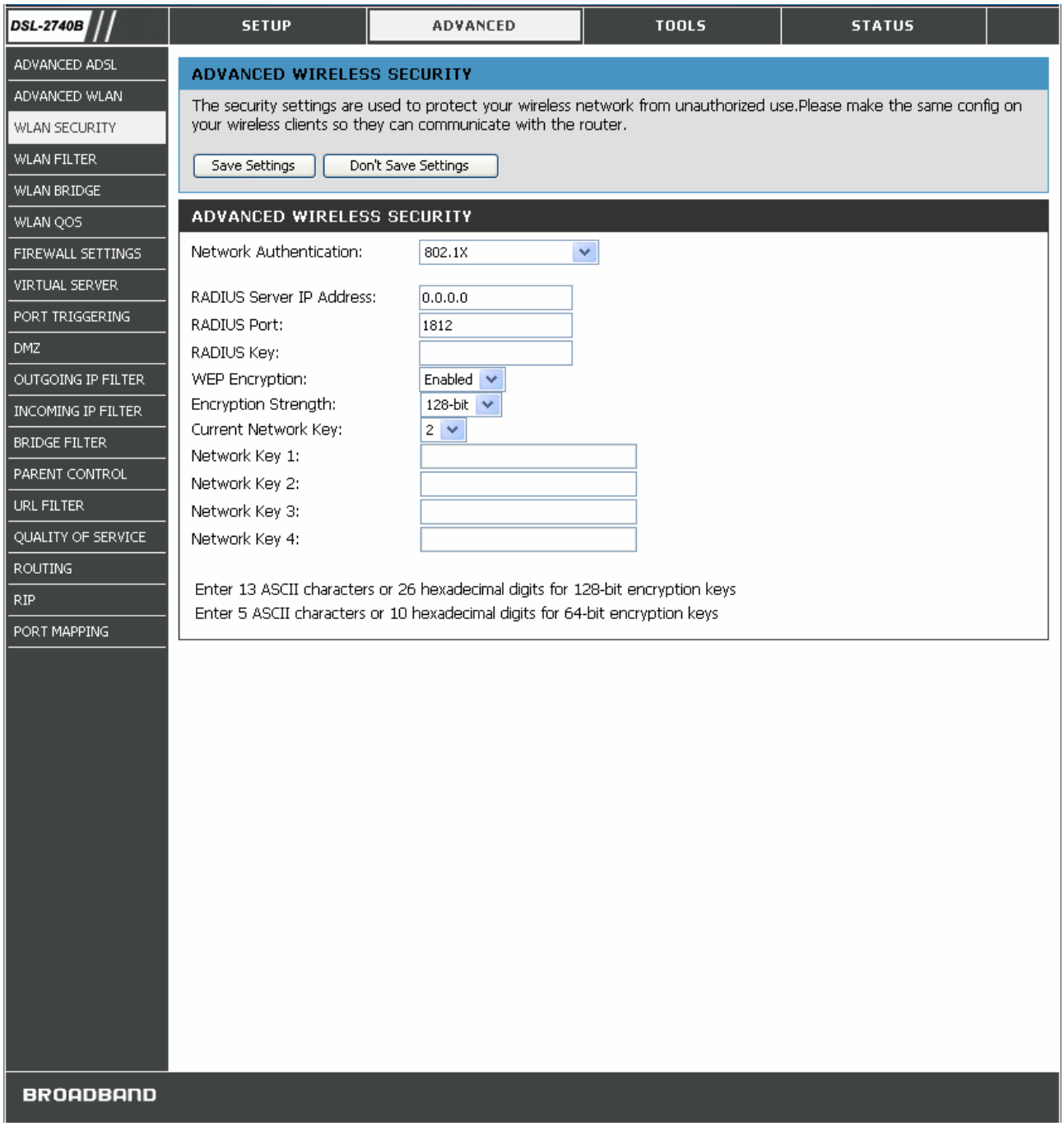
WLAN SECURITY Window – WEP

Notice *If encryption of any kind, at any level is applied to the Router, all devices on the network must comply with all security measures.*

802.1x

Some network-security experts now recommend that wireless networks use 802.1X security measures to overcome some weaknesses in standard WEP applications. A RADIUS server is used to authenticate all potential users.

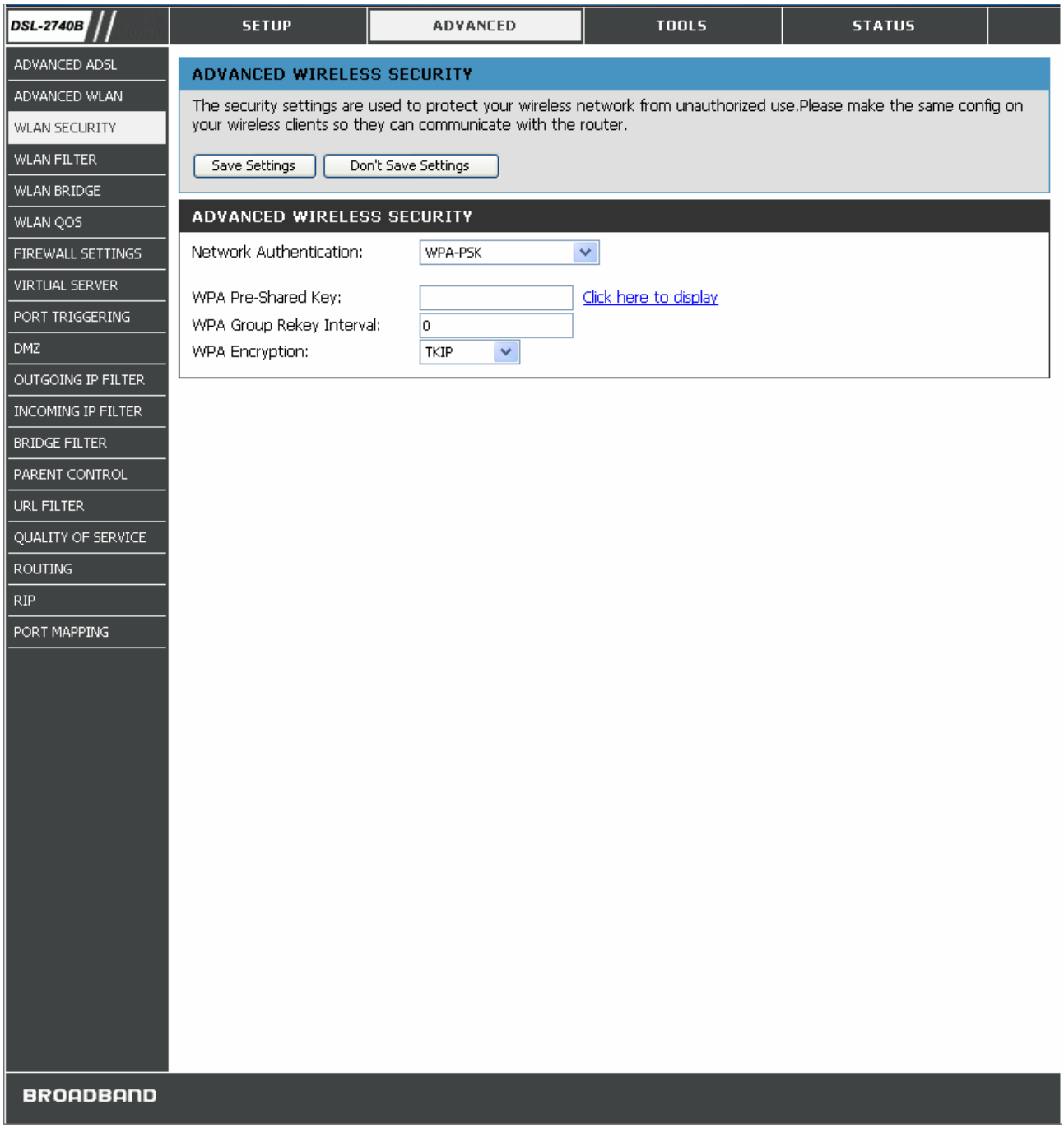
1. Select **802.1x** from the **Network Authentication** drop-down list.
2. Enter your RADIUS server data: **IP Address, Port, and Key**.
3. Configure WEP Encryption. (See above section for detail.)
4. Click the **Save Settings** button to apply settings.



WLAN SECURITY Window – 802.1x

WPA-PSK

WPA-PSK configuration is similar to WEP. The key length is between 8 to 63 ASCII codes.



WLAN Security Window – WPA-PSK

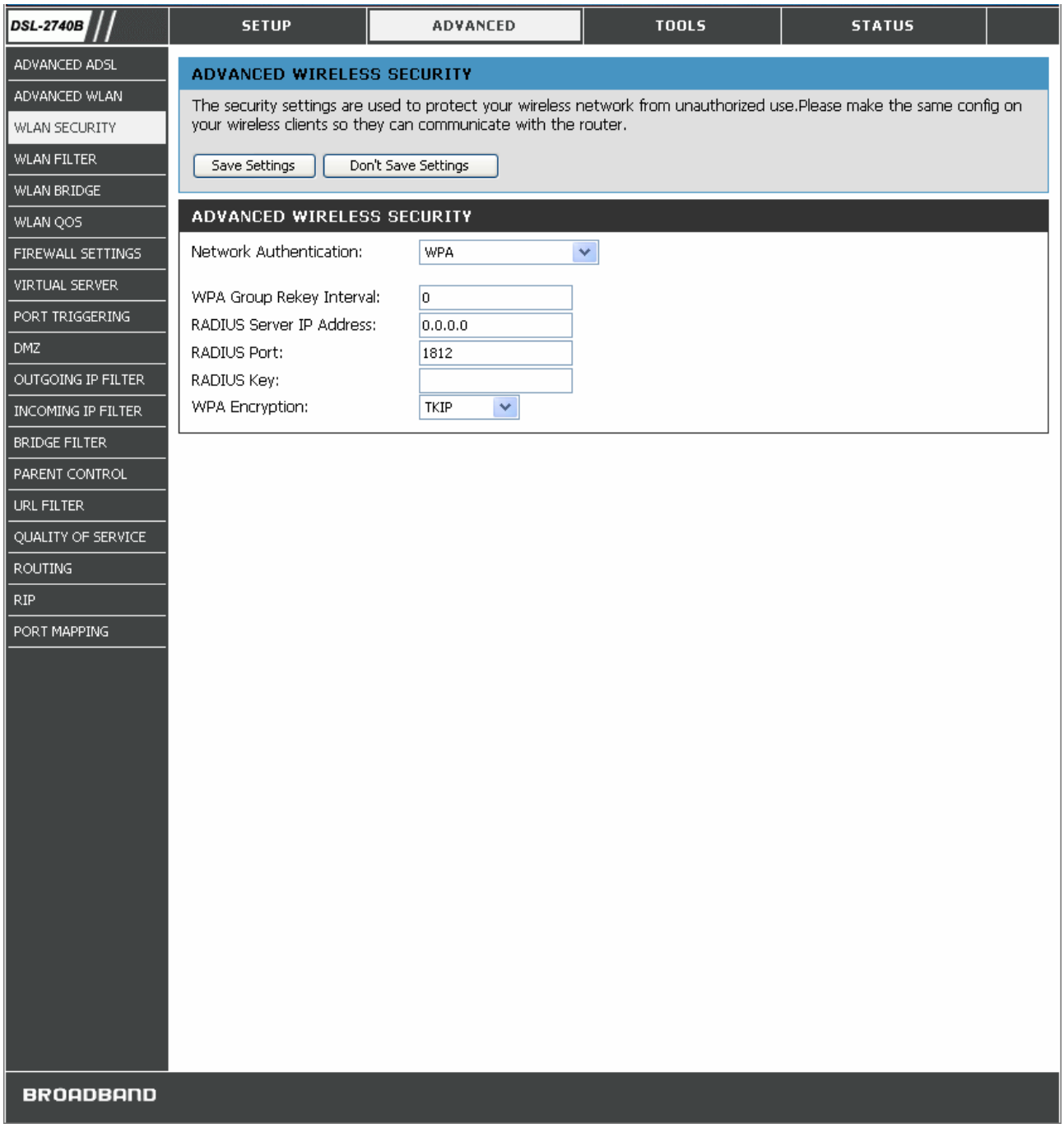
WPA (Wi-Fi Protected Access)

Wi-Fi Protected Access was designed to provide improved data encryption, perceived as weak in WEP, and to provide user authentication, largely nonexistent in WEP.

To take full advanteage of WPA, a RADIUS server is needed in your network to authenticate users. For most home or SOHO users, WPA-PSK is the easiest way to implement and provides adequate protection for your wireless network.

1. Select your wireless security method from the **Network Authentication** drop-down list.
2. Enter the **RADIUS Server IP Address**, **Port**, and **Key**.
3. Select the encryption method from **WPA Encryption** drop-down list.

4. Click **Save Settings** to apply your settings.

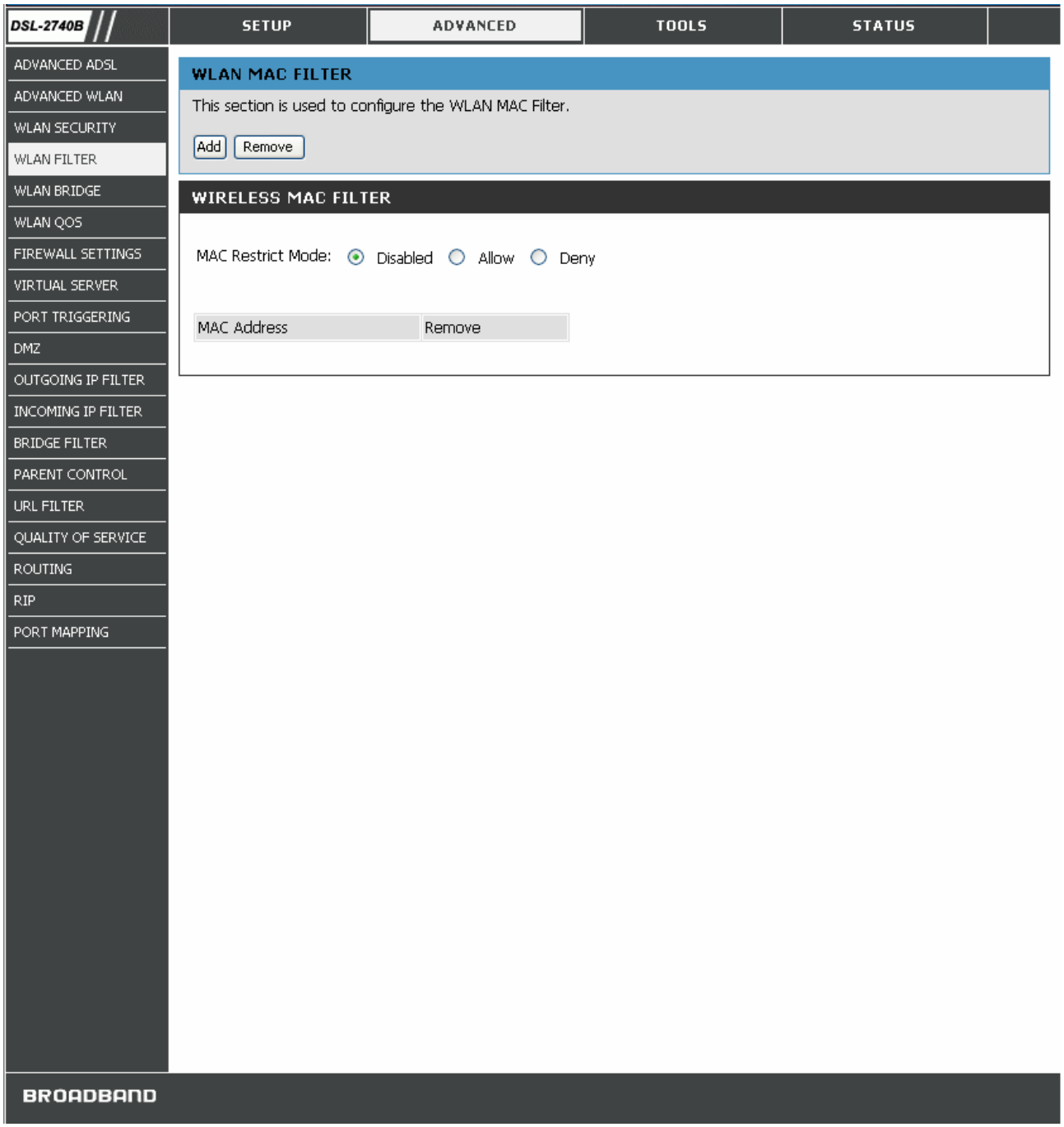


WLAN Security Window – WPA

WLAN Filter

The **WLAN Filter** is used to control wireless client devices access based on their MAC addresses. You can choose to allow or deny the specific MAC addresses.

1. Click the **Add** button to enter WLAN Filter configuration window.
2. Enter the specific MAC address and click the **Save Settings** button to apply.
3. Click the **MAC Restrict Mode** radio button to select filter rule (**Allow** or **Deny**) and enable the WLAN filter.



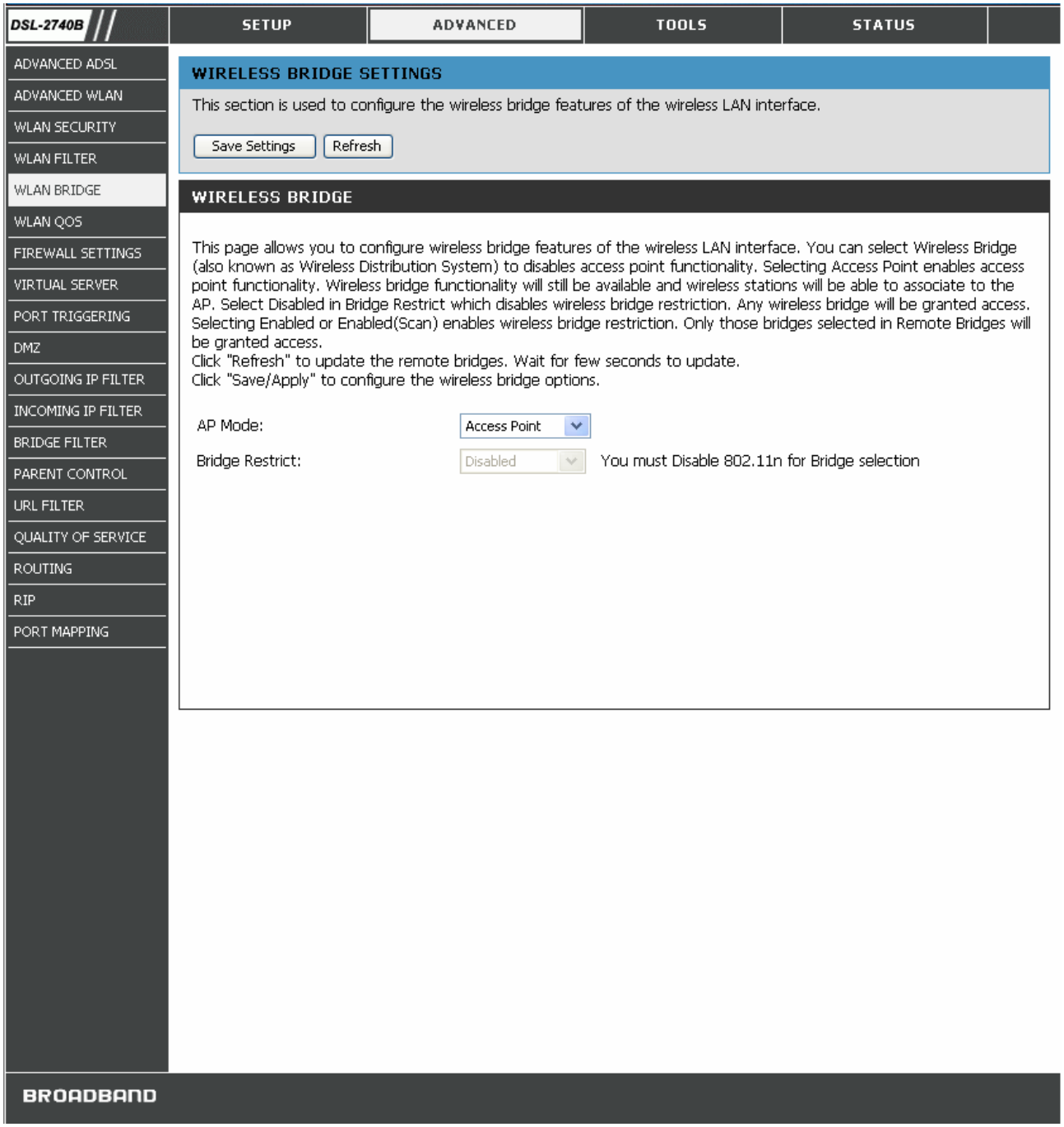
WLAN FILTER Window

WLAN BRIDGE

Wireless bridge is used to bridge AP traffic between other APs. You can select Wireless Bridge (also known as Wireless Distribution System) to disables access point functionality. Selecting Access Point enables access point functionality. Wireless bridge functionality will still be available and wireless stations will be able to associate to the AP. Select Disabled in Bridge Restrict which disables wireless bridge restriction. Any wireless bridge will be granted access. Selecting Enabled or Enabled (Scan) enables wireless bridge restriction. Only those bridges selected in Remote Bridges will be granted access. Only APs operating in the same channel can be bridged together.

Notice *WIreless Bridge function is available only when 802.11n is disabled. Please go to* ***ADVANCED WLAN*** *page to disable 802.11n before configuring Wireless Bridge.*

1. Select **AP Mode** from the drop-down list.
2. Select **Enabled** in **Bridge Restrict** drop-down list and enter the MAC address of the AP which to be bridged. Or,
3. Select **Enabled(Scan)** in **Bridge Restrict** drop-down list and the Router starts to search and displays available APs. Click the specific AP check box.
4. Click the **Save Settings** button to apply settings.



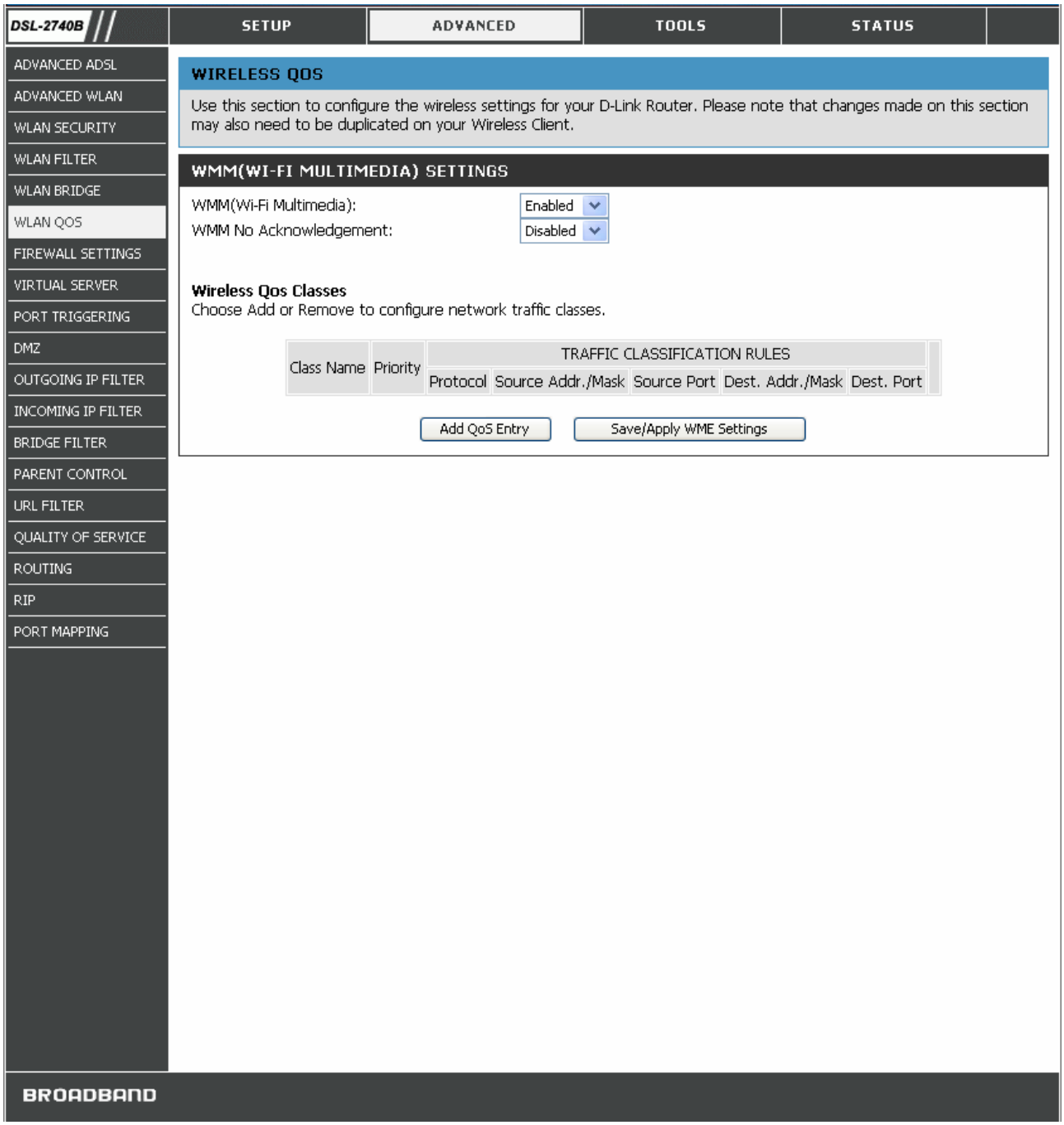
WLAN BRIDGE Window

WLAN QOS

WLAN QoS (Quality of Service), also called WMM (Wi-Fi Multi-media), is used to prioritize the wireless packets when you are using wireles device transmitting delay-sensitive packets (voice, video,..etc).

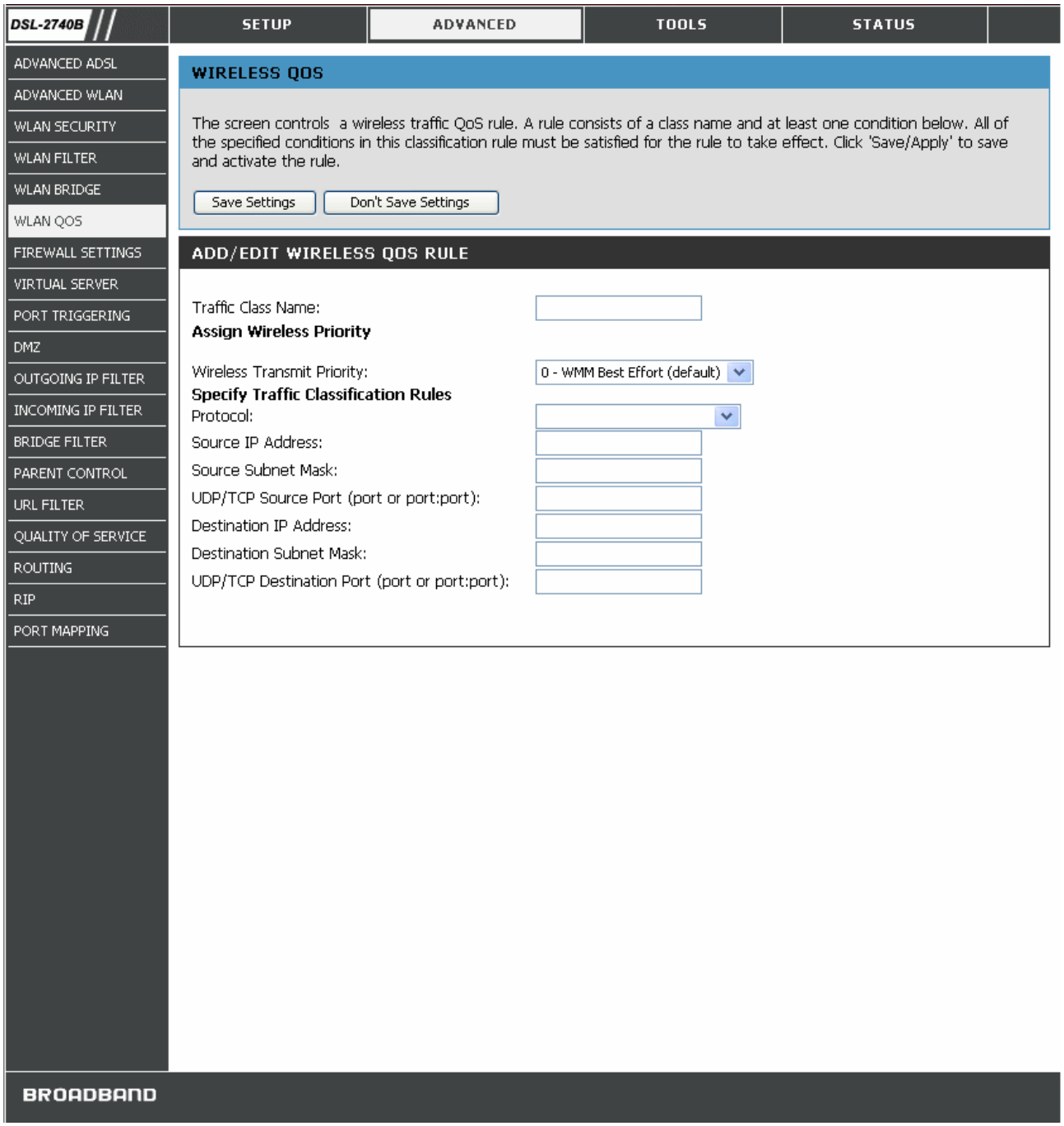
Notice *WMM is not supported by IEEE 802.11n yet. You must trun off 802.11n in* ***ADVANCED WLAN*** *section before configuring any WMM settings.*

1. Select **Enabled** from the **WMM(Wi-Fi Multimedia)** drop-down list.
2. Select **Disabled** from the **WMM No Acknowledgement** drop-down list if your wireless link quality is good. It can increase more bandwidth. Or select **Disable** if your link quality is an issue.
3. Click the **Add QoS Entry** button to enter QoS configuration window.



WLAN QoS Window (1)

4. Enter the name of the rule.
5. Select priority from the **Wireless Transmit Priority** drop-down list (**1**~**4**, higher number has higher priority).
6. Specify traffic classification rules. The classification can be de fined in the following parameters: **Protocol**, **Source/Destination IP Address**, **and Source/Destination Port**.
7. Click the **Save Settings** button to apply this rule.
8. Click the **Save/Apply WME Settings** button to apply settings.



WLAN QoS Window (2)

FIREWALL

The **Firewall Configuration** window allows the Router to enforce specific predefined policies intended to protect against certain common types of attacks. There are two general types of protection (DoS, Port Scan) that can be enabled on the Router, as well as filtering for specific packet types sometimes used by hackers.

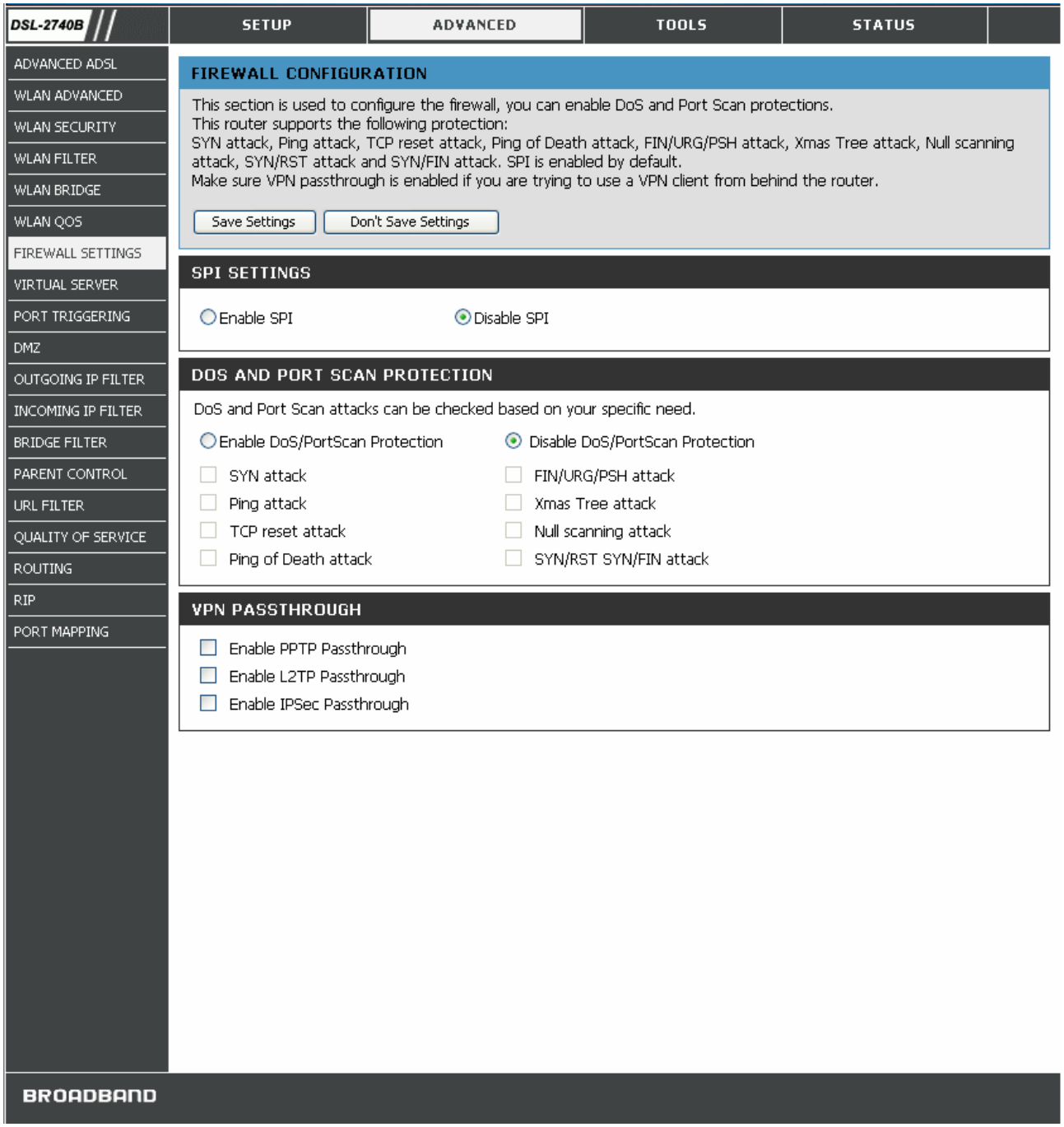
SPI (Stateful Packet Inspection) is a firewall feature that checks the state of network connections. Only legitimate packets are allowed to passthrough.

A DoS (denial-of-service) attack is characterized by an explicit attempt by attackers to prevent legitimate users of a service from using that service. Examples include: attempts to "flood" a network, thereby preventing legitimate network

traffic, attempts to disrupt connections between two machines, thereby preventing access to a service, attempts to prevent a particular individual from accessing a service, or, attempts to disrupt service to a specific system or person.

Port scan protection is designed to block attempts to discover vulnerable ports or services that might be exploited in an attack from the WAN.

Select specific VPN type from the **VPN Passthrough** check-box if a VPN client is used behind the Router.

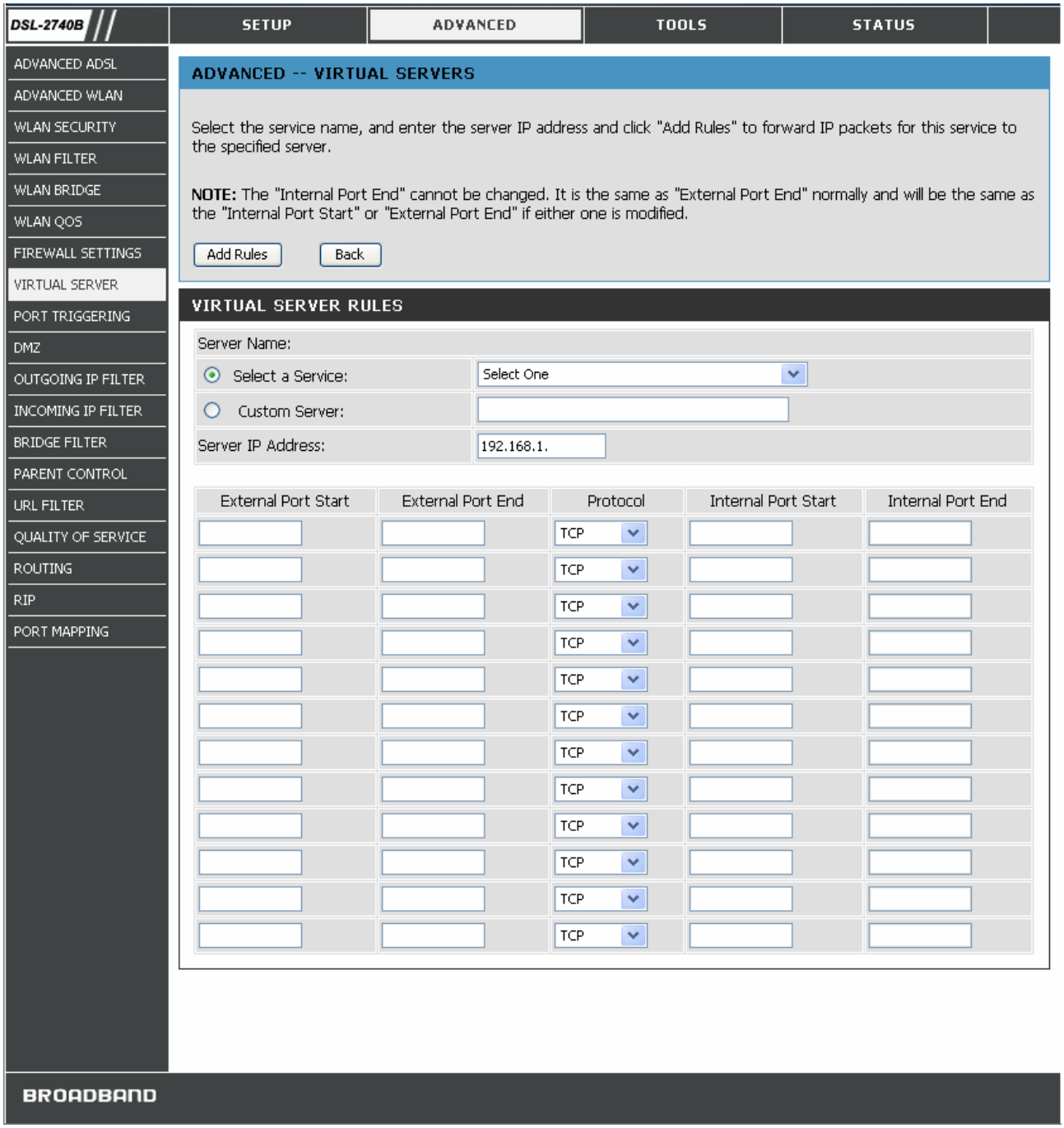


FIREWALL Window

VIRTUAL SERVER

Use the **Virtual Server** window to set up single-port or static-port range forwarding rules applied to inbound (WAN-to-LAN) traffic. The Virtual Server function allows remote users to access services on your LAN such as FTP for file transfers or SMTP and POP3 for e-mail. The DSL-2740B will accept remote requests for these services at your Global IP Address, using the specified TCP or UDP protocol and port number, and then redirect these requests to the server on your LAN with the LAN IP address you specify. Remember that the specified Private IP Address must be within the useable range of the subnet occupied by the Router.

UDP/TCP port redirection is used to direct inbound traffic to the specified servers or workstations on your private network. Port redirection can also be used to direct potentially hazardous packets to a proxy server outside your firewall. For example, you can configure the Router to direct HTTP packets to a designated HTTP server in the DMZ. You can define a set of instructions for a specific incoming port or for a range of incoming ports. Each set of instructions or rule is indexed and can be modified or deleted later as needed.



VIRTUAL SERVER window

1. Click the **Add A Rule** button to enter your virtual server configuration window.
2. Select a service from the drop down list for pre-configured server or select **Custom Server** to define your own server.
3. Enter your server IP address, protocol and port number.
4. Click **Add Rules** button to apply settings.

There are many different pre-configured rules available for specific functions such as Internet gaming, VPN, streaming and interactive multi-media, standard TCP/IP protocols, reserved ports, p2p, network management applications, and so on.

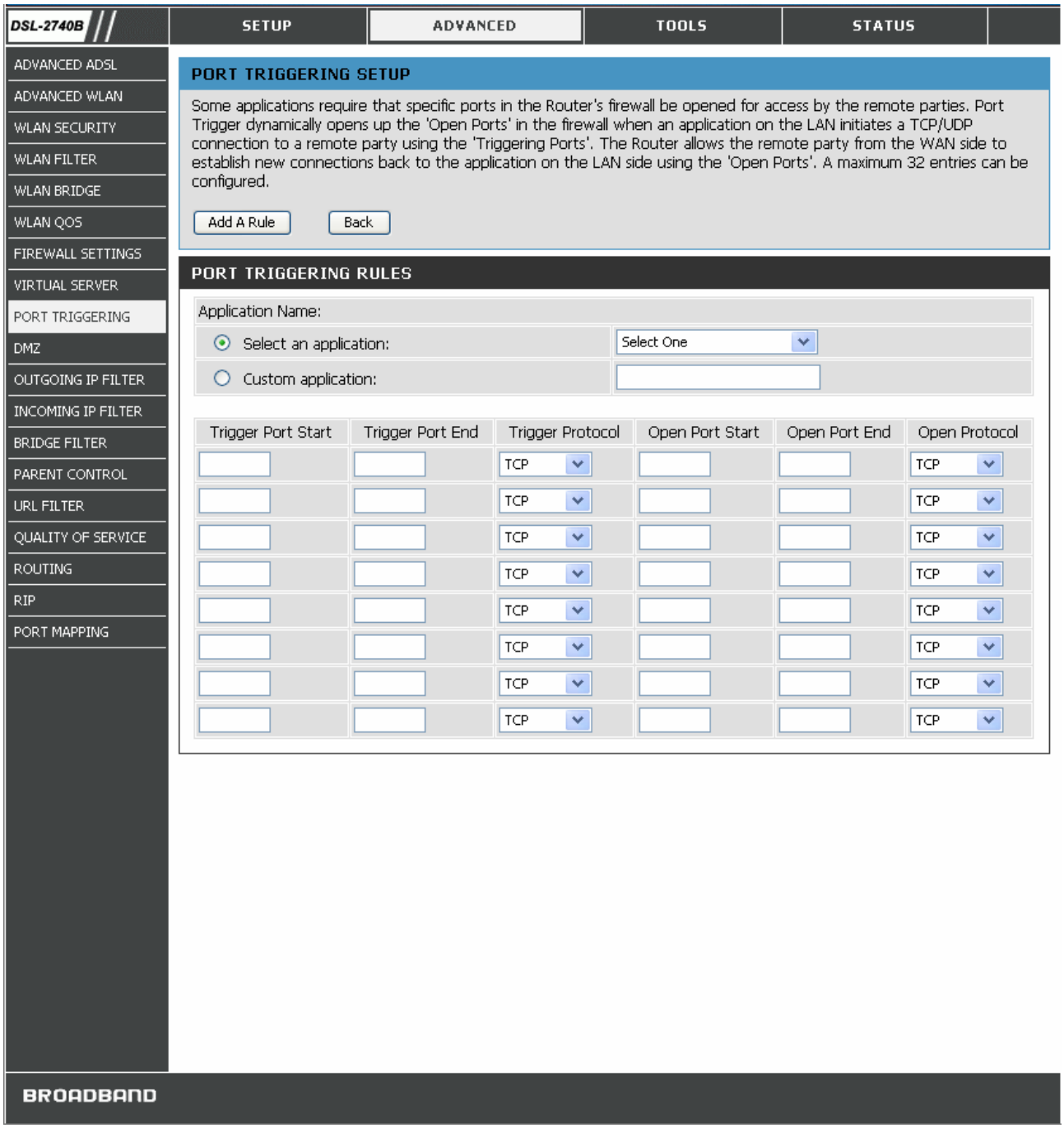
Configure these parameters for virtual server on the router:

Virtual Server Category	Description
Server IP Address	IP address of your server
External Port Start/End	Starting and Ending port number for remote users
Protocol	Protocol used by your server
Internal Port Start/End	Starting and Ending port number that the router will forward to (In most cases, they are the same as External port numbers)

PORT TRIGGERING

Some applications require that specific ports in the Router's firewall be opened for access by the remote parties. Port Trigger dynamically opens up the 'Open Ports' in the firewall when an application on the LAN initiates a TCP/UDP connection to a remote party using the 'Triggering Ports'. The Router allows the remote party from the WAN side to establish new connections back to the application on the LAN side using the 'Open Ports'. A maximum 32 entries can be configured.

1. Click the **Add Rule** button to enter your port triggering configuration window.
2. Select an application from the drop down list for pre-configured applicationr or select **Custom Application** to define your own rules.
3. Enter your trigger/open port number(s), and trigger/open protocol.
4. Click **Add A Rule** button to apply settings.



PORT TRIGGERING Window

Configure these parameters for port triggering on the router:

Virtual Server Category	Description
Trigger Port Start/End	Triggered port number initiated by local host
Trigger Protocol	Triggered protocol initiated by local host
Open Port Start/End	Opened port number(s) for remote users

Open Protocol	Opened protocol for remote users

DMZ

Since some applications are not compatible with NAT, the Router supports use of a DMZ IP address for a single host on the LAN. This IP address is not protected by NAT and will therefore be visible to agents on the Internet with the right type of software. Keep in mind that any client PC in the DMZ will be exposed to various types of security risks. If you use the DMZ, take measures (such as client-based virus protection) to protect the remaining client PCs on your LAN from possible contamination through the DMZ.

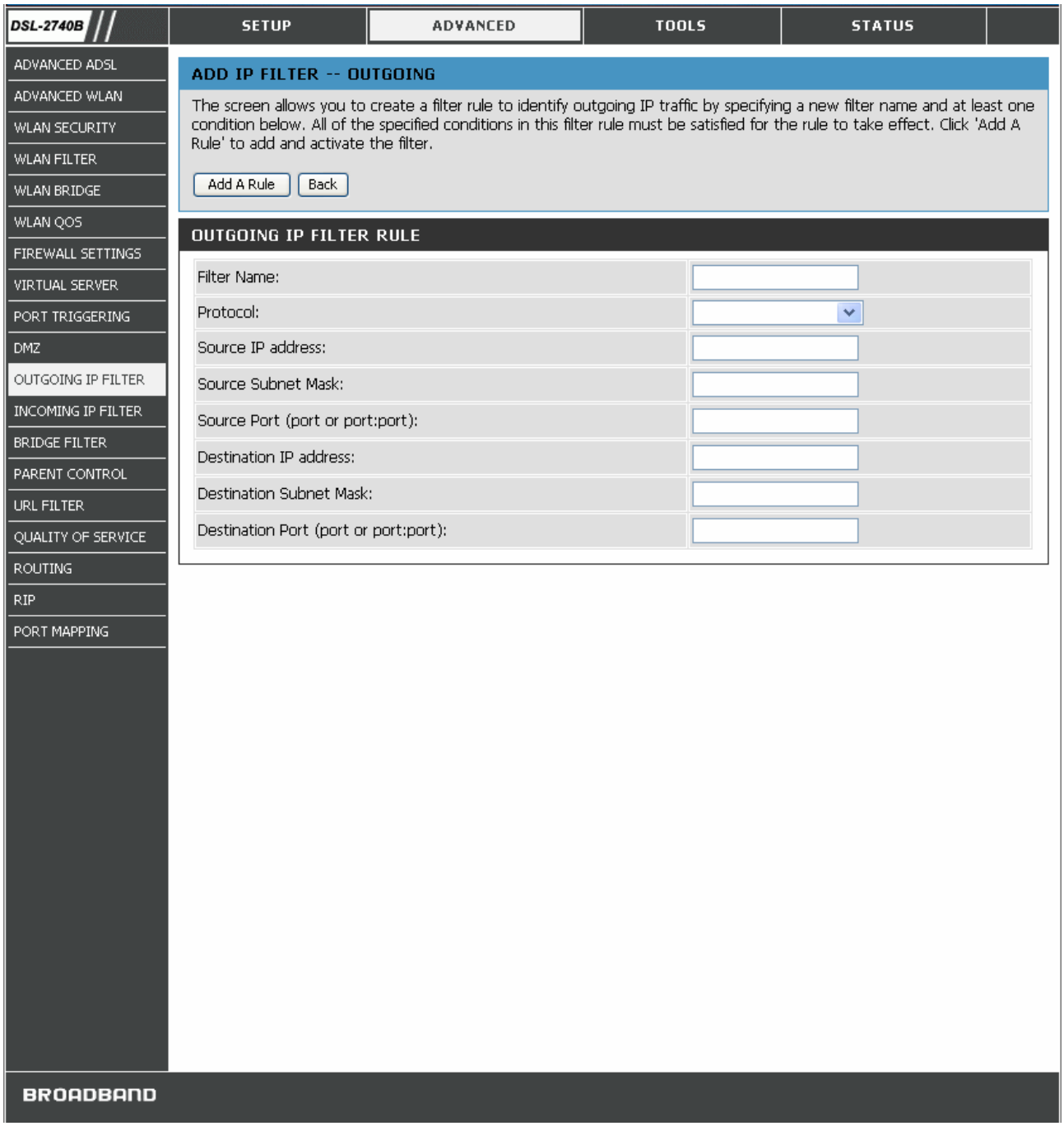
DMZ Window

To designate a DMZ IP address, type in the IP Address of the server or device on your LAN in the **DMZ Host IP Address** box, and click the **Save Settings** button. To remove DMZ status from the designated IP address, clear the IP address in the box and click the **Save Settings** button.

OUTGOING IP FILTER

By default, all outgoing packets are allowed. But you can block specific type of packets from local hosts to Internet by setting up outgoing IP filter.

1. Click the **Add A Rule** button to enter your outgoing IP filter configuration window.
2. Enter the filter name and at least one of the following criteria: Protocol, Source/Destination IP Address, and Source/Destination Port.
3. Click **Add A Rules** button to apply settings.



OUTGOING IP FILTER Window

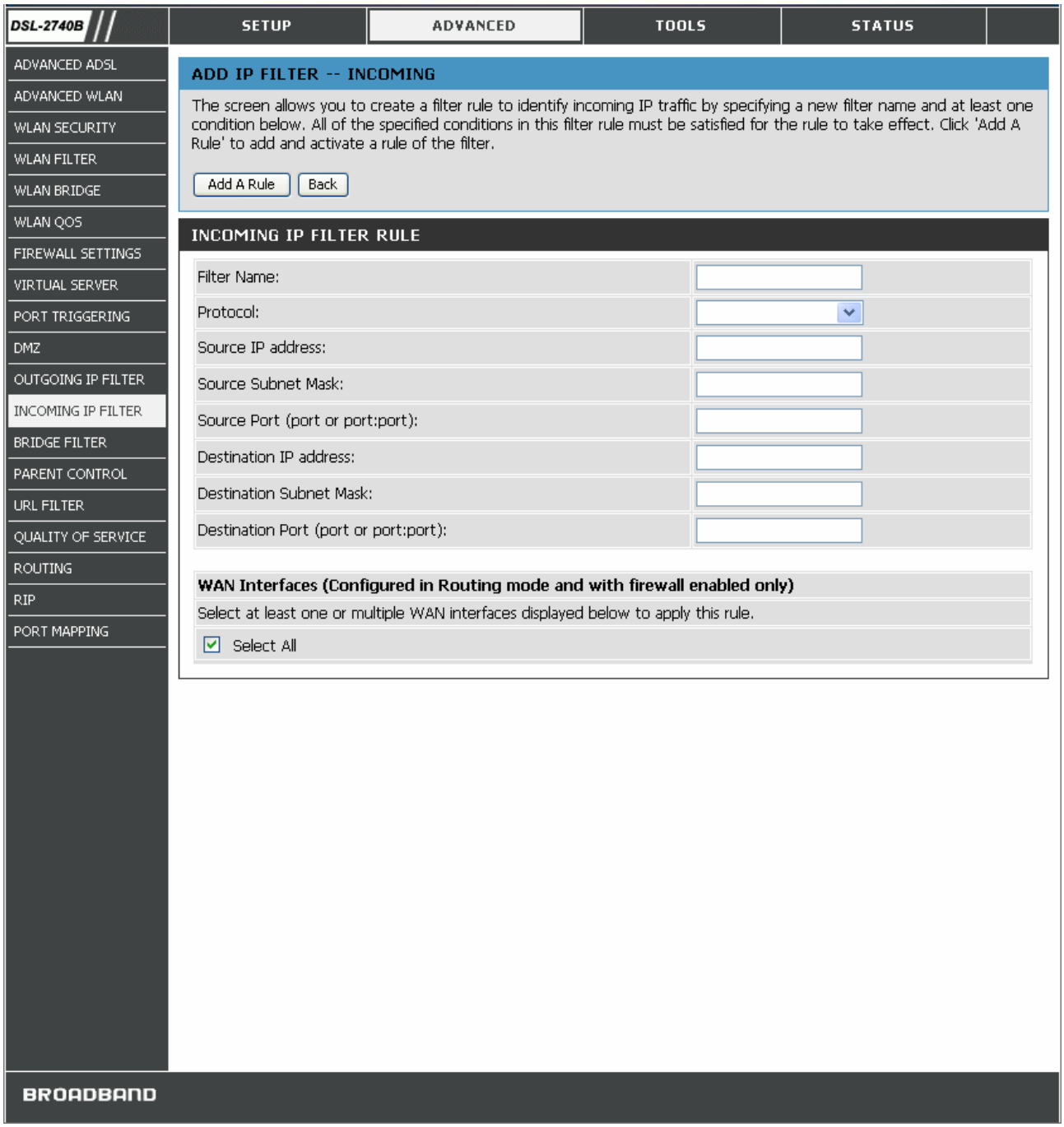
Note

If more than one criterion is configured, all of them must be matched for this outgoing filter rule to take effect.

INCOMING IP FILTER

By default, all incoming packets are blocked if Firewall is enabled. But you can allow specific type of packets to be accepted by setting up incoming IP filter.

1. Click the **Add A Rule** button to enter your incoming IP filter configuration window.
2. Enter the filter name and at least one of the following criteria: Protocol, Source/Destination IP Address, and Source/Destination Port.
3. Select WAN interface(s) to apply this rule.
4. Click **Add A Rules** button to apply settings.

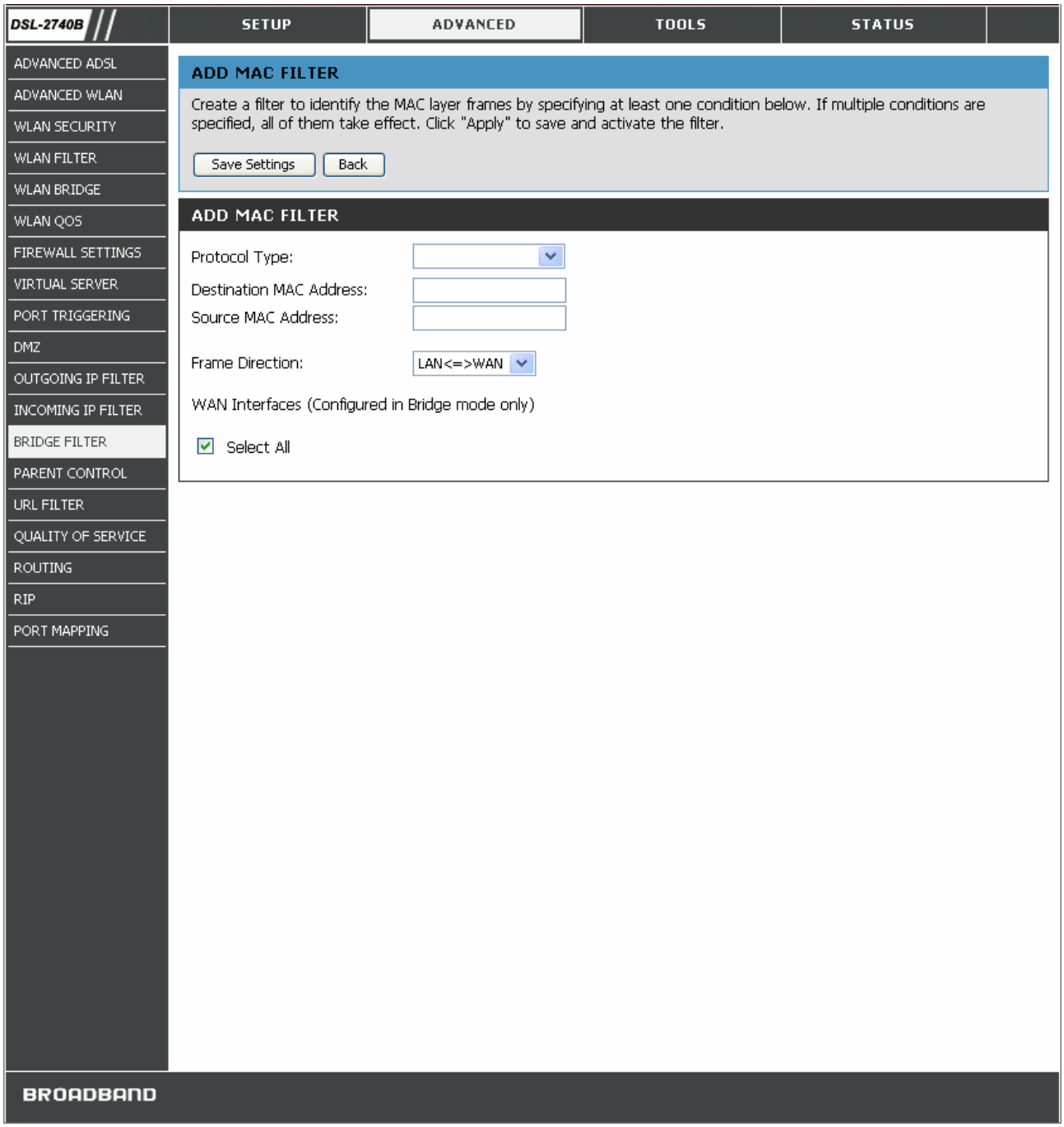


INCOMING IP FILTER Window

BRIDGE FILTER

Bridge filters are used to block or allow various types of packets through the WAN interface. This may be done for security or to improve network efficiency. The rules are configured for individual devices based on MAC address. Filter rules can be set up for source, destination or both. Bridge Filter is only effective on ATM PVCs configured in **Bridge** mode. The Global Policy **FORWARDED** means that all MAC layer frames will be **FORWARDED** except those matching with any of the specified rules in the following table. **BLOCKED** means that all MAC layer frames will be **BLOCKED** except those matching with any of the specified rules in the following table.

1. Click **Chnage Policy** button to change bridge filter policy between **Forwarded** and **Blocked**.
2. Click the **Add A Rule** button to enter your bridge filter configuration window.
3. Select **Protocol Type** from the drop-down list, or leave it blank for all protocols.
4. Enter the Destination/Source MAC address of the specific devices.
5. Select **Frame Direction** from the drop-down list. **LAN⇔WAN**: Both directions. **WAN=>LAN**: From WAN to LAN only. **LAN=>WAN**: From LAN to WAN only.
6. Select the WAN interfaces (Bridge only).
7. Click **Save Settings** button to apply filter rule.

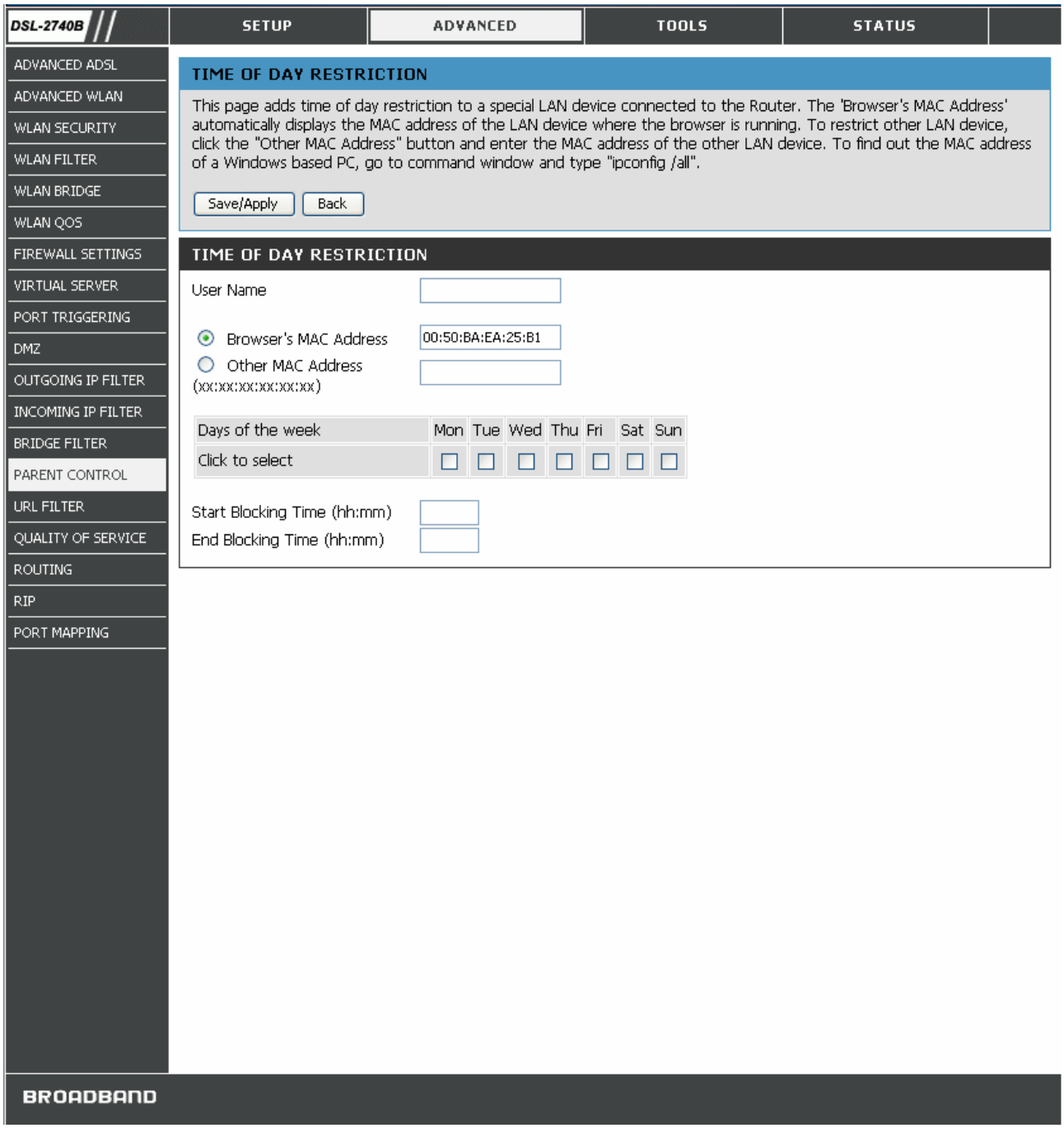


BRIDGE FILTER Window

PARENT CONTROL

Parent control is used to prevent specific local hosts from accessing Internet based on their MAC address.

1. Click the **Add A Rule** button to enter your parent control configuration window.
2. Enter the user name and MAC address of the restricted PC.
3. Select days and enter time frame to apply this rule.
4. Click **Save/Apply** button to apply settings.



PARENT CONTROL Window


Note

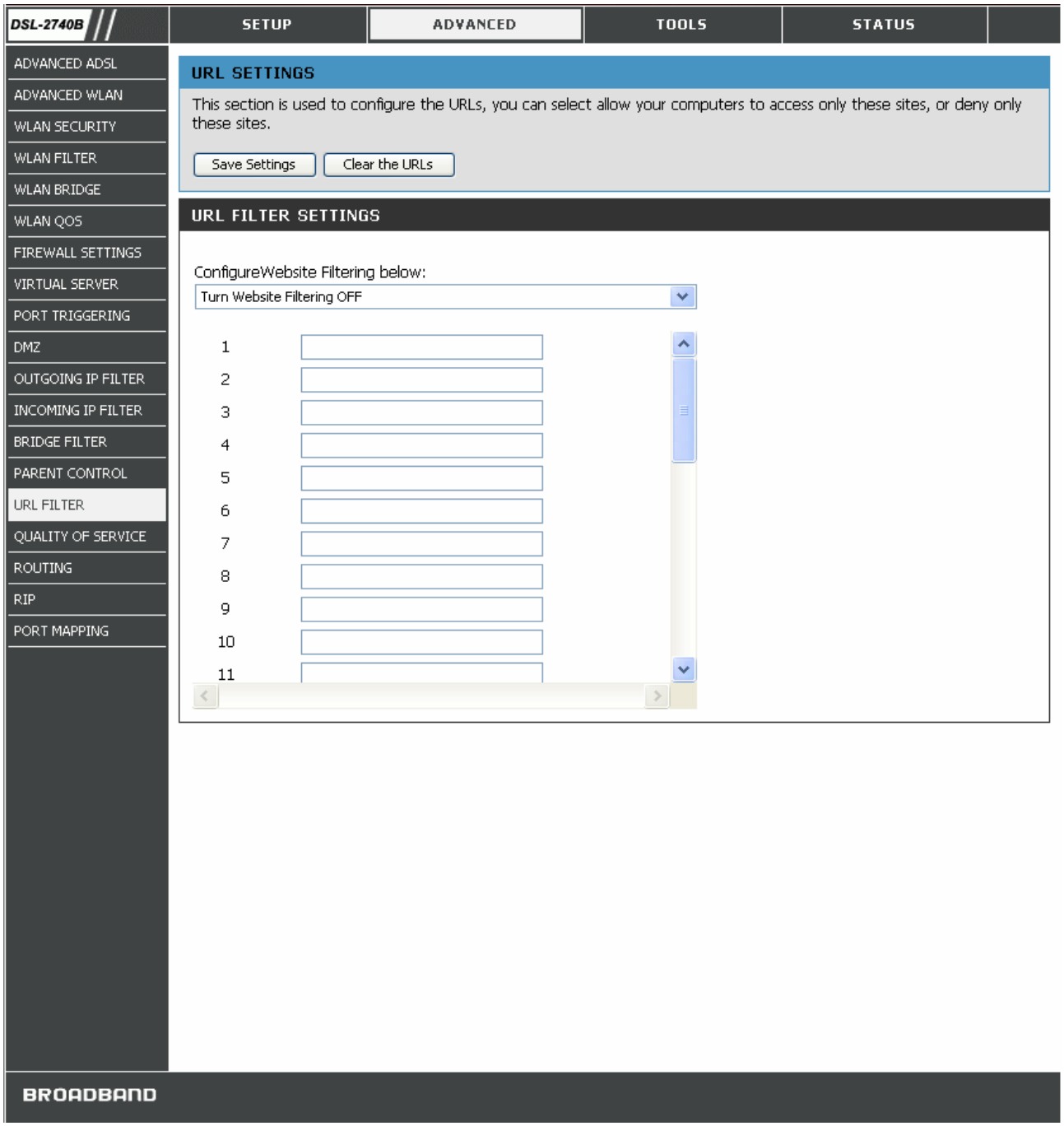
*Local host's MAC address will be displayed automatically when enter this configuration page. To find out other PC's MAC address. Open the specific PC's command prompt window, type command **ipconfig /all** and check **Physical Address** row.*

URL FILTER

URL filter is used to control Internet website access. You can decide that your local hosts can access these specific websites only, or can not access these websites only.

1. Select from the drop-down list **Turn on Website Filtering** (**Allow** or **Deny**).
2. Enter the website URLs or keywords.
3. Click **Save Settings** to apply this rule

To turn off URL filter, select **Turn Website Filtering OFF** from drop-down list and click **Save Settings**.



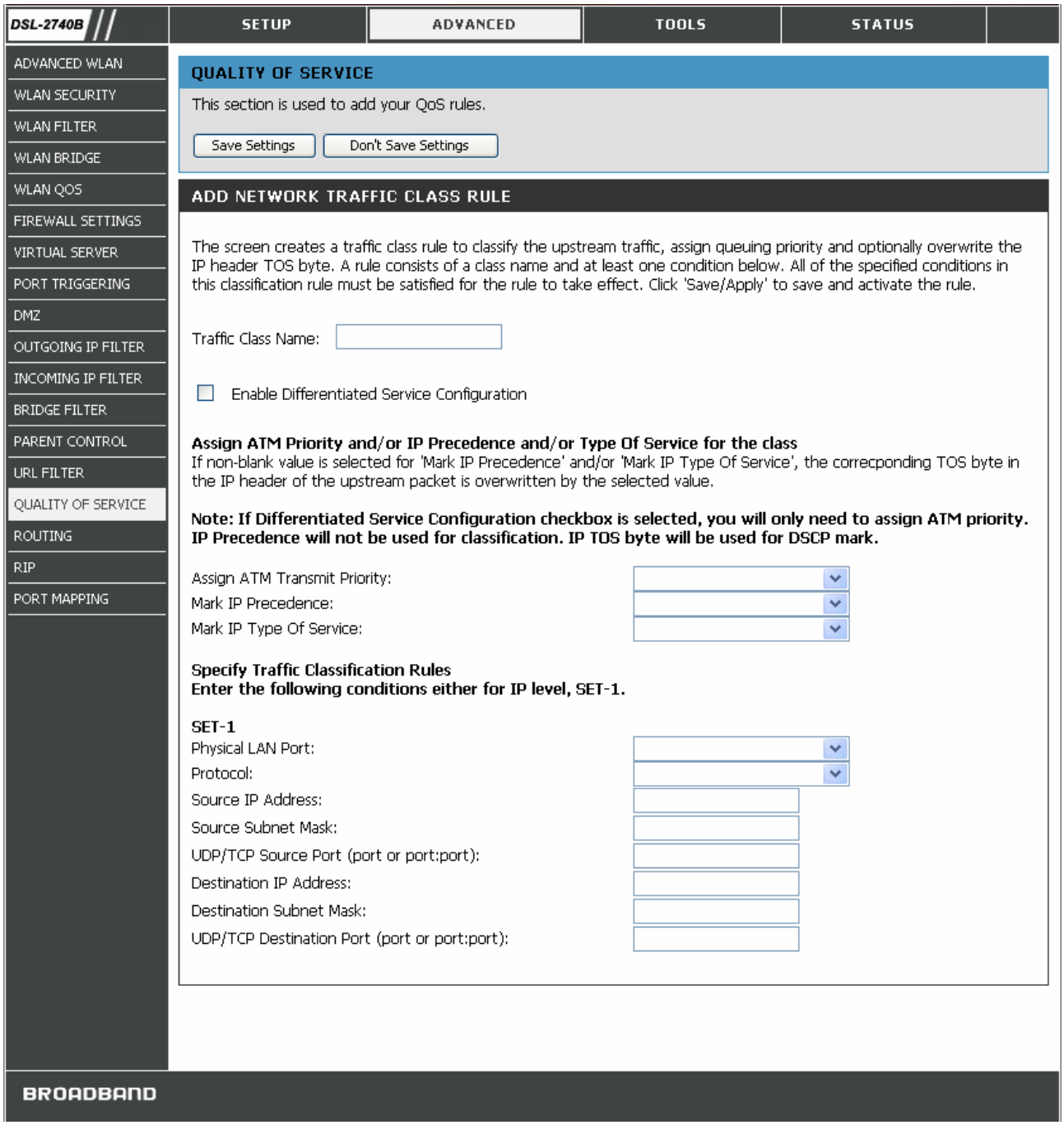
URL FILTER Window

QUALITY OF SERVICE

QoS (Quality of Service) is a traffic class rule to classify the upstream traffic, assign queuing priority and optionally overwrite the IP header TOS byte. This is to ensure that the delay-sensitive traffic has higher priority to go to Internet. IP Precedence and IP TOS (Type of Service) marking, once enabled, will overwrite the correspondent TOS byte in the IP haeder. These features, along with Differentiated Service Configuration, are valid only when your ISP has implement these services.

1. Click the **Add** button to enter your QoS configuration window.

2. Enter the name of the rule.
3. Assign ATM priority from the **Assign ATM Transmit Priority** drop-down list.
4. Check **Enable Differentiated Service Configuration** box if it is supported by your ISP.
5. Select the optional marking on IP Precedence and TOS from the **Mark IP Precedence** and **Mark IP Type Of Service** drop-down lists.
6. Specify traffic classification rules from **SET-1**. The classification can be de fined in the following parameters: **Physical LAN port**, **Protocol**, **Source/Destination IP Address**, **and Source/Destination Port**.
7. Click **Save Settings** to apply this rule.



QUALITY OF SERVICE Window

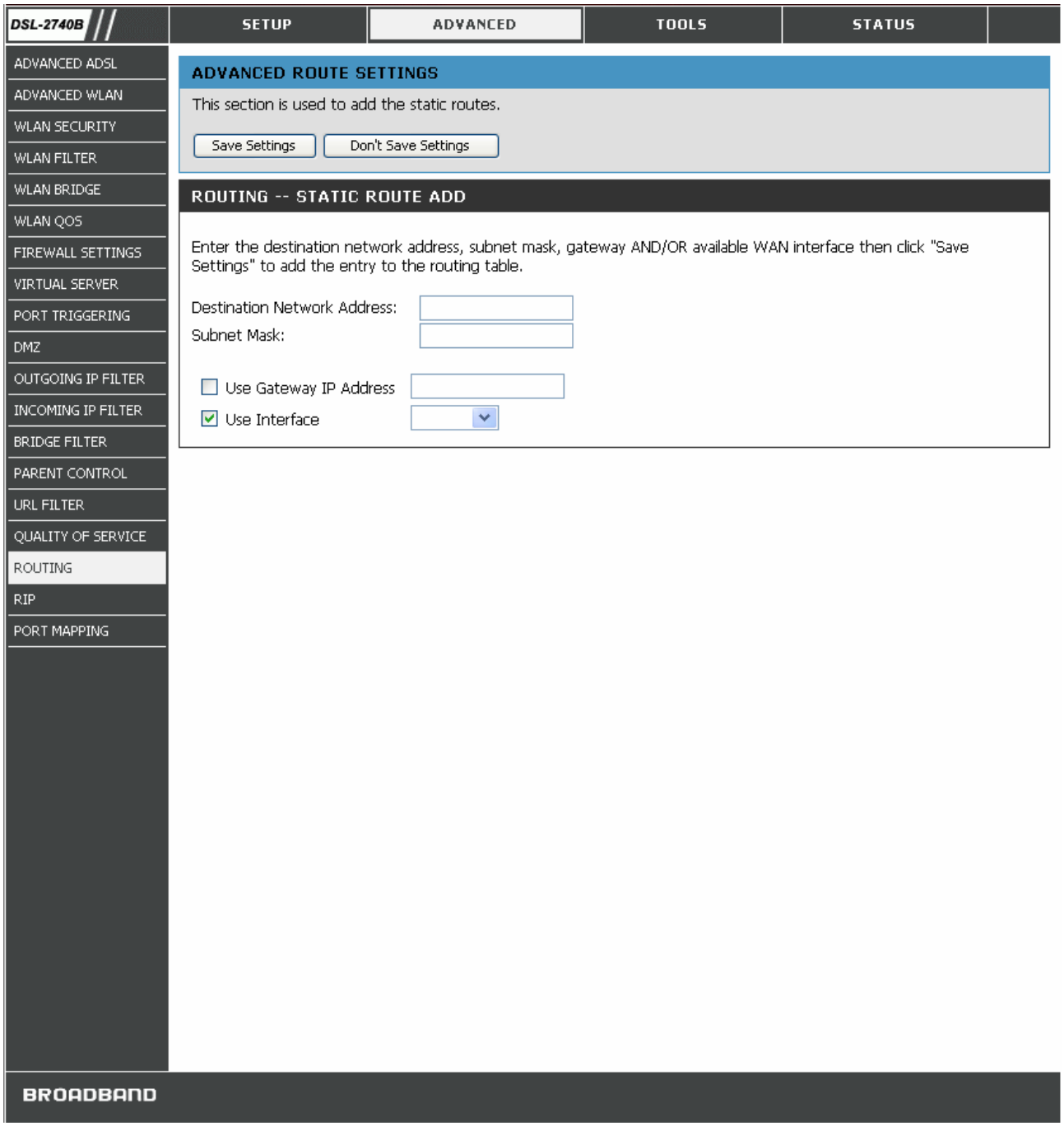
All of the specified conditions in this classification rule must be satisfied for the rule to take effect.

To delete the configured QoS rule, check the box in **Remove** field and click **Remove** button on top.

ROUTING

Use Static Routing to specify a route used for data traffic within your Ethernet LAN or to route data on the WAN. This is used to specify that all packets destined for a particular network or subnet use a predetermined gateway.

1. Click the **Add** button to enter your routing configuration window.
2. Enter the **Destination Network Address**, **Subnet Mask**, **Gateway IP Address**, and/or available **WAN Interface**.
3. Click **Save Settings** to apply this rule.



ROUTING Window

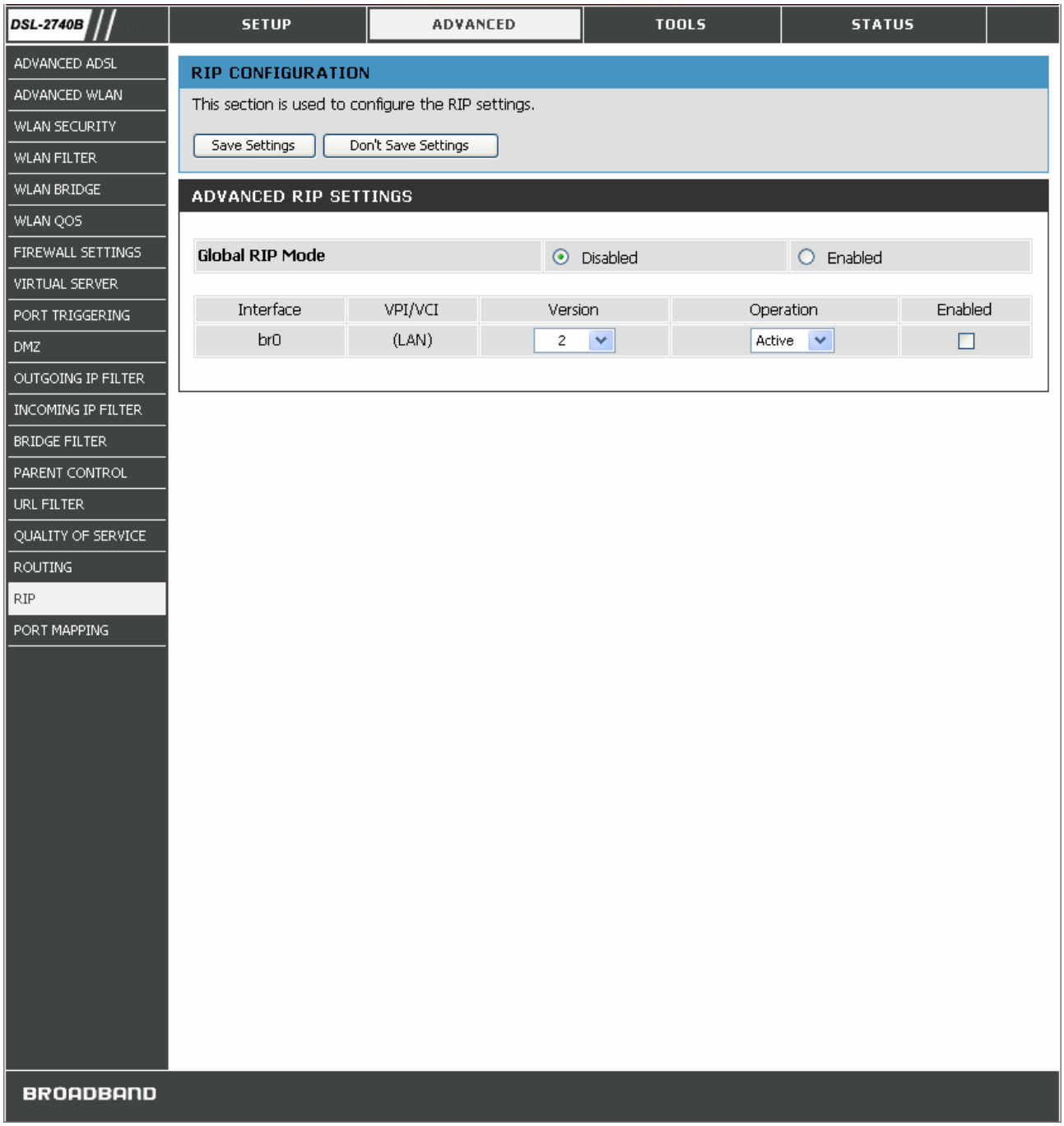
RIP

The Router supports RIP v1 and RIP v2 used to share routing tables with other Layer 3 routing devices on your local network or remote LAN.

1. Click the **Enabled** radio button to enable the router RIP function.
2. Select RIP **Version** and **Operation** mode from the drop-down list.

3. Check **Enabled** box and click **Save Settings** to apply your settings.

To disable RIP, click **Disabled** radio button and click **Save Settings**.



RIP Window

More on RIP settings:

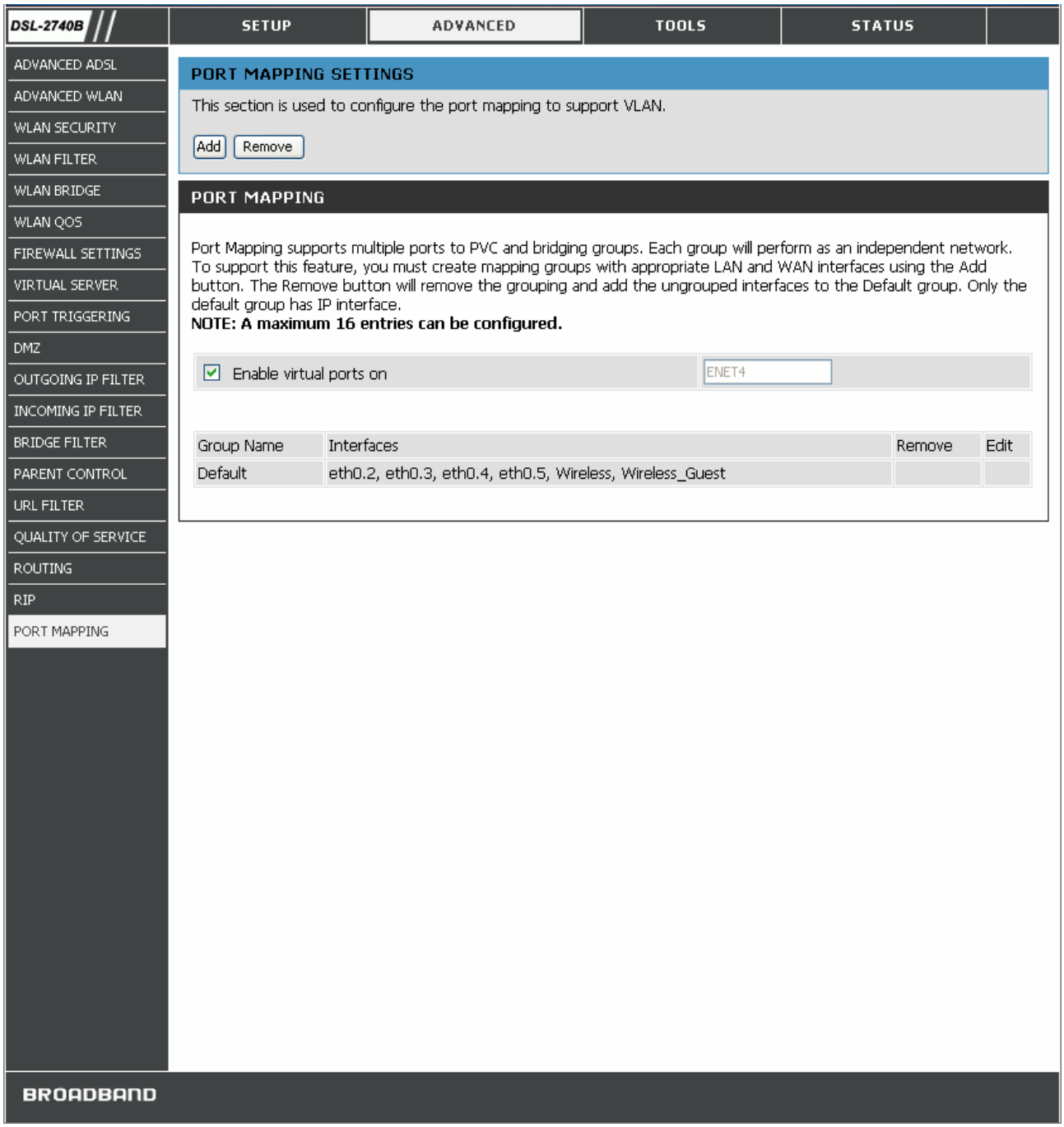
RIP Parameters	Description

Interface	The interface which RIP function is applied.
Version	RIP has two versions available: **RIP 1** and **RIP 2**. **RIP 1** uses classed routing table and **RIP 2** uses classless routing table.
Operation	Two operation modes are available: **Active** and **Passive**. **Active** mode: Router listens and shares routing table with other devices. **Passive** mode: Router only listens and updates its own routing tables.

PORT MAPPING

Port Mapping supports multiple ports to PVC and bridging groups. Each group will perform as an independent network. To support this feature, you must create mapping groups with appropriate LAN and WAN interfaces. By default, all interfaces are included in the **Default** group. And only the **Default** group has IP interface to access Router 's configuration window. The interfaces which have been selected to form a mapping group will no longer have the ability to access the router configuration window.

1. First, select **Enable virtual ports on** box to enable port mapping.



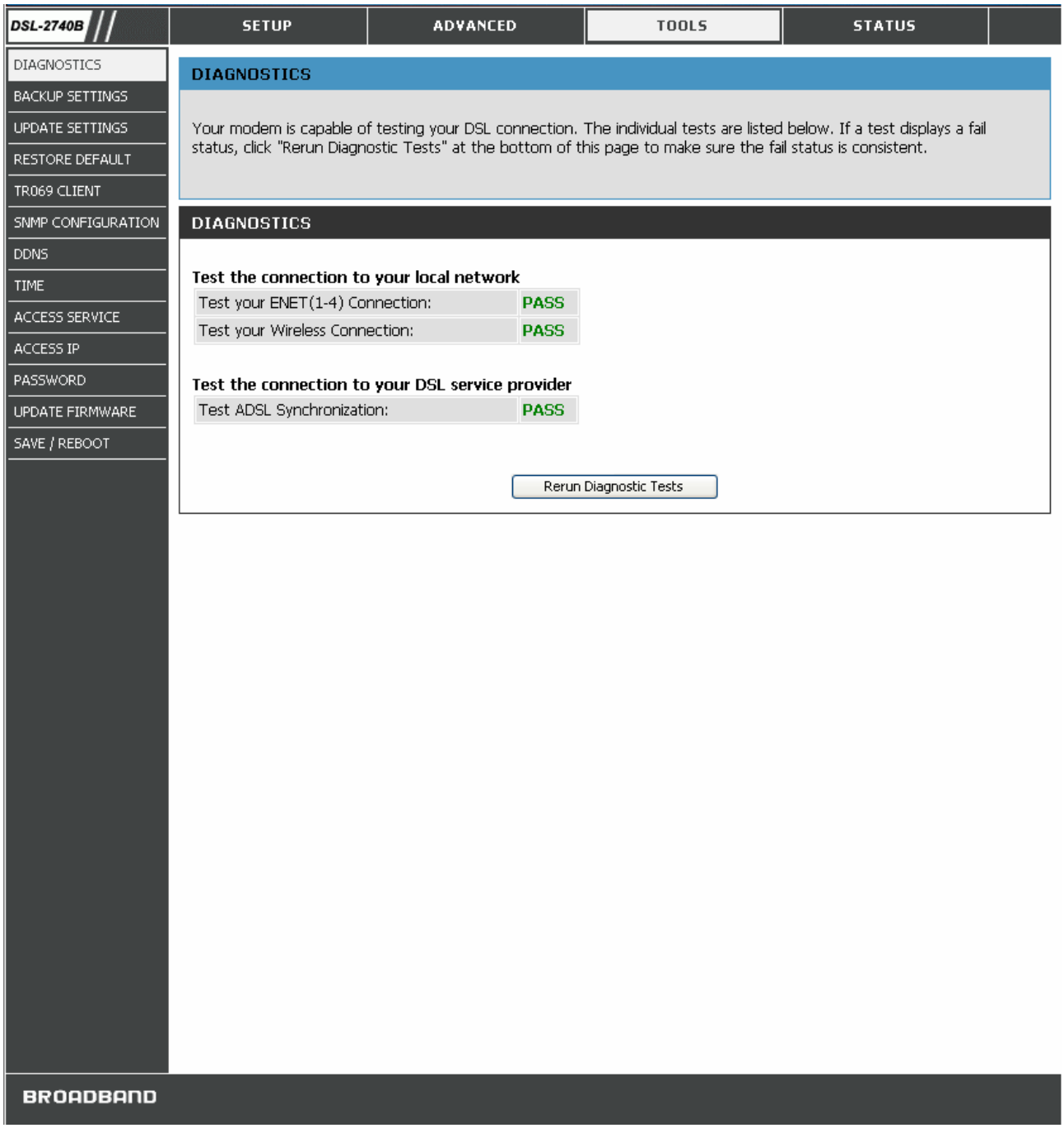
PORT MAPPING Window (1)

2. Click **Add** button to enter port mapping configuration window.
3. Enter the group name and select the specific interfaces from **Available Interfaces** (Default group) to **Grouped Interfaces**.
4. Click **Save Settings** to apply your settings.

PORT MAPPING Window (2)

TOOLS

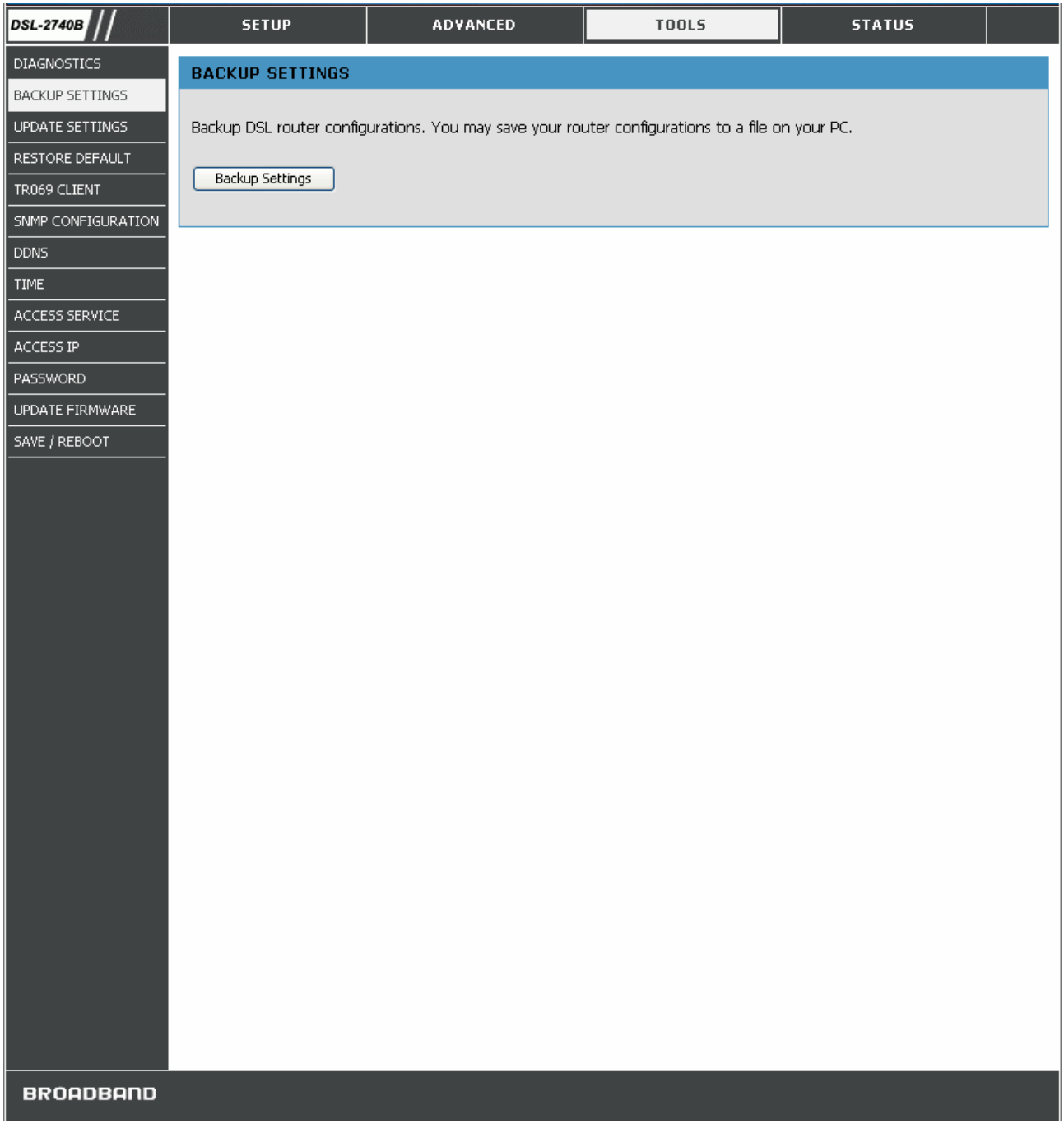
Click the **Tools** tab to reveal the window buttons for various functions located in this directory. The **Diagnostics** window is the first item in the **Tools** directory. The **Diagnostic Test** window is used to test connectivity of the Router. A Ping test may be done through the local or external interface to test connectivity to known IP addresses. The diagnostics feature executes a series of test of your system software and hardware connections. Use this window when working with your ISP to troubleshoot problems.



DIAGNOSTICS Window

BACKUP SETTINGS

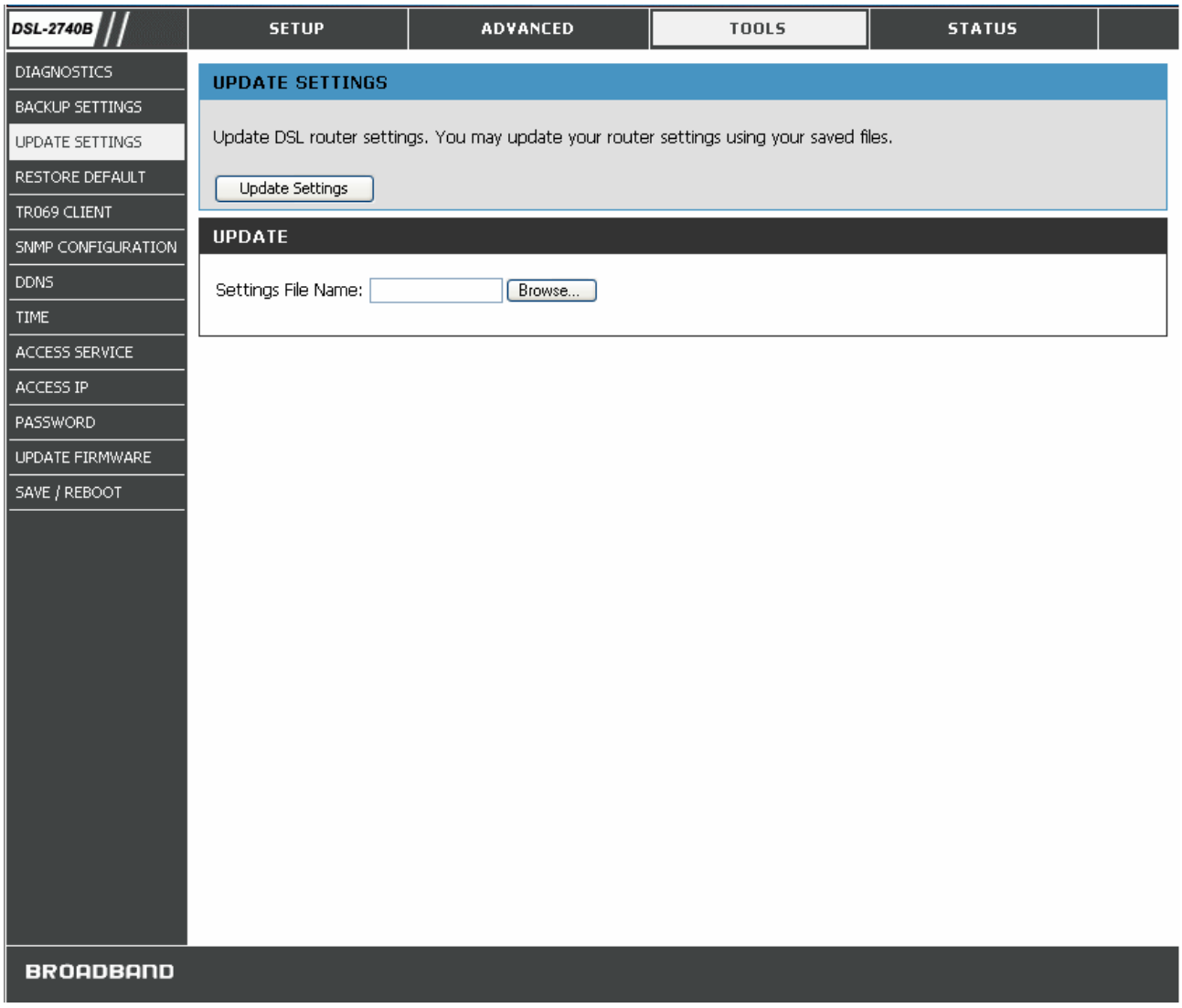
Once you have configured the Router to your satisfaction, it is a good idea to back up the configuration file to your computer. To save the current configuration settings to your computer, click the **Backup Settings** button in the **Tools** directory to display the window. Click the **Backup Settings** button to Save Settings to Local Hard Drive. You will be prompted to select a location on your computer to put the file. The configuration file may be named anything you like.



BACKUP SETTINGS window

UPDATE SETTINGS

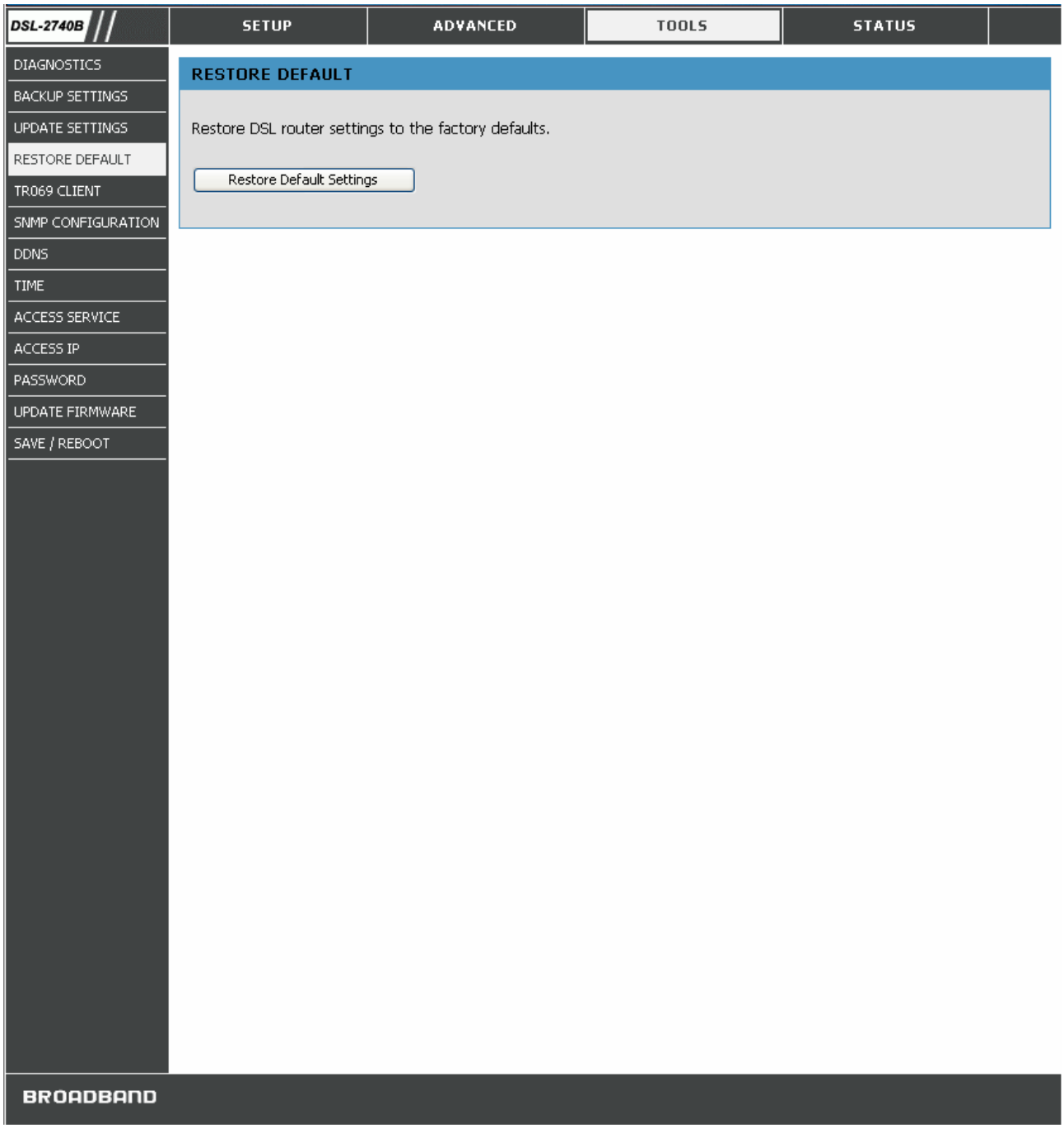
To load a previously saved configuration file, click the **Browse** button and locate the file on your computer. Click the **Update Settings** button to load settings from local hard drive. Confirm that you want to load the file when prompted and the process is completed automatically. The Router will reboot and begin operating with the configuration settings that have just been loaded.



UPDATE SETTINGS Window

RESTORE DEFAULT

To reset the Router to its factory default settings, click the Restore button. You will be prompted to confirm your decision to reset the Router. The Router will reboot with the factory default settings including IP settings (192.168.1.1) and Administrator password (admin).



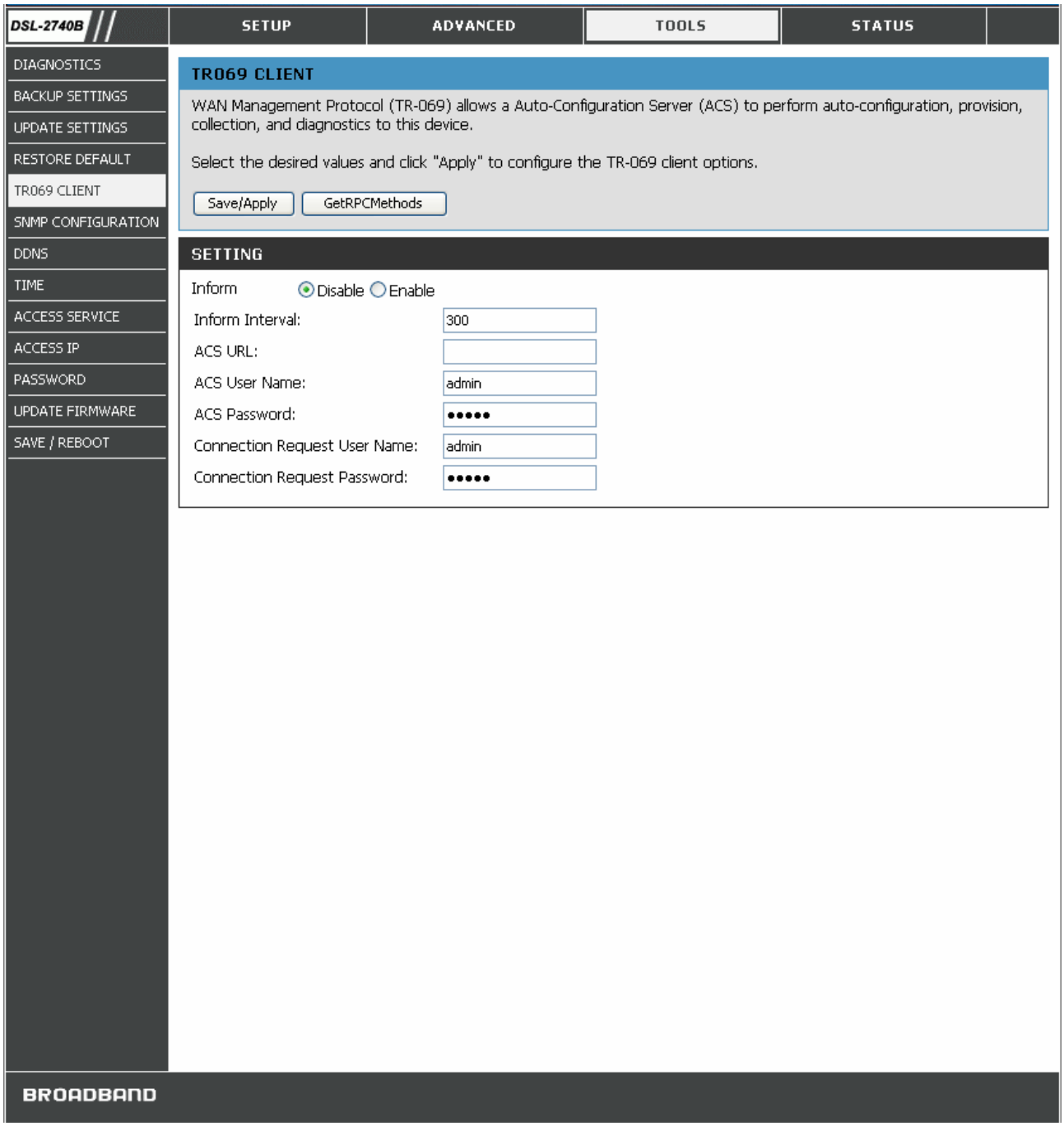
RESTORE DEFAULT Window

TR069 CLIENT

TR-069 is a WAN Management Protocol which allows an Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to this device. You should have all the necessary information frm your ISP if **TR-069** is implemented by your ISP.

1. Click **Enable** radio button to enable **TR-069**.
2. Enter your ACS server data and user name/password.

3. Click Save/Apply to apply your settings.



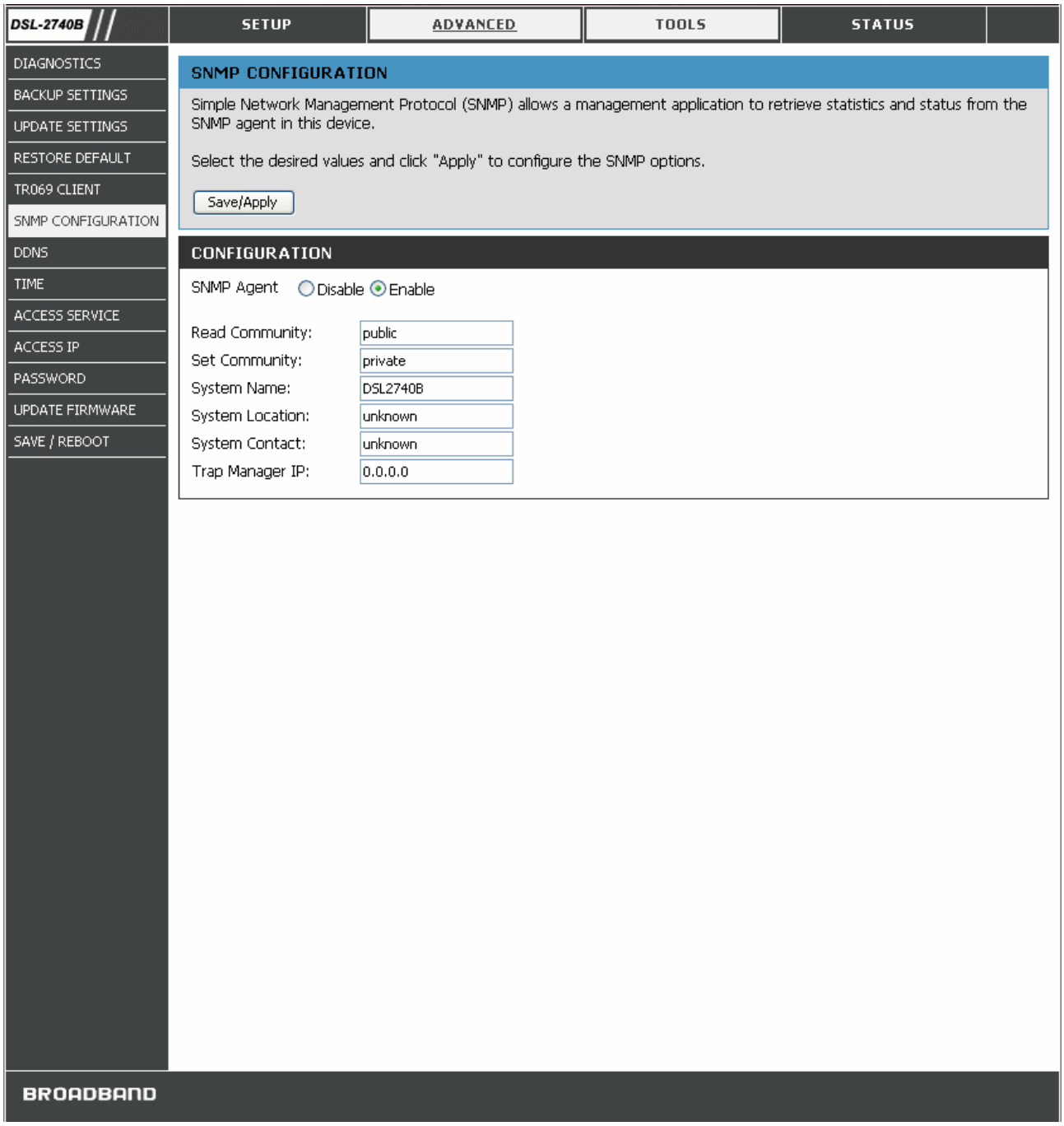
TR-069 CLIENT Window

SNMP CONFIGURATION

Simple Network Management Protocol is a standard for internetwork and intranetwork management. Please contact your ISP for all necessary information before configuring SNMP.

1. Click **Enable** radio button in **SNMP Agent**.
2. Enter all data provided by your ISP.

3. Click **Save/Apply** to apply your settings.



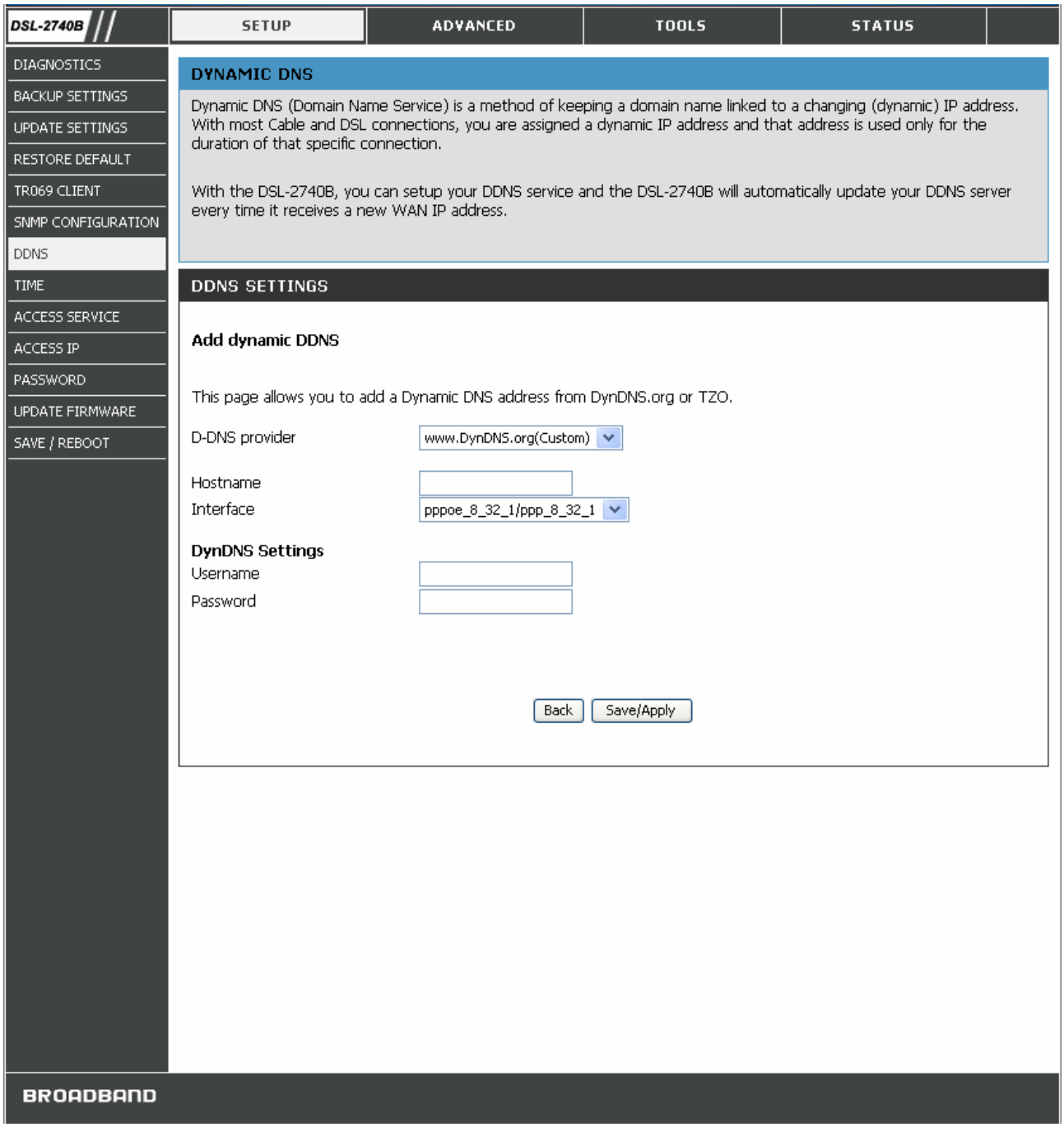
SNMP CONFIGURATION Window

DDNS

The Router supports DDNS (Dynamic Domain Name Service). The Dynamic DNS service allows a dynamic public IP address to be associated with a static host name in any of the many domains, allowing access to a specified host from various locations on the Internet. This is enabled to allow remote access to a host by clicking a hyperlinked URL in the form hostname.dyndns.org, Many ISPs assign public IP addresses using DHCP, and this can make it difficult to locate a

specific host on the LAN using standard DNS. If for example you are running a public web server or VPN server on your LAN, this ensures that the host can be located from the Internet if the public IP address changes. DDNS requires that an account be setup with one of the supported DDNS service providers (DyndDNS.org or TZO).

1. Click the **Add** button to enter your DDNS configuration window.
2. Select DDNS service provider from the **D-DNS provider** drop-down list and enter your account data.
3. Click **Save/Apply** button to apply settings.



DDNS Window

Notice DDNS requires that an account be setup with one of the supported DDNS service provider prior to engaging it on the router. This function will not work without an accepted account with a DDNS service provider.

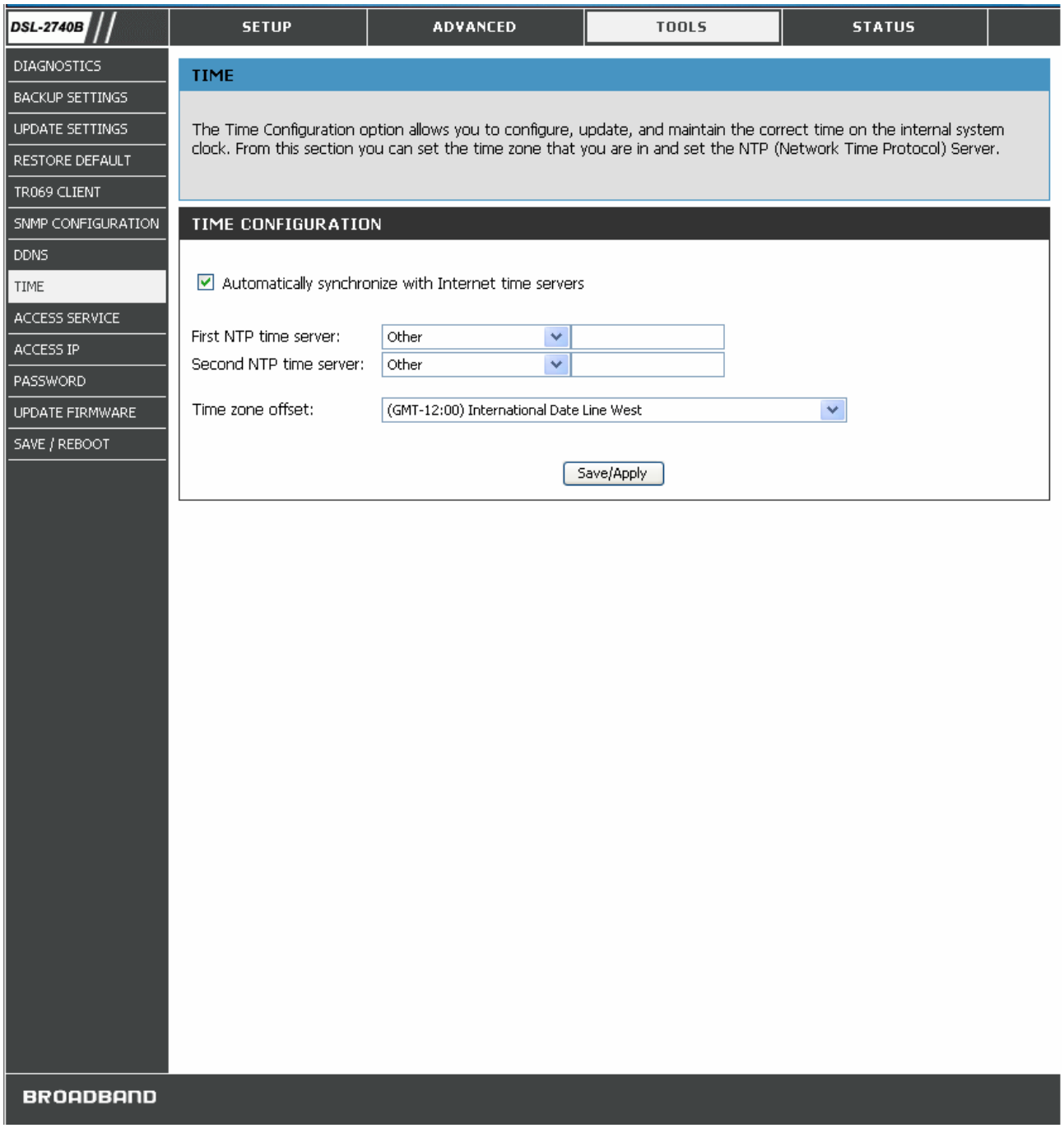
Configure these parameters for DDNS:

DDNS Parameters	Description
DDNS Server	Select one of the DDNS registration organizations form those listed in the pull-down menu. Available servers include DynDns.org and TZO.
Host Name	Enter the host name of your server.
Interface	Select your WAN interface (if more than one) that DDNS is applied to.
Username (or Key)	Enter the username given to you by your DDNS service provider.
Password (or Key)	Enter the password or key given to you by your DDNS service provider.
Email (if used)	Enter the email address registered to your DDNS service provider.

TIME

The Router provides you a method (Network Time Protocol) to maintain your router system clock via Internet.

1. Select **Automatically synchronize with Internet time servers**.
2. Select specific time server to use from the **First NTP time server** drop-down list; or you can select **Other** from the drop-down list and type the preferable time server in the right field.
3. Configure the **Second NTP time server** for backup purpose.
4. Select your operating time zone from **Tine zone offset** drop-down list.
5. Click **Save/Apply** to apply your settings.



TIME Window

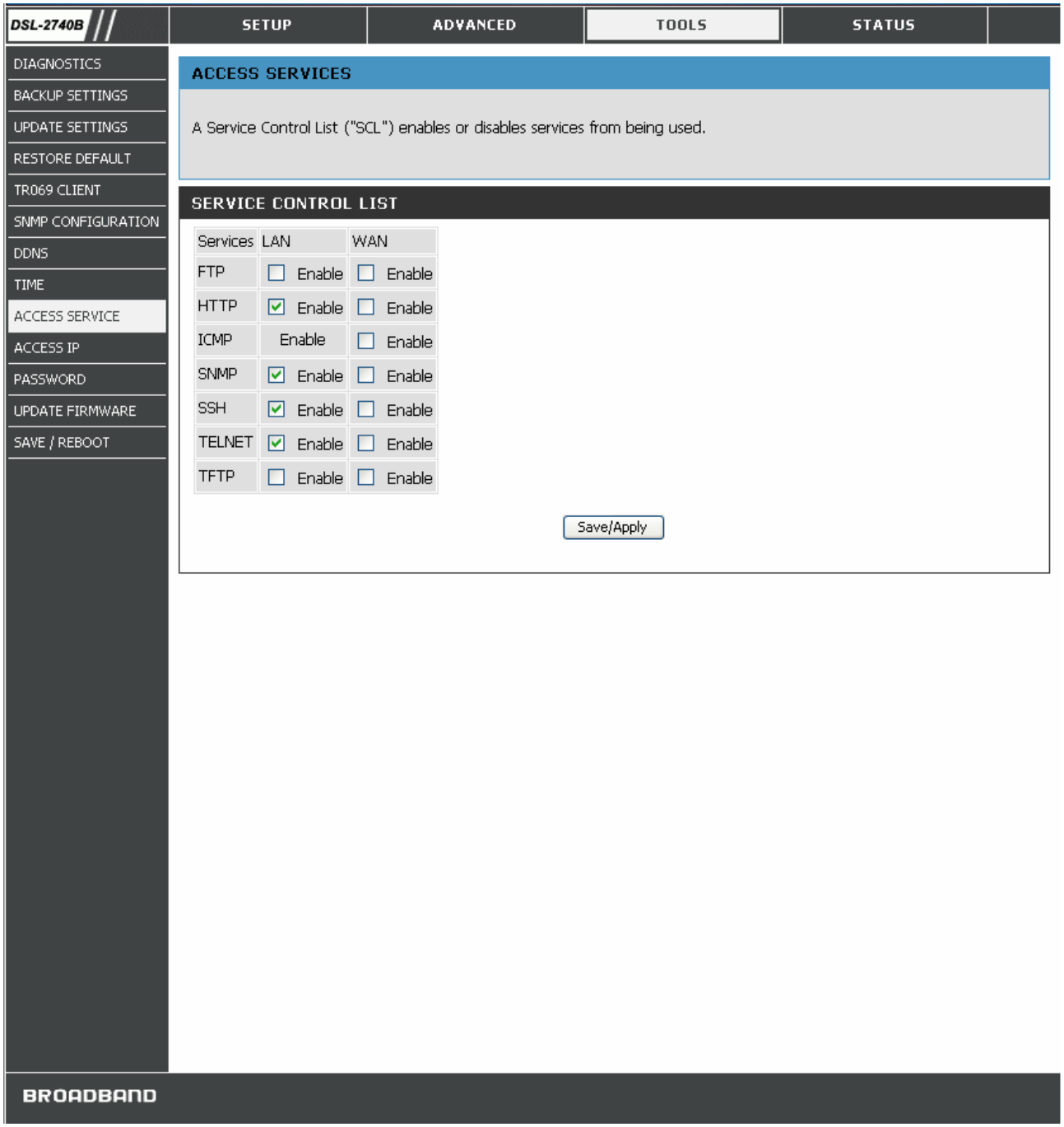
ACCESS SERVICE

You can select to enable or disable of which management services from being used in your router, for LAN and/or WAN interface. You need configure at least one WAN interface (except Bridge) before settings up service control list on WAN interface. Access Service is not available for Bridge mode.

1. Select the management services which you want to enable/disable on your LAN/WAN interface.

2. Click the **Save/Apply** button to apply your settings.

CAUTION: If you disable HTTP service, you'll not be able to access the router's configuration window permanently.



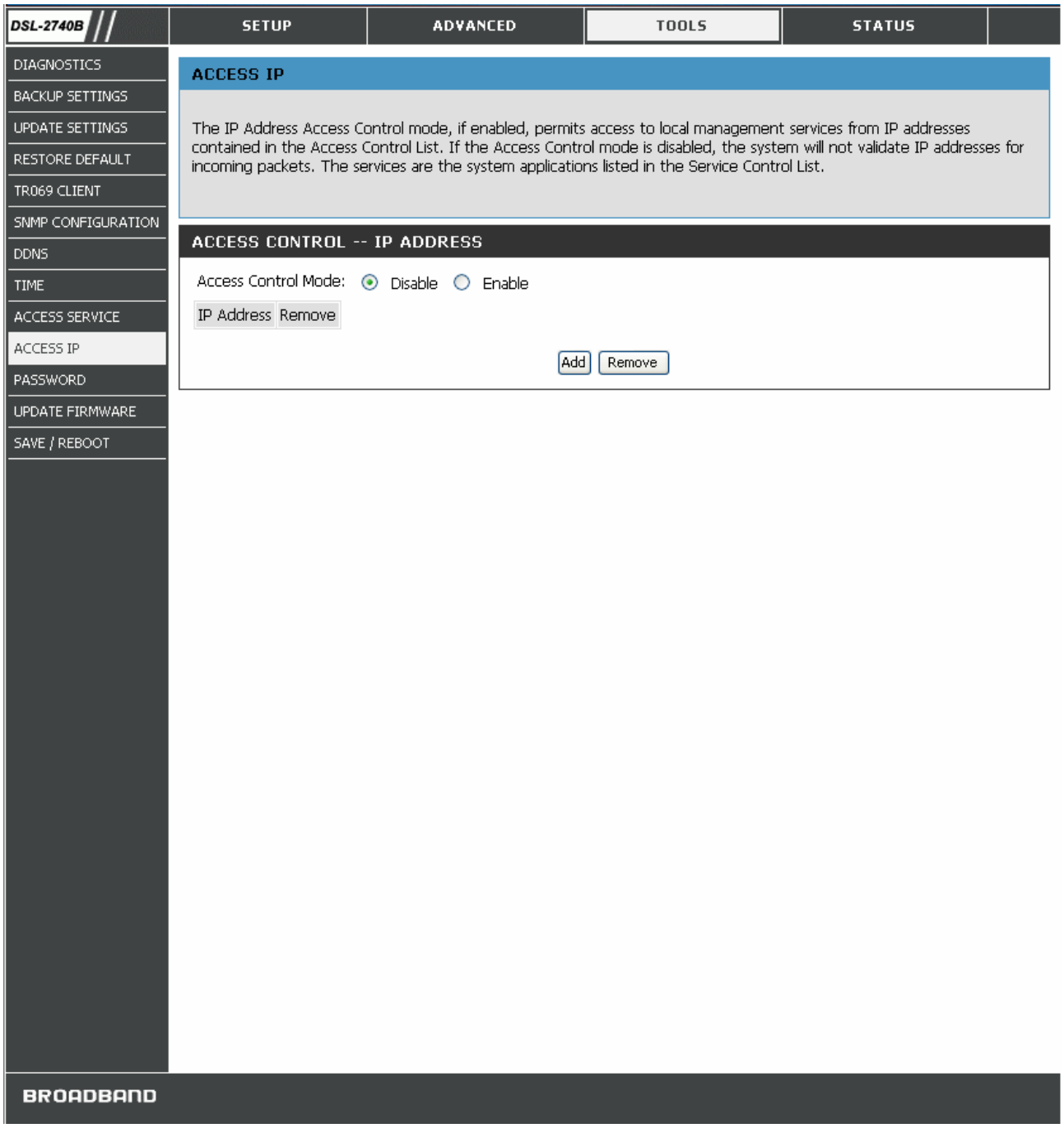
ACCESS SERVICE Window

ACCESS IP

The IP Address Access Control mode, if enabled, permits access to local management services from IP addresses contained in the Access Control List. The available management services are configured in the **Access Service**.

1. Click **Add** button to enter access IP address configuration window.
2. Enter the specific IP address which will be granted access and click **Save/Apply** button.
3. After adding all IP addresses, click **Enable** radio button to enable IP access control.

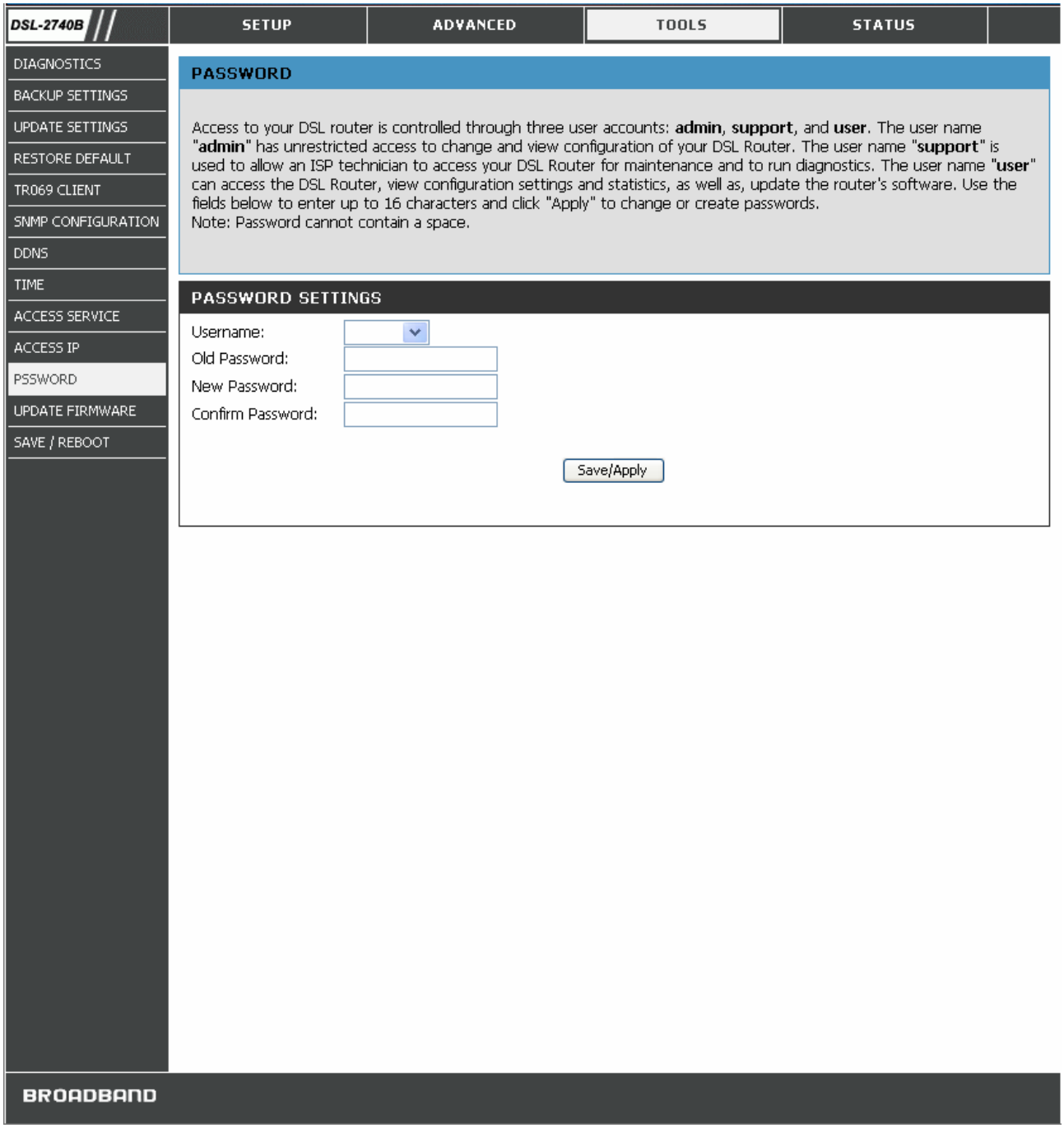
To remove configured IP address, select **Remove** box of the specific entry and click **Remove** button.



ACCESS IP Window

PASSWORD

Access to your router is controlled through three user accounts: **admin**, **support**, and **user**. The user name **admin** has unrestricted access to change and view configuration of your router. The user name **support** is used to allow an ISP technician to access your router for maintenance and to run diagnostics. The user name **user** can access the router, view configuration settings and statistics, as well as, update the router's software. By default, all passwords are the same as their account name. To change password, select the specific account and enter the old/new password. Click the **Save/Apply** button to apply settings.

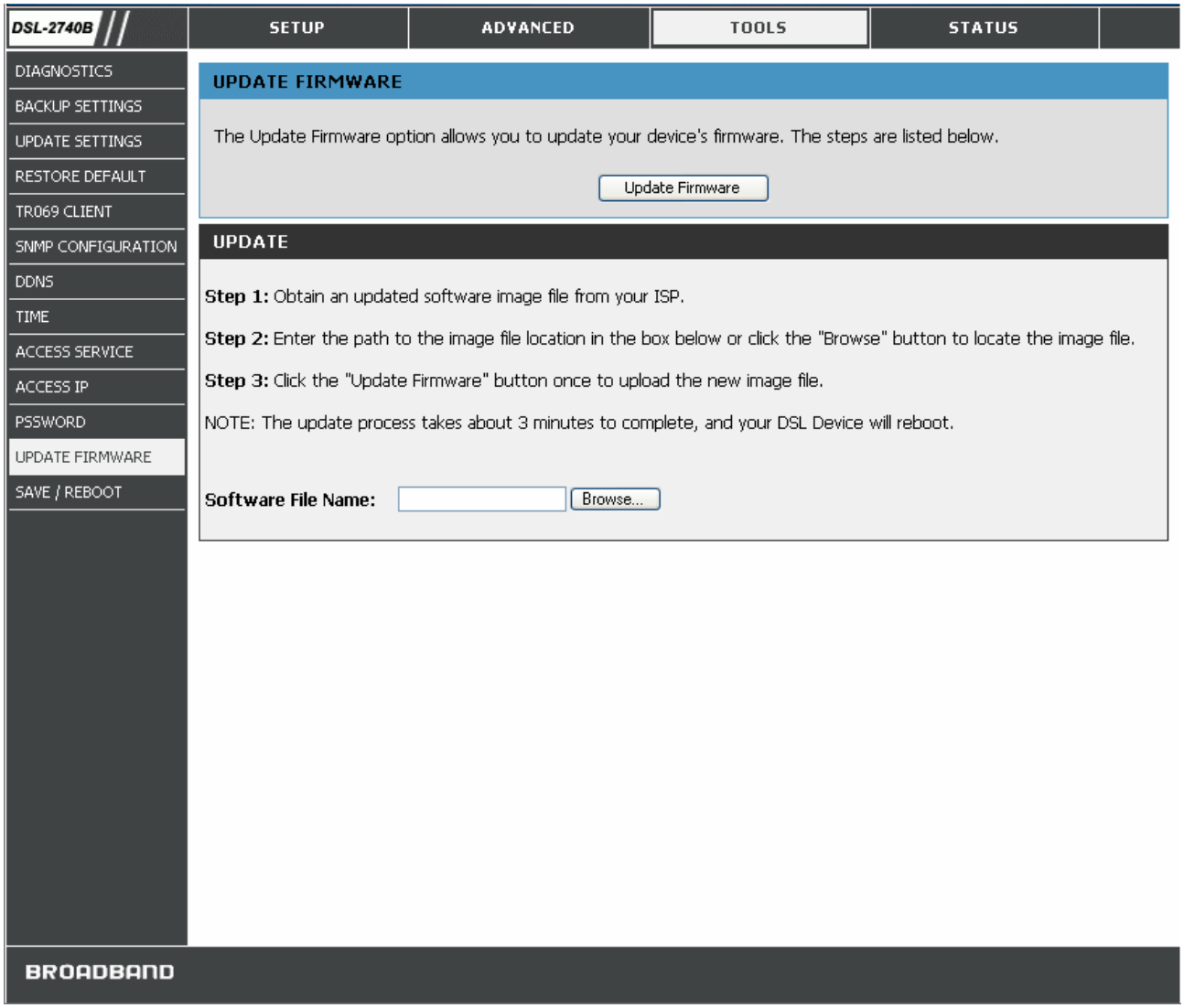


PASSWORD Window

UPDATE FIRMWARE

Use the **Firmware Upgrade** window to load the latest firmware for the device. Note that the device configuration settings may return to the factory default settings, so make sure you save the configuration settings with the **System Settings** window described above.

To upgrade firmware, click on the **Browse** button to search for the file. Click the **Update Firmware** button to begin copying the file. The Router will load the file and restart automatically.



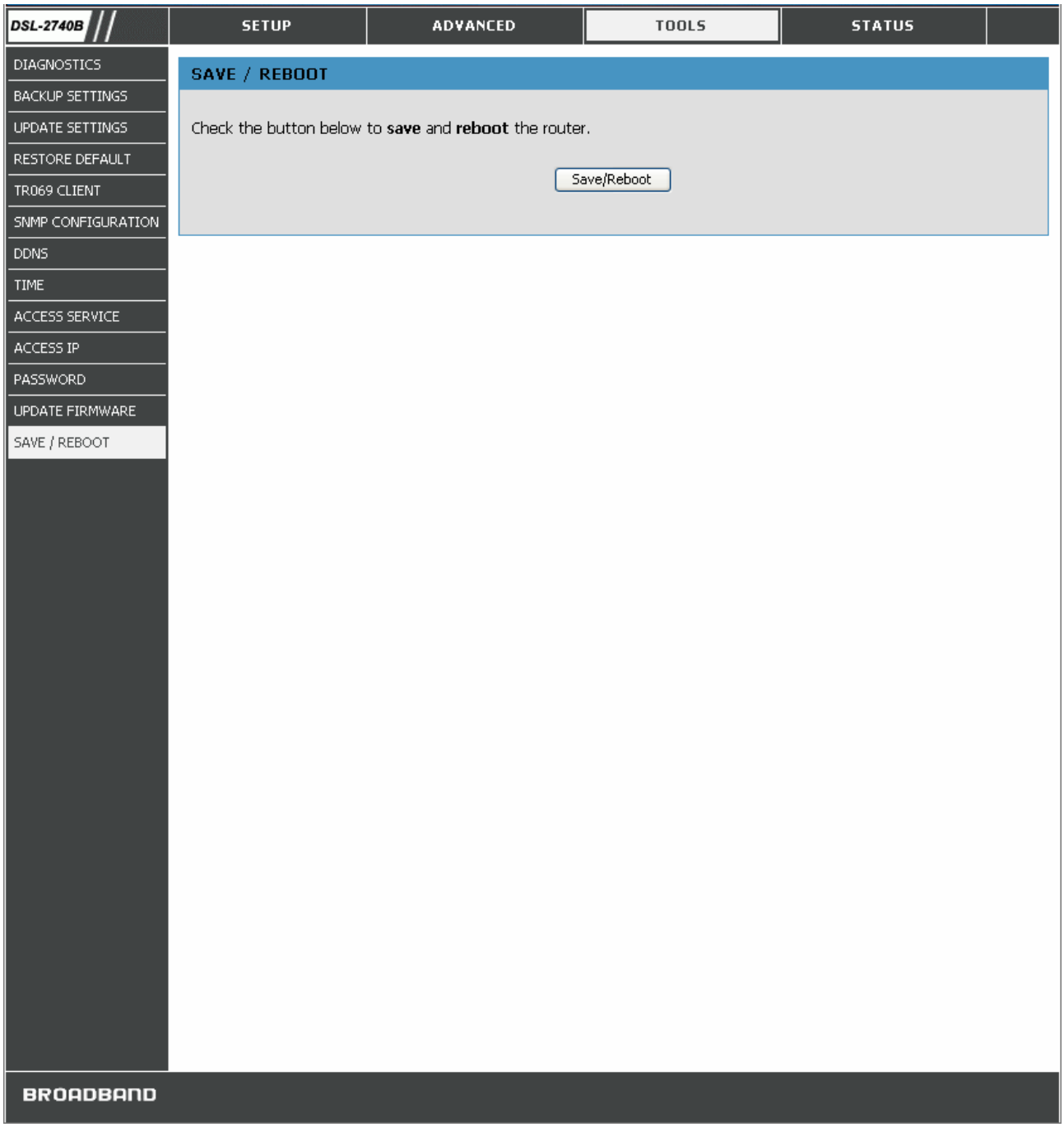
UPDATE FIRMWARE Window

Note

Performing a Firmware Upgrade can sometimes change the configuration settings. Be sure to back-up the Router's configuration settings before upgrading the firmware.

SAVE / REBOOTt

Click the **Save/Reboot** button to save the previously made configurations and reboot the router.



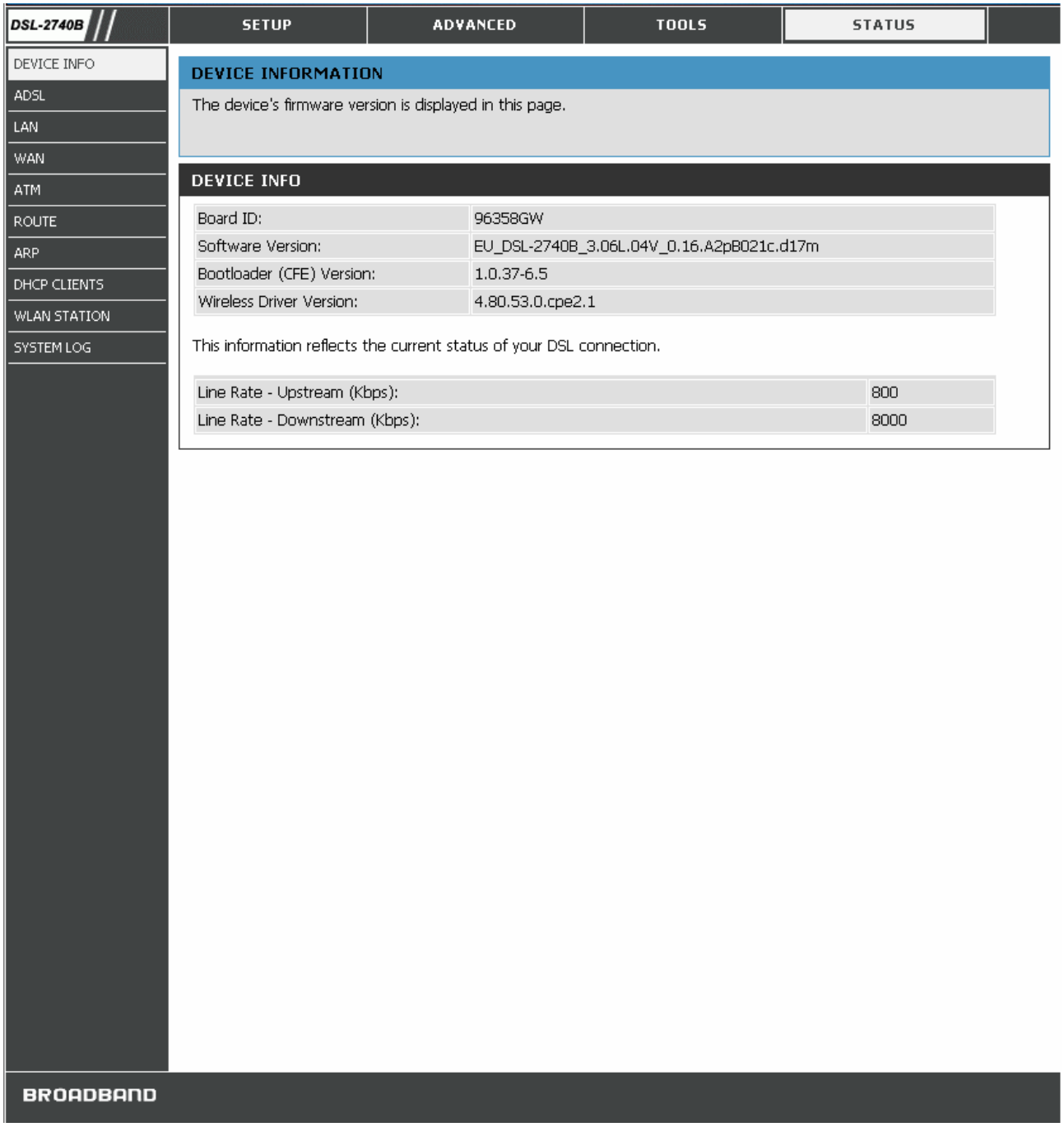
SAVE / REBOOT Window

STATUS

Use these windows to view system information and monitor performance.

DEVICE INFO

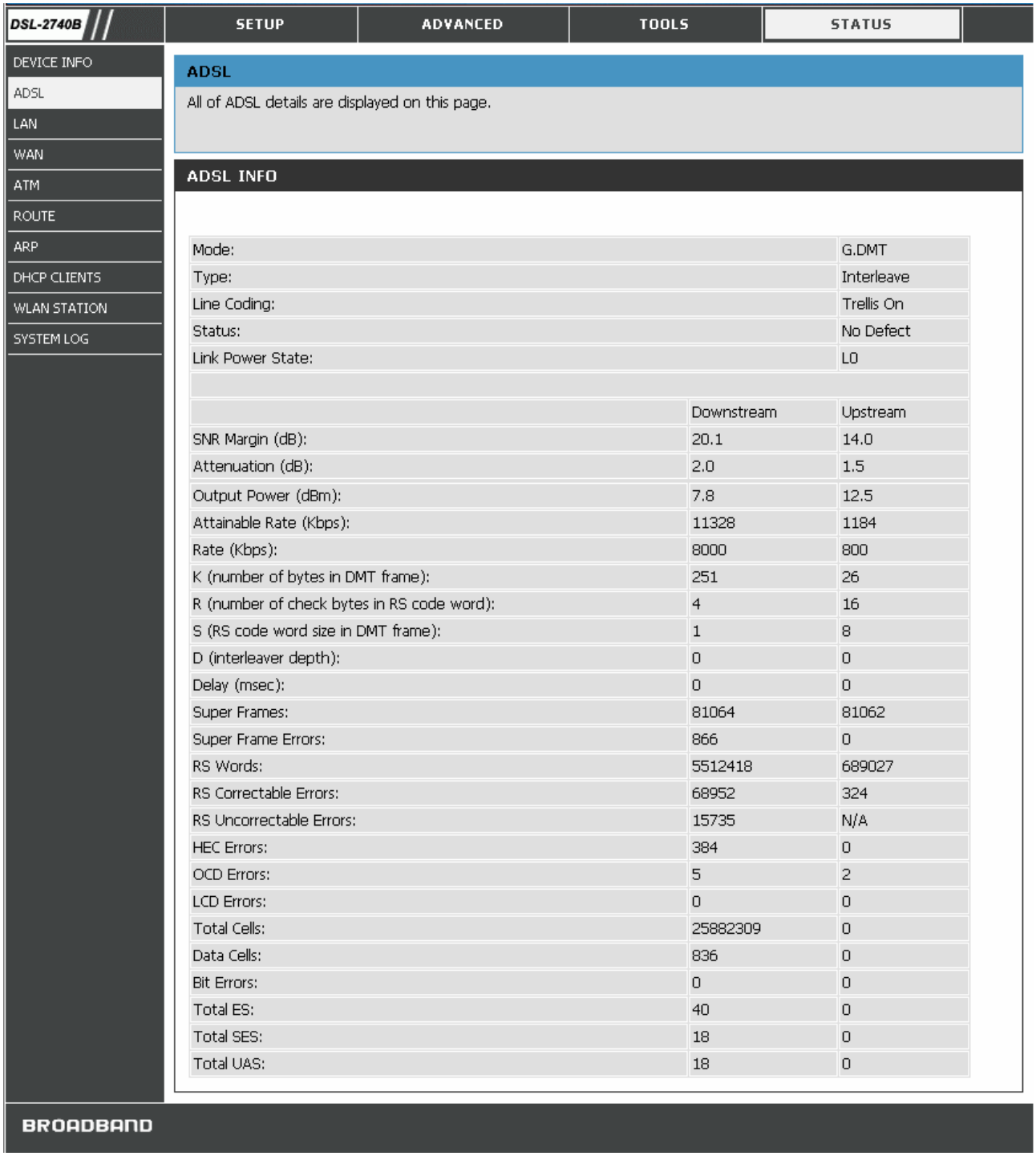
Use the **Device Information** window to quickly view basic current information about the router and device information including Firmware Version and ADSL connection status.



DEVICE INFO window

ADSL

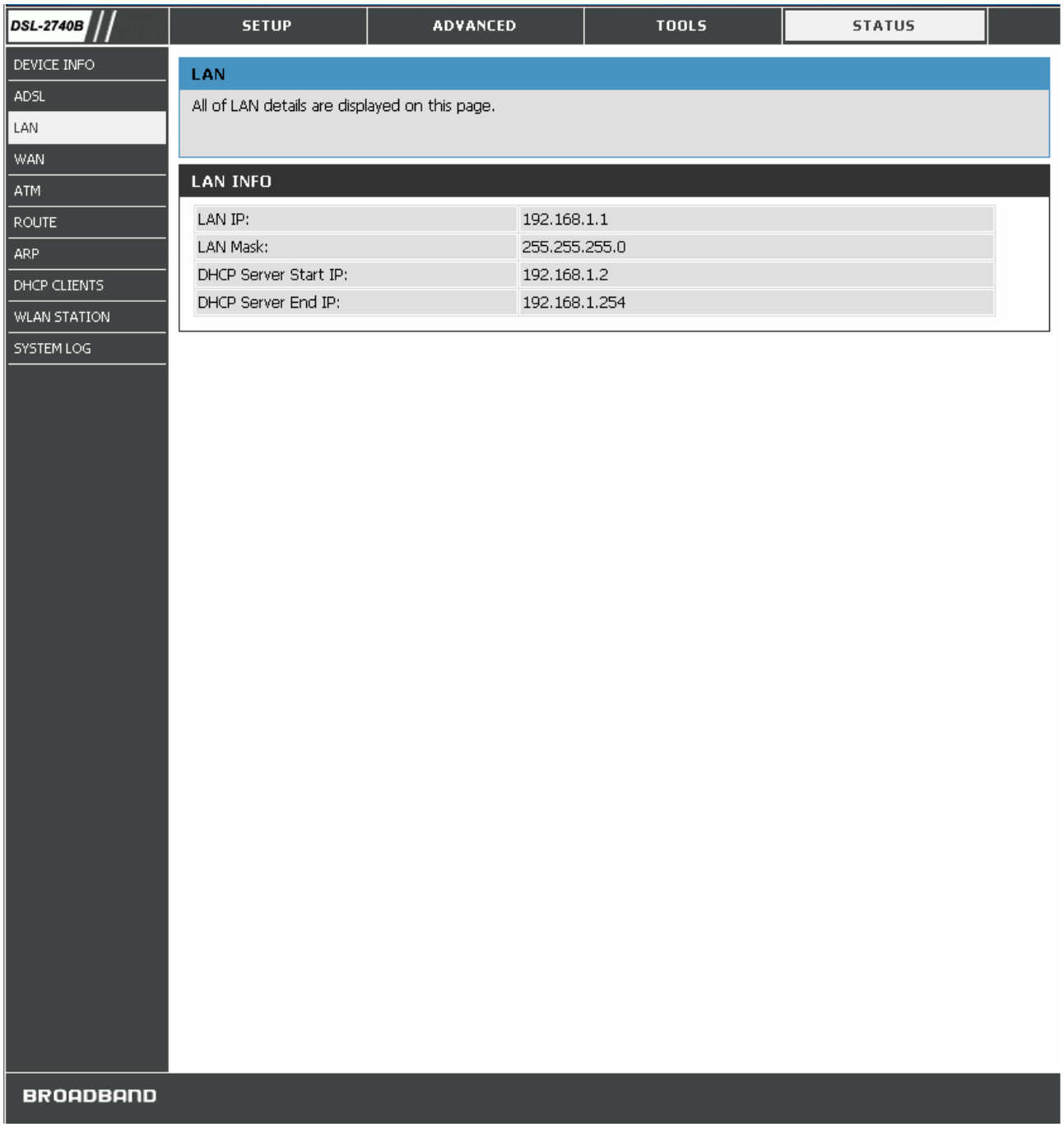
This window displays ADSL information including Link Rate, SNR, and some Error Counters.



ADSL Window

LAN

This window displays LAN information including IP address, Mask, and DCHP pool.



LAN Window

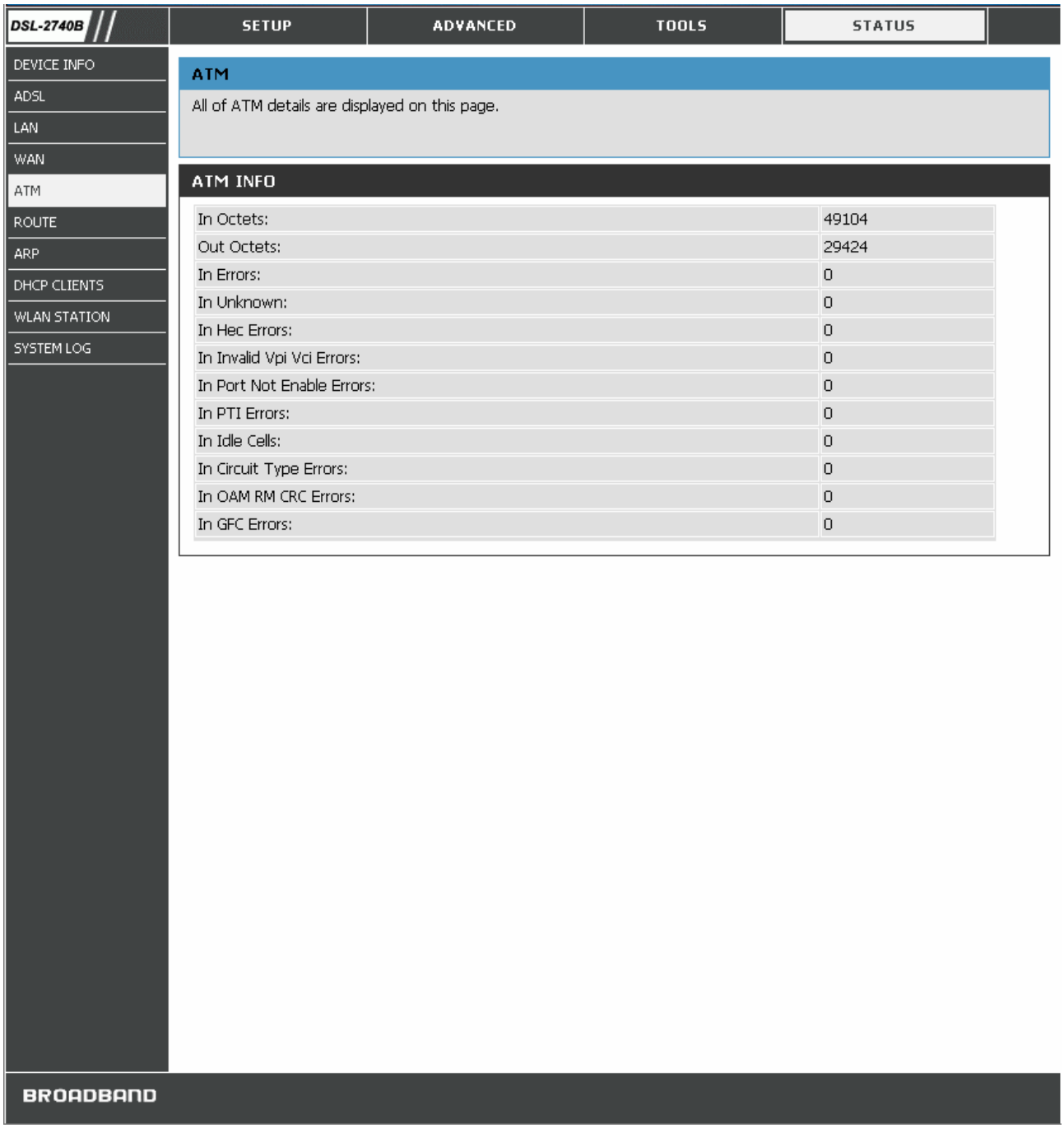
WAN

This window displays WAN information including IP address, Mask, Dafault Gateway, Primary/Secondary DNS Server.

WAN Window

ATM

This window displays ATM information including Cell Count and someError Counters.



ATM Window

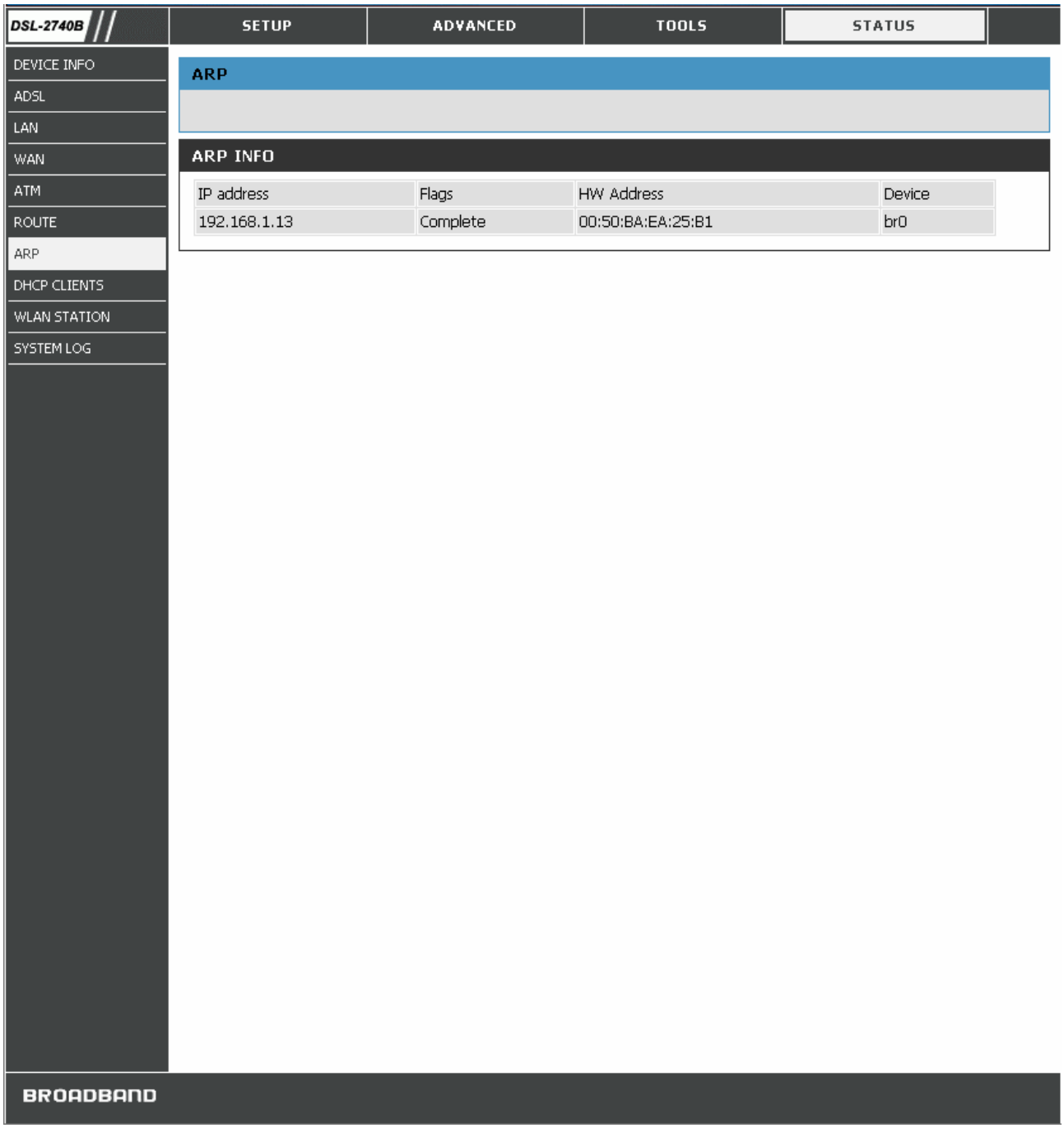
ROUTE

This window displays the Routing Table of the router.

ROUTE Window

ARP

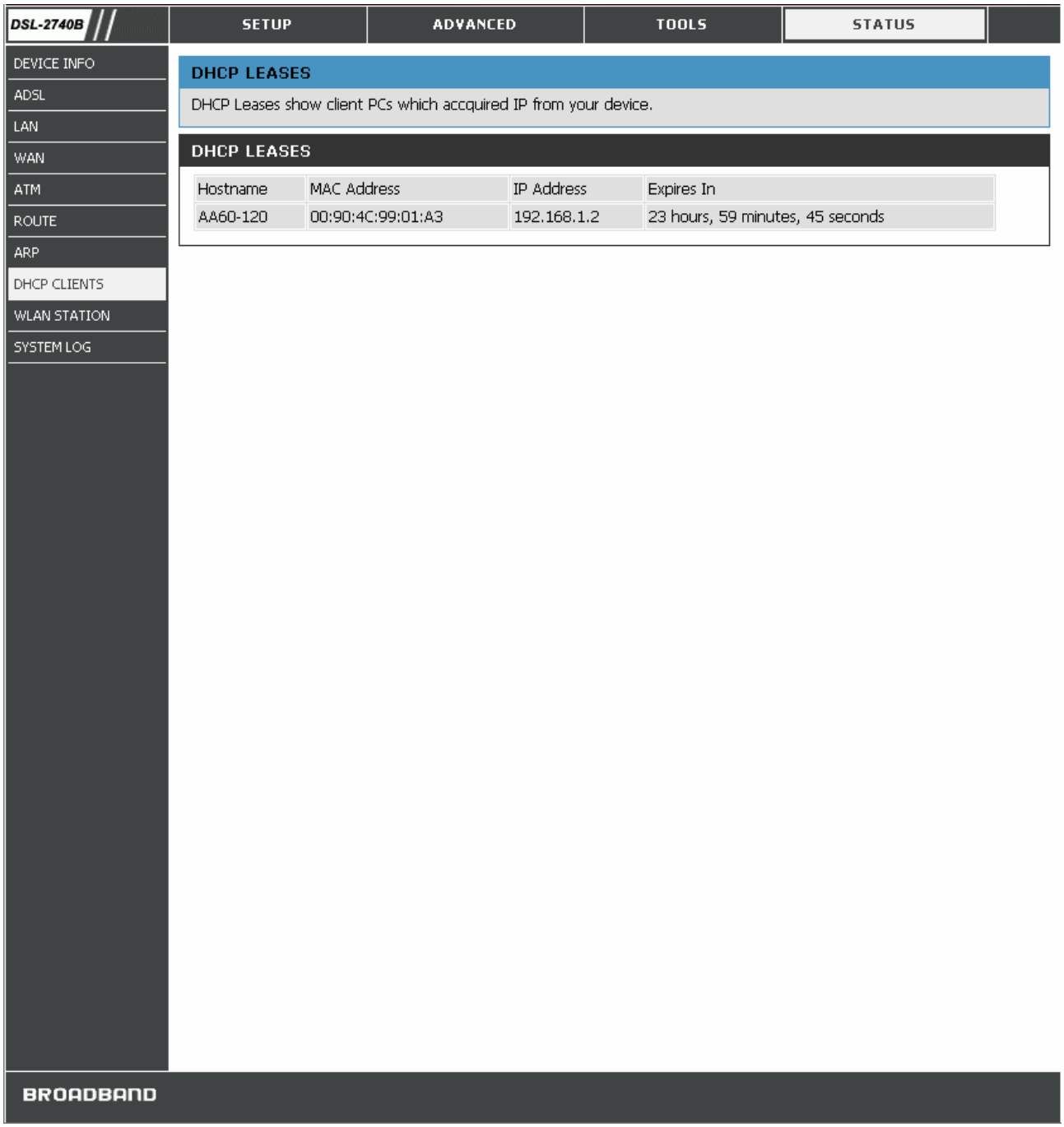
This window displays ARP Table of the router's LAN port.



ARP Window

DHCP CLIENTS

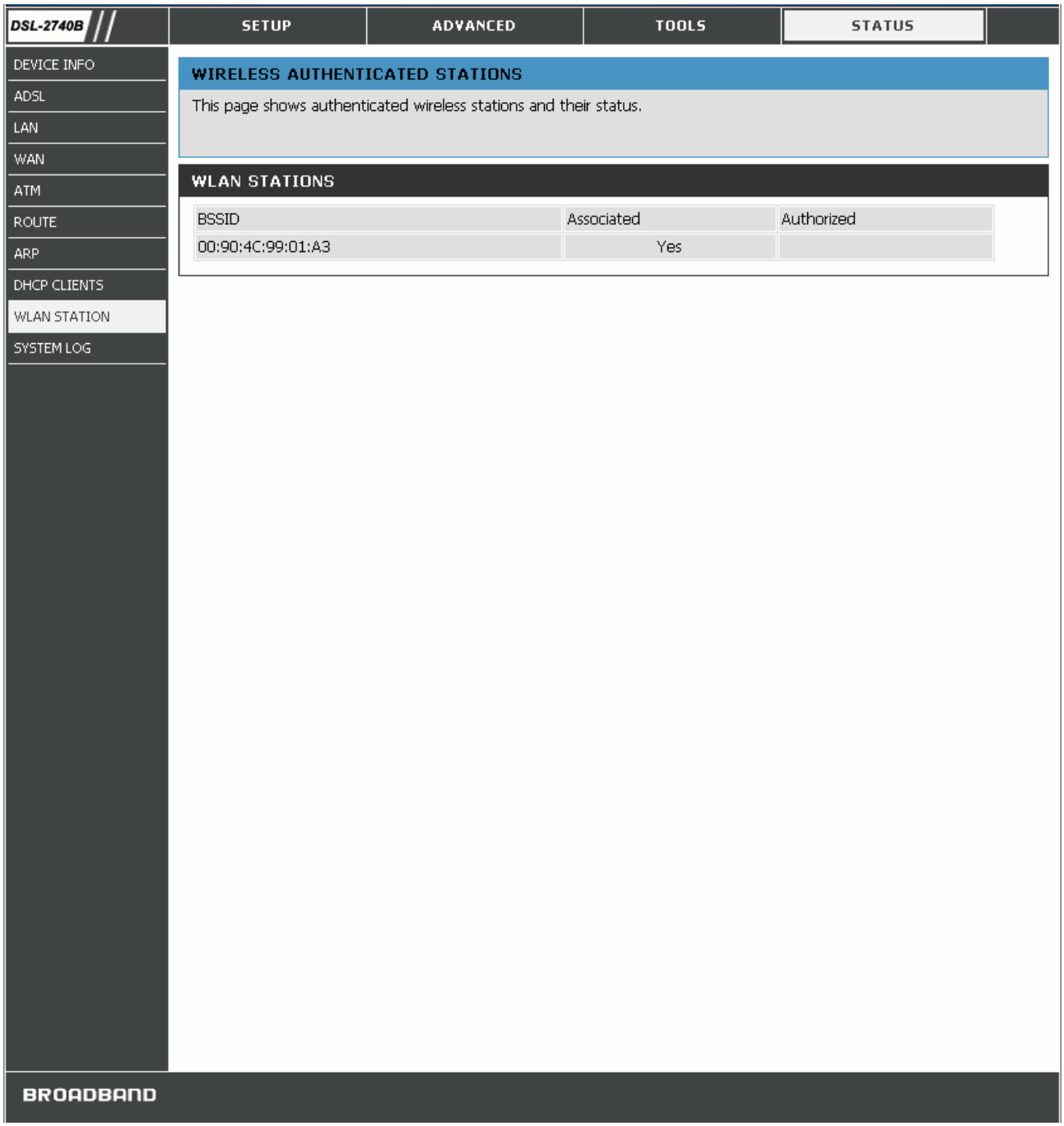
This window displays all the client devices which have obtained IP addresses from the router.



DHCP CLIENTS window

WLAN STATION

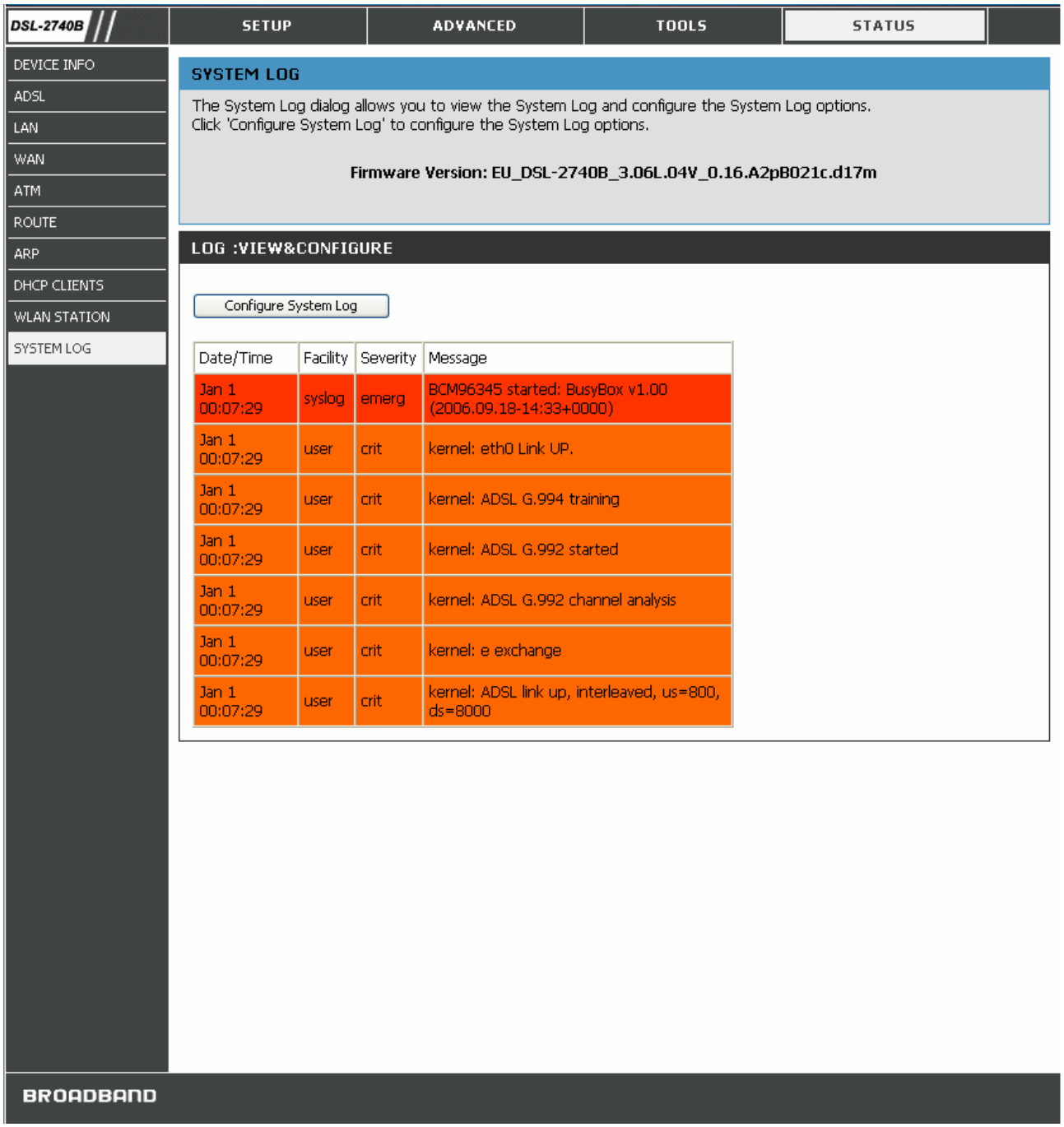
This window displays authenticated wireless stations and their status.



WLAN STATION Window

SYSTEM LOG

The system log displays chronological event log data. The event log can be read from local host or sent to syslog server. The available event severity levels are: *Emergency*, *Alert, Critical, Error, Warning, Notice, Informational* and *Debugging,*



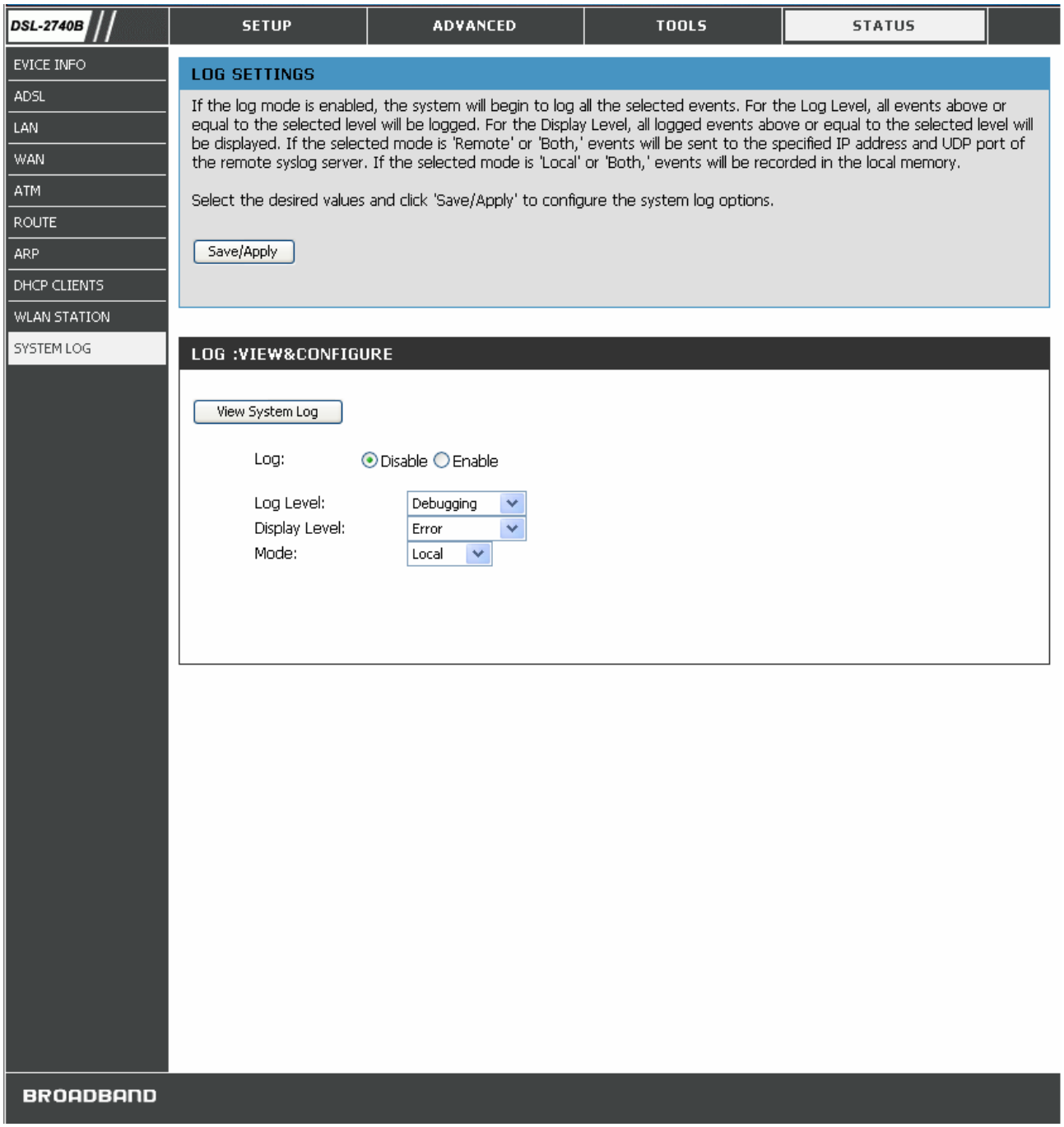
SYSTEM LOG window (1)

1. Click **Configure System Log** button to enter system log configuration window.
2. Click **Enable** radio button and select **Log/Display Level** from the drop down list.
3. Select display mode from the **Mode** drop-down list; enter the syslog server IP address and port number if **Both/Remote** Mode is selected.
4. Click **Save/Apply** button to apply your settings.

Configure these parameters for system log on the Router:

System Log Category	Parameters

Log Level	All events above or equal to the selected level will be logged.
Display Level	All logged events above or equal to the selected level will be displayed.
Mode	Display mode of system log. • Local: Display on local host only • Remote: Send log file to remote syslog server only • Both: Display on local host and send to syslog server concurrently
Server IP Address	IP address of the remote syslog server
Server UDP Port	UDP port number of the remote syslog server



SYSTEM LOG window (2)

A

Technical Specifications

General		
Standards:	**ADSL Standards** • ANSI T1.413 Issue 2 • ITU G.992.1 (G.dmt) AnnexA • ITU G.992.2 (G.lite) Annex A • ITU G.994.1 (G.hs) • ITU G.992.5 Annex A	**ADSL2 Standards** • ITU G.992.3 (G.dmt.bis) Annex A • ITU G.992.4 (G.lite.bis) Annex A
Protocols:	• IEEE 802.1d Spanning Tree • TCP/UDP • ARP • RARP • ICMP • RFC1058 RIP v1 • RFC1213 SNMP v1 & v2c • RFC1334 PAP • RFC1389 RIP v2	• RFC1483/2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5 (AAL5) • RFC1577 Classical IP over ATM • RFC1661 Point to Point Protocol • RFC1994 CHAP • RFC2131 DHCP Client / DHCP Server • RFC2364 PPP over ATM • RFC2516 PPP over Ethernet
Data Transfer Rate:	• G.dmt full rate downstream: up to 8 Mbps / upstream: up to 1 Mbps • G.lite: ADSL downstream up to 1.5 Mbps / upstream up to 512 Kbps • G.dmt.bis full rate downstream: up to 12 Mbps / upstream: up to 12 Mbps • ADSL full rate downstream: up to 24 Mbps / upstream: up to 1 Mbps	
Media Interface:	• ADSL interface: RJ-11 connector for connection to 24/26 AWG twisted pair telephone line • LAN interface: RJ-45 port for 10/100BASE-T Ethernet connection	

Physical and Environmental	
DC Inputs: **Power Adapter:**	Input: 120V AC 60Hz Output: 12V AC, 1200mA
Power Consumption:	12 Watts (max)
Operating Temperature:	0° to 40°C
Storage Temperature	-20° to 70°C
Humidity:	5% to 95% (non-condensing)
Dimensions:	109 mm x 142.8 mm x 32.1 mm
Weight:	200 gm
EMI:	CE Class B, FCC Class B (Part 15)
Safety:	CSA 950, UL 1950, IEC 60950, EN 60950
Reliability:	Mean Time Between Failure (MTBF) min. 4 years

Wireless	
Modulation	IEEE 802.11b: DQPSK, DBPSK, DSSS, and CCK IEEE 802.11g: BPSK, QPSK, 16QAM, 64QAM, OFDM
Frequency	2400 ~ 2484.5MHz ISM band
Channels	11 channels for United States 13 channels for European Countries 13 channels for Japan
Wireless Data Rates	IEEE 802.11b: 11, 5.5, 2, and 1Mbps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
Media Access Protocol	CSMA/CA with ACK
Wireless Certification	Wi-Fi WPA
ADSL Data Rates	G.dmt full rate: Downstream up to 8 Mbps Upstream up to 640 Kbps G.lite: Downstream up to 1.5 Mbps Upstream up to 512 Kbps G.dmt.bis full rate: Downstream up to 12Mbps, Upstream up to 640kbps G.lite.bis full rate: Downstream up to 12Mbps, Upstream up to 512kbps ADSL2+ full rate: Downstream up to 24Mbps, Upstream up to 1Mbps
Media Interface	RJ-11 port ADSL telephone line connection 4 x RJ-45 ports for 10/100BASET Ethernet connection

B

Configuring IP Settings on Your Computer

In order to configure your system to receive IP settings from the Router it must first have the TCP/IP protocol installed. If you have an Ethernet port on your computer, it probably already has TCP/IP protocol installed. If you are using Windows XP the TCP/IP is enabled by default for standard installations. Below is an illustrated example of how to configure a Windows XP system to automatically obtain IP settings from the Router. Following this example is a step-by-step description of the procedures used on the other Windows operating systems to first check if the TCP/IP protocol has been installed; if it is not, instructions are provided for installing it. Once the protocol has been installed you can configure the system to receive IP settings from the Router.

For computers running non-Windows operating systems, follow the instructions for your OS that configure the system to receive an IP address from the Router, that is, configure the system to be a DHCP client.

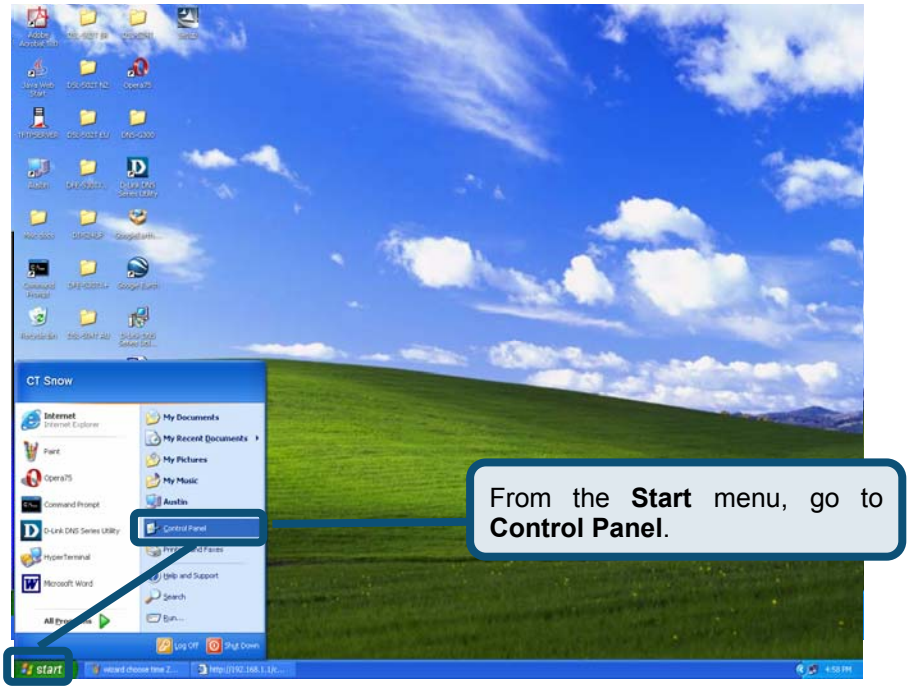
Note

If you are using this Router to provide Internet access for more than one computer, you can use these instructions later to change the IP settings for the other computers. However, you cannot use the same IP address since every computer must have its own IP address that is unique on the local network.

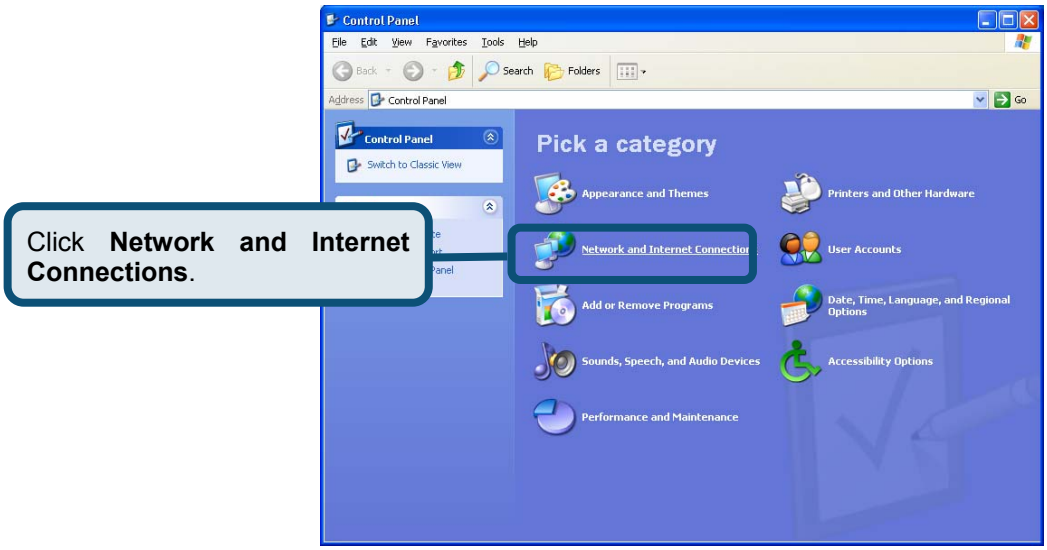
Configure Windows XP for DHCP

Use the following steps to configure a computer running Windows XP to be a DHCP client.

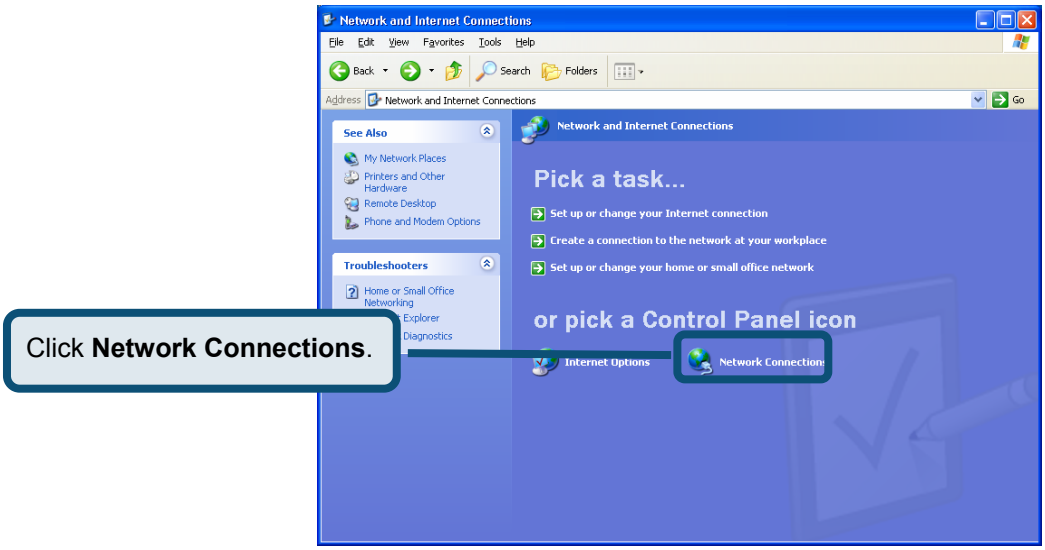
1. From the **Start** menu on your desktop, go to **Control Panel.**



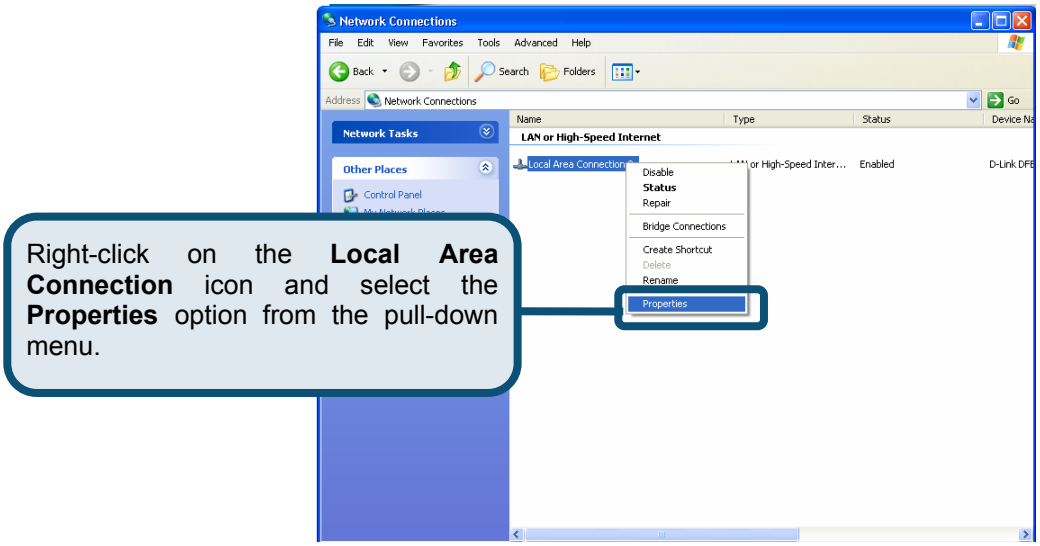
2. In the Control Panel window, click Network and Internet Connections.



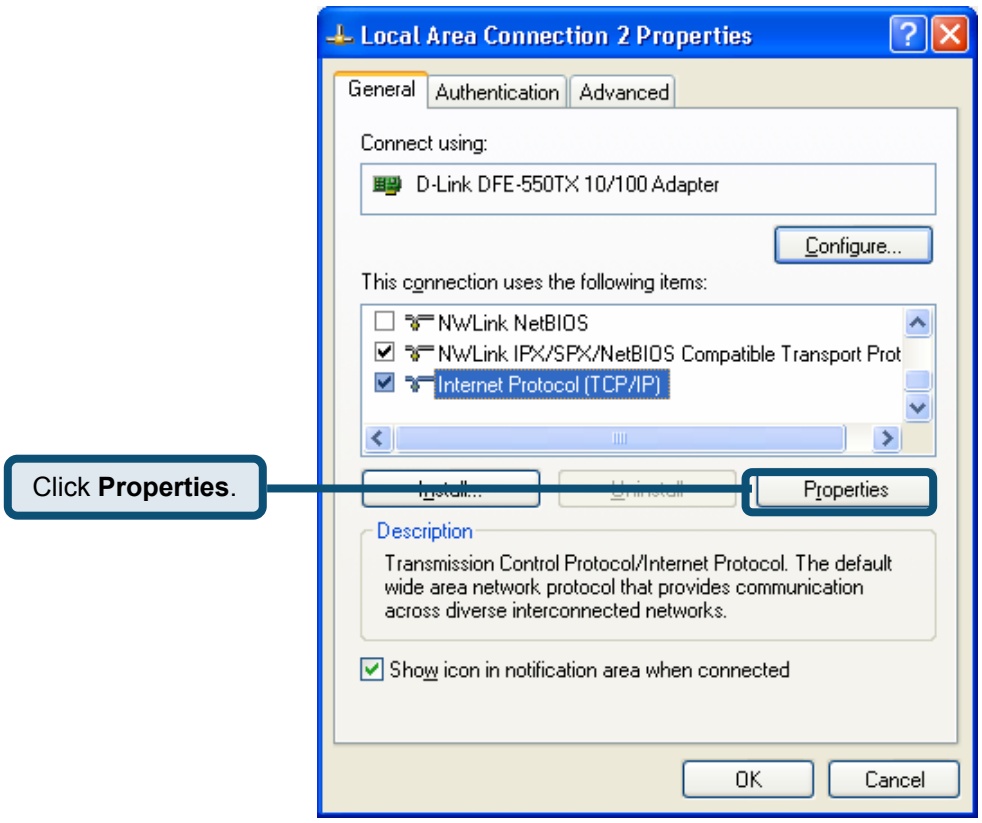
3. In the Network and Internet Connections window, click **Network Connections**.



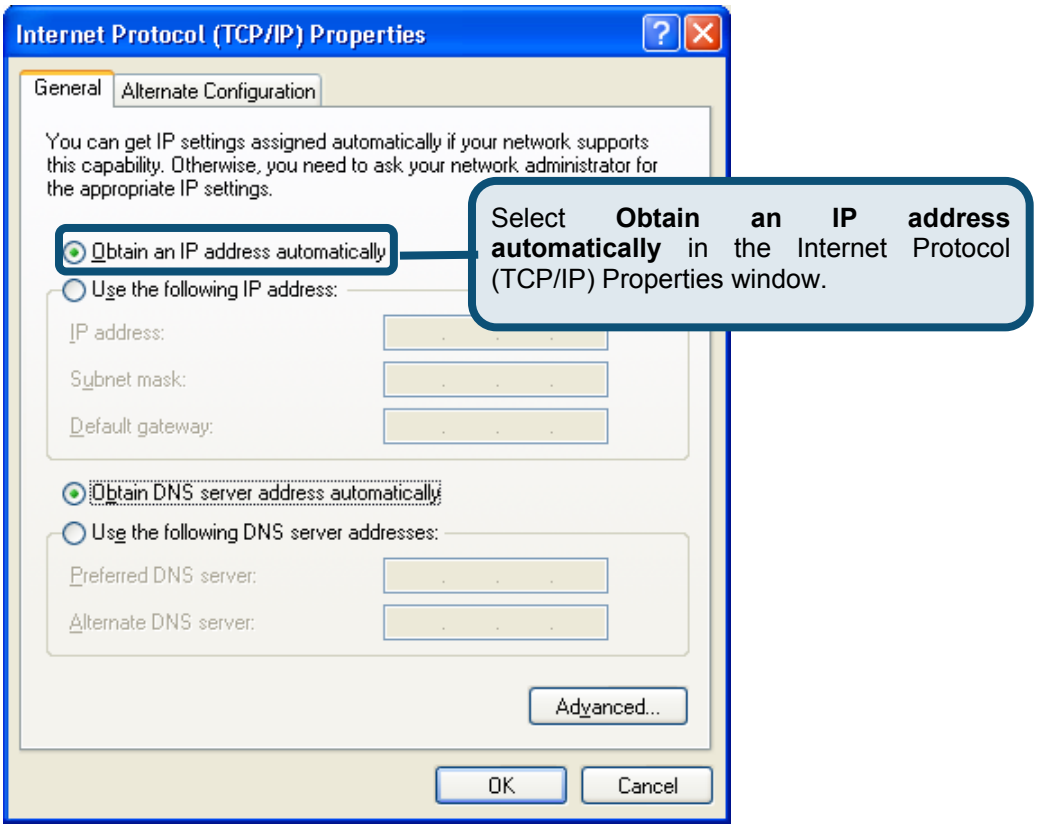
4. In the Network Connections window, right-click on **Local Area Connection**, then click **Properties**.



5. In the **General** tab of the **Local Area Connection Properties** window, highlight **Internet Protocol (TCP/IP)** under "This connection uses the following items:" by clicking on it once. Click on the **Properties** button.



6. Select "Obtain an IP address automatically" by clicking once in the circle. Click the **OK** button



Your computer is now ready to use the Router's DHCP server.

Windows 2000

First, check for the IP protocol and, if necessary, install it:

1. In the **Windows** task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Network and Dial-up Connections** icon.
3. In the **Network and Dial-up Connections** window, right-click the **Local Area Connection** icon, and then select **Properties**.
4. The **Local Area Connection Properties** dialog box displays with a list of currently installed network components. If the list includes Internet Protocol (TCP/IP), then the protocol has already been enabled, skip ahead to *Configure Windows 2000 for DHCP*.
5. If Internet Protocol (TCP/IP) does not display as an installed component, click **Install**.
6. In the **Select Network Component Type** dialog box, select **Protocol**, and then click **Add**.
7. Select **Internet Protocol (TCP/IP)** in the Network Protocols list, and then click **OK**.
8. You may be prompted to install files from your Windows 2000 installation CD or other media. Follow the instructions to install the files.
9. If prompted, click **OK** to restart your computer with the new settings.

Configure Windows 2000 for DHCP

1. In the Control Panel, double-click the **Network and Dial-up Connections** icon.
2. In **Network and Dial-up Connections** window, right-click the **Local Area Connection** icon, and then select **Properties**.
3. In the **Local Area Connection Properties** dialog box, select **Internet Protocol (TCP/IP)**, and then click **Properties**.
4. In the **Internet Protocol (TCP/IP) Properties** dialog box, click the button labeled **Obtain an IP address automatically**.
5. Double-click **OK** to confirm and save your changes, and then close the Control Panel.

Your computer is now ready to use the Router's DHCP server.

Windows 95 and Windows 98

First, check for the IP protocol and, if necessary, install it:

1. In the **Windows** task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**. Double-click the **Network** icon.
2. The **Network** dialog box displays with a list of currently installed network components. If the list includes TCP/IP, and then the protocol has already been enabled, skip to *Configure IP Information Windows 95, 98*.
3. If TCP/IP does not display as an installed component, click **Add**. The **Select Network Component Type** dialog box displays.
4. Select **Protocol**, and then click **Add**. The **Select Network Protocol** dialog box displays.
5. Click on **Microsoft** in the Manufacturers list box, and then click **TCP/IP** in the Network Protocols list box.
6. Click **OK** to return to the Network dialog box, and then click **OK** again. You may be prompted to install files from your Windows 95/98 installation CD. Follow the instructions to install the files.
7. Click **OK** to restart the PC and complete the TCP/IP installation.

Configure Windows 95 and Windows 98 for DHCP

1. Open the **Control Panel** window, and then click the **Network** icon.
2. Select the network component labeled TCP/IP, and then click **Properties**.
3. If you have multiple TCP/IP listings, select the listing associated with your network card or adapter.
4. In the **TCP/IP Properties** dialog box, click the **IP Address** tab.
5. Click the **Obtain an IP address automatically** option.
6. Double-click **OK** to confirm and save your changes. You will be prompted to restart Windows.
7. Click **Yes**.

When it has restarted, your computer is ready to use the Router's DHCP server.

Windows ME

First, check for the IP protocol and, if necessary, install it:

1. In the **Windows** task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Network and Dial-up Connections** icon.
3. In the **Network and Dial-up Connections** window, right-click the **Network** icon, and then select **Properties**.
4. The **Network Properties** dialog box displays with a list of currently installed network components. If the list includes Internet Protocol (TCP/IP), then the protocol has already been enabled. Skip ahead to *Configure Windows ME for DHCP*.
5. If Internet Protocol (TCP/IP) does not display as an installed component, click **Add**.
6. In the **Select Network Component Type** dialog box, select **Protocol**, and then click **Add**.
7. Select **Microsoft** in the Manufacturers box.
8. Select **Internet Protocol (TCP/IP)** in the Network Protocols list, and then click **OK**.
9. You may be prompted to install files from your Windows Me installation CD or other media. Follow the instructions to install the files.
10. If prompted, click **OK** to restart your computer with the new settings.

Configure Windows ME for DHCP

1. In the **Control Panel** window, double-click the **Network and Dial-up Connections** icon.
2. In the **Network and Dial-up Connections** window, right-click the **Network** icon, and then select **Properties**.
3. In the **Network Properties** dialog box, select **TCP/IP**, and then click **Properties**.
4. In the **TCP/IP Settings** dialog box, click the **Obtain and IP address automatically** option.
5. Double-click **OK** twice to confirm and save your changes, and then close the Control Panel.

Your computer is now ready to use the Router's DHCP server.

Windows NT 4.0 Workstations

First, check for the IP protocol and, if necessary, install it:

1. In the **Windows NT** task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. In the **Control Panel** window, double-click the **Network** icon.
3. In the **Network** dialog box, click the **Protocols** tab.
4. The **Protocols** tab displays a list of currently installed network protocols. If the list includes TCP/IP, then the protocol has already been enabled. Skip to "Configure IP Information"
5. If TCP/IP does not display as an installed component, click **Add**.
6. In the **Select Network Protocol** dialog box, select **TCP/IP**, and then click **OK**. You may be prompted to install files from your Windows NT installation CD or other media. Follow the instructions to install the files.
7. After all files are installed, a window displays to inform you that a TCP/IP service called DHCP can be set up to dynamically assign IP information.
8. Click **Yes** to continue, and then click **OK** if prompted to restart your computer.

Configure Windows NT 4.0 for DHCP

1. Open the **Control Panel** window, and then double-click the **Network** icon.
2. In the **Network** dialog box, click the **Protocols** tab.
3. In the **Protocols** tab, select **TCP/IP**, and then click **Properties**.
4. In the **Microsoft TCP/IP Properties** dialog box, click the **Obtain an IP address automatically** option.
5. Click **OK** twice to confirm and save your changes, and then close the Control Panel.

Your computer is now ready to use the Router's DHCP server.

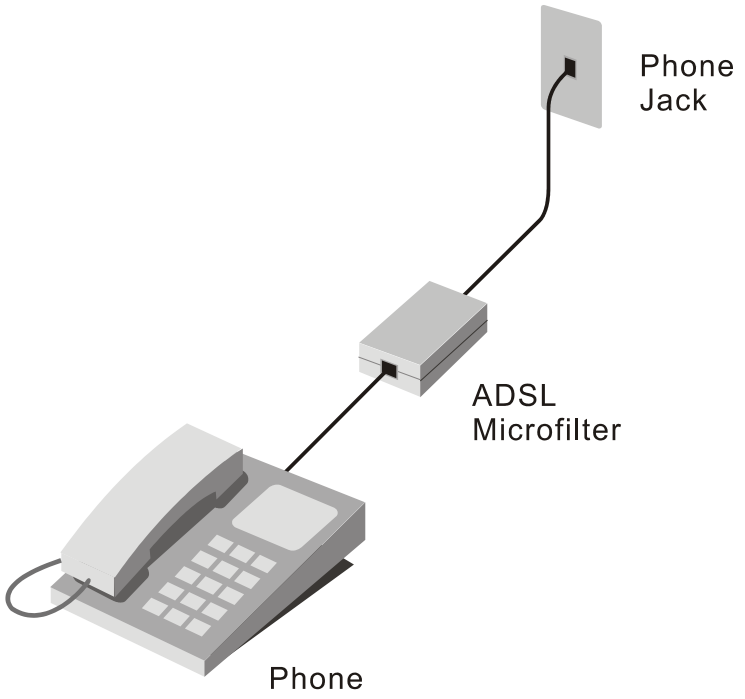
C

Low Pass Filters for DSL

Most ADSL clients will be required to install a simple device that prevents the ADSL line from interfering with regular telephone services. These devices are commonly referred to as microfilters or low pass filters. The two basic styles of low pass filters commonly used are described below.

In-Line Filter

In line low pass filters are used for each telephone or telephone device (answering machines, Faxes etc.) that shares the line with the ADSL service. These devices are attached to the telephone cable between the telephone and wall jack. Filters that install behind the wall plate hidden from view are also available. A typical in-line filter installation is shown in the diagram below.



In-line low pass filter

Three Port Filter

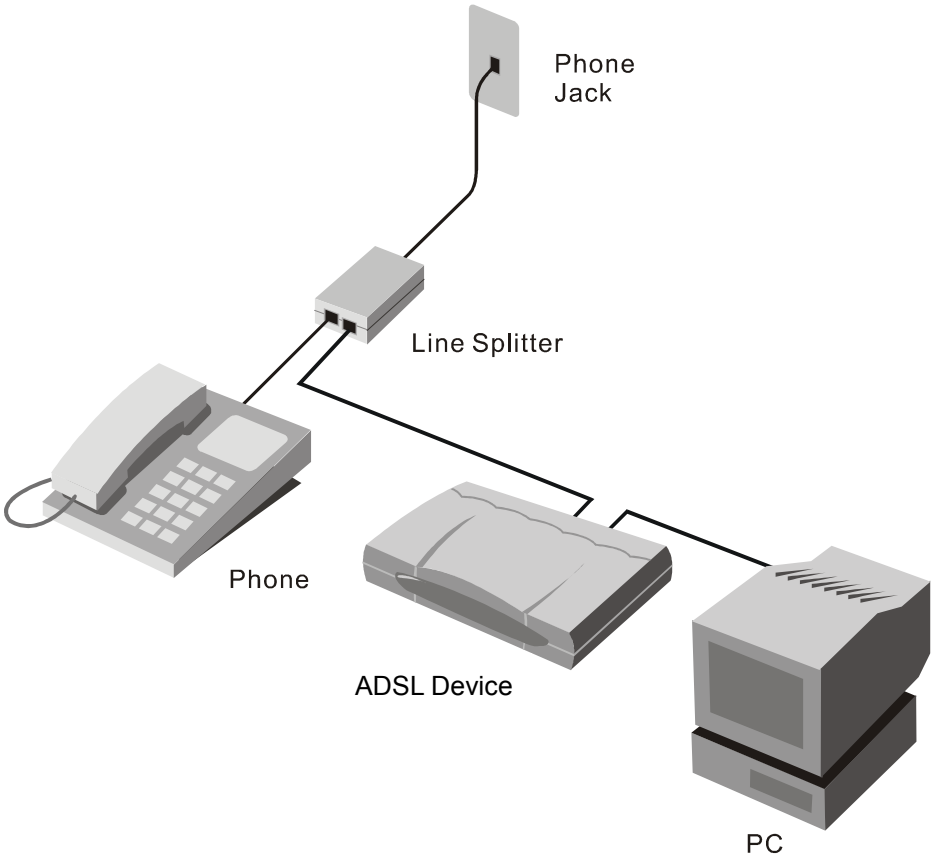
Another style of filter is installed at the same point where the Router connects to the telephone line. Only a single filter is required. The connection ports are typically labeled as follows:

Line - This port connects to the wall jack.

ADSL – This port connects to the Router.

Phone – This port connects to a telephone or other telephone device.

The diagram below illustrates the proper use of this style of filter. Make certain the lines are properly connected. If you are unable to hear a dial tone with the telephone, check the connections to make sure they are securely attached and connected to the correct port.



3-port Filter