D-Link®

DSL-320T

ADSL Modem

User Guide

January 2006
ESL320TEU.A1G

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-320T ADSL Modem and use it to provide Internet access for an Ethernet network or single computer.

If you are using a computer with a functioning Ethernet port, the quickest and easiest way to set up the DSL-320T 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 Modem. Have all the necessary information and equipment on hand before beginning the installation.

Installation Overview

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

1. 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.
2. Install the hardware, connect the cables to the device, and connect the power adapter.
3. Check the IP settings on your computer and change them if necessary so the computer can access the web-based software built into the Modem.
4. Use the web-based management software to configure the device to suit the requirements of your ADSL service and private Ethernet network.

Setup Wizard

Once you access the web interface use the Setup Wizard to configure your Internet connection. For instructions on how to configure the Internet connection with the Setup Wizard, please see the the section entitled Wizard after you have configured your computer's IP settings to connect to the Modem.

Packing List

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

- One DSL-320T ADSL Modem

- One CD-ROM containing the User's 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 Modem 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 Modem. 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-320T 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 Modem 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 Modem must be able to connect to it through the Ethernet port on the Modem. 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 Modem. If you must install an adapter, follow the installation instructions that come with the Ethernet NIC adapter.

Additional Software

For a bridged connection, the information needed to make and maintain the Internet connection is stored on another computer or gateway device using PPP client or similar third party client software, not in the Modem itself.

If your ADSL service is delivered through a PPPoE, PPPoA or Static IP connection, the information needed to establish and maintain the Internet connection can be stored in the Modem. 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.

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) Static IP Address (1483 Routed IP LLC, 1483 Routed IP VC-Mux) Default = PPPoE/PPPoA (PPPoE LLC)	
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. This setting can be changed in the WAN window of the web manager. Default value = 8	
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. This setting can be changed in the WAN window of the web manager. Default value = 35	

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

Information you will need about your DSL-320T ADSL Modem:

		Record info here
Username	This is the Username needed access the Modem'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 Modem is **admin**. The user cannot change this.	
Password	This is the Password you will be prompted to enter when you access the Modem's management interface. The default Password is **admin**. The user may change this.	
LAN IP addresses for the DSL-320T	This is the IP address you will enter into the Address field of your web browser to access the Modem'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-320T	This is the subnet mask used by the DSL-320T, 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:

		Record info here
Ethernet NIC	If your computer has an Ethernet NIC, you can connect the DSL-320T to this Ethernet port using an Ethernet cable. You can also use the Ethernet ports on the DSL-320T to connect to other computer or Ethernet devices.	
DHCP Client status	Your DSL-320T ADSL Modem 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-320T 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-320T ADSL Modem.

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Introduction

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

Modem Description and Operation

The DSL-320T Modem is designed to provide a simple and cost-effective ADSL Internet connection for a private Ethernet network. The Modem combines high-speed ADSL Internet connection and IP routing for the Local Area Network (LAN) connectivity in one package.

The Modem is easy to install and use. The DSL-320T connects to an Ethernet LAN or computers via standard Ethernet ports. The ADSL connection is made using ordinary telephone line with standard connectors.

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.

ADSL service operates at speeds of up to 24 Mbps downstream and up to 1 Mbps upstream. A secure dedicated point-to-point connection is established between the user and the central office of the service provider.

Modem Features

The DSL-320T ADSL Modem utilizes the latest ADSL enhancements to provide a reliable Internet portal suitable for most small to medium sized offices. DSL-320T advantages include:

- Data rates up to 24 Mbps for downstream and 1Mbps for upstream
- Friendly web-based graphical user interface for configuration and management
- Supports most ADSL, ADSL2, and ADSL2+ standards
- Auto-handshake and rate adaptation for different ADSL flavors
- Widest range of DSLAM interoperability
- Built-in MIBs for SNMP management
- Upgradeable firmware through HTTP

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Front Panel Display

Place the Modem 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, Status, ADSL, and Ethernet. The ADSL and Ethernet indicators monitor link status and activity (Link/Act).
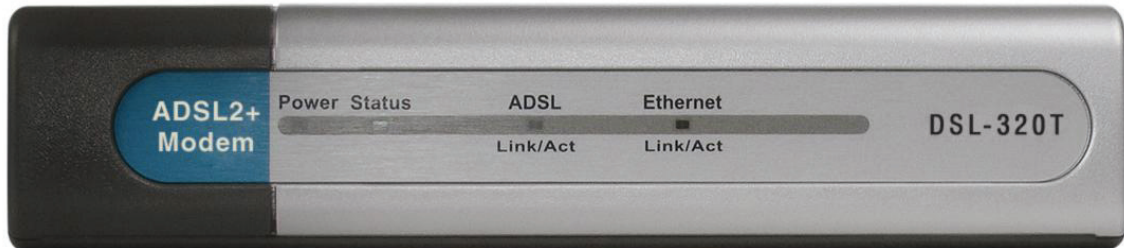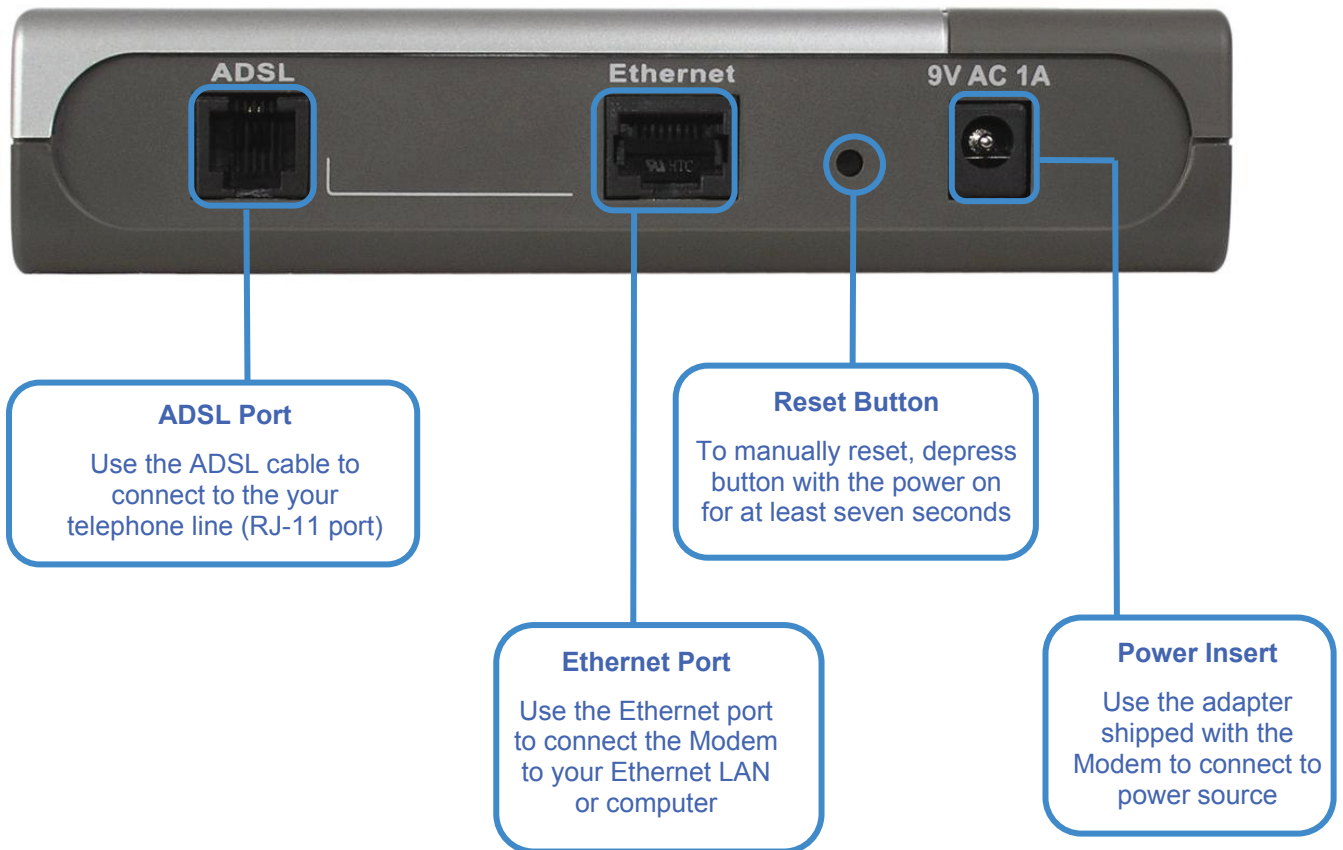
Power	Steady green light indicates the unit is powered on. When the device is powered off this remains dark.
Status	Lights steady green during power on self-test (POST). Once the connection status has been settled, the light will blink green. If the indicator lights steady green after the POST, the system has failed and the device should be rebooted.
ADSL (Link/Act)	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.
Ethernet (Link/Act)	A solid green light indicates a valid link on startup. This light will blink when there is activity currently on the Ethernet port.

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Rear Panel Connections

All cable connections to the Modem are made at the rear panel. Connect the power adapter here to power on the Modem. 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 into the ADSL port and then connect the cable to your telephone line.

2. Insert one end of the Ethernet cable into the Ethernet (LAN) port on the back panel of the Modem and the other end of the cable to an Ethernet Adapter or available Ethernet port on your computer.

ADSL Port

Use the ADSL cable to connect to the your telephone line (RJ-11 port)

Reset Button

To manually reset, depress button with the power on for at least seven seconds

Ethernet Port

Use the Ethernet port to connect the Modem to your Ethernet LAN or computer

Power Insert

Use the adapter shipped with the Modem to connect to power source

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Hardware Installation

The DSL-320T Modem maintains two separate interfaces, an Ethernet LAN and an ADSL (WAN) interface. Place the Modem in a location where it can be connected to the various devices as well as to a power source. The Modem should not be located where it will be exposed to moisture 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 Modem 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.

Power on Modem

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

To power on the Modem:

1. Insert the AC Power Adapter cord into the power receptacle located on the rear panel of the Modem and plug the adapter into a suitable nearby power source.

2. You should see the Power LED indicator light up and remain lit. The Status LED should light solid green and begin to blink after a few seconds.

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 Modem will attempt to establish the ADSL connection, if the ADSL line is connected and the Modem 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 Modem can establish a connection.

Factory Reset Button

The Modem may be reset to the original factory default settings by depressing the reset button for a few seconds while the device is powered on. Use a ballpoint or paperclip to gently push down 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 Ethernet port on the back of the Modem. See the Rear Panel diagram above and the illustration below for examples.

Connect ADSL Line

Use the ADSL cable included with the Modem 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 Modem 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

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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 Modem to Ethernet

The Modem may be connected to a single computer or Ethernet device through the 10/100 BASE-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 Modem to any Ethernet device that is capable of operating at speeds between 0~100Mbps, be sure that the device has auto-negotiation (NWay) enabled for the connecting port.

Use Category 5 or better twisted-pair Ethernet cable with RJ-45 connectors. The RJ-45 port on the Modem is auto MDI-X/MDI-II meaning that is will link correctly with either MDI-II through or MDI-X crossed ports.

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

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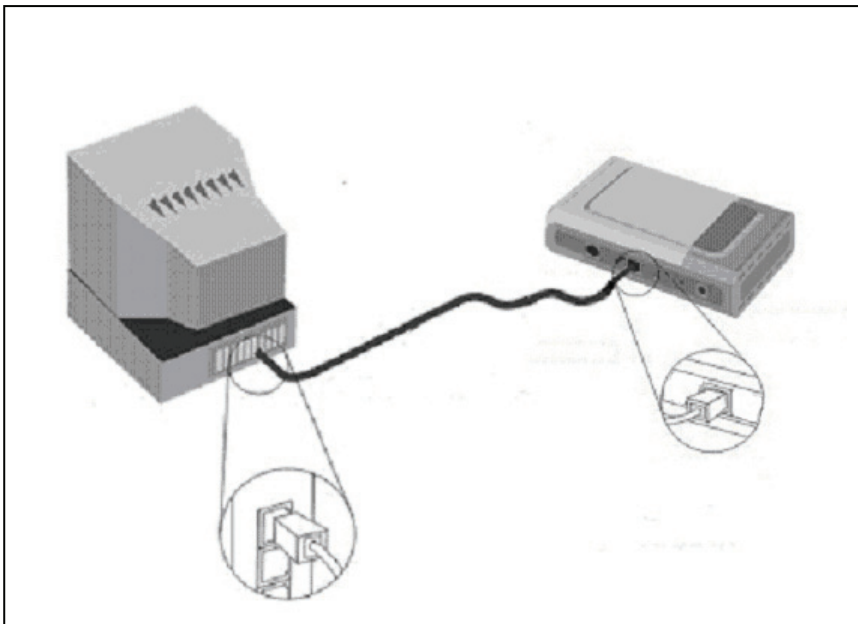
You can connect the Router directly to a 10/100BASE-TX Ethernet adapter card (NIC) installed on a PC using the Ethernet cable provided as shown in this diagram.

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Basic Modem Configuration

The first time you setup the Modem it is recommended that you configure the WAN connection using a single computer connected directly to the Modem. Once the WAN connection is functioning properly, you may continue to make changes to Modem configuration including IP settings and DHCP setup. For information on how to configure advanced features such as port redirection, filtering and firewall, please skip ahead to the Advanced Modem Management section on page 32.

Configuration Summary

1. **Connect to the Modem** To configure various settings used by the Modem for Internet and access it is first necessary to access the Modem's management HTML-based interface. This is done using an ordinary web browser. Your computer must be able to "see" the Modem before it can manage it using a browser. If the Modem is in the same "neighborhood" or subnet as the Modem, you should be able to access the management software. Therefore you must first make sure your computer has IP settings that place it in the same subnet as the Modem. The easiest way to make sure your computer has the correct IP settings is to configure it to use the DHCP server in the Modem. The DHCP server will automatically enable your computer to use a browser to manage the Modem. The next section describes how to change the IP configuration for a computer running a Windows operating system to be a DHCP client. If you are running another operating system, make sure your computer is configured as a DHCP client so it can automatically obtain IP settings from the Modem. Some operating systems will automatically select the best IP settings. Consult the user manual for the operating system (OS) if you are unsure.

2. **Configure the Internet (WAN) Connection** Most users will be able to complete this process using the **Setup Wizard**. The Setup Wizard can be launched once you have successfully connected with the Modem's management software. There are different methods used to establish the WAN connection to the service provider's network and ultimately to the Internet. Your Modem may already have most of the settings configured by default. However you will probably at least have to type in a user name and password given to you by your ISP. You may also need to know the encapsulation and connection type required to use for your ADSL service. Your service provider should provide all the information needed to configure the WAN connection.

Computer IP Settings

In order to configure your system to receive IP settings from the Modem 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 Modem are provided in Appendix B on page 48.

For computers running non-Windows operating systems, follow the instructions for your OS that configure the system to receive an IP address from the Modem, 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 48.*

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Access the Configuration Manager

In order to make sure your computer's IP settings allow it to communicate with the Modem, it is advisable to configure your system be a DHCP client – that is, it will get IP settings from the Modem. 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 go to the **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 Modem. 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 dialog box

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 Modem 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.*

Home

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.
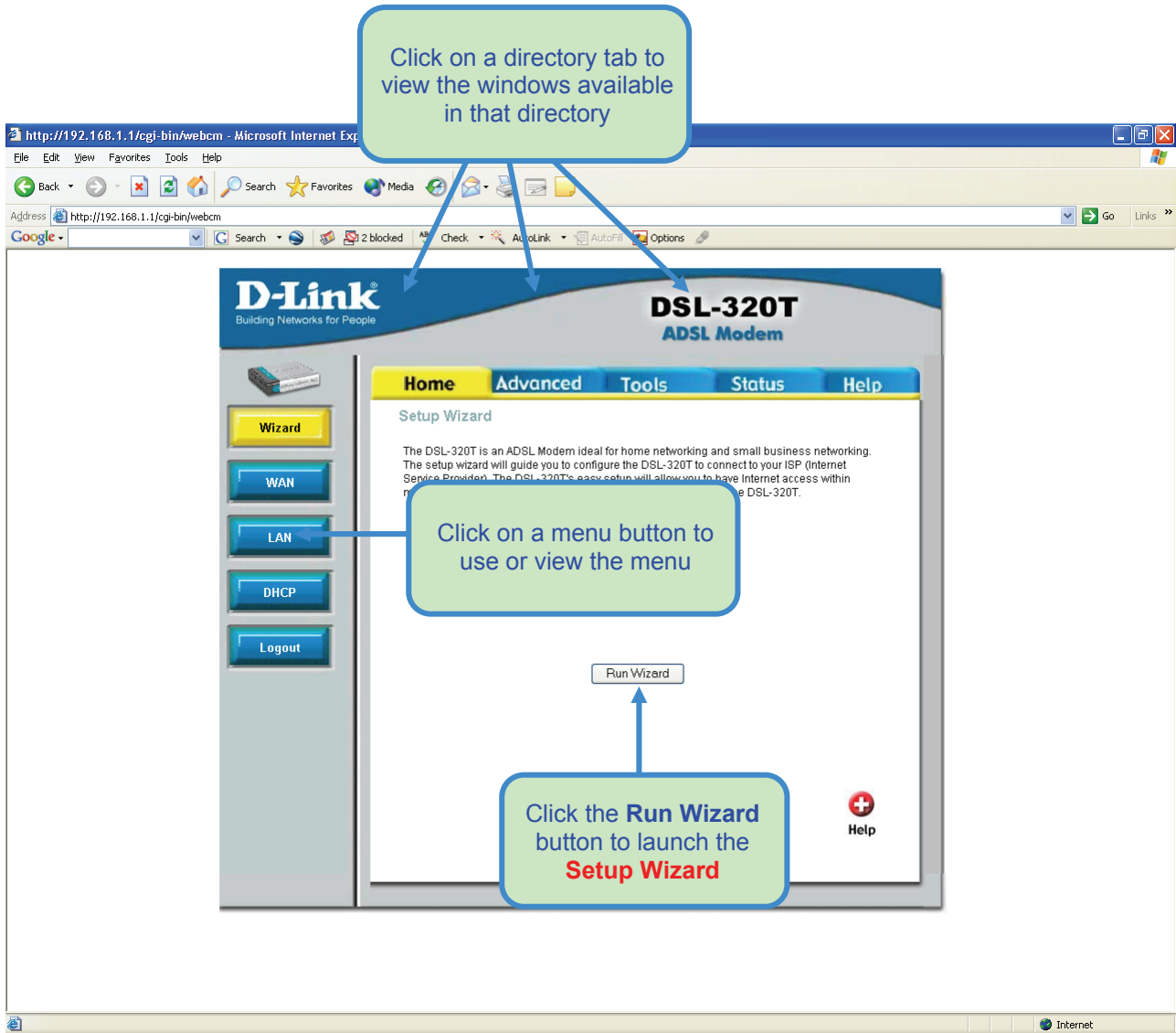
Web Manager – First Time Log On

All configuration and management of the Modem 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**, **Status**, and **Help**. Each tab has associated window buttons in the left hand panel of the web interface. Basic setup of the Modem can be completed in the windows accessed from the **Home** directory including: (Setup) **Wizard**, **WAN** (Internet), **LAN** (to configure the IP address of the Modem), and **DHCP**.

Wizard

To use the Setup Wizard, click the **Run Wizard** button in the first browser window and follow the instructions in the pop-up window that appears.

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The initial window summarizes the setup process. Click the **Next** button to proceed. You may stop using the Setup Wizard at any time by clicking the **Exit** button. If you exit the wizard you will return to the opening Setup Wizard window without saving any of the settings changed during the process.
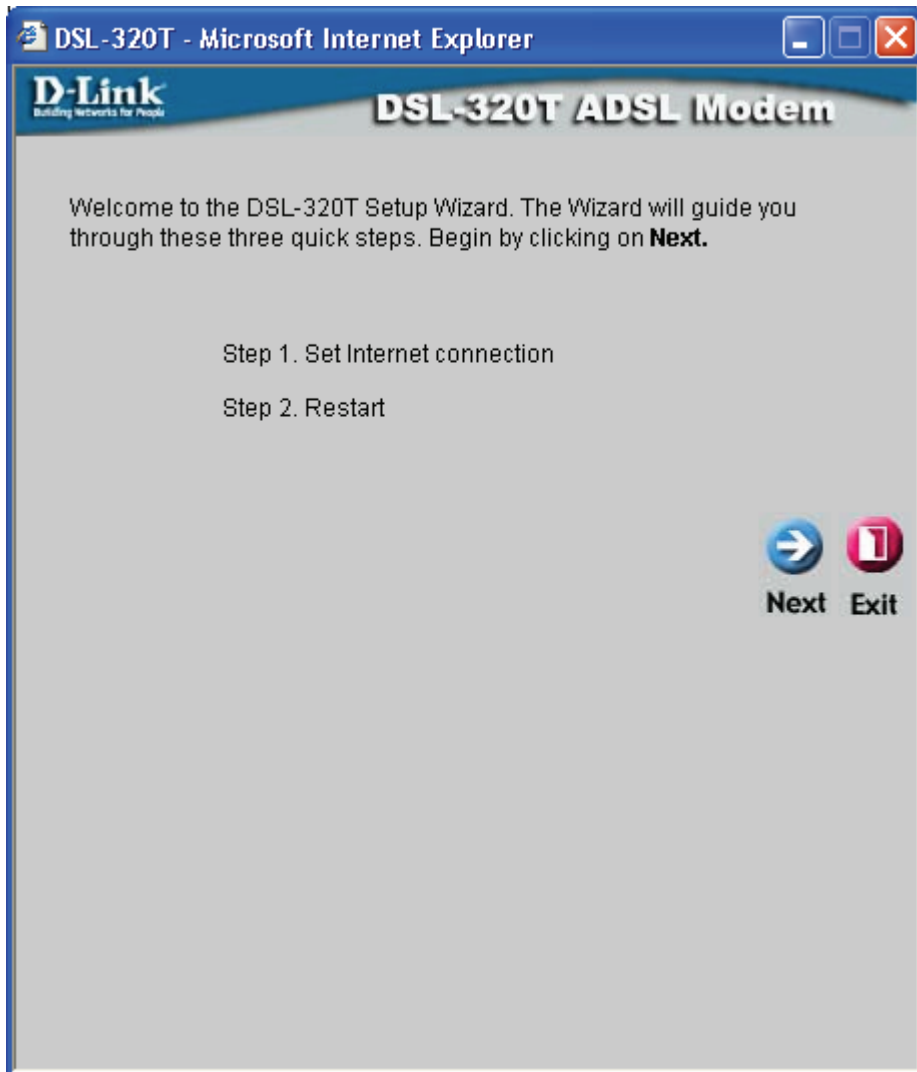
The first window of the Setup Wizard lists the basic steps in the process. These steps are as follows:

1. Configure the connection to the Internet.
2. Save the new configuration settings and reboot the system.

Using the Setup Wizard - 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 for "Multi-User" Mode are **PPPoE/PPPoA**, **Static IP Address**, and **Bridge Mode**. Each connection type has different settings that are configured in the next window of the Setup Wizard.

Select the **Connection Type** specific to your service and click **Next** to go to the next Setup Wizard window. Follow the instructions below for the type of connection you have selected.

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Using the Setup Wizard - For PPPoE/PPPoA connections:

1. Type in the **Username** and **Password** used to identify and verify your account to the ISP.

2. Select the specific **Connection Type** from the drop-down menu. The available PPP connection and encapsulation types are *PPPoE LLC*, *PPPoA LLC* and *PPPoA VC-Mux*.

3. If you are instructed to change the **VPI** or **VCI** value, type in the correct setting in the available entry fields. Most users will not need to change these settings. The Internet connection cannot function if these values are incorrect.

4. Click **Next** to go to the next window and complete the Setup Wizard.

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Using the Setup Wizard - For Static IP Address connections:

1. Select the specific **Connection Type** from the drop-down menu. The available Static IP Address connection and encapsulation types are *1483 Routed IP LLC* and *1483 Routed IP VC-Mux*.

2. Change the **IP Address**, **Subnet Mask**, **ISP Gateway Address**, **Primary DNS Address**, and **Secondary DNS Address** as instructed by your ISP. Use the **ARP Server Address** entry field for IPoA connections if necessary.

3. If you are instructed to change the **VPI** or **VCI** value, type in the correct setting in the available entry fields. Most users will not need to change these settings. The Internet connection cannot function if these values are incorrect.

4. Click **Next** to go to the next window and complete the Setup Wizard.

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Using the Setup Wizard - For Bridge Mode connections:

1. Select the specific **Connection Type** from the drop-down menu. The available Bridge Mode connection and encapsulation types are *1483 Bridged IP LLC* and *1483 Bridged IP VC-Mux*.

2. If you are instructed to change the **VPI** or **VCI** value, type in the correct setting in the available entry fields. Most users will not need to change these settings. The Internet connection cannot function if these values are incorrect.

3. Click **Next** to go to the next window and complete the Setup Wizard.
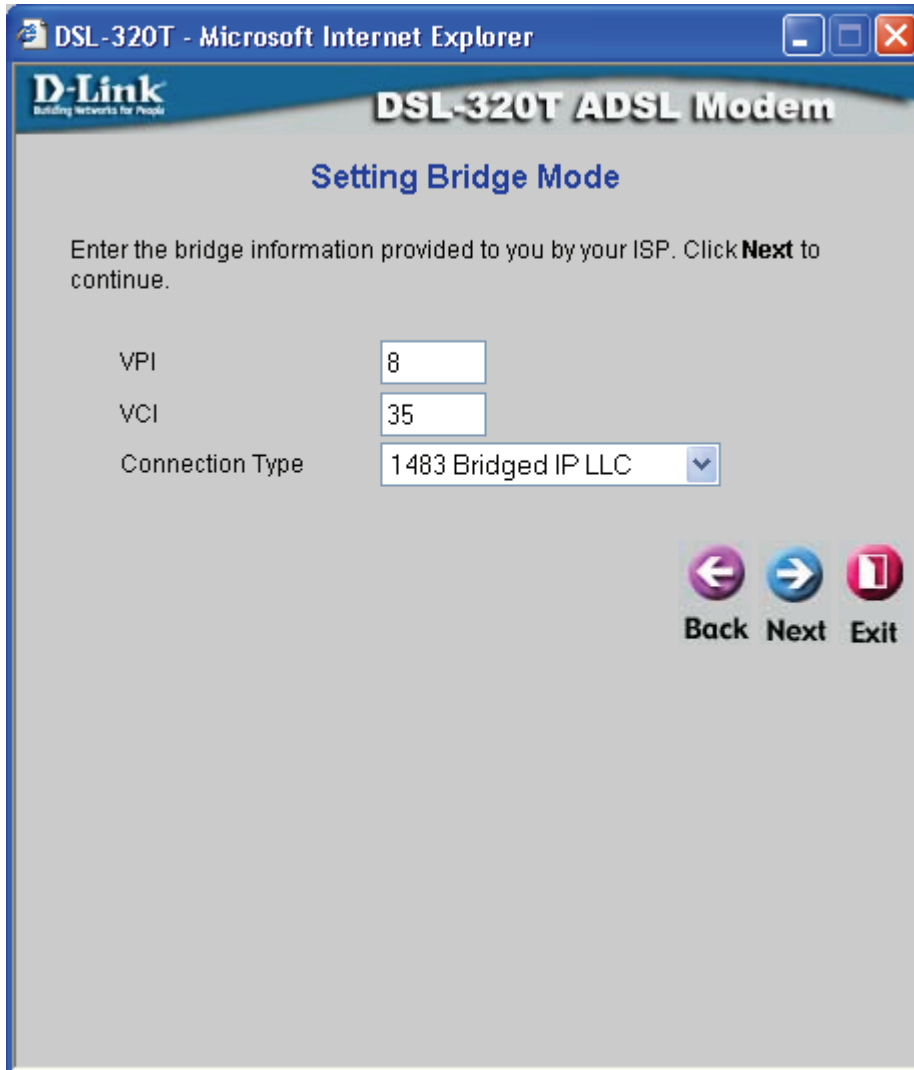
Using the Setup Wizard - Finish and Restart

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 **Restart** button to save the new configuration settings and restart the Modem. If you need to change settings from a previous window, click the **Back** button.

CAUTION: Do not turn the Modem off while it is restarting!

The following window opens to indicate the DSL-320T is in the process of restarting.

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After the system is finished restarting, you will be returned to the opening page of the web manager. You may now continue to configure the Modem as desired.

WAN

To configure the Modem's basic configuration settings without running the Setup Wizard, you can access the windows used to configure WAN, LAN, and DHCP settings directly from the **Home** directory. To access the **WAN Settings** window, click on the **WAN** link button on the left side of the first window that appears when you successfully access the web manager.

WAN Settings window – PPPoE/PPPoA

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Select the **Connection Type** used for your account. The window will display settings that are appropriate for the connection type you select. Follow the instruction below according to the type of connection you select in this window.

PPPoE/PPPoA

Follow the instructions below to configure the Modem to use a PPPoE or PPPoA for the Internet connection. Make sure you have all the necessary information before you configure the WAN connection.

To set up a PPPoE or PPPoA connection:

1. If not already selected, click the **PPPoE/PPPoA** radio button in the WAN Settings section in the middle of the window. PPPoE/PPPoA is selected by default if you are configuring the Modem for the first time.

2. The settings under ATM VC Setting at the top of the window should not be changed unless you have been instructed to change them. However, if you are instructed to change the **VPI** or **VCI** values, type in the values assigned for your account. Leave the **Virtual Circuit** setting at the default (*Enabled*) value for now.

3. Under the PPPoE/PPPoA heading, type the **User Name** and **Password** used for your ADSL account. A typical User Name will be in the form <u>user1234@isp.co.uk</u>. The **Password** may be assigned to you by your ISP or you may have selected it when you set up the account with your ISP. See the table below for more information about the optional settings, **AC Name** and **Service Name**.

4. Choose the **Connection Type** from the pull-down menu located under the User Name and Password entry fields. This defines both the connection protocol and encapsulation method used for your ADSL service. The available options are *PPPoA VC-Mux, PPPoA LLC* and *PPPoE LLC*. If you have not been provided specific information for the Connection Type setting, leave the default setting.

5. Leave the **MTU** value at the default setting (default = *1400*) unless you have specific reasons to change this (see table below).

6. Leave the **MRU** value at the default setting (default = *1492*) unless you have specific reasons to change this (see table below).

7. Leave the **Default Route** enabled if you want to use the Modem as the default route to the Internet for your LAN. Whenever a computer on the LAN attempts to access the Internet, the Modem becomes the Internet gateway to the computer. If you have an alternative route for Internet traffic you may disable this without effecting the Modem's connection.

8. Typically the globally IP settings (i.e. IP address for the WAN interface) for a PPPoA or PPPoA connection will use Dynamic IP assignment from the ISP. Some accounts may be assigned a specific global IP address. If you have been give an IP address for your PPPoE/PPPoA connection, select the **Static IP** option from the **IP Control** pull-down menu.

9. Choose the desired **Connection Setting**. Select from: Always ON, Connection On Demand, or Manual. Most users will want to choose the default connection setting, Always ON.

10. Most users will not need to change ATM settings. If this is the first time you are setting up the ADSL connection it is recommended that you leave the **Service Category** settings at the default values until you have established the connection. See the table on page 23 for a description of the parameters available for ATM traffic shaping.

11. When you are satisfied that all the WAN settings are configured correctly, click on the **Apply** button.

12. To save and reboot the Modem, click on the **Tools** directory tab and then click **System**. Next click the **Save and Reboot** button in the lower half of the **System Settings** window.

13. Click **OK** when the following "Save and restart?" dialog box opens.

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14. The Modem will save the new settings and restart. Upon restarting the Modem will automatically establish the WAN connection.

The following provides additional description of the settings for PPPoA and PPPoE connections:

PPPoA/PPPoE Parameters	Description
User Name	For PPP connections, a User Name and Password are used to identify and verify your account to the ISP. Enter the User Name for your ADSL service account. User names and passwords are case-sensitive, so enter this information exactly as given to you by your ISP.
Password	Together with the User Name, this is used to verify your account to the ISP. Enter the Password exactly as given to you by your ISP.
AC Name	AC Name is optional for most users. Please contact your ISP if you are uncertain whether an AC Name is required.
Service Name	Service Name is optional for most users. Please contact your ISP if you are uncertain whether a Service Name is required.
Connection Type	This specifies the protocol (PPPoE or PPPoA) and the encapsulation method (LLC or VC-Mux) used for your connection. The options available are *PPPoE LLC*, *PPPoA LLC*, or *PPPoA VC-Mux*.
MTU	The Maximum Transmission Unit size may be changed if you want to optimize efficiency for uploading data through the WAN interface. The default setting (*1400* bytes) should be suitable for most users. Some user may want to adjust the setting to optimize performance for wireless traffic or when low latency is desired (such as with Internet gaming). It is highly recommended that the user research how adjusting the MTU may affect network traffic for better or worse.
MRU	Similar to the MTU, except this applies to Maximum Received Unit size for downloading data. Most users will be happy with the default setting (*1492* bytes). However this may also be optimized for fast downloads of general bulk Internet traffic, for low latency or for downloading to computers on the Wireless LAN. As with the MTU setting, the user should carefully consider how changing the MRU may affect Internet downloads for all systems on your LAN.
Default Route	When this is *Enabled*, the Modem will be considered to be the primary gateway to the Internet and WAN for systems on your network. If you are using the Modem 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.
IP Control	This is used to determine how global IP settings are handled for the WAN interface. Typically PPPoE or PPPoA connections will use the default setting for *Dynamic IP*. Some users will be given a specific IP address for the WAN interface. In this case you need to change this setting to *Static IP*. When Static IP is selected in the IP Control drop-down menu, you need to type in the global IP address provided to you

	by your ISP.
Static IP	If you have selected the *Static IP* option in the IP Control drop-down menu, type in the global IP address used for your WAN interface. Your ISP should provide this IP address to you.
Connection Setting	Select the desired option: Always ON, Connection On Demand, or Manual. Most users will want to choose the default connection setting, Always ON.

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Static IP Address

When the Modem is configured to use Static IP Address assignment for the WAN connection, you must manually assign a global IP Address, subnet mask and gateway IP Address used for the WAN connection. Follow the instruction below to configure the Modem to use Static IP Address assignment for the WAN connection.

To configure a Static IP address connection, perform the steps listed below. Some of the settings do not need to be changed the first time the device is set up, but can be changed later if you choose. See the table below for a description of all the settings available in this window.

WAN Settings window- Static IP Address

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To configure a Static IP connection for the WAN, follow these steps:

1. Click the **Static IP Address** radio button in the WAN Settings section in the middle of the window.

2. The settings under ATM VC Setting at the top of the window should not be changed unless you have been instructed to change them. However, if you are instructed to change the **VPI** or **VCI** values, type in the values assigned for your account. Leave the **Virtual Circuit** setting at the default (*Enabled*) value for now.

3. Under the Static IP heading, choose the **Connection Type** from the pull-down menu. This defines both the connection type and encapsulation method used for your ADSL service. The available options are *Routed IP LLC* and *Routed IP VC-Mux*. If you have not been provided specific information for the **Connection Type**, leave the default setting.

4. Change the **IP Address**, **Subnet Mask**, **Gateway Address** and (if available) **Secondary DNS Address** as instructed by your ISP. These are the global IP settings for the WAN interface. This is the "visible" IP address of your account. Your ISP should have provided these IP settings to you.

5. Leave the **MTU** value at the default setting (default = *1400*) unless you have specific reasons to change this (see table below).

6. Most users will not need to change ATM settings. If this is the first time you are setting up the ADSL connection it is recommended that you leave the **Service Category** settings at the default values until you have established the connection. See the table on page 23 for a description of the parameters available for ATM traffic shaping.

7. When you are satisfied that all the WAN settings are configured correctly, click on the **Apply** button.

8. To save and reboot the Modem, click on the **Tools** directory tab and then click **System**. Next click the **Save and Reboot** button in the lower half of the **System Settings** window.

9. Click **OK** when the following "Save and restart?" dialog box opens.

10. The Modem will save the new settings and restart. Upon restarting the Modem will automatically establish the WAN connection.

The following provides additional description of the settings for Static IP Address connections:

Static IP Parameters	Description
Connection Type	This specifies the connection type and the encapsulation method used for your Static IP Address connection. The options available are *1483 Routed IP LLC* and *1483 Routed IP VC-Mux*.
IP Address	This is the permanent global IP address for your account. This is the address that is visible outside your private network. Get this from your ISP.
Subnet Mask	This is the Subnet mask for the WAN interface. Get this from your ISP.
Gateway Address	This is the IP address of your ISP's Gateway router. It provides the

	connection to the Modem for IP routed traffic that is outside your ISP's network. That is, this will be the primary connection from the Modem to most of the Internet. Get this IP address from your ISP.
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.
MTU	The Maximum Transmission Unit size may be changed if you want to optimize efficiency for uploading data through the WAN interface. The default setting (*1400* bytes) should be suitable for most users. Some user may want to adjust the setting to optimize performance for wireless traffic or when low latency is desired (such as with Internet gaming). It is highly recommended that the user research how adjusting the MTU may affect network traffic for better or worse.

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Bridge Mode

For Bridged connections it will be necessary for most users to install additional software on any computer that will the Modem for Internet access. The additional software is used for the purpose of identifying and verifying your account, and then granting Internet access to the computer requesting the connection. The connection software requires the user to enter the User Name and Password for the ISP account. This information is stored on the computer, not in the Modem.

Follow the instructions below to configure a Bridged connection for the WAN interface.

To configure a Dynamic IP Address connection, perform the steps listed below. Some of the settings do not need to be changed the first time the device is set up, but can be changed later if you choose. See the table below for a description of all the settings available in this window.

WAN Settings window- Bridge Mode

1. Click the **Bridge Mode** radio button in the WAN Settings section in the middle of the window.

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2. The settings under ATM VC Setting at the top of the window should not be changed unless you have been instructed to change them. However, if you are instructed to change the **VPI** or **VCI** values, type in the values assigned for your account. Leave the **Virtual Circuit** setting at the default (*Enabled*) value for now.

3. Under the Bridge Mode heading, choose the **Connection Type** from the pull-down menu. This defines both the connection type and encapsulation method used for your ADSL service. The available options are *1483 Bridged IP LLC* and *1483 Bridged IP VC-Mux*. If you have not been provided specific information for the **Connection Type**, leave the default setting.

4. Most users will not need to change ATM settings. If this is the first time you are setting up the ADSL connection it is recommended that you leave the **Service Category** settings at the default values until you have established the connection. See the table on page 23 for a description of the parameters available for ATM traffic shaping.

5. When you are satisfied that all the WAN settings are configured correctly, click the **Apply** button.

6. The new settings must be saved and the Modem must be restarted for the settings to go into effect. To save and reboot the Modem, click on the **Tools** directory tab and then click **System**. Next click the **Save and Reboot** button in the lower half of the **System Settings** window.

7. Click **OK** when the following "Save and restart?" dialog box opens.
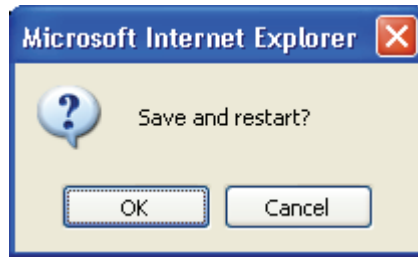
8. The Modem will save the new settings and restart. Upon restarting the Modem will automatically establish the WAN connection.

ATM Traffic Shaping

The ATM settings section in the **WAN 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 Settings for WAN Connection

Additional ATM settings for PPPoE or PPPoA connections:

ATM Parameters	Description
	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 are 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.
Service Category	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.
	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.

ATM VC Settings

ATM VC settings can be configured for all connection types in the **WAN Settings** windows of the **Home** directory.

ATM VC Settings in WAN Settings window
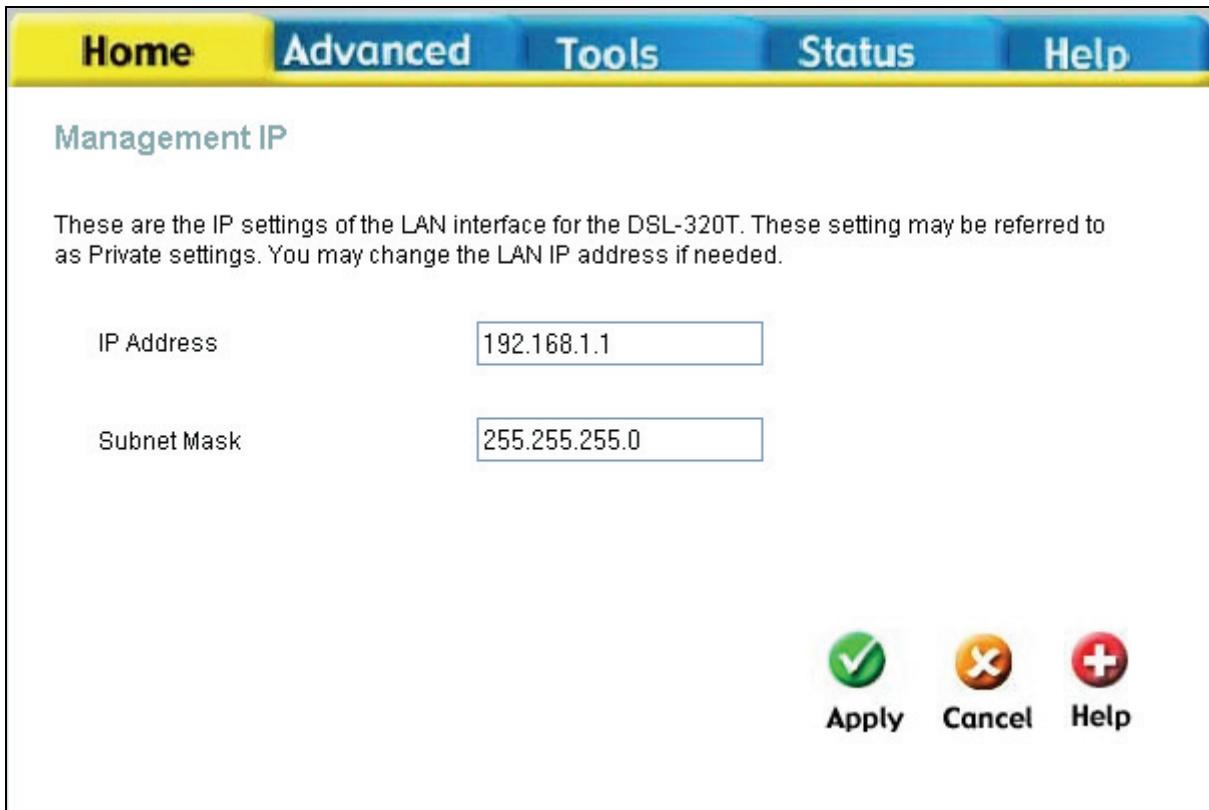
The table below describes the ATM VC settings used to configure a PPPoE or PPPoA connection for an ADSL account.

ATM VC Parameters	Description
PVC	The Modem a single connection only.
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	By default Pvc0 is *Enabled*.

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 Modem is the base address used for DHCP. In order to use the Modem for DHCP on your LAN, the IP address pool used for DHCP must be compatible with the IP address of the Modem. The IP addresses available in the DHCP IP address pool will change automatically if you change the IP address of the Modem. See the next section for information on DHCP setup.

To access the **Management IP** window, click the **LAN** button in the **Home** directory.
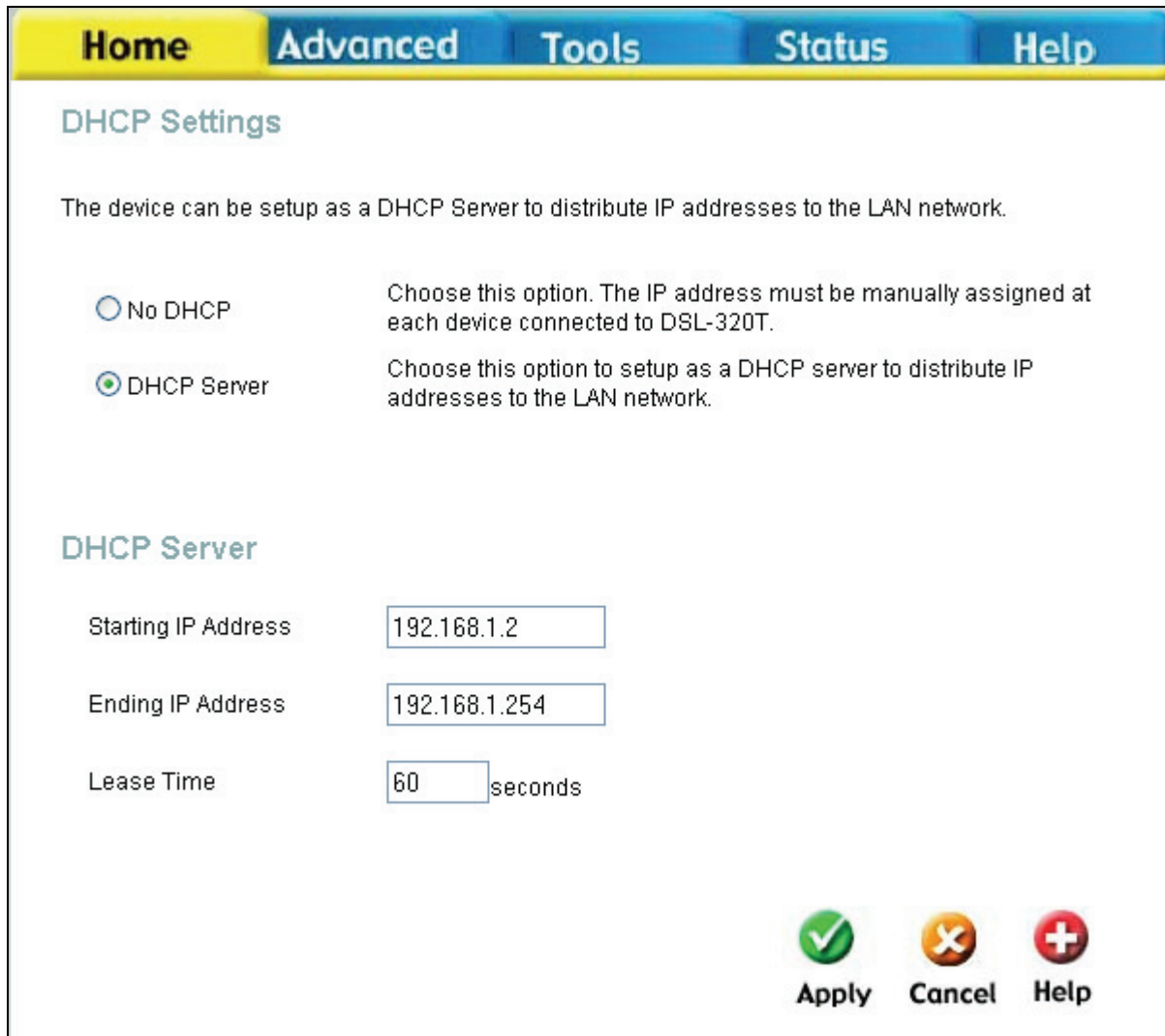
Management IP window

To change the **IP Address** or **Subnet Mask**, type in the desired values and click the **Apply** button. Your web browser should automatically be redirected to the new IP address. You will asked to login again to the Modem's web manager.

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DHCP

The DHCP server is enabled by default for the Modem's Ethernet LAN interface. DHCP service will supply IP settings to workstations configured to automatically obtain IP settings that are connected to the Modem though the Ethernet port. When the Modem 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 Modem 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.

DHCP Settings window

The two options for DHCP service are as follows:

- You may use the Modem as a DHCP server for your LAN.
- You can disable DHCP service and manually configure IP settings for workstations.

Follow the instructions below according to which of the above DHCP options you want to use. When you have configured the DHCP Settings as you want them, click the **Apply** button to commit the new settings.

Use the Modem for DHCP

To use the built-in DHCP server, click to select the **DHCP Server** option if it is not already selected. The IP Address Pool settings can be adjusted. The **Starting IP Address** is the lowest available IP address (default = *192.168.1.2*). If you change the IP address of the Modem this will change automatically to be 1 more that the IP address of the Modem.

The **Ending IP Address** is the highest IP address number in the pool. Type in the **Lease Time** in the entry field provided. This is the amount of time in seconds that a workstation is allowed to reserve an IP address in the pool if the workstation is disconnected from the network or powered off.

Disable the DHCP Server

To disable DHCP, click to select the **No DHCP** option and click on the **Apply** button. Choosing this option requires that workstations on the local network must be configured manually or use another DHCP server to obtain IP settings.
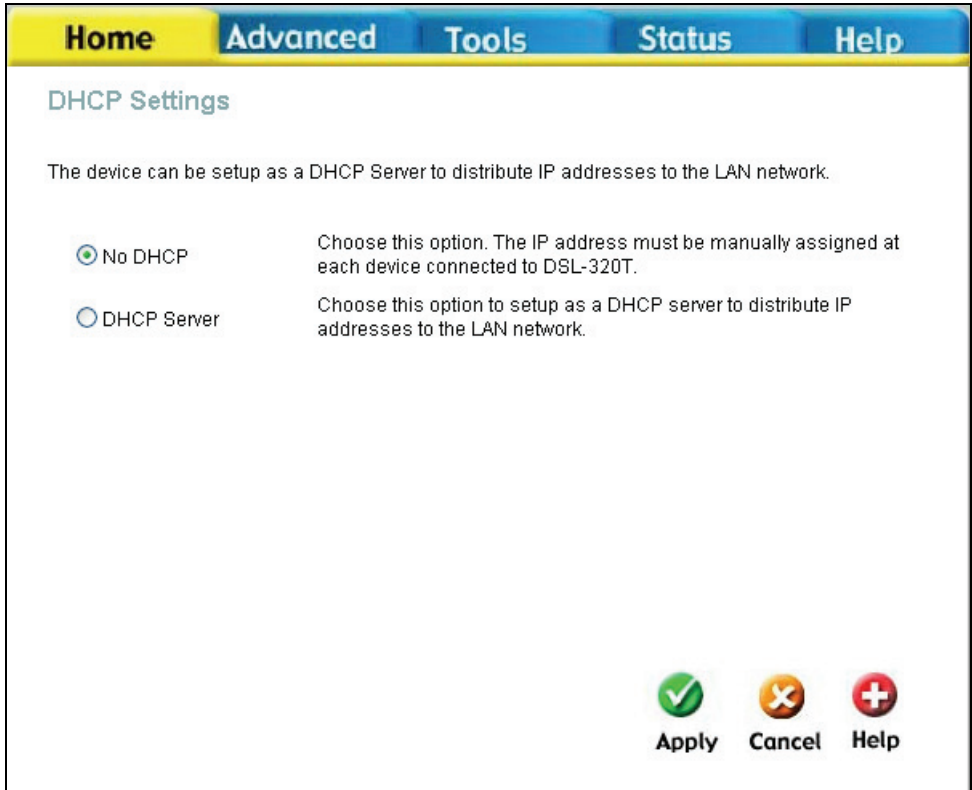
DHCP Settings window with DHCP disabled

If you configure IP settings manually, make sure to use IP addresses in the subnet of the Modem. You will need to use the Modem's IP address as the Default Gateway for the workstation in order to provide Internet access.

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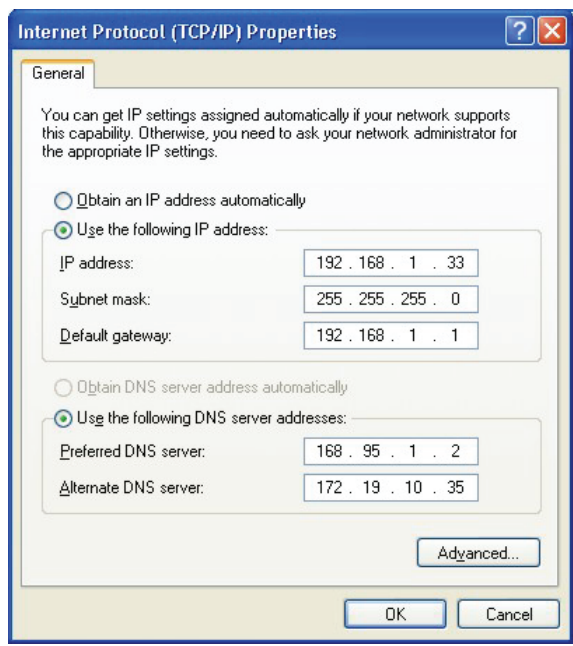
> **Note** *To manually configure IP settings on Windows workstations, open the TCP/IP Properties menu and select the "Use the following IP address" option. You will need to supply the IP address, subnet mask and default gateway (use the IP address of the DSL-320T) for each workstation. The example here also uses manually configured DNS settings.*

Save Settings and Reboot

When you have configured the DSL-320T with the settings you desire, make sure you save those settings. To save the system configuration settings, click the **Tools** tab. You will be presented first with the **Administrator Settings** window. This window is described in the next chapter. To save the current configuration, click the **System** button to view the **System Settings** window pictured here.

System Settings window

To save the settings you have configured, click the **Save and Reboot** button under Save Settings and Reboot the System.

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4

Advanced Modem Management
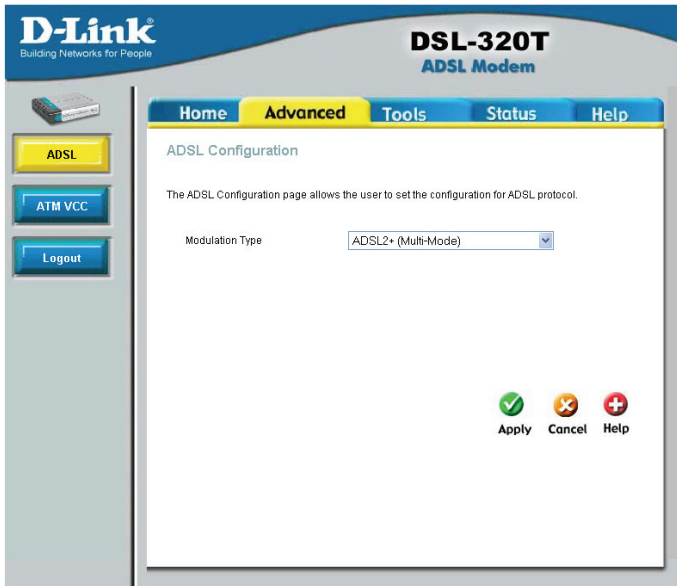
This chapter introduces and describes the management features that have not been presented in the previous chapter. These include the more advanced features used for network management and security as well as administrative tools to manage the Modem, view statistics and other information used to examine 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 windows 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 Menus
Home	Click the **Home** tab to access the Setup Wizard as well as configuration windows for WAN, LAN, and DHCP. See the previous chapter for a description of the **Home** directory windows.
Advanced	Click the **Advanced** tab to access the **ADSL Configuration** and **ATM VC Setting** windows.
Tools	Click the **Tools** tab to access the **Administrator Settings** (used to set the system user name and password, backup and load settings), **Time**, **Remote Log Settings**, **System Settings**, **Firmware Upgrade**, and **Diagnostic Test** windows. The Save and Reboot feature is located on the System Settings window.
Status	Click the **Status** tab to view the **Device Information**, **View Log**, **Traffic Statistics**, and **ADSL Status** windows.
Help	The **Help** window presents links to pages that explain various functions and services provided by the Modem.

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ADSL

The **ADSL Configuration** window allows the user to set the configuration for ADSL protocols. For most ADSL accounts the default setting, *ADSL2+ (Multi-mode),* will work. This configuration works with all ADSL implementations. If you have been given instructions to change the **Modulation Type** used, select the desired option from the drop-down menu and click the **Apply** button.

ADSL Configuration window

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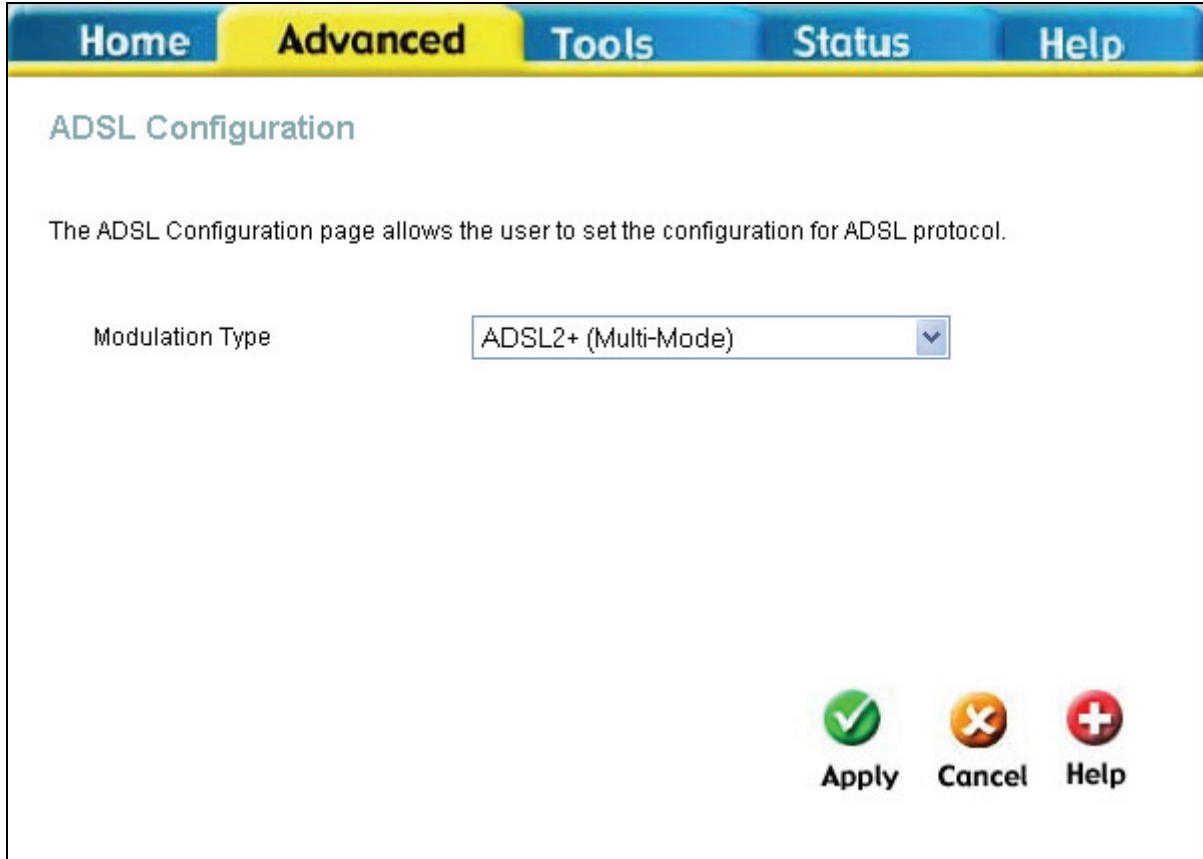
ATM VCC

This ATM Virtual Circuit connection window is used to configure the WAN connection.

This window can be used as an alternative to configuring the same settings found on the **WAN Settings** windows in the **Home** directory.
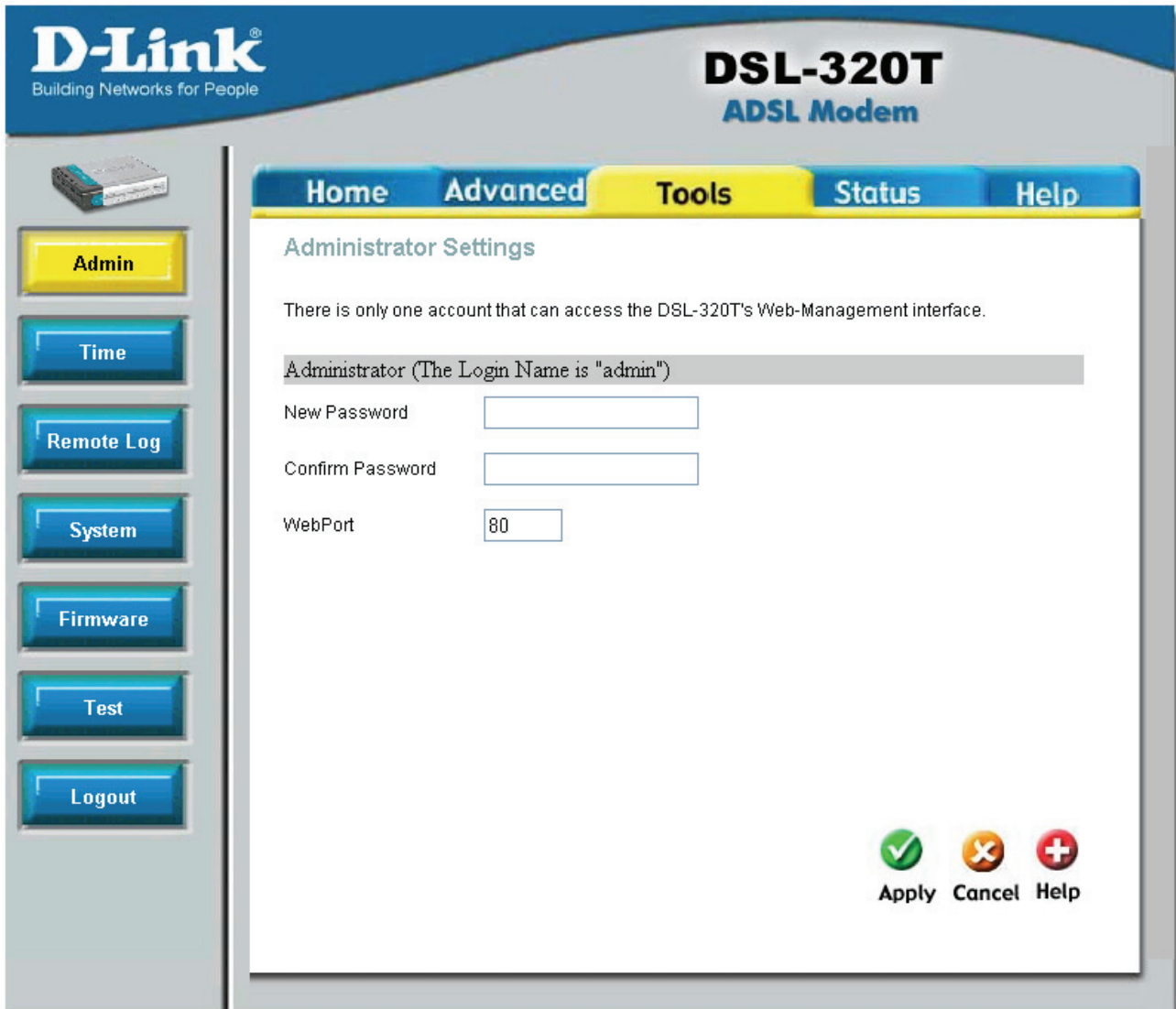
ATM VC Setting window

To configure the PVC configuration set, click the corresponding notepad icon in the right-hand column of the ATM VCs List. The PVCs current settings appear above in the entry fields of the **ATM VC Setting** window. Configure the appropriate settings and click the **Apply** button to put the new settings into effect.

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Tools

Click the **Tools** tab to reveal the window buttons for various functions located in this directory. **Administrator Settings** is the first window that appears in the **Tools** directory. This window is used to change the system password used to access the web manager, to save or load Modem configuration settings, and to restore default settings. The functions in this and the other **Tools** windows are described below.

Admin

Administrator Settings window

To change the password used to access the Modem web manager, click the **Admin** button in the **Tools** directory to display the **Administrator Settings** window. Type the **New Password** and **Confirm Password** to be certain you have typed it correctly. Click the **Apply** button to activate the new password. The system User Name remains "admin." This cannot be changed using the web manager interface. Be sure to save the new setting.

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Time

The Modem provides a number of options to maintain current date and time.

Time window

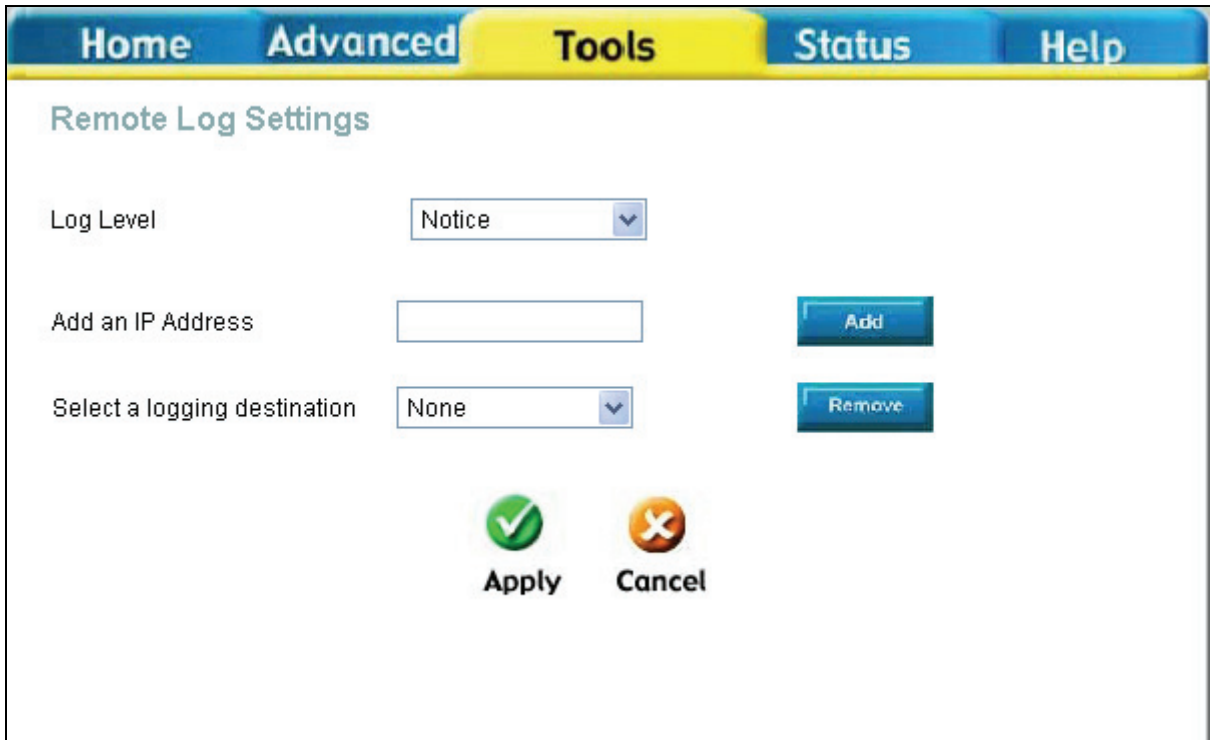To configure system time on the Modem, select the method used to maintain time. The options available include using your computer's system clock (default) or setting the time and date manually. Click the **Apply** button to set the system time.

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Remote Log

Use the **Remote Log Settings** window to set up logging to servers or computers that are located outside the LAN or subnet of the Modem.

Remote Log Settings window

Select the **Log Level** from the pull-down menu. The levels available are: *Alert, Critical, Debug, Error, Info, Notice, Panic*, and *Warning.* Type in the IP address of a receiver for the log message in the **Add an IP Address** field and click on the **Add** button. Log message receivers that are added appear listed in the **Select a logging destination** pull-down menu. These may be used at any time for other types of log messages. To remove a log message receiver from the list, select it and click on the **Remove** button. Click the **Apply** button when you have configured the log message receivers. Remember to save the settings to non-volatile memory.

System

Once you have configured the Modem 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 **System** button in the **Tools** directory to display the **System Settings** window. Click the **Save** button to Save Settings to Local Hard Drive. You will be prompted to select a location on your computer to put the file. The file type is .xml (HTML) and may be named anything you wish.

To load a previously saved configuration file, click the **Browse** button and locate the file on your computer. Click the **Load** 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 Modem will reboot and begin operating with the configuration settings that have just been loaded.

System Settings window

Restore Factory Default Settings

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

Firmware

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

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.

Firmware Upgrade window

To upgrade firmware, type in the name and path of the file or click on the **Browse** button to search for the file. Click the **Apply** button to begin copying the file. The file will load and restart the Modem automatically.

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Test

The **Diagnostic Test** window is used to test connectivity of the Modem. 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 tests of your system software and hardware connections. Use this window when working with your ISP to troubleshoot problems.

Diagnostic Test window

Status

Use the various windows in this section to view system information and monitor performance.

Device Info

Use the **Device Information** window to quickly view basic current information about the LAN and WAN interfaces and device information including Firmware Version and MAC address. In addition, this window offers the ability to initiate a connection by clicking the **Connect** button.

Device Information window

Log

The system log displays chronological event log data. Use the navigation buttons to view or scroll log pages. You may also save a simple text file containing the log to your computer. Click the **Save Log** button and follow the prompts to save the file.
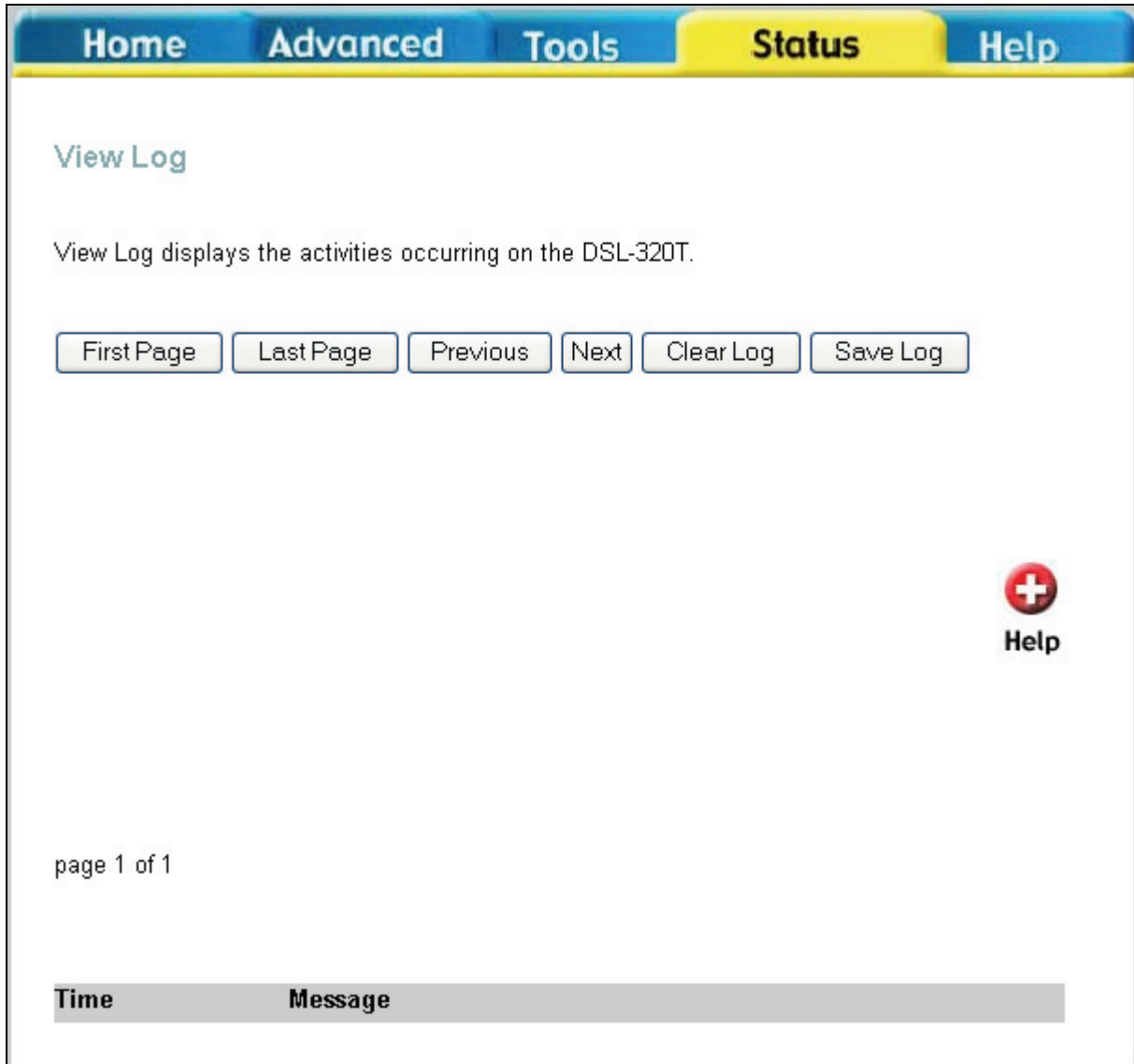
View Log window

Click **Clear Log** to delete the current log information.

Statistics

Use the **Traffic Statistics** window to monitor traffic on the Ethernet or ADSL Internet connection. Select the interface for which you want to view packet statistics and the information will appear below.

Traffic Statistics window

Click **Refresh** to view traffic information.

ADSL

Use the **ADSL Status** window and the **Diagnostic Test** window (**Tools > Test**) for troubleshooting the ADSL connection.

ADSL Status window
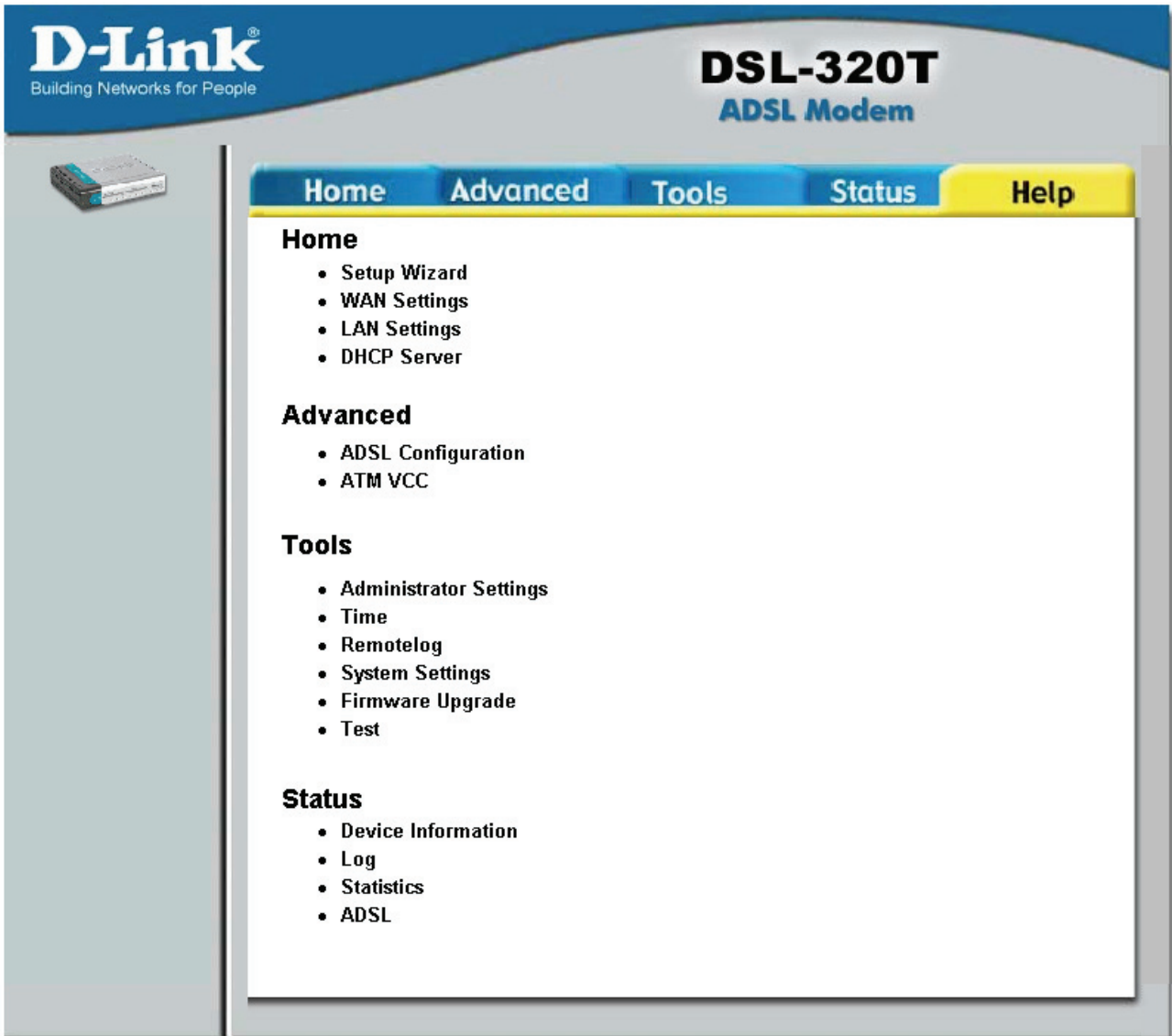
Help

Help window

Click the desired hyperlink to access helpfiles.

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	

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Physical and Environmental	
DC Inputs: **Power Adapter:**	Input: 120V AC 60Hz Output: 9V DC, 1A
Power Consumption:	11.25 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

B

Configuring IP Settings on Your Computer

In order to configure your system to receive IP settings from the Modem 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 Modem. 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 Modem.

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

> **Note** *If you are using this Modem 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.**

From the **Start** menu, go to **Control Panel**.
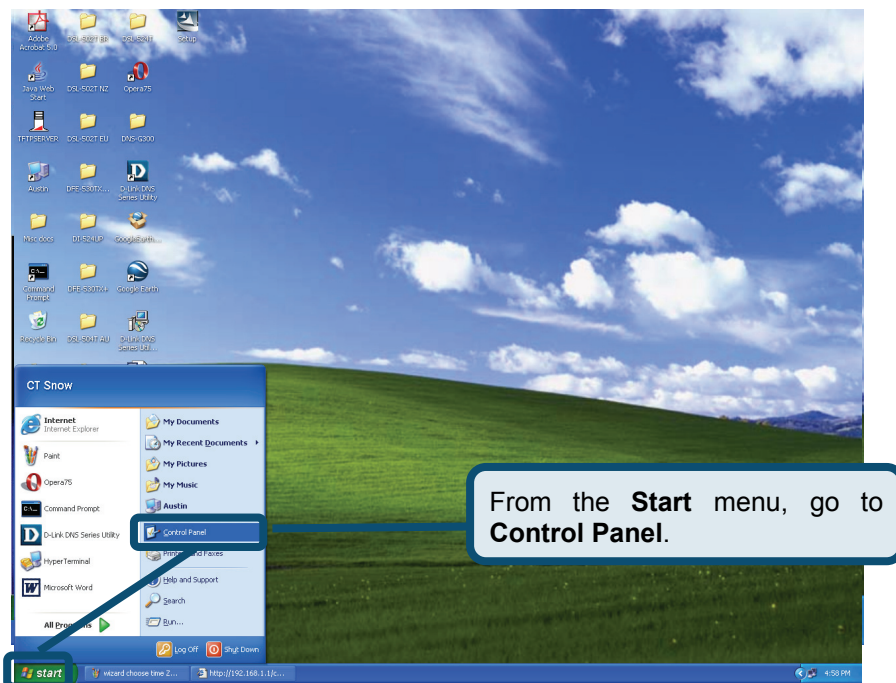
2. In the Control Panel window, click **Network and Internet Connections**.

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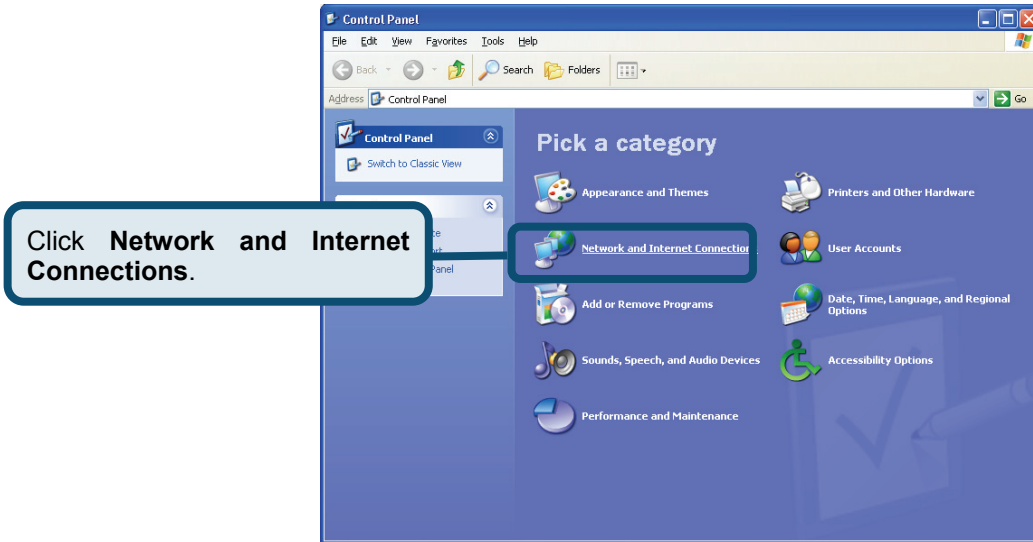
3.   In the Network and Internet Connections window, click **Network Connections**.

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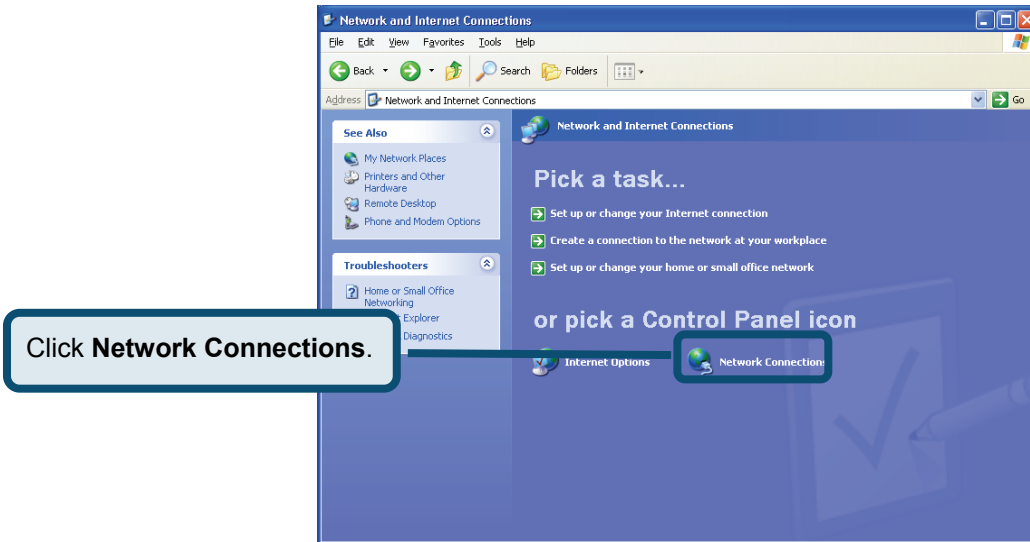
4.   In the Network Connections window, right-click on **Local Area Connection**, then click **Properties**.

Right-click on the **Local Area Connection** icon and select the **Properties** option from the pull-down menu.

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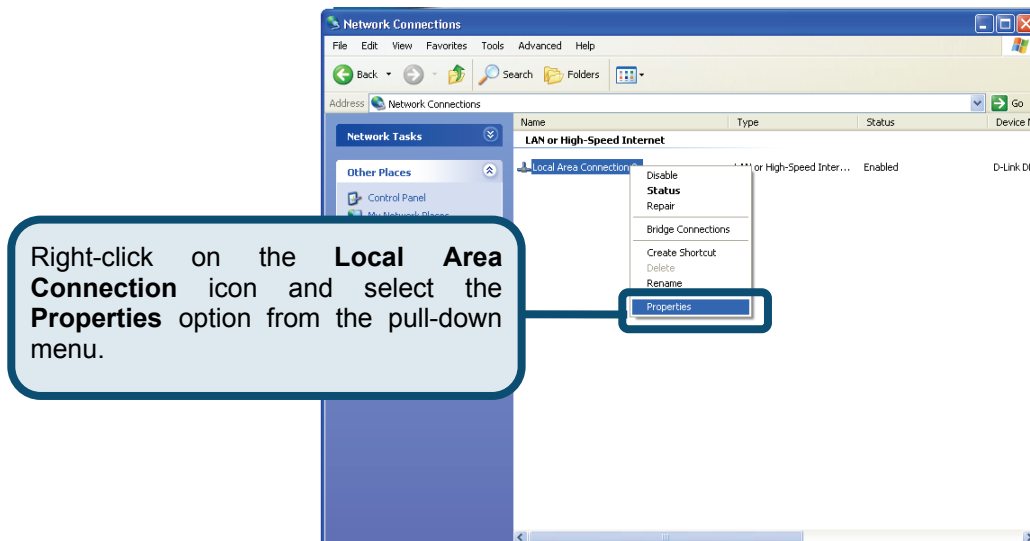
5. In the **General** tab of the **Local Area Connection Properties** window, highlight **Internet Protocol (TCP/IP)** under "This connection uses the following items:" by clicking on it once. Click on the **Properties** button.

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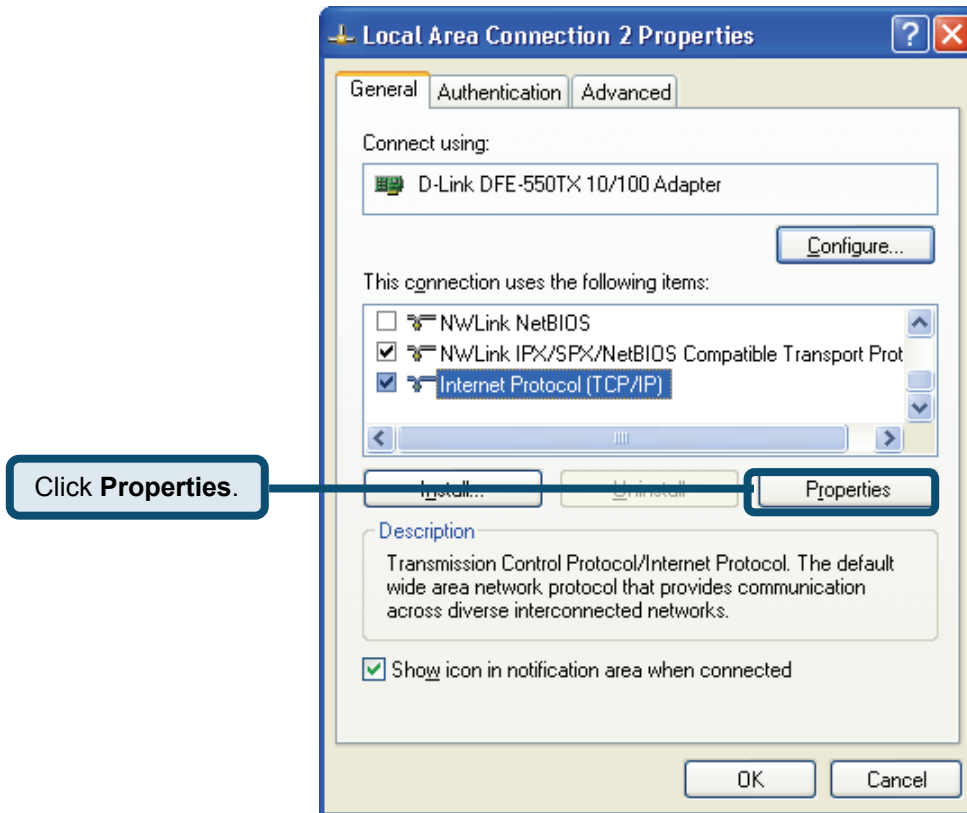
6. Select "Obtain an IP address automatically" by clicking once in the circle. Click the **OK** button

Select **Obtain an IP address automatically** in the Internet Protocol (TCP/IP) Properties window.

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

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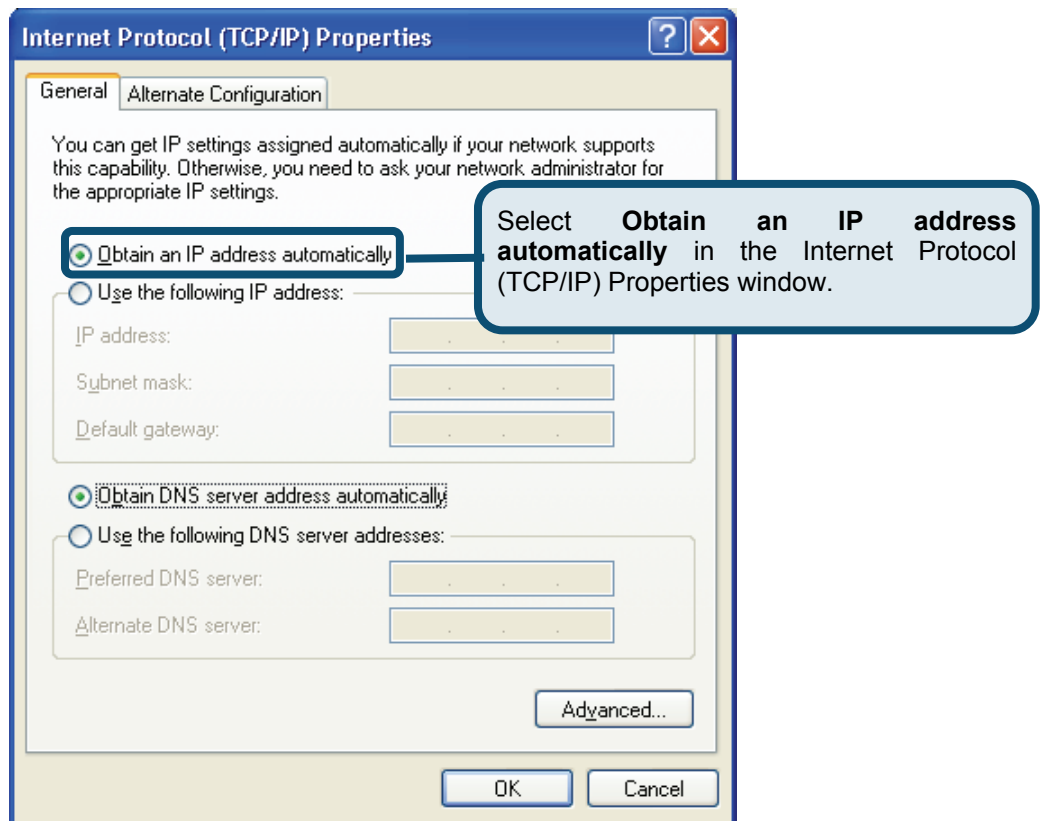
Windows 2000

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 Modem'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 Modem'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** window.

Your computer is now ready to use the Modem'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** window.

Your computer is now ready to use the Modem'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.

Phone
Jack

ADSL
Microfilter

Phone

In-line low pass filter

54
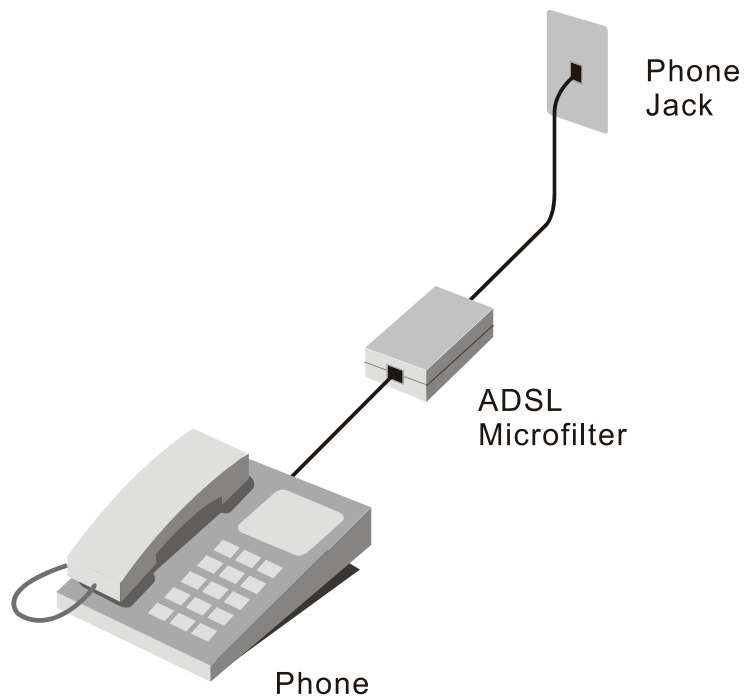
Three Port Filter

Another style of filter is installed at the same point where the Modem 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 Modem.

- **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

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