802.11g Wireless Four Port Ethernet ADSL2+ Router

User's Manual

June 2006

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Caution

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.

Per FCC 15.21, you are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user’s authority to operate the equipment.

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1. Introduction

1.1 Introduction

This full rate Wireless ADSL2+ router is an all-in-one gateway for Home and SOHO applications. This gateway are with full-featured ADSL router that provides high-speed Internet access, 4-port Ethernet switch direct connections to individual PCs or local area network with 10/100 Base-T Ethernet and a 54Mbps IEEE802.11g wireless connectivity. This device uses advanced ADSL chipset solution with complete set of industry standard features for high-speed Internet access. Also built-in 54Mbps IEEE802.11g wireless service can provide you easy and convenient way to connect the PCs and Internet. User can enjoy higher quality multimedia and real-time applications such as online gaming, Video-on-Demand, VoIP and other bandwidth consuming services. Also the feature-rich routing functions are seamlessly integrated to ADSL service for existing corporate or home users. This product is made in ISO9001 approved factory and complies with FCC part15 regulations and CE approval.

1.2 Product Features

◆ Application Diagram

◆ High Speed Internet Access

This Wireless ADSL2+ router complies with ADSL / ADSL2 / ADSL2+ standards. It can support downstream rates of up to 24Mbps and upstream rates of up to 1Mbps. This ADSL2+ router is compliant with the following standards.

- ANSI T1.413 issue 2
- ITU-T G.992.1 (G.dmt)
- ITU-T G.992.2 (G.lite)
- G.994.1 (G.hs, Multimode)
- ITU-T G.992.3 (ADSL2 G.dmt.bis)
- ITU-T G.992.4 (ADSL2 G.lite.bis)
- ITU-T G.992.5 (ADSL2+; Annex A, B, I, J, L & M)
- Reach Extended ADSL (RE ADSL)

◆ Quick Setup Wizard

Support Quick Setup Wizard Web GUI to configure this Wireless ADSL2+ router easily and quickly.

◆ Multi-connection protocol support

- Multi Protocol over AAL5 (RFC1483 / 2684)
- Classical IP over ATM (RFC 1577)
- VC and LLC Multiplexing
- PPP over Ethernet (RFC 2516)
- PPP over ATM (RFC 2364)

◆ Network Address Translation (NAT)

Network Address Translation (NAT) allows the translation of an Internet protocol address used within one network (for example a private IP address used in a local network) to a different IP address known within another network (for example a public IP address used on the Internet).

◆ Universal Plug and Play (UPnP)

Universal Plug and Play is a standard that uses Internet and Web protocols to enable devices such as PCs, peripherals, intelligent appliances, and wireless devices to be plugged into a network and automatically know about each other. This protocol is used to enable simple and robust connectivity among stand-alone devices and PCs.

◆ Dynamic DNS Support

With Dynamic DNS support, you can have a static hostname alias for a dynamic IP address, allowing the host to be more easily accessible from various locations on the Internet. You must register for this service with a Dynamic DNS client.

◆ DHCP Support

DHCP (Dynamic Host Configuration Protocol) allows individual clients to obtain TCP/IP

configuration at start-up from a centralized DHCP server. The ADSL router has built-in DHCP server capability enabled by default. It can assign IP addresses, an IP default gateway and DNS servers to DHCP clients. It can also act as a surrogate DHCP server (DHCP Relay) where it relays IP address assignment from the actual real DHCP server to the clients.

◆ Device Management

- Web-based GUI Configuration / Management
- Command-line Interpreter (CLI)
- Telnet Remote Management
- Firmware upgrade via FTP / TFTP (Web-based GUI)
- Built-in Diagnostic tool and IP Ping

◆ SNMP (Simple Network Management Protocol) Support

It's an easy way to remote control the router via SNMP.

◆ 10/100M Auto-negotiation Fast Ethernet switch

This auto-negotiation feature allows the router to detect the speed of incoming transmissions and adjust appropriately without manual intervention. It allows data transfer of either 10 Mbps or 100 Mbps in either half-duplex or full-duplex mode depending on your Ethernet network.

◆ Multiple PVC (Permanent Virtual Circuits) Support

- Support up to 8PVCs.
- Supports OAM F4/F5 loop-back, AIS and RDI OAM cells.
- ATM Forum UNI 3.1/4.0 PVC

◆ Bridging / Routing support

- Ethernet to ADSL self-learning Transparent Bridging (IEEE 802.1D)
- IP routing-RIPv2 (backward compatible with RIPv1)
- Static IP routing
- Routing (TCP/IP/UDP/ARP/ICMP)
- IP Multicast IGMP v1/v2

◆ Wireless

- IEEE802.11g compliance, backward compatible with 802.11b (at 11Mbps)
- 64/128 bits WEP Encryption
- WPA, WPA-TKIP/PSK

- MAC Address Filtering

◆ Security

- PPP over PAP (Password Authentication Protocol; RFC1334)
- PPP over CHAP (Challenge Authentication Protocol; RFC1994)
- VPN (IPsec, PPTP, L2TP) pass through
- Built-in NAT Firewall
- IP-based Packet filtering
- Password Protected System Management

2. Hardware Installation

2.1 System Requirements

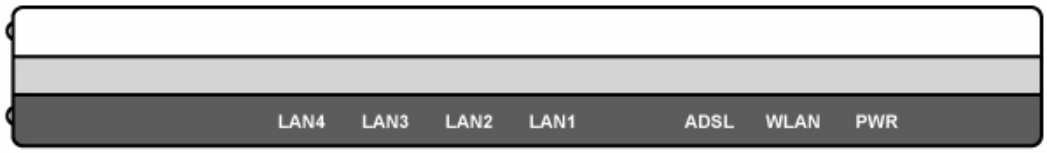
- Pentium III 266 MHz processor or higher
- 128 MB RAM minimum
- 20 MB of free disk space minimum
- RJ45 Ethernet Port

2.2 Package Contents

- Wireless ADSL2+ Router
- RJ-45 Ethernet cable
- RJ-11 Phone cable
- Power Adapter
- Quick Installation Guide

2.3 Front Panel Indicators and Description

Front panel of this Wireless ADSL2+ router has LED indicators to display router's operating status.



Descriptions of LED status

PWR	When an active power adapter is connected with this router, this LED will light up.
WLAN	When WLAN card installed properly, this LED will be flashing. When transferring data, the LED will be steadily.
4	When port 4 connection with PC or Switch / Hub is established, this LED will light up.
3	When port 3 connection with PC or Switch / Hub is established, this LED will light up.
2	When port 2 connection with PC or Switch / Hub is established, this LED will light up.
1	When port 1 connection with PC or Switch / Hub is established, this LED will light up.
ADSL	When connection with Internet (ADSL Connected) is established, this LED will light up. When this LED is flashing: NO ADSL physical connection

2.4 Back Panel

PWR	Connect with power adapter
ON/OFF	Power switch button
LINE	Connect with phone cable
4	Connect with Ethernet Cable to Switch Hub or PC
3	Connect with Ethernet Cable to Switch Hub or PC
2	Connect with Ethernet Cable to Switch Hub or PC
1	Connect with Ethernet Cable to Switch Hub or PC
DEFAULT	Reset button

2.5 Connect Related Devices

1) Connect Router to **LINE**

   Plug the provided **RJ-11 phone cable** into **LINE port** on the back panel of the router and insert the other end into splitter or wall phone jack.

2) Connect Router to **LAN**

   Plug **RJ-45 Ethernet Cable** into **LAN port** on the back panel of the router and insert the other end of the Ethernet cable on your PC's Ethernet port or switch / hub.

3) Connect Router to Power Adapter

   Plug **Power Adapter** to **PWR** port on the back panel of the router and the other end to a power outlet.

4) Press **ON/OFF** button to start the router

Warning! Only use the power adapter provided in the package, otherwise it may cause hardware damage.

3. Connecting Wireless ADSL2+ Router via Ethernet

Your router can be managed from anywhere with the embedded Web configuration using a Web browser, such as Microsoft Internet Explorer or Netscape Navigator. Internet Explorer 6.0 and later or Netscape Navigator 7.0 and later versions with JavaScript enabled should be used. A screen resolution of 1024 by 768 pixels is recommended.

3.1 Setup Wireless ADSL2+ router via Ethernet Cable

If there is an available LAN card present on your PC, you just simply connect ADSL router and PC through the Ethernet cable. Once you establish Internet connection, you could browse the Web through the Ethernet cable.

3.2 Configure TCP/IP

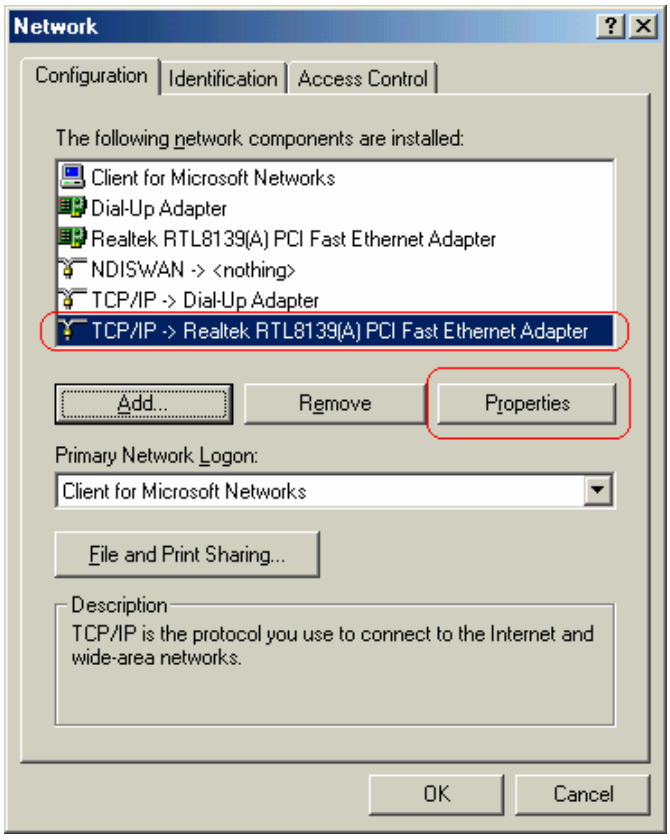
For Windows 98SE and ME

Step 1: Click **Start** then **Settings** and choose **Control Panel**

Step 2: Double click **Network** icon.

Step 3: Select **Configuration** tab, then choose **TCP/IP** from the list of installed network Components and click **Properties** button.

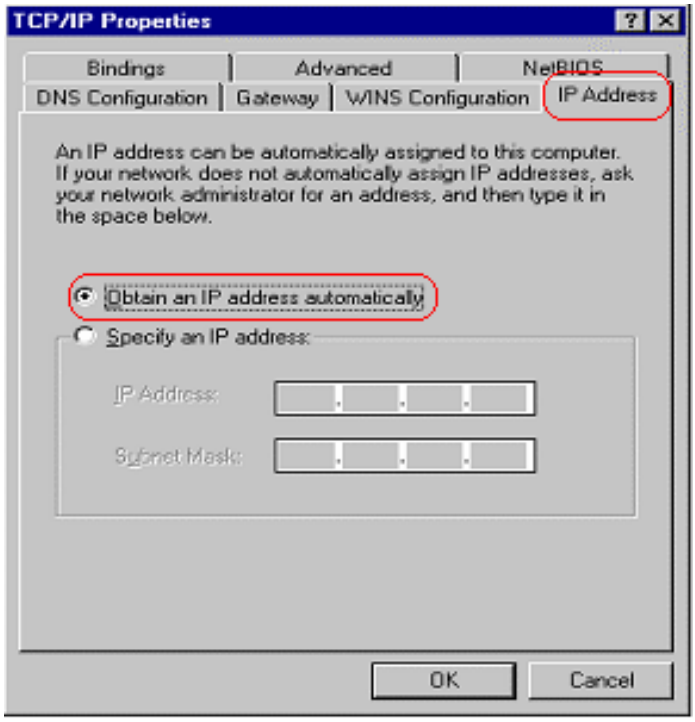
Step 4: You can setup the following configurations in **two** methods:



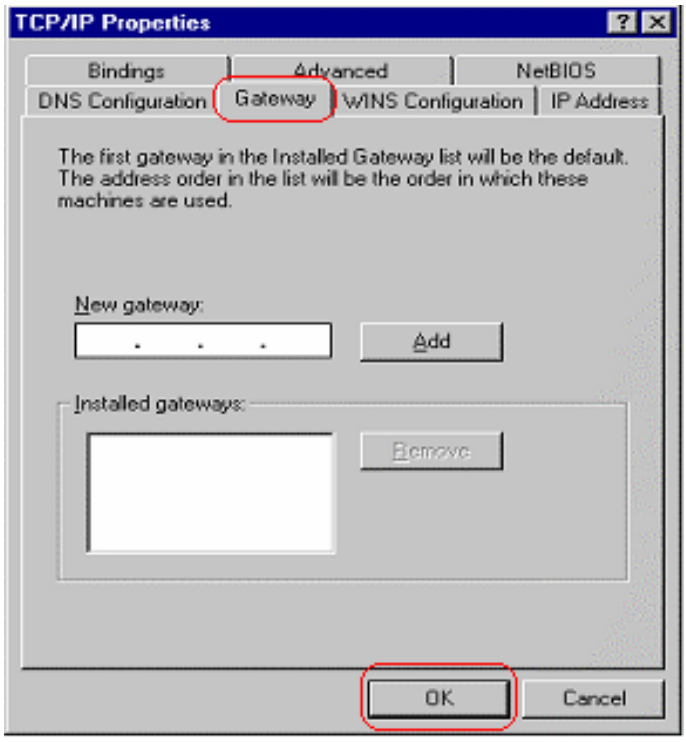
Option1: Get an IP from Router Automatically

Select the **IP Address** tab.

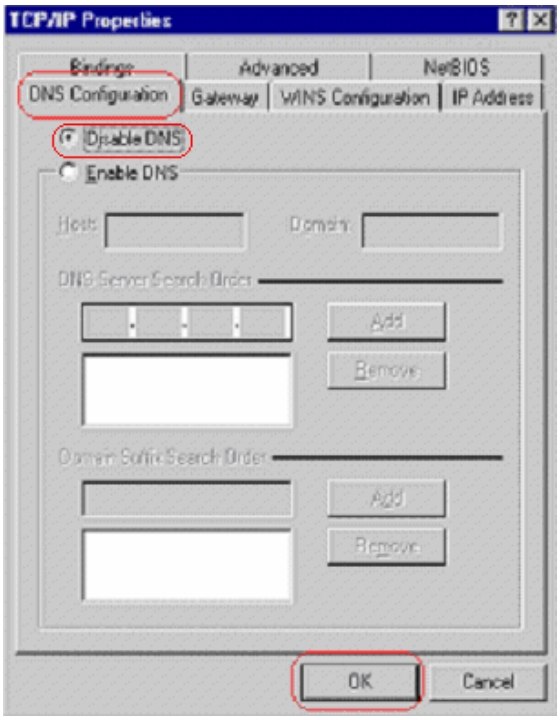
In this page, click **Obtain an IP address automatically** radio button.



1) Select **Gateway** tab and click **OK**

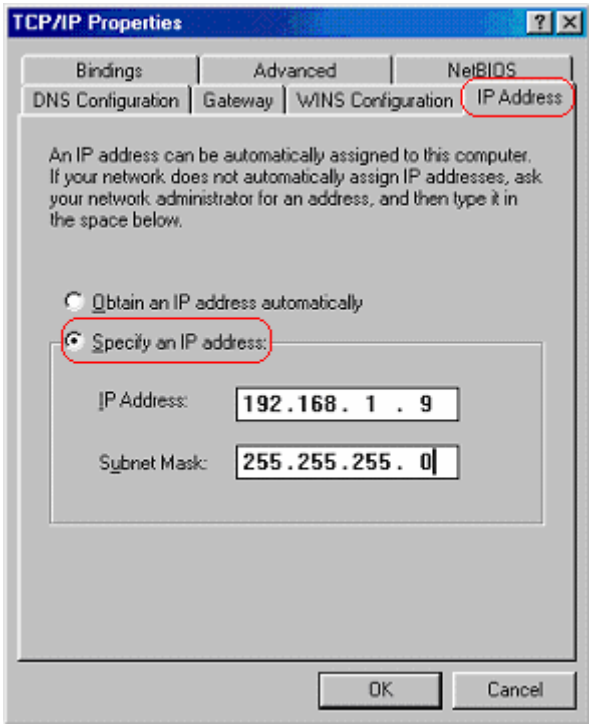


2) Then, select **DNS Configuration** tab and select **Disable DNS** then click **OK** to finish the configuration.

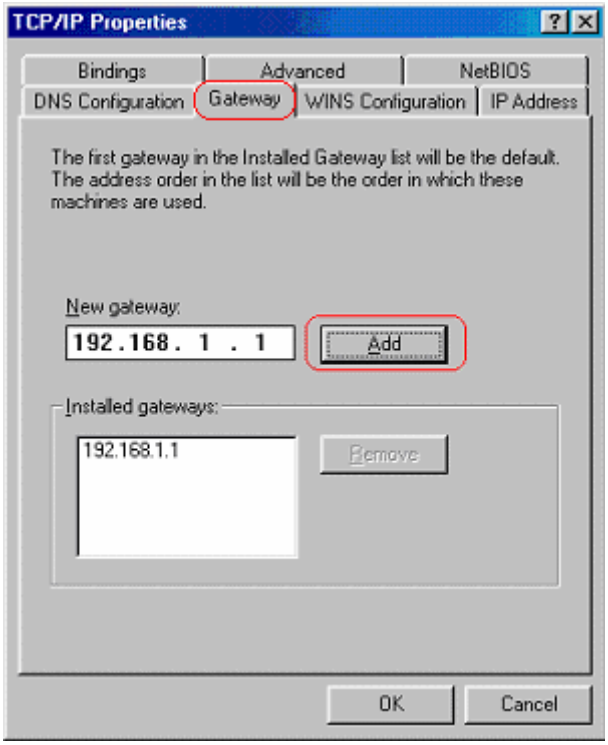


Option2: Configure IP Manually

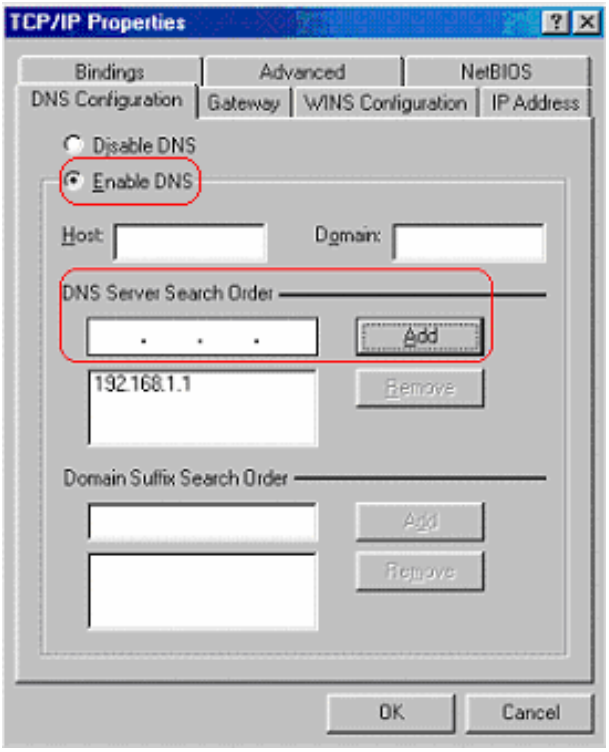
1) At **IP Address** tab, select **Specify an IP address**, set default IP address for the Router is **192.168.1.1,** so use **192.168.1.X** (X is a number between 2 to 254) for **IP Address** field and **255.255.255.0** for **Subnet Mask** field.



2) Select **Gateway** tab and add default Router IP Address **"192.168.1.1"** in the **New gateway** field and click **Add**.



Under **DNS Configuration** tab, select **Enable DNS** and add DNS values (192.168.1.1) in **DNS Server Search Order** field then click **Add**.

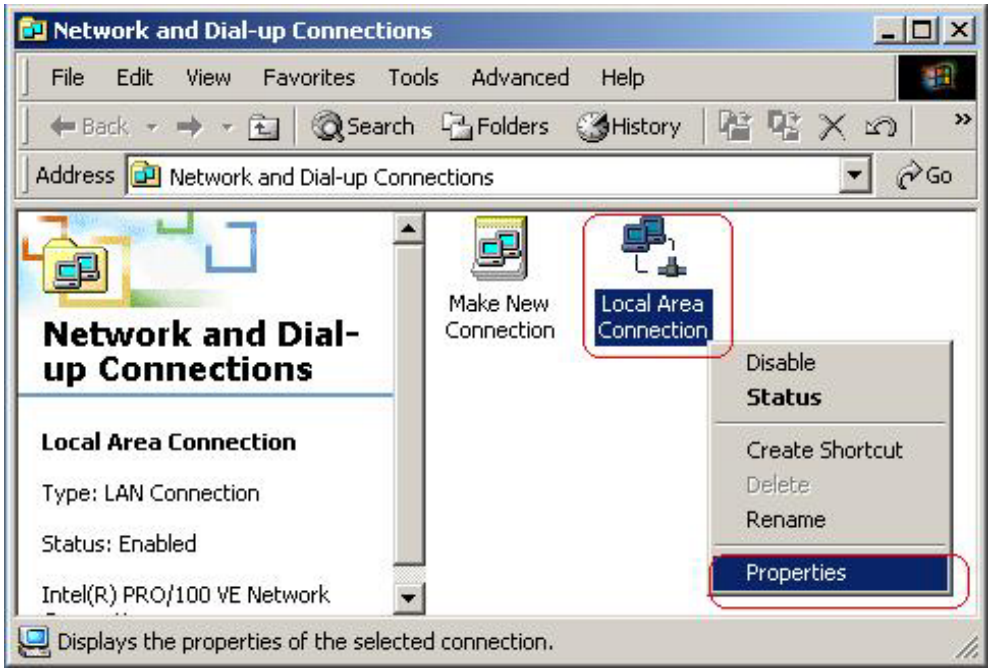


For Windows 2000

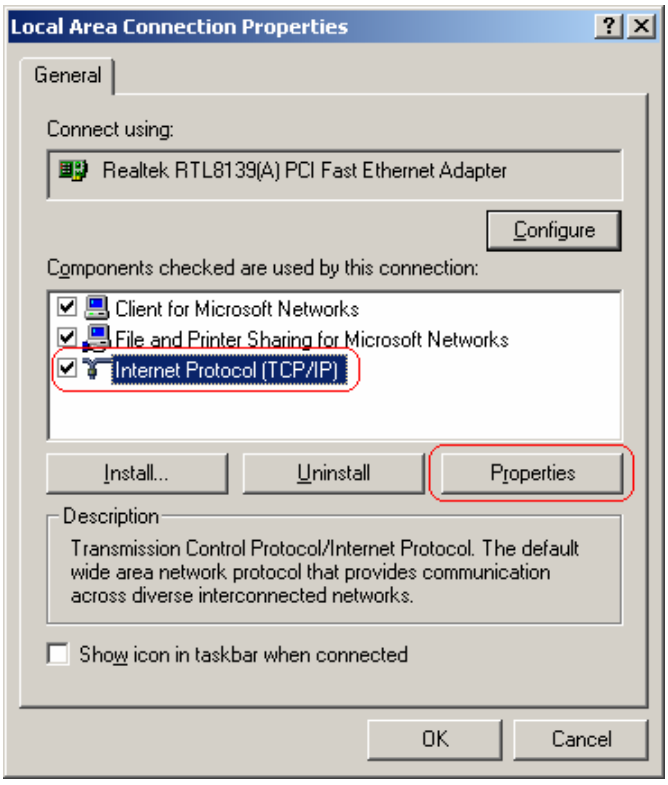
Step 1: (a) Right-click **My Network Places** and select **Properties** in the main window screen

(b) Or, go to **Start / Settings / Control Panel.** In the **Control Panel**, double-click on **Network and Dial-up Connections**.

Step 2: Right click **Local Area Connection** (your local network hooked up with ADSL router) and select **Properties**:

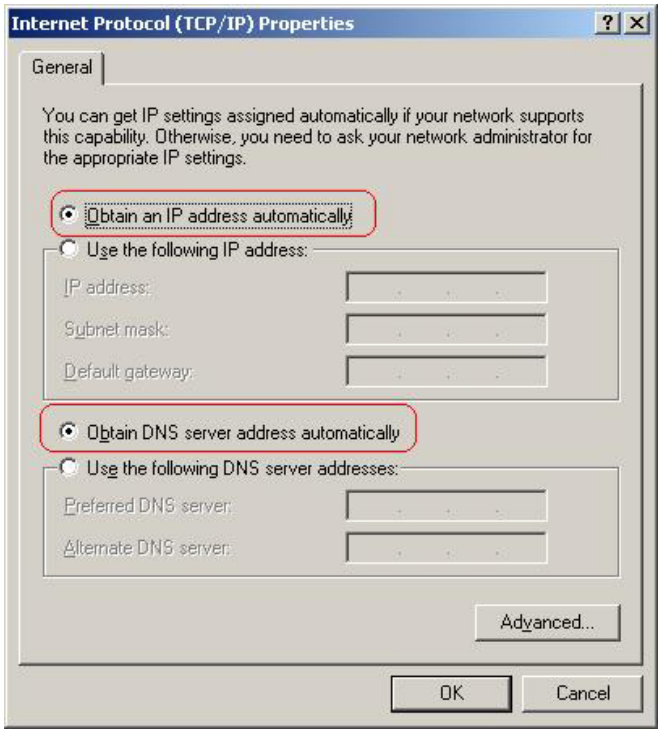


Step 3: Select **Internet Protocol (TCP/IP)** then click **Properties**:



Configure IP Automatically:

Step 4: Select **Obtain an IP address automatically** and **Obtain DNS server address automatically** then click **OK** to complete IP configuring process.



Configure IP Manually:

Step 4: Select **Use the following IP address** and **Use the following DNS server addresses**.

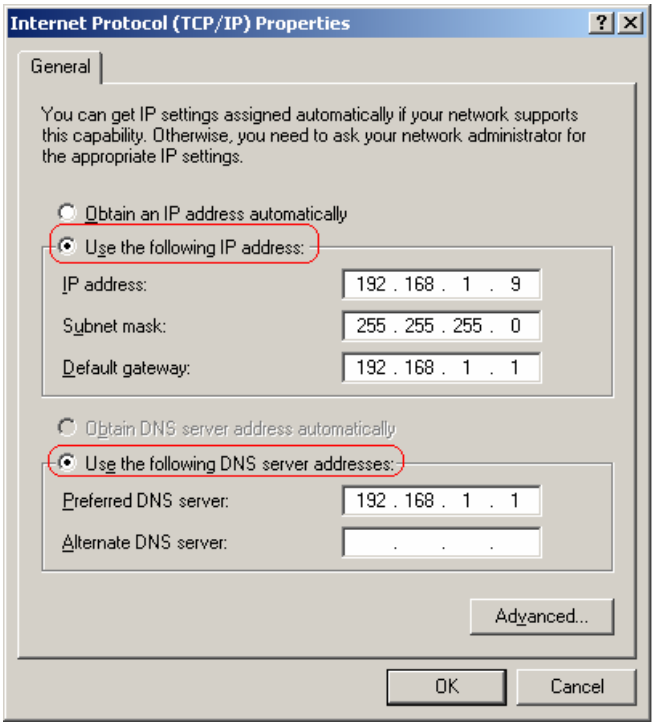
IP address: Fill in IP address 192.168.1.x (x is a number between 2 to 254).

Subnet mask: Default value is 255.255.255.0.

Default gateway: Default value is 192.168.1.1.

Preferred DNS server: Fill in preferred DNS server IP address.

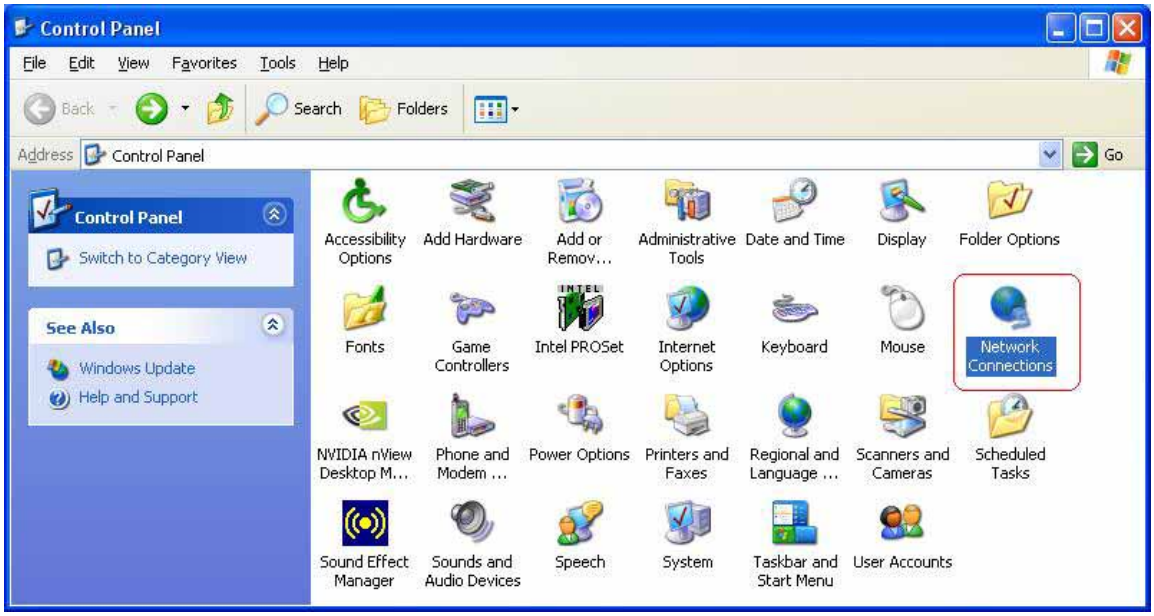
Alternate DNS server: Fill in alternate DNS server IP address.



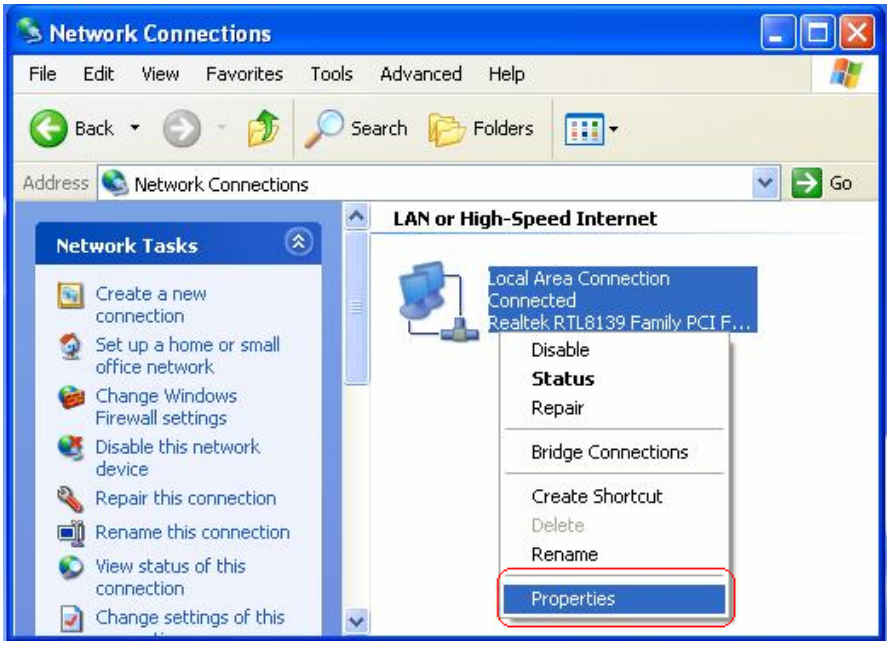
For Windows XP

Step 1: Click **Start** then select **Control Panel**.

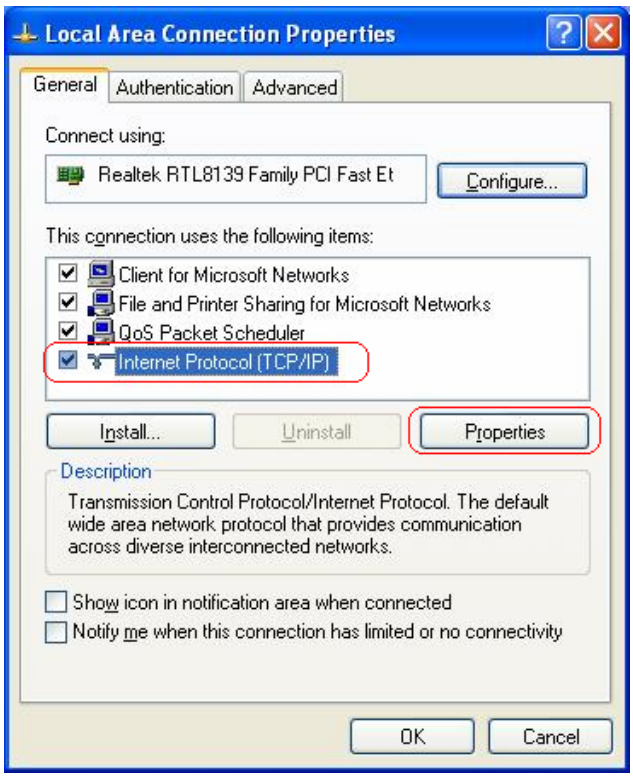
Step 2: Double-click **Network Connections** icon.



Step 3: Right-click **Local Area Connection** (local network your ADSL hooked up with) and select **Properties**:

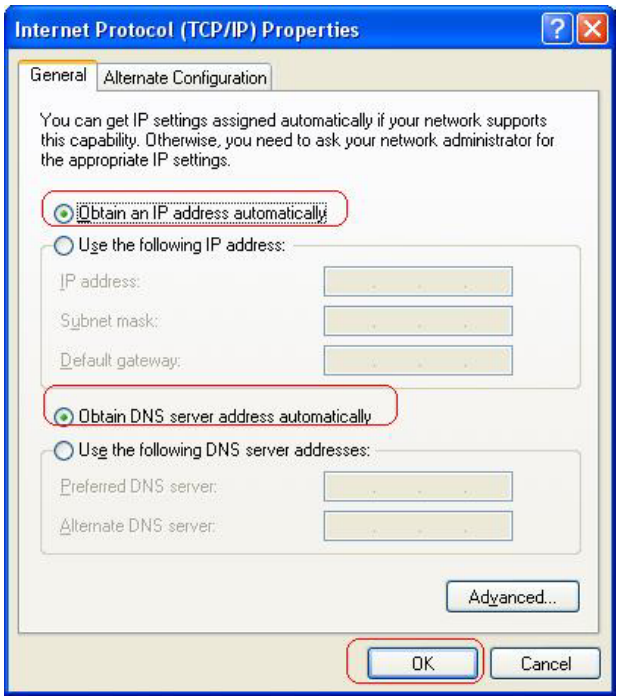


Step 4: Select **Internet Protocol (TCP/IP)** then click **Properties**:



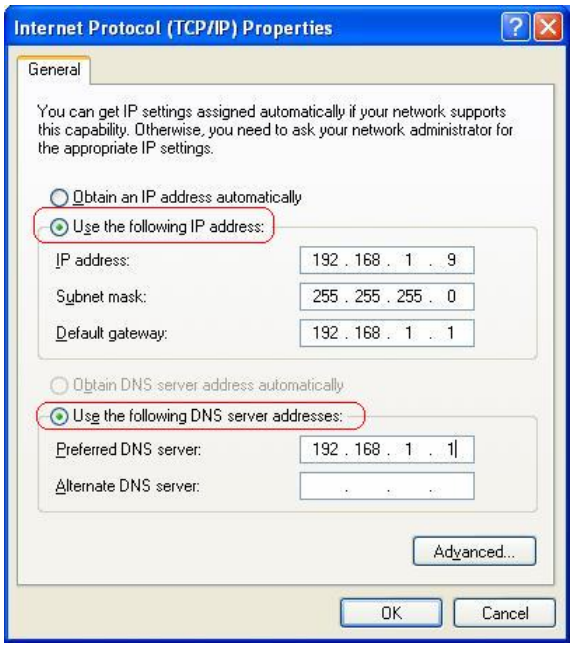
Configure IP address Automatically:

Step 5: Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**. Click **OK** to finish the configuration.



Configure IP Address Manually:

Step 5: Select **Use the following IP address** and **Use the following DNS server addresses**.



IP address: Fill in IP address 192.168.1.x (x is a number between 2 to 254).

Subnet mask: Default value is 255.255.255.0.

Default gateway: Default value is 192.168.1.1.

Preferred DNS server: Fill in preferred DNS server IP address.

Alternate DNS server: Fill in alternate DNS server IP address.

You can use ping command under DOS prompt to check if you have setup TCP/IP protocol correctly and if your computer has successfully connected to this router.

1) Type **ping 192.168.1.1** under DOS prompt and the following messages will appear:

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 times<2ms TTL=64

Reply from 192.168.1.1: bytes=32 times<1ms TTL=64

Reply from 192.168.1.1: bytes=32 times<10ms TTL=64

2) If the communication link between your computer and router is not setup correctly, after you type **ping 192.168.1.1** under DOS prompt following messages will appear:

Pinging 192.168.1.1 with 32 bytes of data:

Request timed out.

Request timed out.

Request timed out.

Cable issue or something wrong might cause this failure in configuration procedure.

4. Configure Wireless ADSL2+ Router via HTML

This device supports a Web-based (HTML) GUI to allow users to configure Router setting via Web browser.

4.1 Login

1) Launch the Web browser.

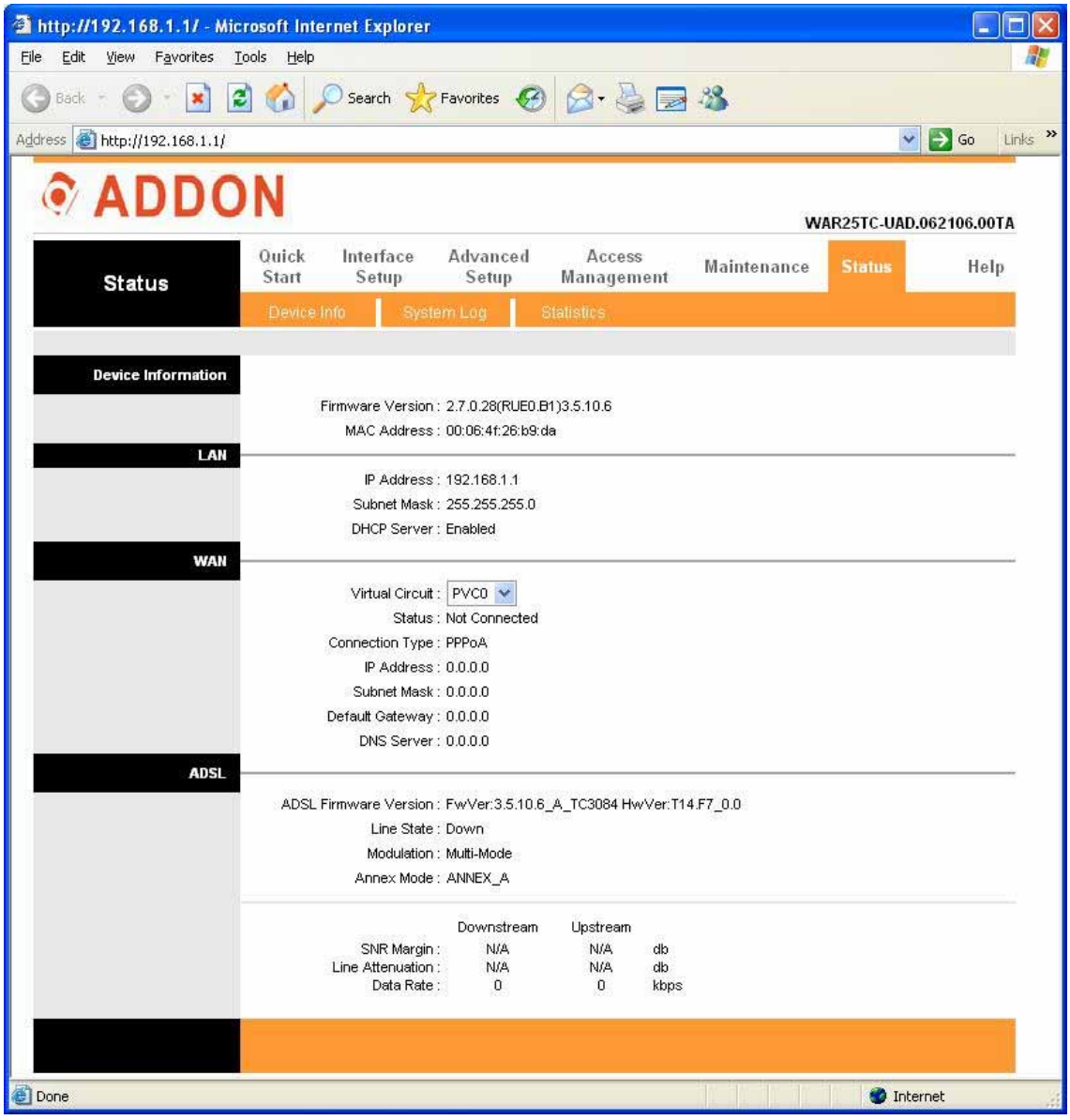
2) Enter the default IP address **http://192.168.1.1**

3) Entry of the username and password will be displayed. Enter the default **login User Name** and **Password**:

- The default login **User Name** of the administrator is **admin**, and the default **login password** is **admin**.

4.2 Navigating the Web Configurator

Steps to navigate the Web configuration from the Site Map are summarized as below.



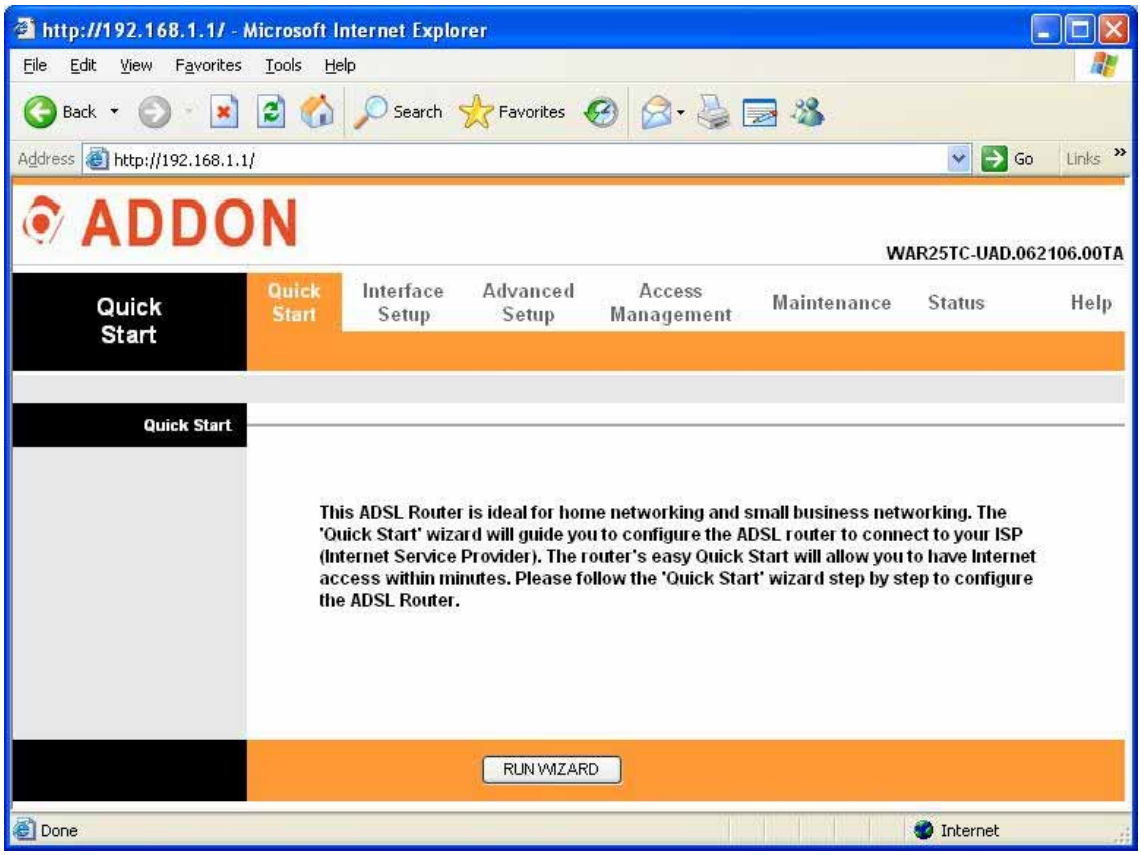
Steps to navigate the Web configuration from the Site Map are summarized below.

- Click on **Quick Start** to begin a wizard that helps to configure your router.
- Click on **Interface Setup** to configure Internet and LAN functions.
- Click on **Advanced Setup** to configure advanced features.
- Click on **Access Management** to manage Internet access options.
- Click on **Maintenance** to set a new password, to set the time zone, to upgrade or reload firmware and to run diagnostic tests on the router
- Click on **Status** to see router device information, system logs and performance statistics.
- Click on **Help** to see available help topics.

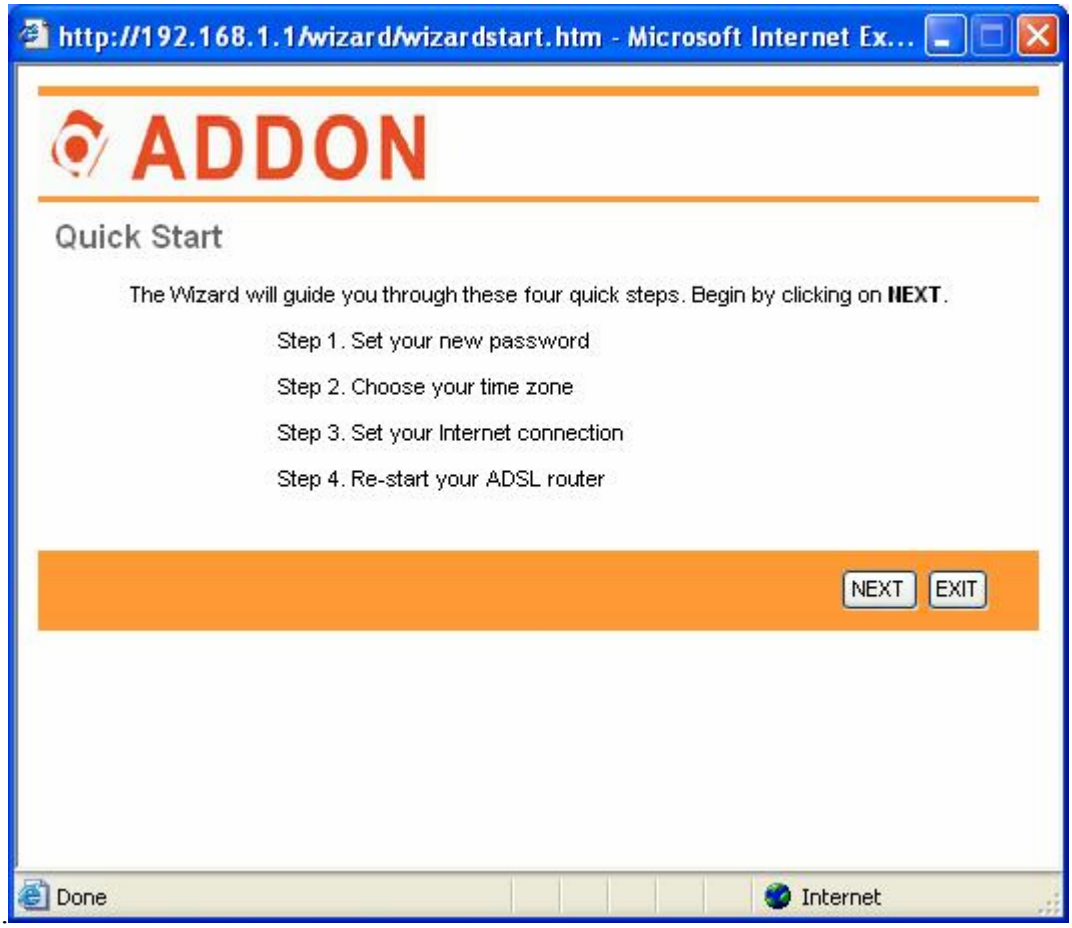
5. Quick Start Wizard

Click **Quick Start** to guide you to configure the device to connect your ISP and have Internet access within minutes. This Quick Start will guide you step by step to configure the password, time zone, and WAN settings of you device. This Wizard is a helpful guide for first time uses to the device.

NOTE: It is a strong recommendation that using **Quick Start** to configure your ADSL settings.



Click on the **RUN WIZARD** button to start the Quick Start wizard. The Quick Start wizard will open a new browser window with the following screen.



The **Quick Start** Setup Wizard includes four quick steps: **1) Set your new password**. **2) Choose your time zone**. **3) Set your Internet connection**. **4) Re-start your ADSL router**.

Please follow the quick start step by step to configure the device.

Note: If your ISP doesn't provide DNS, after you complete Quick Start configuration, please go to **Interface Setup → Internet** to configure your DNS settings.

Click on **NEXT** to continue, or on **EXIT** to exit the wizard without saving.

5.1 Setting a New Password

This screen helps you set a new password, replacing the default password.

The following table describes the labels in this screen.

LABEL	DESCRIPTION
New Password	Enter the password you wish to use here
Confirmed Password	Enter the password again to confirm

Click on **BACK** to return to the previous screen, on **NEXT** to continue, or on **EXIT** to exit the wizard without saving.

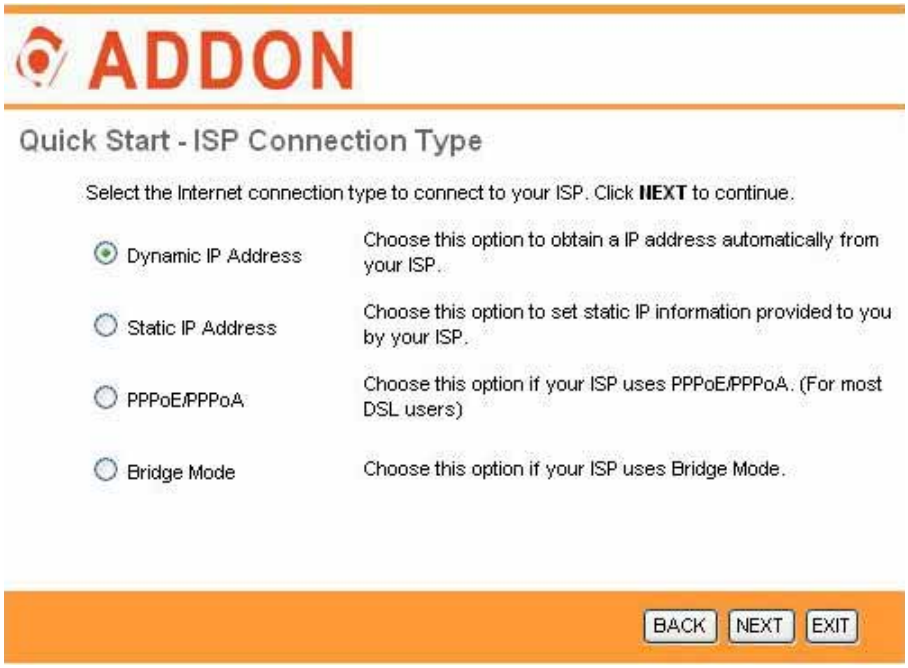
5.2 Choose your Time Zone

This screen helps you set the time zone for your ADSL2+ Router.

Select the appropriate time zone for your location from the dropdown list. Click on **BACK** to return to the previous screen, on **NEXT** to continue, or on **EXIT** to exit the wizard without saving.

5.3 Set your Internet Connection

This screen helps you select, then configure, your ISP connection type.

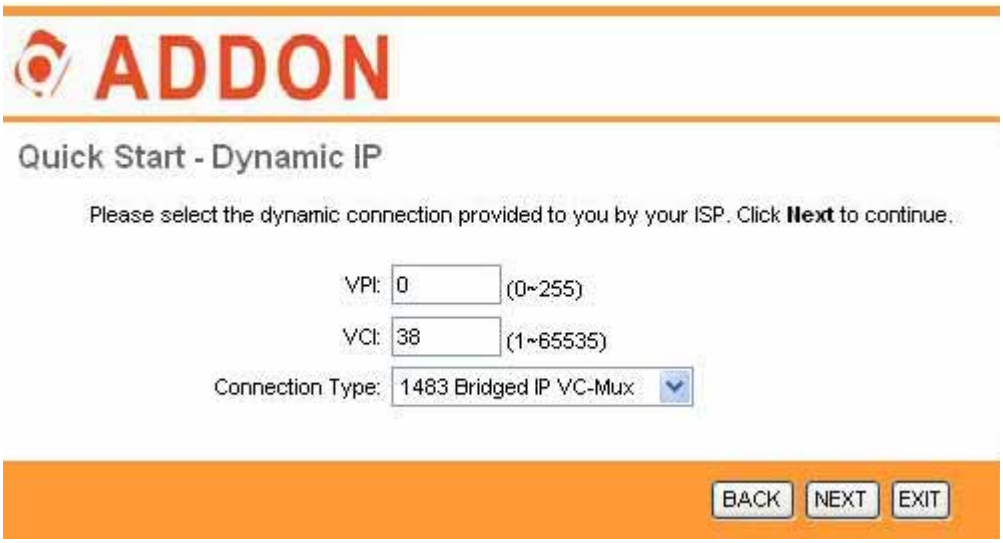


Select the Internet connection type you use to connect to your ISP. Click on **BACK** to return to the previous screen, on **NEXT** to continue, or on **EXIT** to exit the wizard. The following screen will vary depending on which connection type you chose.

Each screen is explained below:

5.3.1 Configuring Dynamic IP Address

A dynamic IP address connection requests a new IP address from your ISP each time you connect to it.



The following table describes the labels in this screen.

LABEL	DESCRIPTION
VPI	Enter the VPI here. VPI can range from 0 to 255.
VCI	Enter the VCI here. VCI can range from 1 to 65535.
Connection Type	Select your connection type from the dropdown list.

Your ISP should provide the above information. Click on **BACK** to return to the previous screen, on **NEXT** to continue, or on **EXIT** to exit the wizard without saving.

5.3.2 Configuring Static IP Address

A static IP address connection uses the same IP each time you connect to your ISP.

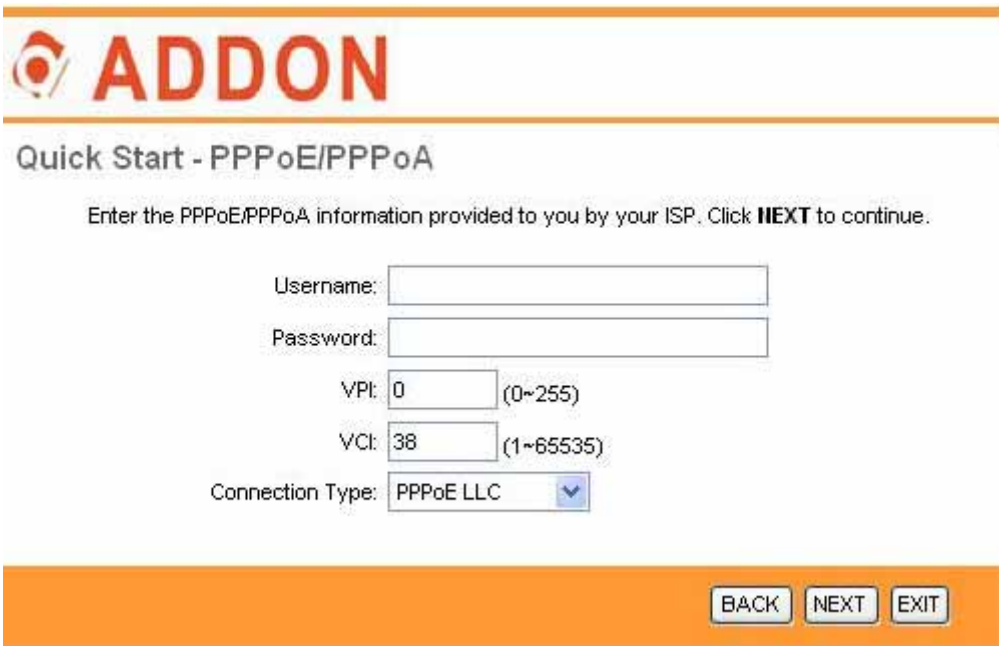
The following table describes the labels in this screen.

LABEL	DESCRIPTION
VPI	Enter the VPI here. VPI can range from 0 to 255.
VCI	Enter the VCI here. VCI can range from 1 to 65535.
IP Address	Enter the IP address here.
Subnet Mask	Enter the Subnet Mask here.
ISP Gateway	Enter the ISP Gateway here.
Connection Type	Select your connection type from the dropdown list.

Your ISP should provide this information. Click on **BACK** to return to the previous screen, on **NEXT** to continue, or on **EXIT** to exit the wizard without saving.

5.3.3 Configuring PPPoE

PPPoE provides access control and billing functionality in a manner similar to dial-up services using PPP. The router bridges a PPP session over Ethernet (PPP over Ethernet, RFC 2516) from your computer to an ATM Permanent Virtual Circuit (PVC) that connects to the ADSL Access Concentrator, where the PPP session terminates. Single PVC can support any number of PPP sessions from your LAN.



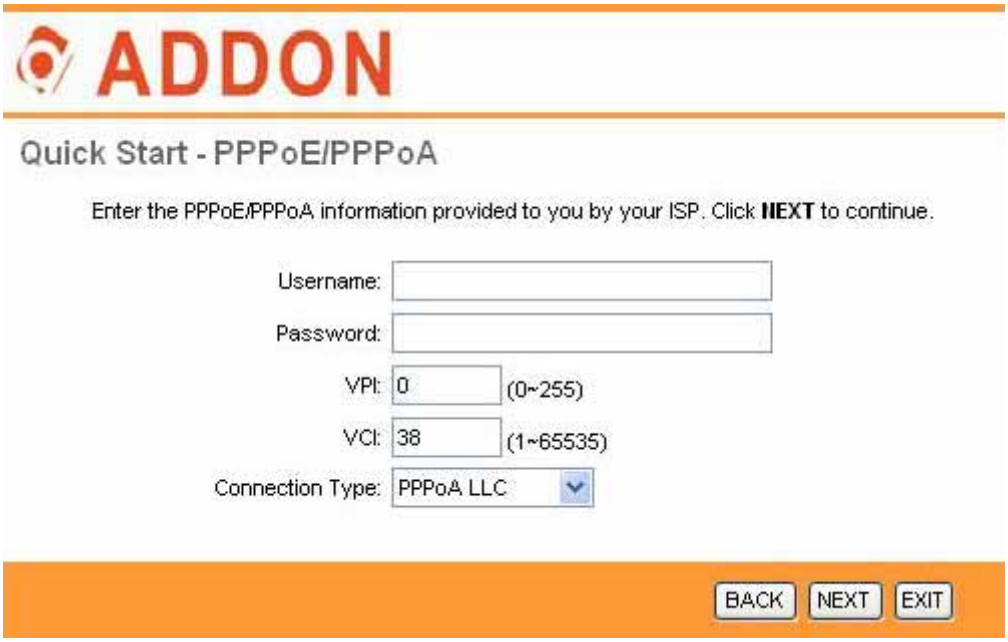
The following table describes the labels in this screen.

LABEL	DESCRIPTION
Username	Enter your username here.
Password	Enter your password here.
VPI	Enter the VPI here. VPI can range from 0 to 255.
VCI	Enter the VCI here. VCI can range from 1 to 65535.
Connection Type	Select your connection type from the dropdown list.

Your ISP should provide the above information. Note that you must enter the user name exactly as your ISP assigned it. If the assigned name is in the form of user@domain where domain identifies a service name, enter it exactly as given. Click on **BACK** to return to the previous screen, on **NEXT** to continue, or on **EXIT** to exit the wizard without saving.

5.3.4 Configuring PPPoA

Point-to-Point Protocol over ATM Adaptation Layer 5 (AAL5) (PPPoA) provides access control and billing functionality in a manner similar to dial-up services using PPP. The router encapsulates the PPP session based on RFC1483 and sends it through ATM PVC to the ISP's DSLAM.



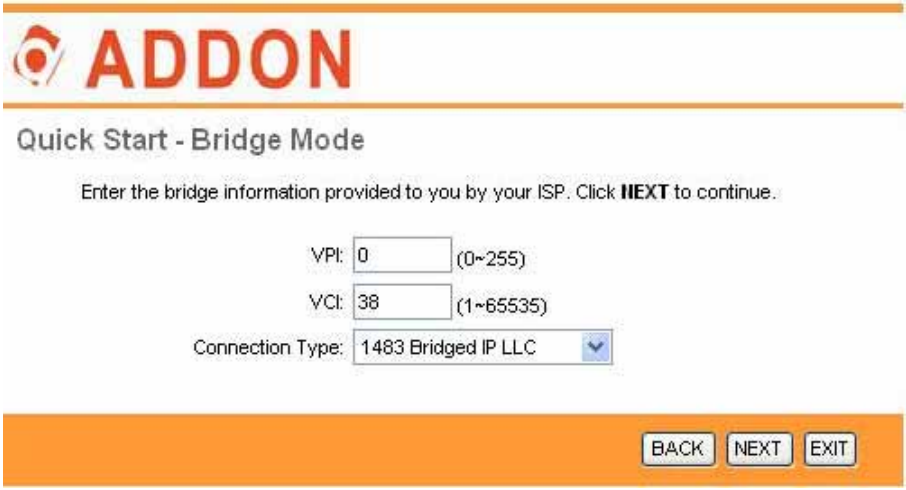
The following table describes the labels in this screen.

LABEL	DESCRIPTION
Username	Enter your username here.
Password	Enter your password here.
VPI	Enter the VPI here. VPI can range from 0 to 255.
VCI	Enter the VCI here. VCI can range from 1 to 65535.
Connection Type	Select your connection type from the dropdown list.

Your ISP should provide the above information. Note that you must enter the user name exactly as your ISP assigned it. If the assigned name is in the form of user@domain where domain identifies a service name, enter it exactly as given. Click on **BACK** to return to the previous screen, on **NEXT** to continue, or on **EXIT** to exit the wizard without saving.

5.3.5 Configuring Bridge Mode

RFC 1483 explains two methods for Multi-protocol Encapsulation over AAL5. The first method allows multiplexing of multiple protocols over just one ATM virtual circuit (LLC-based multiplexing). The second method assumes that each individual protocol is carried over a separate ATM virtual circuit (VC-based multiplexing). Please refer to RFC 1483 for more information.



The following table describes the labels in this screen.

LABEL	DESCRIPTION
VPI	Enter the VPI here. VPI can range from 0 to 255.
VCI	Enter the VCI here. VCI can range from 32 to 65535.
Connection Type	Select your connection type from the dropdown list.

Your ISP should provide the above information. Click on **BACK** to return to the previous screen, on **NEXT** to continue, or on **EXIT** to exit the wizard without saving.

5.3.6 Multiplexing

Two conventions identify what protocols a virtual circuit (VC) is carrying. Be sure to use the multiplexing method your ISP requires.

(1) VC-Based Multiplexing

In VC-based multiplexing, by prior mutual agreement, each protocol is assigned to a specific virtual circuit. For example, VC1 carries IP, etc. VC-based multiplexing may be dominant in environments where dynamic creation of large numbers of ATM VCs is fast and economical.

(2) LLC-Based Multiplexing

In LLC-based multiplexing, one VC carries multiple protocols with protocol-identifying information contained in each packet header. While this method requires extra bandwidth and processing overhead, this method may be advantageous if it is not practical to have a separate VC for each carried protocol; for example, if charging heavily depends on the number of simultaneous VCs.

5.3.7 VPI and VCI

Be sure to use the Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) numbers assigned to you. The valid range for the VPI is 0 to 255. The valid range for the VCI is 32 to 65535. 0 to 31 is reserved for local management of ATM traffic.

5.4 Finishing the Wizard

The Quick Start wizard now has all the information it needs. Click on **BACK** to make changes or correct mistakes. Click on **NEXT** to save the current settings. Click on **EXIT** to exit the wizard without saving.

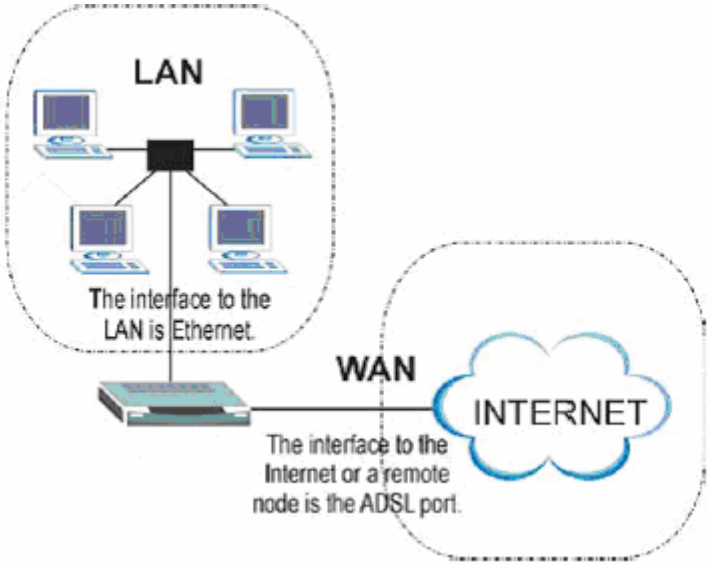
Your changes have been saved. Click on **CLOSE.** The Quick Start wizard window will close.

6. Interface Setup

The physical connections determine whether the router ports are local area network (LAN) ports or wide area network (WAN) ports. There are two kinds of IP networks. The local, private kind is the LAN network; the global, public kind is the WAN network. The following illustration shows the relationship between the router and the two different networks.

A LAN is a shared communication system to which many computers are attached. A LAN is generally limited to the immediate area, usually the same building or floor of a building.

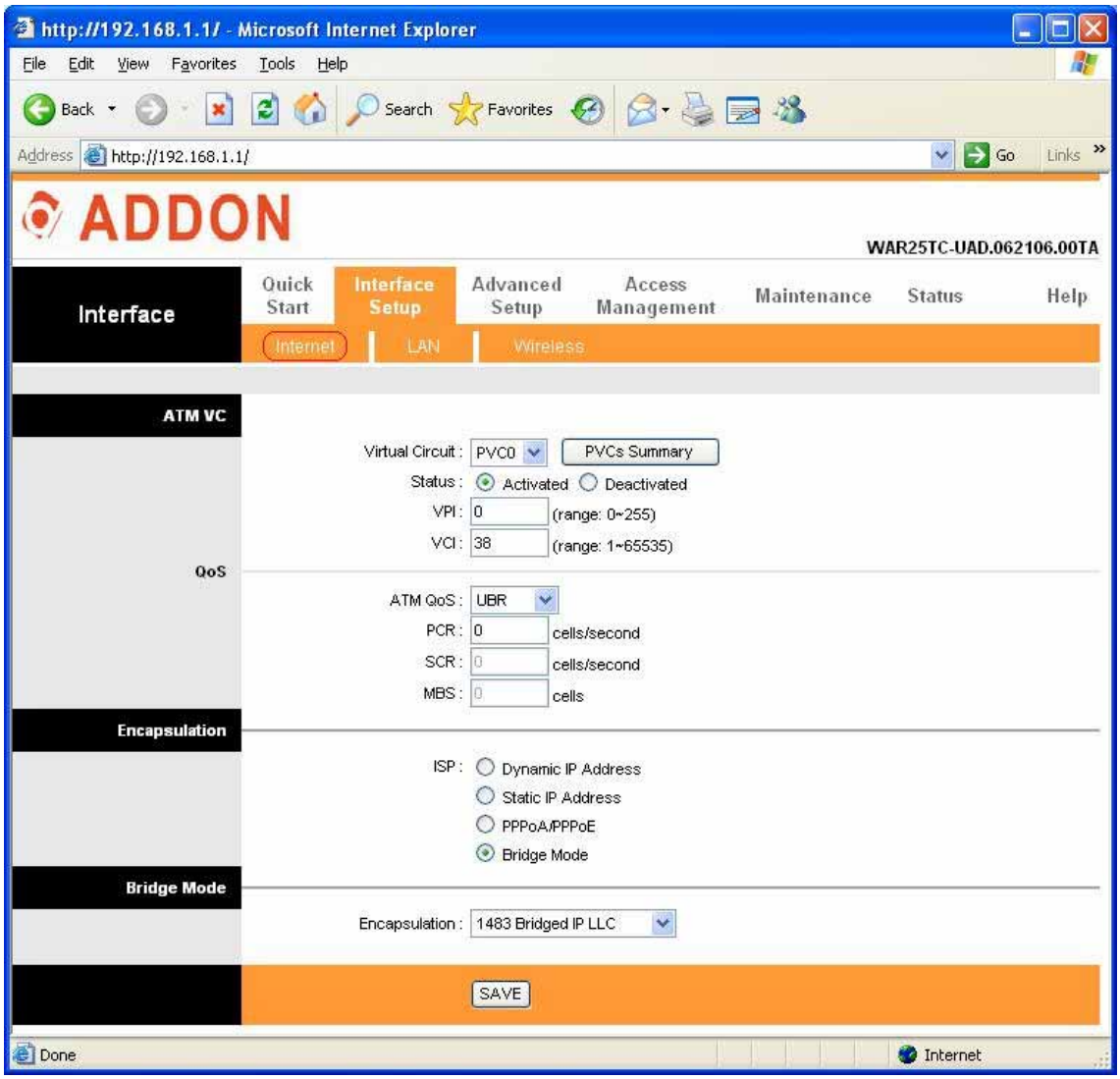
A WAN is an outside connection to another network or to the Internet.



Click an **Interface Setup** link to set ATM VC values, ISP Encapsulation, configure multi-connection settings, and LAN configuration.

6.1 Internet

The Internet screen allows you to set up how your router connects to the Internet. If you already ran the Quick Start wizard, the information you provided to the wizard should be entered into the fields already. After you finish the changes, click on the **SAVE** button to save your changes.



6.1.1 ATM VC & QoS

ATM settings are used to connect to your ISP. Your ISP provides VPI, VCI, settings to you. In this Device, you can totally setup 8 PVCs on different encapsulations if you apply 8 different virtual circuits from your ISP. You need to activate the VC to take effect. For PVCs management, you can use ATM QOS to setup each PVC traffic line's priority.

Virtual Circuit: Select the VC number you want to setup.

VPI: Virtual Path Identifier. The valid range for the VPI is 0 to 255.

VCI: Virtual Channel Identifier. The valid range for the VCI is 1 to 65635 (0 to 31 is reserved for local management of ATM traffic).

ATM QoS: Select the Quality of Service types for this Virtual Circuit. The ATM QoS types include CBR(Constant Bit Rate), VBR(Variable Bit Rate) and UBR (Unspecified Bit Rate). These QoS types are all controlled by the parameters specified below, including PCR, SCR, and MBS.

PCR: Peak Cell Rate (PCR) is the maximum rate at which the sender can send cells. This

parameter may be lower (but not higher) than the maximum line speed. 1 ATM cell is 53 bytes (424 bits), so a maximum speed of 832 Kbps gives a maximum PCR of 1962 cells/sec. This rate is not guaranteed because it is dependent on the line speed.

SCR: Sustained Cell Rate (SCR) is the mean cell rate of a bursty, on-off traffic source that can be sent at the peak rate, and a parameter for burst-type traffic. SCR may not be greater than the PCR; the system default is 0 cells/sec.

MBS: Maximum Burst Size (MBS) is the maximum number of cells that can be sent at the PCR. After MBS is reached, cell rates fall below SCR until cell rate averages to the SCR again. At this time, more cells (up to the MBS) can be sent at the PCR again.

CBR is for connections that support constant rates of data transfer. The only parameter you need to worry about in CBR is PCR.

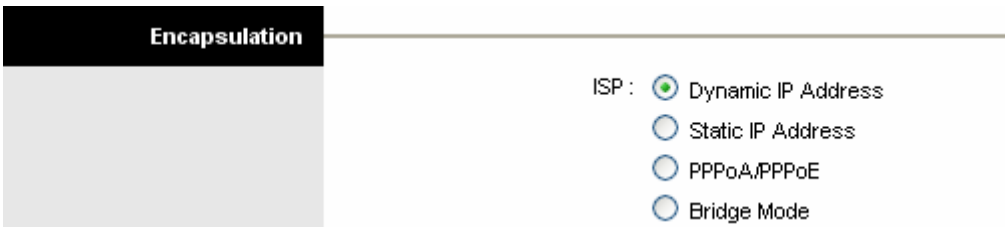
UBR is for connections that have variable traffic. The only parameter you need to worry about in UBR is PCR.

rtVBR is for connections that, while having variable traffic, require precise timing between traffic source and destination. PCR, SCR and MBS must all be set for rtVBR.

nrtVBR is for connections that have variable traffic, do not require precise timing, but still require a set bandwidth availability. PCR, SCR and MBS must all be set for nrtVBR.

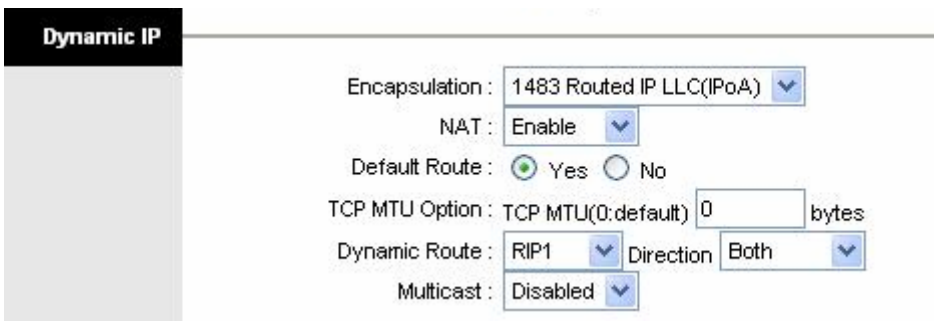
6.1.2 Encapsulation

Select the encapsulation protocol your ISP uses. The following section will vary depending on which encapsulation protocol you select.



(1) Dynamic IP Address

Select this option if your ISP provides you an IP address automatically. Please enter the Dynamic IP information accordingly.

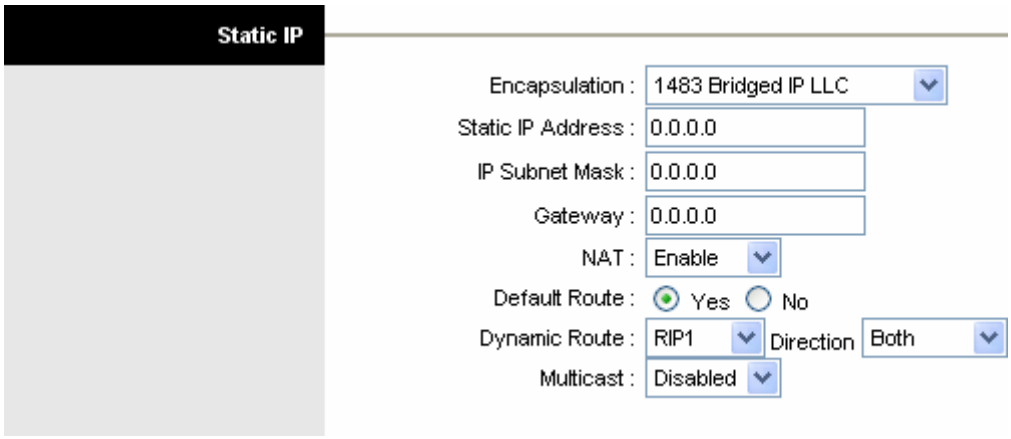


The following table describes the labels in this screen.

LABEL	DESCRIPTION
Encapsulation	Select your encapsulation type from the dropdown list.
NAT	Select whether NAT is Enabled or Disabled.
Default Route	Select whether this PVC will be the default route for Internet data.
TCP MTU Option	Enter TCP MTU Value here
Dynamic Route	Select the RIP type and direction from the dropdown lists.
Multicast	Select the multicast protocol you wish to use from the dropdown list.

(2) Static IP Address

Select this option to set static IP information. You will need to enter in the encapsulation type (1483 Bridged IP LLC, 1483 Bridged IP VC-Mux, 1483 Routed IP LLC (IPoA), 1483 Routed IP VC-Mux), IP address, subnet mask, and gateway address provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form, which is 4 IP octets separated by a dot (x.x.x.x). The Router will not accept the IP address if it is not in this format.



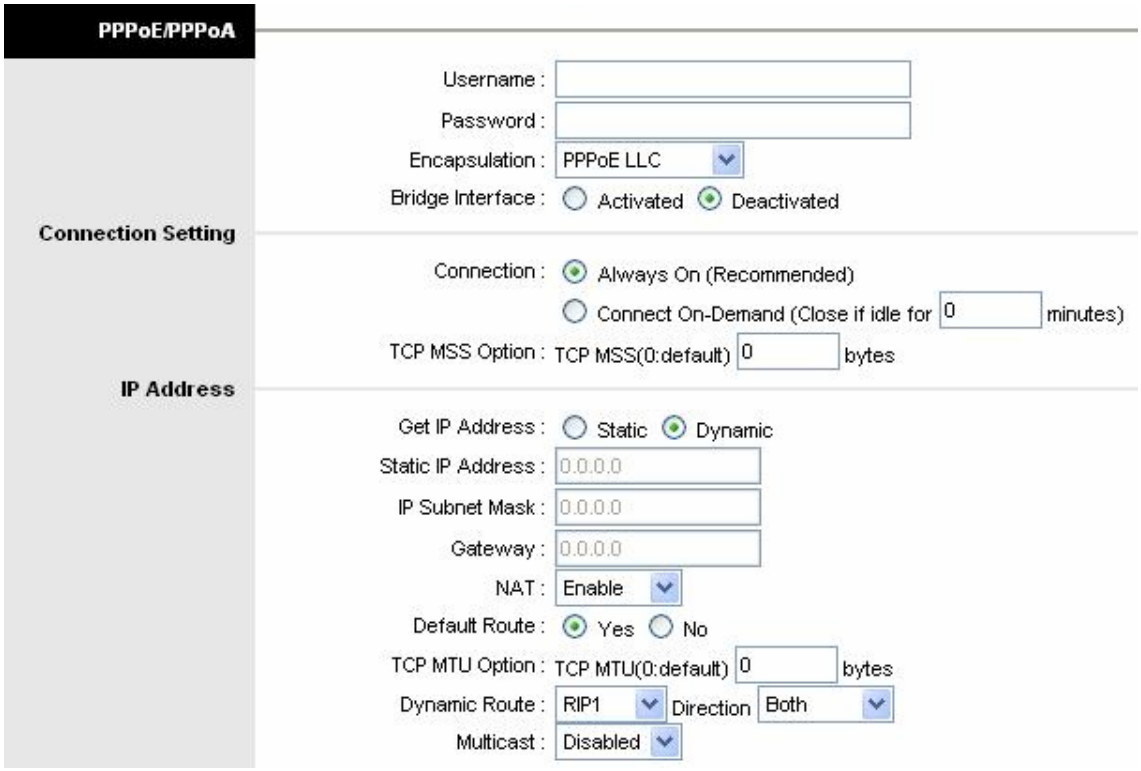
The following table describes the labels in this screen.

LABEL	DESCRIPTION
Encapsulation	Select your encapsulation type from the dropdown list.
Static IP Address	Enter the static IP Address here.
IP Subnet Mask	Enter the IP Subnet Mask here.
Gateway	Enter the Gateway address here.
NAT	Select whether NAT is Enabled or Disabled.
Default Route	Select whether this PVC will be the default route for Internet data.
Dynamic Route	Select the RIP type and direction from the dropdown lists.
Multicast	Select the multicast protocol you wish to use from the dropdown list.

(3) PPPoA / PPPoE

Select this option if your ISP requires you to use a PPPoE connection. This option is typically used for DSL service. Select Dynamic PPPoE to obtain an IP address automatically for your PPPoE connection. Selection Static PPPoE to use static IP address for your PPPoE

connection. Please enter the information accordingly.



LABEL	DESCRIPTION
Username	Enter your username for your PPPoE/PPPoA connection.
Password	Enter your password for your PPPoE/PPPoA connection.
Encapsulation	Select your encapsulation type from the dropdown list.
Bridge Interface	Select whether the Interface will be Activated or Deactivated.
Connection	Select whether your connection is always on or if it connects on demand. If on demand, specify how many minutes the connection may be idle before it disconnects.
TCP MSS Option	Enter the TCP MSS you wish to use here.
Get IP Address	Choose whether the ROUTER obtains the IP address statically or dynamically.
Static IP Address	Enter the static IP address here. Only if you chose Static above.
IP Subnet Mask	Enter the IP subnet mask here. Only if you chose Static above.
Gateway	Enter the gateway here. Only if you chose Static above.
NAT	Select whether NAT is Enabled or Disabled.
Default Route	Select whether this PVC will be the default route for Internet data.
TCP MTU Option	Enter TCP MTU Value here.
Dynamic Route	Select the RIP type and direction from the dropdown lists.
Multicast	Select the multicast protocol you wish to use from the dropdown list.

***Connection Setting*:** For PPPoE/PPPoA connection, you can select Always on or Connect on-demand. Connect on demand is dependent on the traffic. If there is no traffic (or Idle) for a pre-specified period of time, the connection will tear down automatically. And once there is traffic send or receive, the connection will be automatically on.

***IP Address*:** For PPPoE/PPPoA connection, you need to specify the public IP address for this ADSL Router. The IP address can be either dynamically (via DHCP) or given IP address provide by your ISP. For Static IP, you need to specify the IP address, Subnet Mask and Gateway IP address.

NAT: Select this option to Activate/Deactivated the NAT (Network Address Translation) function for this VC. The NAT function can be activated or deactivated per PVC basis.

[Dynamic Route]

RIP (Routing Information Protocol): Select this option to specify the RIP version, including ***RIP1***, ***RIP2-B*** and ***RIP2-M***. RIP2-B & RIP2-M are both sent in RIP-2 format, the difference is that RIP2-M using Multicast and RIP2-B using Broadcast format.

RIP Direction: Select this option to specify the RIP direction. ***None*** is for disabling the RIP function. ***Both*** means the ADSL Router will periodically send routing information and accept routing information then incorporate into routing table. ***IN only*** means the ADSL router will only accept but will not send RIP packet. ***OUT only*** means the ADSL router will only sent but will not accept RIP packet.

[Multicast]

IGMP (Internet Group Multicast Protocol): It is a session-layer protocol used to establish membership in a multicast group. The ADSL supports both IGMP version ***IGMP-v1*** & ***IGMP-v2***. Select ***None*** to disable it.

Your ISP should provide the above information. Note that you must enter the user name exactly as your ISP assigned it. If the assigned name is in the form of user@domain where domain identifies a service name, enter it exactly as given.

(4) Bridge Mode

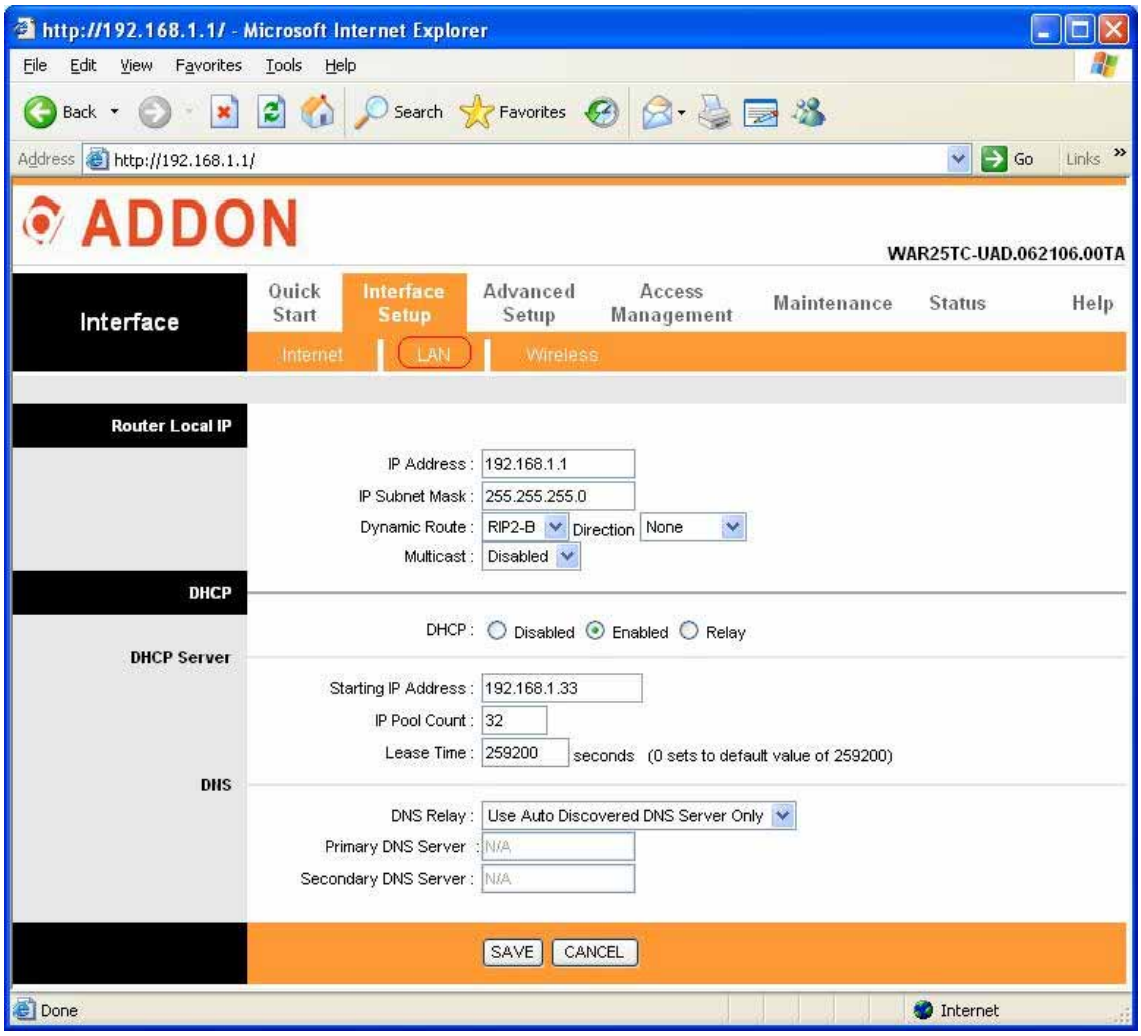
The modem can be configured to act as a bridging device between your LAN and your ISP. Bridges are devices that enable 2 or more networks to communicate as if they are 2 segments of the same physical LAN. Please set the Connection type.

The following table describes the labels in this screen.

LABEL	DESCRIPTION
Encapsulation	Select your encapsulation type from the dropdown list.

6.2 LAN

There are the IP settings of the **LAN** Interface for the device. These settings may be referred to as Private settings. You may change the LAN IP address if needed. The LAN IP address is provided to your internal network and cannot be seen on the Internet.



6.2.1 Router Local IP

IP Address: Enter the IP address of your ADSL router in dotted decimal notation, for example, 192.168.1.1 (default setting).

IP Subnet Mask: Your ADSL router will automatically calculate the subnet mask based on the IP address that you assign. Unless you are implementing sub netting, use the subnet mask computed by the ADSL router.

Dynamic Route: Select the Dynamic Route from **RIP1**, **RIP2-B**, and **RIP2-M**. Please refer to Internet→ Dynamic Route. The only difference is the interface.

6.2.2 Explaining RIP Setup

Routing Information Protocol (RIP) allows a router to exchange routing information with other routers. The RIP Direction field controls how RIP packets are allowed to enter and leave the router. Selecting **Both** means the router will broadcast its routing table and incorporate the RIP information that it receives. Selecting **In Only** means the router will only accept RIP packets received, not send RIP packets. Selecting **Out Only** means the router will only send RIP packets, not accept any RIP packets received. Selecting **None** means the router will not send any RIP packets nor will it accept any RIP packets received.

The Dynamic Route field controls the format and the broadcasting method of RIP packets that the router sends. It recognizes both formats when receiving packets.

RIP-1 is universally supported, but **RIP-2** carries more information. **RIP-1** is adequate for most networks. Only consider **RIP-2** if your network has unusual topology.

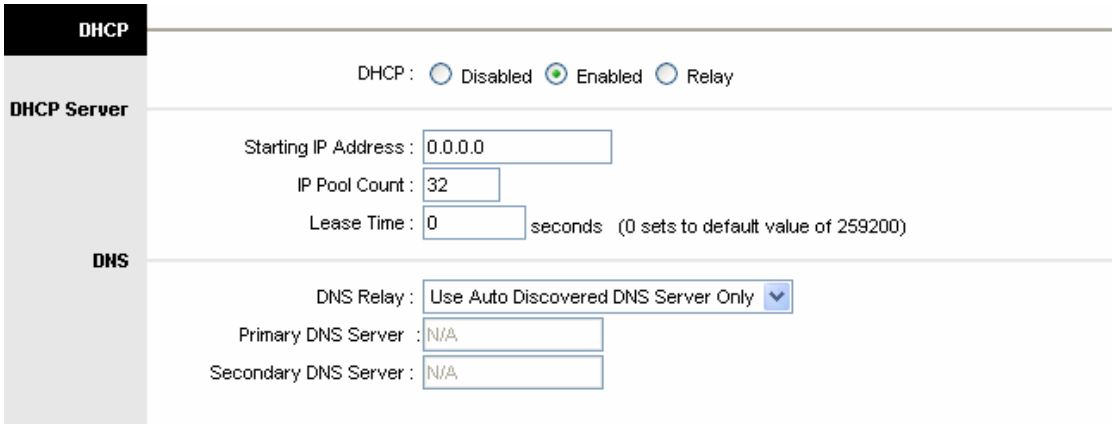
Both **RIP-2B** and **RIP-2M** sends the routing data in **RIP-2** format. **RIP-2B** uses subnet broadcasting while **RIP-2M** uses multicasting.

Direction: Select the RIP direction from **None**, **Both**, **In Only** and **Out Only**.

Multicast: IGMP (Internet Group Multicast Protocol) is a session-layer protocol used to establish membership in a multicast group. The ADSL router supports both **IGMP-v1** and **IGMP-v2.** Select **None** to disable it. Please refer to Internet→ Multicast. The only difference is the interface.

6.2.3 DHCP Server

The DHCP Server gives out IP addresses when a device is booting up and request an IP to be logged on to the network. It must be set as a DHCP client to obtain the IP address automatically. By default, the DHCP Server is enabled. The DHCP address pool contains the range of the IP address that will automatically be assigned to the client on the network.



LABEL	DESCRIPTION
Starting IP Address	Enter the starting IP address you wish to use as the DHCP server's IP assignment.
IP Pool Count	Enter the maximum user pool size you wish to allow.
Lease Time	Enter the amount of time you wish to lease out a given IP address.
DNS Relay	Select the DNS relay option you wish to use from the dropdown list.
Primary DNS Server	Enter the primary DNS server IP address you wish to use. For user discovered DNS only.
Secondary DNS Server	Enter the secondary DNS server IP address you wish to use. For user discovered DNS only.

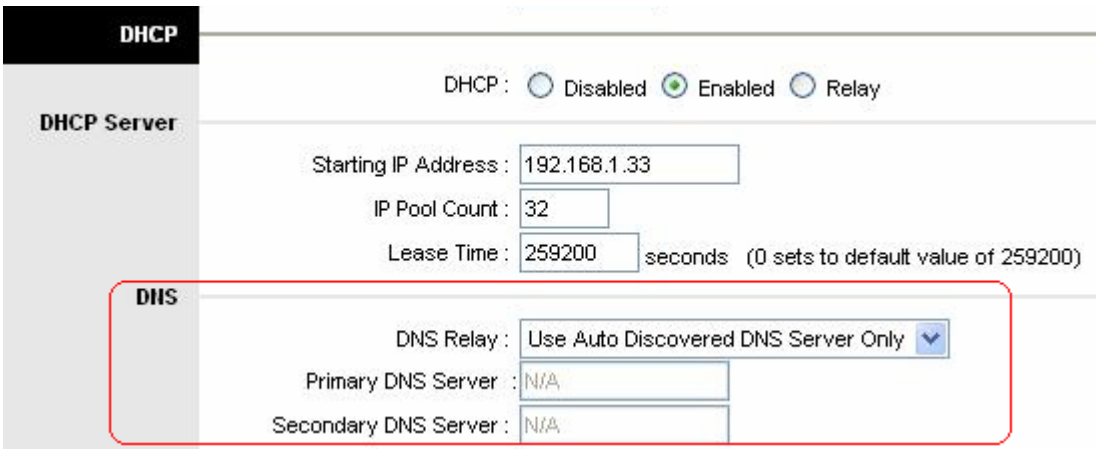
6.2.4 DHCP Relay

A DHCP relay is a computer that forwards DHCP data between computers that request IP addresses and the DHCP server that assigns the addresses. Each of the device's interfaces can be configured as a DHCP relay. If it is enable, the DHCP requests from local PCs will forward to the DHCP server runs on WAN side. To have this function working properly, please run on router mode only, disable the DHCP server on the LAN port, and make sure the routing table has the correct routing entry.

DHCP Server IP for relay agent: The DHCP server IP Address runs on WAN side.

6.2.5 DNS Relay

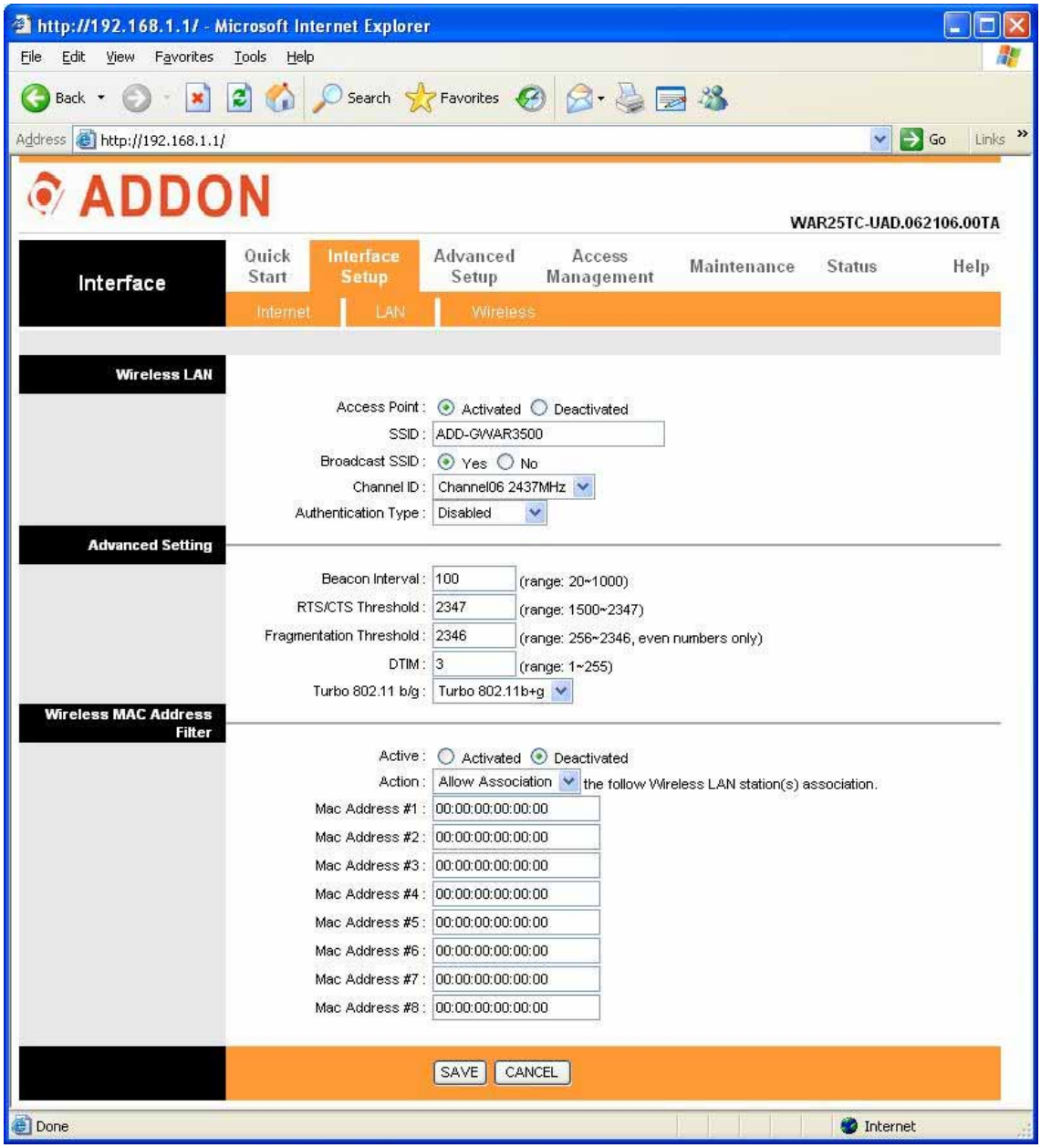
The DNS Configuration allows the user to set the configuration of DNS.



DNS Rely Selection: If user wants to disable this feature, he just needs to set both Primary & Secondary DNS to 0.0.0.0. Using DNS relay, users can setup DNS server IP to 192.168.1.1 on their computer. If not, device will perform as NO DNS relay.

If you don't want to use the DNS Relay option, set the DNS relay to "**Use User Discovered DNS Server Only**" and set both Primary and Secondary DNS Servers to "**0.0.0.0**".

6.3 Wireless



6.3.1 Wireless LAN

SSID: The SSID is a unique name to identify the ADSL Router in the Wireless LAN. Wireless Clients associating to the ADSL Router must have the same SSID.

Broadcast SSID: Select **No** to hide the SSID such that a station can not obtain the SSID through passive scanning. Select **Yes** to make the SSID visible so a station can obtain in the SSID through Passive scanning.

Channel ID: The range of radio frequencies used by IEEE 802.11b/g wireless devices us called a channel.

[Authentication Type]

WEP (Wired Equivalent Privacy) encrypts data frames before transmitting over the wireless network. Select **Disable** to allow all wireless computers to communicate with the access points without any data encryption. Select **64-bit WEP** or **128-bit WEP** to use data encryption.

Key#1~Key#4 The WEP keys are used to encrypt data. Both the ADSL Router and the wireless clients must use the same WEP key for data transmission. If you chose **64-bit WEP**, then enter any 10 hexadecimal digits ("0-9", "A-F") preceded by 0x for each key (1-4). If you choose **1280bit WEP**, then enter 26 hexadecimal digits ("0-9", "A-F") preceded by 0x for each key (1-4). The values must be set up exactly the same on the Access Points as they are on the wireless client stations. The same value must be assigned to Key 1 on both access point (your ADSL Router) and the client adapters, the same value must be assigned to Key 2 on both access point and the client stations and so on, for all four WEP keys.

WPA-PSK Wi-Fi Protected Access, pre-shared key. Encrypts data frames before transmitting over the wireless network.

Pre-shared Key is used to encrypt data. Both the ADSL Router and the wireless clients must use the same WPA-PSK Key for data transmission.

6.3.2 Advanced Setting

Beacon Interval: The Beacon Interval value indicates the frequency interval of the beacon. Enter a value between 20 and 1000. A beacon is a packet broadcast by the Router to synchronize the wireless network.

RTS Threshold: The RTS (Request To Send) threshold (number of bytes) for enabling RTS/CTS handshake. Data with its frame size larger than this value will perform the RTS/CTS handshake. Set this attribute to be larger than the **maximum MSDU** (MAC Service Data Unit) size **TURNS OFF** the RTS/CTS handshake. Set this attribute to **ZERO** **TURNS ON** the RTS/CTS handshake. Enter a value between 0 and 2432.

Fragment Threshold: The threshold (number of bytes) for the fragmentation boundary for directed messages. It is the maximum data fragment size that can be sent. Enter a value between 256 and 2432.

DTIM: This value is between 1 and 255, indicates the interval of the Delivery Traffic Indication Message (DTIM).

6.3.3 MAC Address Filter

You can allow or deny a lust of MAC addresses associated with the wireless stations access to the ADSL Router.

Status: Use the drop down list box to enable or disable MAC address filtering.

Action: Select ***Deny Association*** to block access to the router, MAC addresses not listed will be

allowed to access the router. Select ***Allow Association*** to permit access to the router, MAC addresses not lusted will be denied access to the router.

7 Advanced Setup

7.1 Firewall

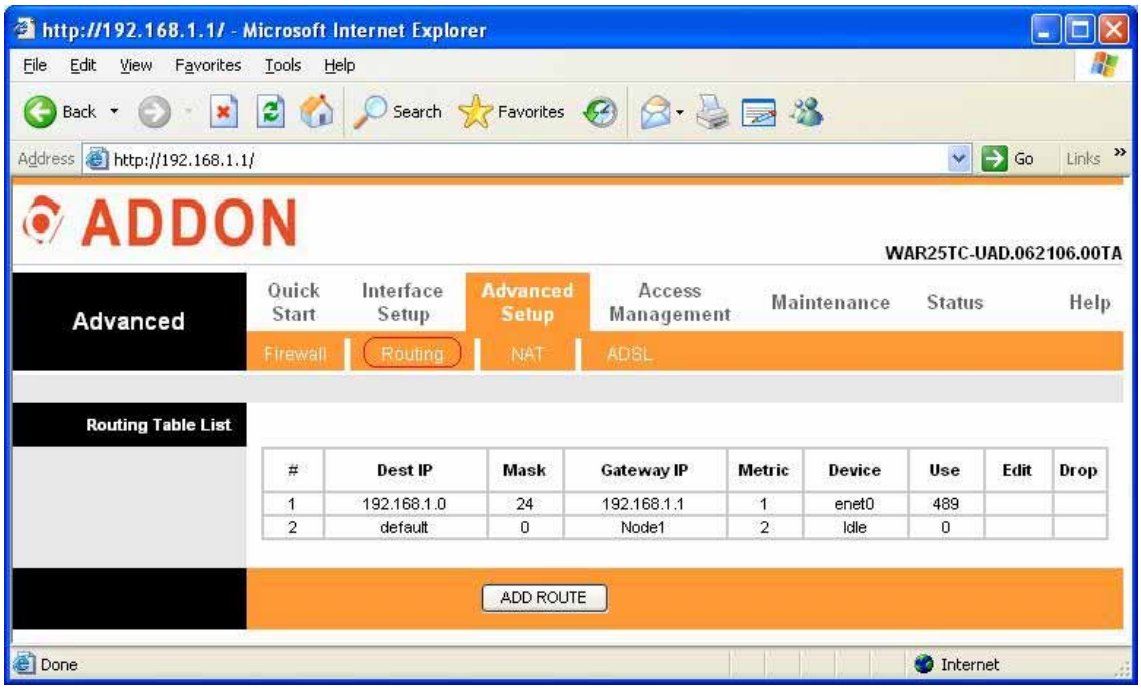
User can enable or disable firewall feature of the ADSL router in the page.

Firewall: Select this option can automatically detect and block Denial of Service (DoS) attacts, such as Ping of Death, SYN Flood, Port Scan and Land Attack.

SPI: Select this option to Enabled or Disabled the SPI feature. (**NOTE:** If you enable SPI, all traffics initiate from WAN would be blocked, including DMZ, Virtual Server, and ACL WAN side)

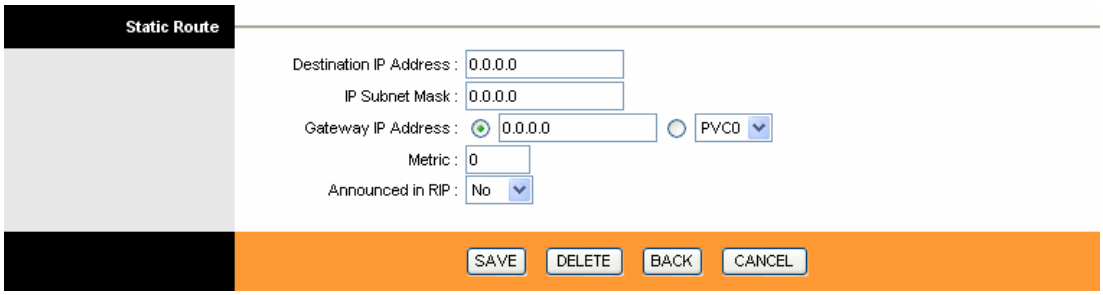
7.2 Routing

This table lists IP address of Internet destinations commonly accessed by your network. When a computer requests to send data to a listed destination, the device uses the Gateway IP to identify the first Internet router it should contact to route the data most efficiently. Select this option will list the routing table information. You can press **ADD ROUTE** to edit the static route. (As below screen)



[Static Route]

Select this option to set Static Routing information.



Destination IP Address: This parameter specifies the IP network address of the final destination of packets routed by this rule.

IP Subnet Mask: Enter the subnet mask for this destination.

Gateway IP Address: Enter the IP address of the gateway. A **gateway** does the actual forwarding of the packets. Enter the gateway's IP address in the field or select which PVC you wish to act as a gateway.

The gateway is an immediate neighbor of your ADSL Router that will forward the packet to the destination. On the LAN, the gateway must be a router on the same segment as your Router; over Internet (WAN), the gateway must be the IP address of one of the remote nodes.

Metric: Metric represents the "cost" of transmission for routing purposes. IP Routing uses hop count as the measurement of cost, with a minimum of 1 for directly connected networks. Enter a number that approximates the cost for this link. The number need not to be precise, but it must between 1 and 15. In practice, 2 or 3 is usually a good number.

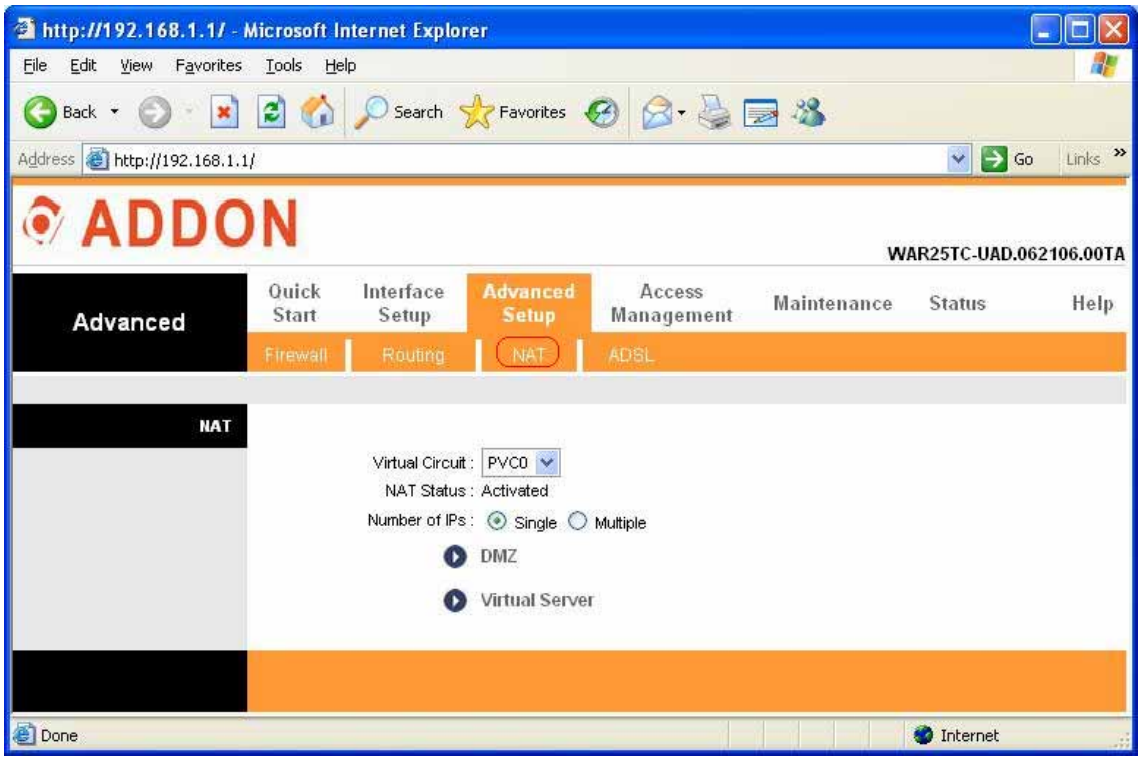
Announced in RIP: This parameter determines if the ADSL router includes the router to this

remote node in its RIP broadcasts. If you choose **Yes**, the router in this remote node will be propagated to other hosts through RIP broadcasts. If you choose **No**, this route is kept private and is not included in the RIP broadcasts.

When you are done making changes, click on **SAVE** to save your changes, **DELETE** to delete the rule with the parameters you set, **BACK** to return to the previous screen or **CANCEL** to exit without saving.

7.3 NAT

Network Address Translation (NAT) is a method for disguising the private IP addresses you use on your LAN as the public IP address you use on the Internet. You define NAT rules that specify exactly how and when to translate between public and private IP addresses. Simply select this option to setup the NAT function for your ADSL router.



Virtual Circuit (VC): The Virtual Circuit (VC) properties of the ATM VC interface identify a unique path that your ADSL/Ethernet router uses to communicate via the ATM-based network with the telephone company central office equipment.

NAT Status: This filed shows the current status of the NAT function for the current VC.

Number of IPs: This field is to specify how many IPs are provided by your ISP for current VC. It can be single IP or multiple IPs.

Note: For VCs with single IP, they share the same DMZ & Virtual servers; for VCs with multiple IPs, each VC cab set DMZ and Virtual servers. Furthermore, for VCs with multiple IPs, they can

define the Address Mapping rules; for VCs with single IP, since they have only one IP, there is no need to individually define the Address Mapping rule.

7.3.1 What NAT Does

NAT changes the source IP address in a packet received from a subscriber (the inside local address) to another (the inside global address) before forwarding the packet to the WAN side. When the response comes back, NAT translates the destination address (the inside global address) back to the inside local address before forwarding it to the original inside host. Note that the IP address (either local or global) of an outside host is never changed.

The global IP addresses for the inside hosts can be either static or dynamically assigned by the ISP. You may also designate servers, such as a Web server and a telnet server, on your local network and make them accessible to the outside world. With no servers defined, your ROUTER filters out all incoming inquiries, thus preventing intruders from probing your network. For more information on IP address translation, refer to RFC 1631, The IP Network Address Translator (NAT).

Inside/outside indicates where a host is located relative to the ROUTER. The computers hosts of your LAN are inside, while the Web servers on the Internet are outside.

Global/local indicates the IP address of a host in a packet as the packet traverses a router. The local address refers to the IP address of a host when the packet is in the local network, while the global address refers to the IP address of the host when the same packet is traveling in the WAN side.

Note that inside/outside refers to the location of a host, while global/local refers to the IP address of a host used in a packet. Thus, an inside local address (ILA) is the IP address of an inside host of a packet when the packet is still in the local network, while an inside global address (IGA) is the IP address of the same inside host when the packet is on the WAN side.

The following table summarizes this information.

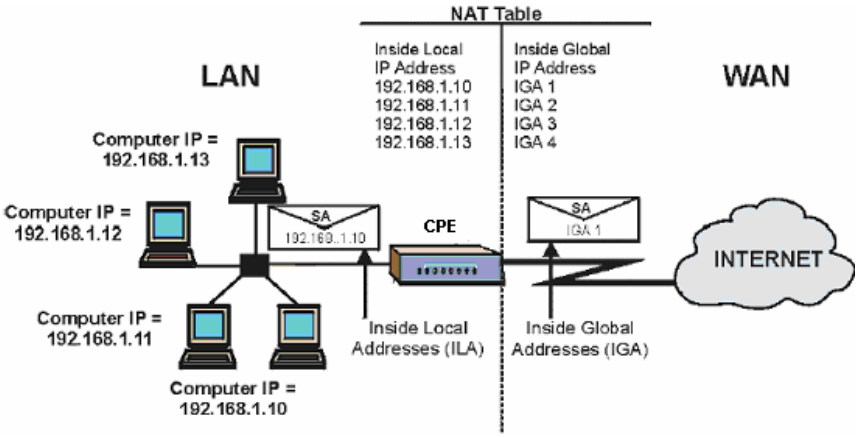
ITEM	DESCRIPTION
Inside	This refers to the host on the LAN.
Outside	This refers to the host on the WAN.
Local	This refers to the packet address (source or destination) as the packet travels on the LAN.
Global	This refers to the packet address (source or destination) as the packet travels on the WAN.

7.3.2 How NAT Works

Each packet has two addresses – a source address and a destination address. For outgoing packets, the ILA is the source address on the LAN, and the IGA is the source address

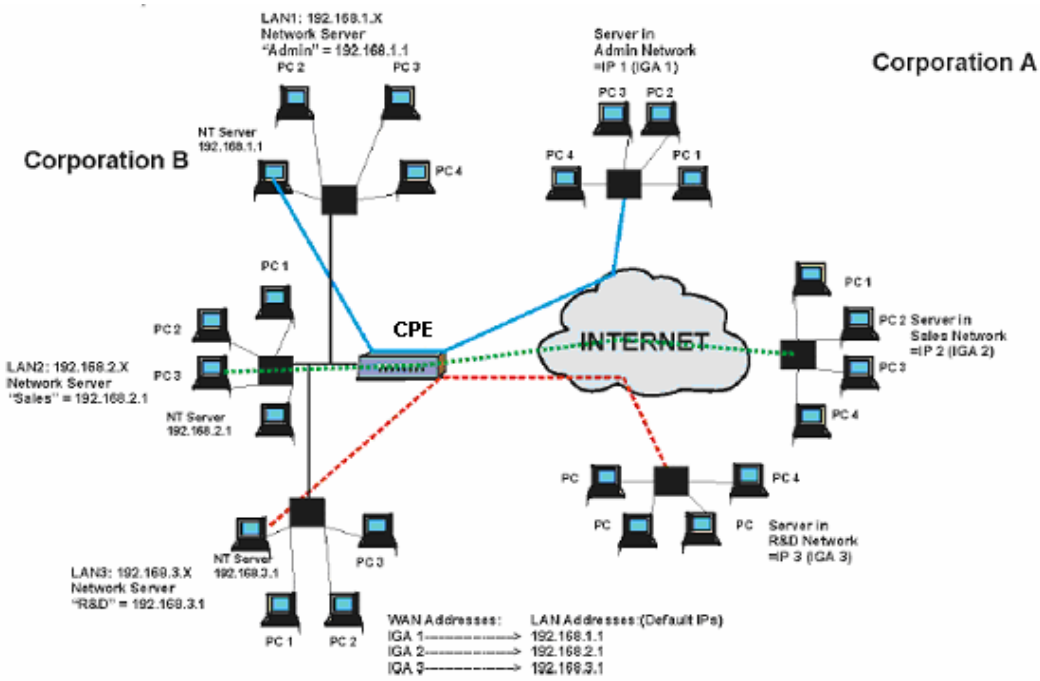
on the WAN. For incoming packets, the ILA is the destination address on the LAN, and the IGA is the destination address on the WAN. NAT maps private (local) IP addresses to globally unique ones required for communication with hosts on other networks. It replaces the original IP source address (and TCP or UDP source port numbers for Many-to-One and Many-to-Many Overload NAT mapping) in each packet and then forwards it to the Internet. The ROUTER keeps track of the original addresses and port numbers so incoming reply packets can have their original values restored.

The following figure illustrates this.



7.3.3 NAT Application

The following figure illustrates a possible NAT application, where three inside LANs (logical LANs using IP Alias) behind the router can communicate with three distinct WAN networks. More examples follow at the end of this chapter.



7.3.4 NAT Mapping Types

NAT supports five types of IP/port mapping. They are:

a. **One-to-One**: In One-to-One mode, the TC3162 EVM maps one local IP address to one global IP address.

b. **Many-to-One**: In Many-to-One mode, the TC3162 EVM maps multiple local IP addresses to one global IP address.

c. **Many-to-Many Overload**: In Many-to-Many Overload mode, the TC3162 EVM maps multiple local IP addresses to shared global IP addresses.

d. **Many-to-Many No Overload**: In Many-to-Many No Overload mode, the TC3162 EVM maps each local IP address to a unique global IP address.

e. **Server**: This type allows you to specify inside servers of different services behind the NAT to be accessible to the outside world.

The following table summarizes these types.

TYPE	IP MAPPING
One-to-One	ILA1 IGA1
Many-to-One (SUA/PAT)	ILA1 IGA1 ILA2 IGA1 …
Many-to-Many Overload	ILA1 IGA1 ILA2 IGA2 ILA3 IGA1 ILA4 IGA2 …
Many-to-Many No Overload	ILA1 IGA1 ILA2 IGA2 ILA3 IGA3 …
Server	Server 1 IP IGA1 Server 2 IP IGA1 Server 3 IP IGA1

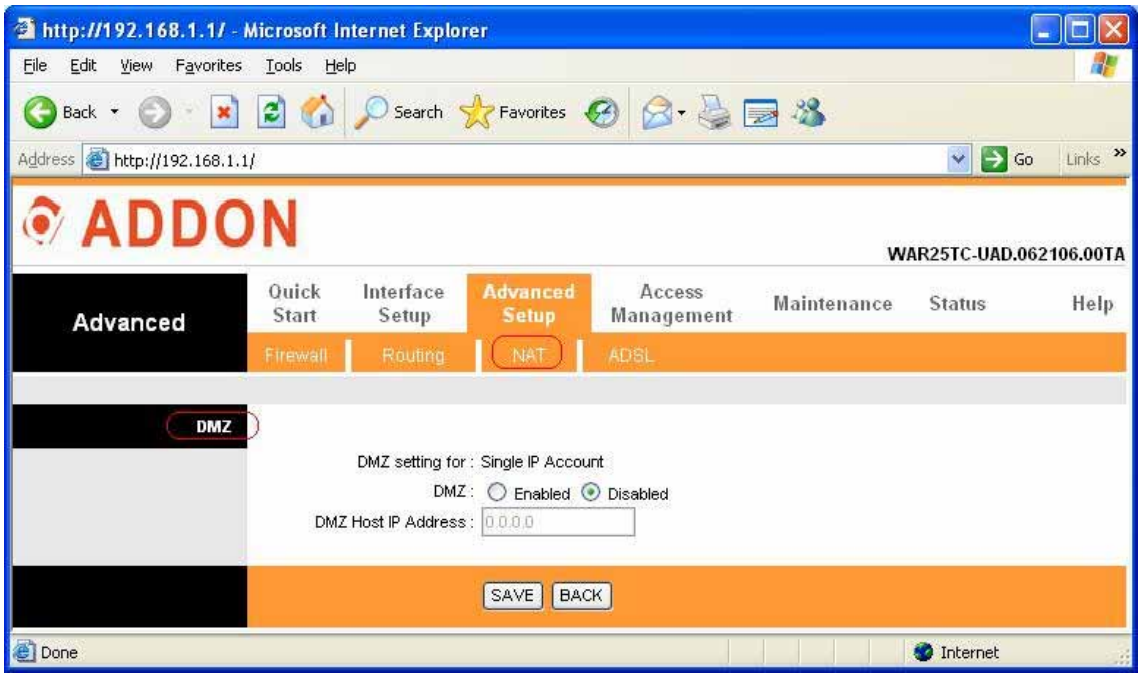
7.3.5 DMZ

A ***DMZ*** (de-militarized zone) is a host between a private local network and the outside public network. It prevents outside users from getting direct access to s server that has company data. Users of the public network outside the company can access only the DMZ host.

DMZ: Toggle the DMZ function Enabled or Disabled.

DMZ Host IP Address: Enter the specified IP Address for DMZ host on the LAN side

When you are done making changes, click on **SAVE** to save your changes or on **BACK** to return to the previous screen.



7.3.6 Virtual Server

The Virtual Server is the server or server(s) behind NAT (on the LAN), for example, Web server or FTP server, that you can make visible to the outside world even though NAT makes your whole inside network appear as a single machine to the outside world.

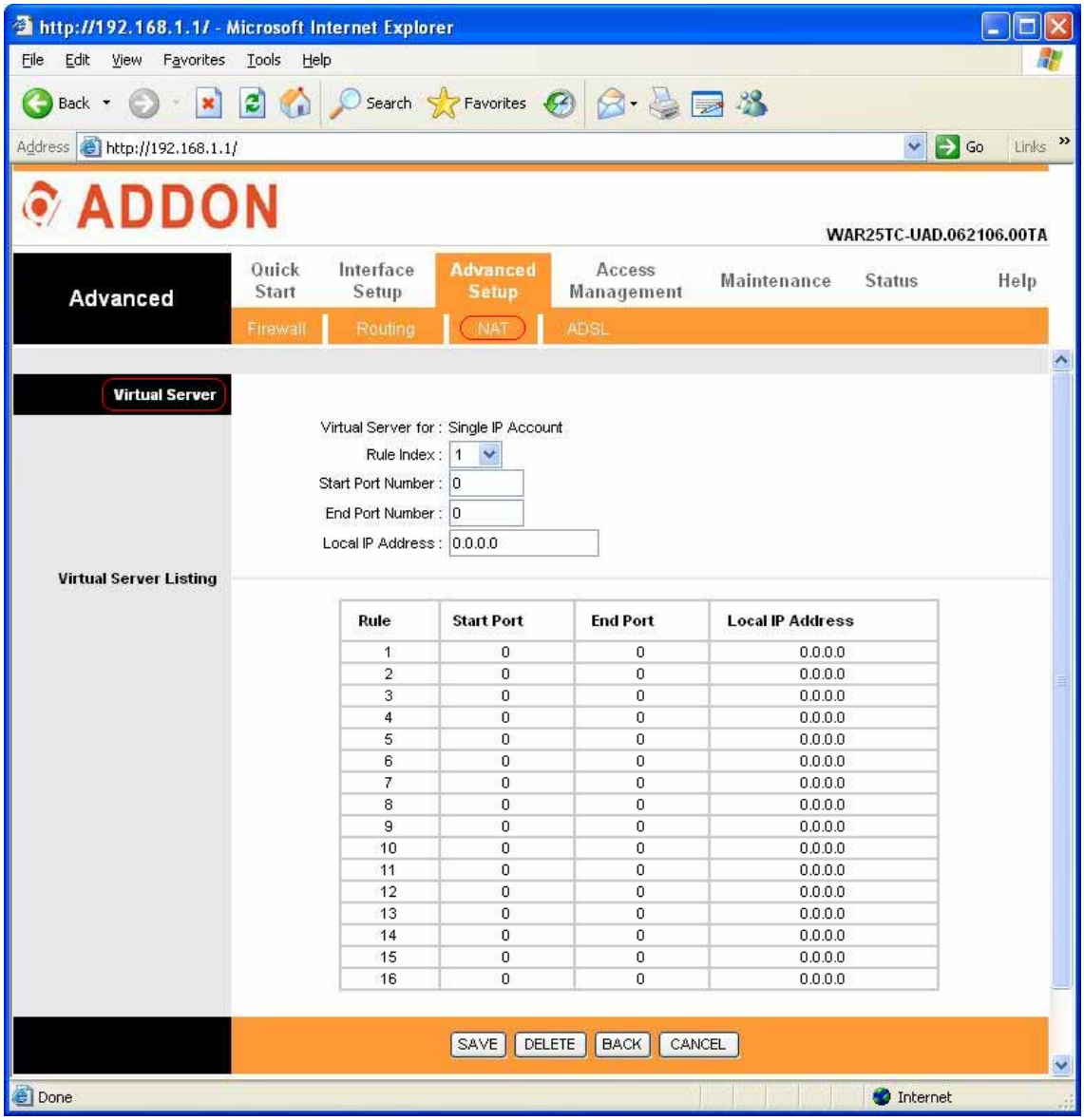
Rule Index: The Virtual server rule index for this VC. You can specify up to 10 rules. All the VCs with single IP will use the same Virtual Server rules.

Start & End port number: Enter the specific Start and End Port number you want to forward. If it is one port only, you can enter the End port number the same as Start port number. For example, set the FTP Virtual server, you can set the start and end port number to 21.

Local IP Address: Enter the IP Address for the Virtual Server in LAN side.

Virtual Server Listing: This is a listing of all virtual servers your have set.

When you are done making changes, click on **SAVE** to save your changes, **DELETE** to delete the rule with the parameters you set, **BACK** to return to the previous screen or **CANCEL** to exit without saving.



7.3.7 IP Address Mapping

The IP Address Mapping is for those VCs that with multiple IPs. The IP Address Mapping rule is per-VC based. (only for Multiple IPs' VCs).

Rule Index: The Virtual server rule index for this VC. You can specify up to 10 rules. All the VCs with single IP will use the same Virtual Server rules.

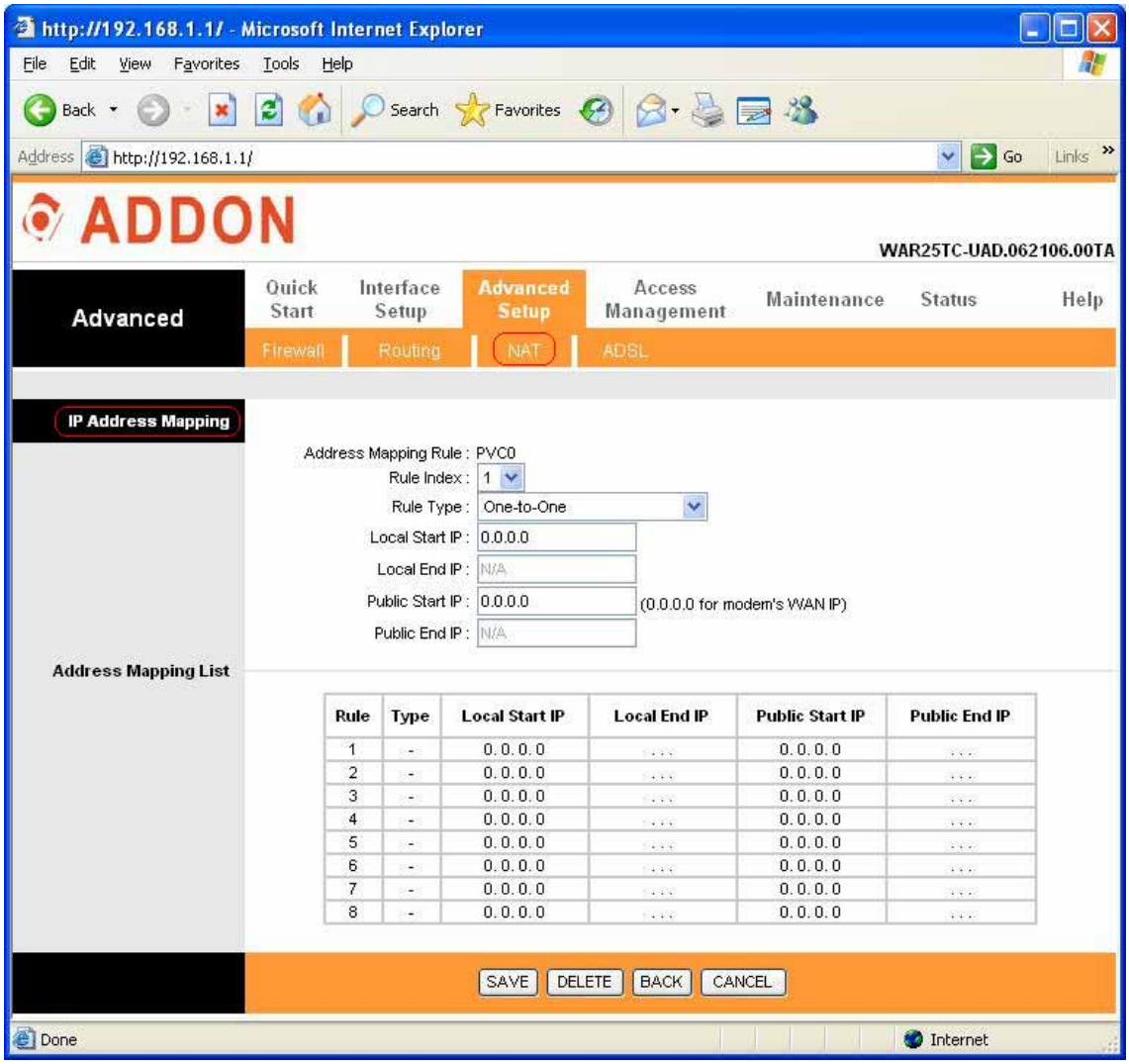
Rule Type: There are 4 types of One-to-One, Many-to-One, Many-to-Many Overload, and Many-to Many No-Overload.

Local Start & End IP: Enter the local IP address you plan to map to. Local Start IP is the starting local IP address & Local End IP is the ending local IP address. If the rule is for all local IPs, then the Start IP is 0.0.0.0 and the End IP is 255.255.255.255.

Public Start & End IP: Enter the Public IP Address you want to do NAT. Public Start IP is the

starting Public IP Address and Public End IP is the ending Public IP Address. If you have a Dynamic IP, enter 0.0.0.0 as the Public Start IP.

When you are done making changes, click on **SAVE** to save your changes, **DELETE** to delete the rule with the parameters you set, **BACK** to return to the previous screen or **CANCEL** to exit without saving.



7.4 ADSL

Select this option to set ADSL Mode and ADSL Type information.

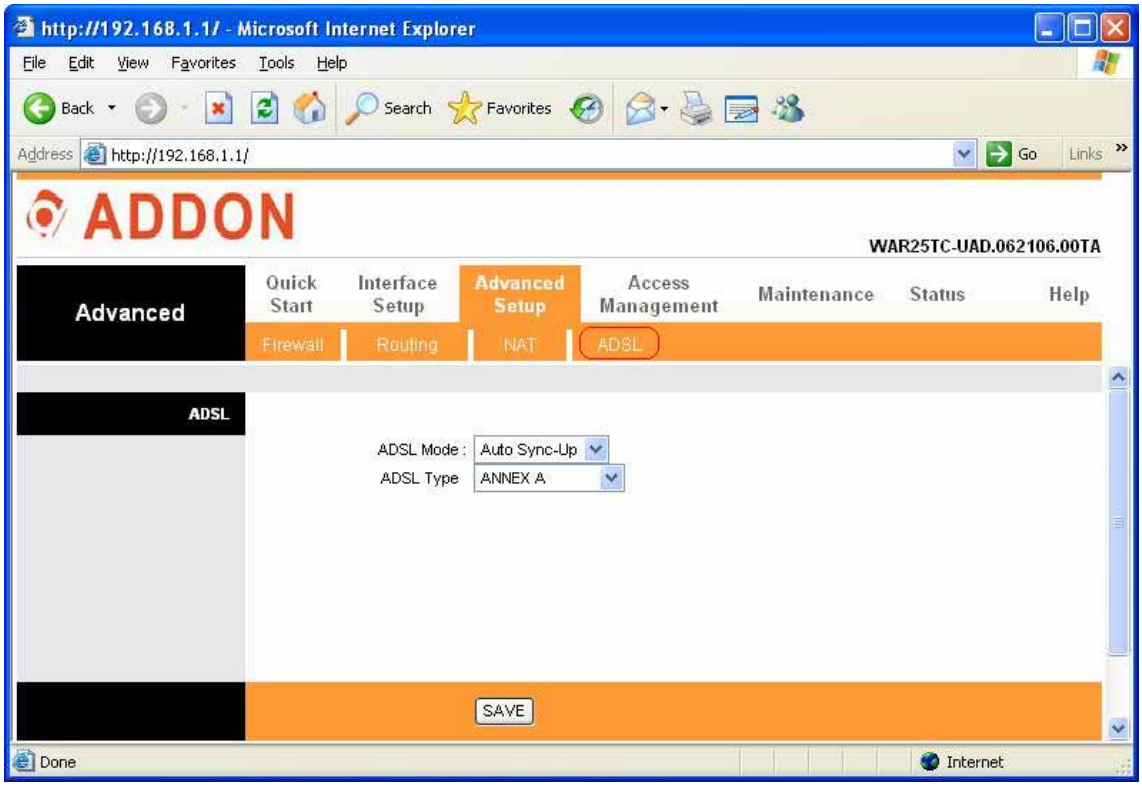
ADSL Mode: Select which mode your ADSL connection uses from the dropdown list.

The option has Auto Sync-up, ADSL2+, ADSL2, G.DMT, T1.413, G.LITE

ADSL Type: Select the ADSL type you use from the dropdown list.

ANNEX A, ANNEX I, ANNEX A/L, ANNEX M, ANNEX A/I/J/L/M

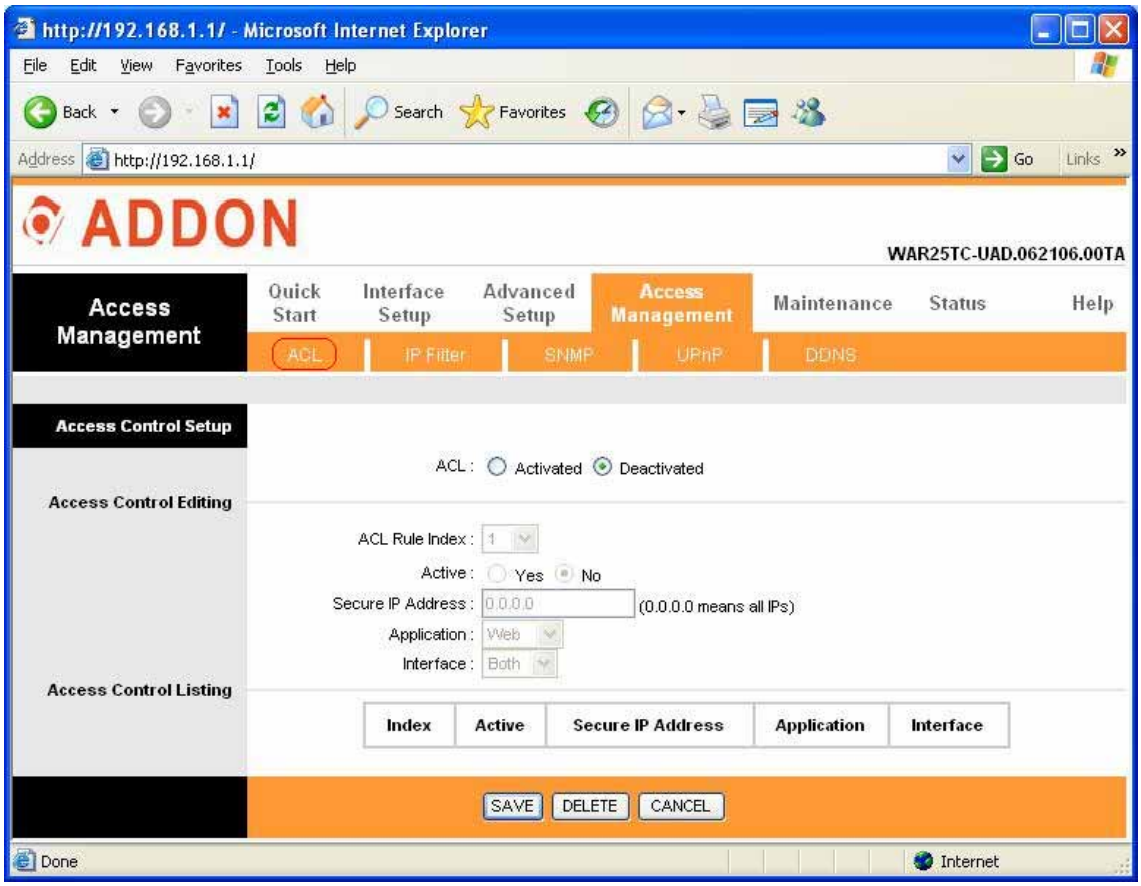
When you are done making changes, click on **SAVE** to save your changes.



8. Access Management

8.1 ACL

Go to **Access Management → ACL** to enable remote management. Access Control Listing (ACL) is a management tool that acts as a filter for incoming or outgoing packets, based on application. You may use telnet or Web to remotely manage the ADSL Router. User just needs to enable Telnet or Web and give it an IP address that wants to access the ADSL Router. The default IP 0.0.0.0 allows any client to use this service to remotely manage the ADSL Router.



ACL: There has **Activated** & **Deactivated** option. The default setting is **Deactivated** which means all IP can access via router. If you choose **Activated**, you only can access via router by listed IP addresses.

ACL Rule Index: Index number from 1 and up to 16.

Active: Once you choose **Yes** then you can access the IP via router.

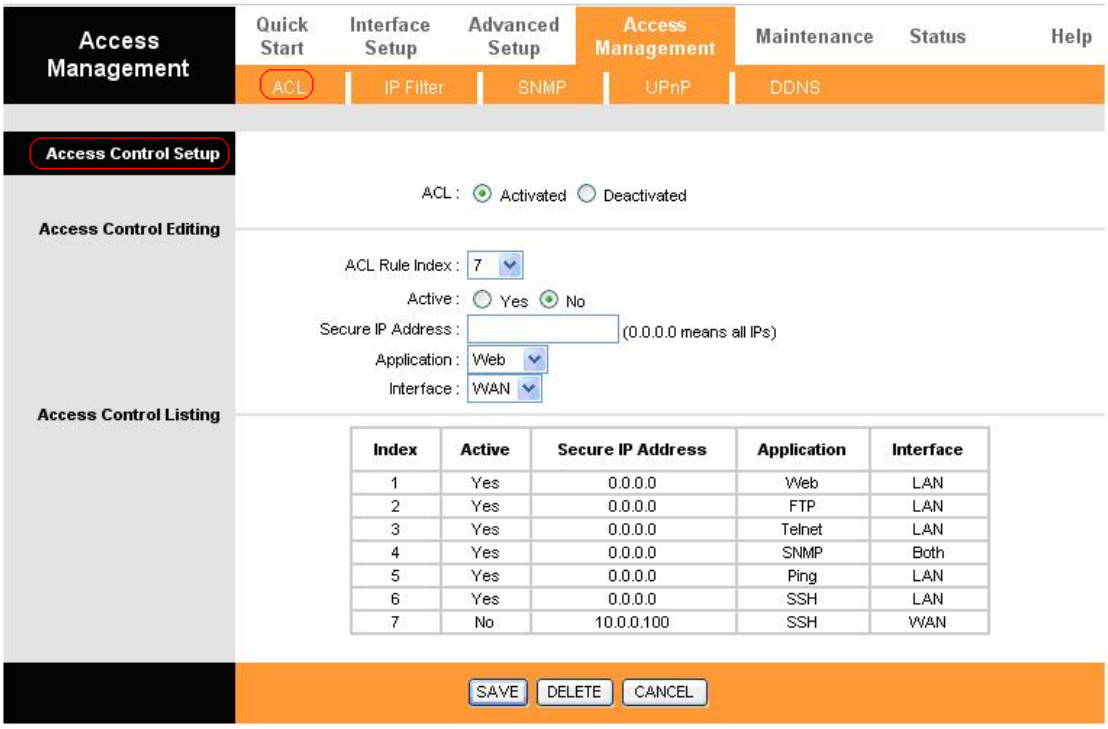
Application: Each of these labels denotes a service that you may use to remotely manage the Router. Choices are **Web, FTP, Telnet, SNMP, Ping, ALL**.

Interface: Select the access interface. Choices are **WAN, LAN** and **Both.**

For Example:

How to set your ACL?

1. You must choose **Activated** to enable your ACL function.
2. Select the ACL Rule Index number (up to 16 number)
3. You can set the specific **Secure IP address** or set **0.0.0.0** for all IPs.
4. Choose the **Application** which you want to access for this ACL Rule index.
5. Select the **Interface** you want to access from.
6. After all settings are ready, click **SAVE** and continue next ACL Rule Index setting.



[Note]

1. You must set one ACL index to access your router via LAN interface. If you don't, your router cannot access other listed IP Address. (Refer to Index 1).

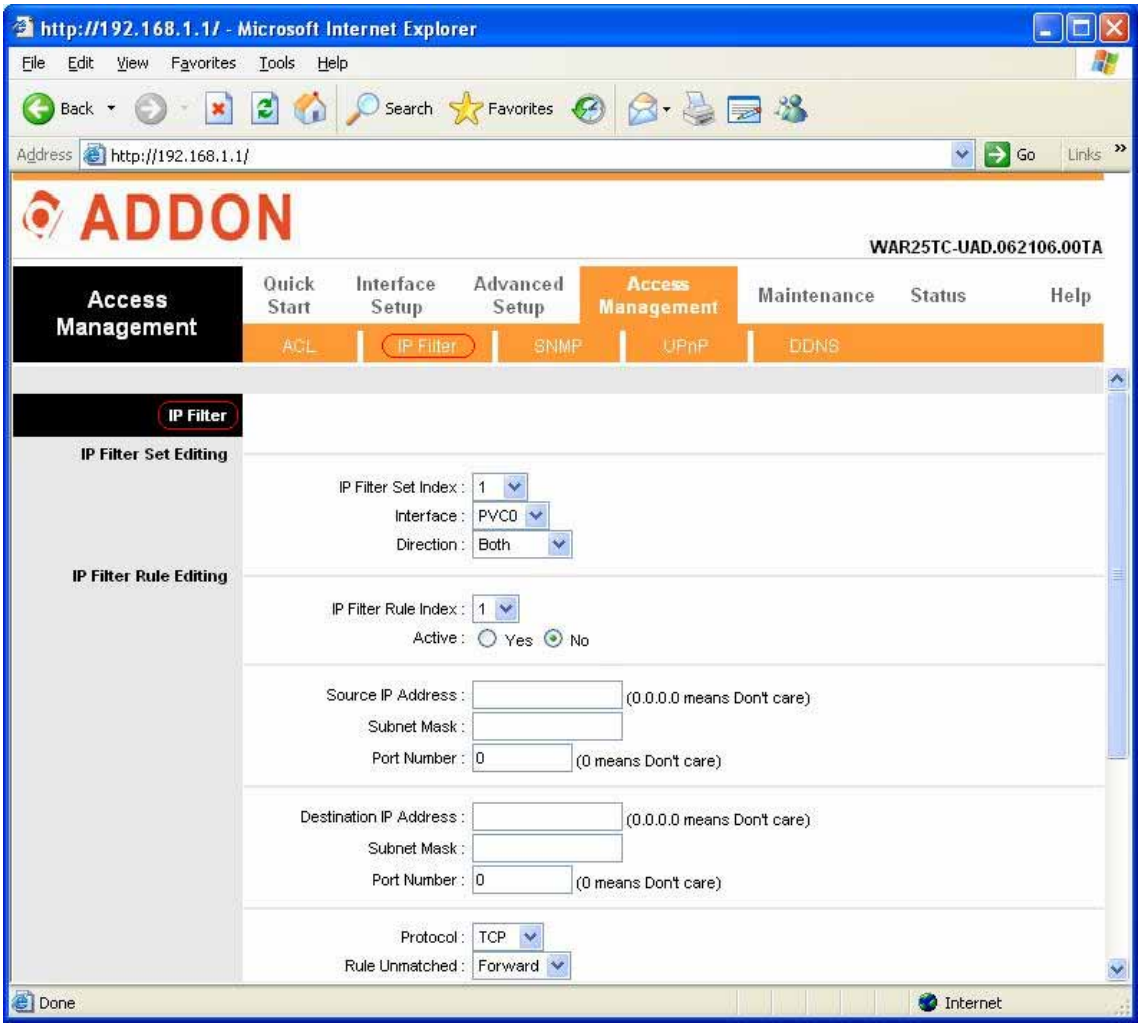
2. Remember! Once you active your ACL function, you only can access via router by listed Secure IP Address.

8.2 IP Filter

The Router provides extensive firewall protection by restricting connection parameters to limit the risk of intrusion and defending against a wide array of common hacker attackers. Go to **Access Management → IP Filtering** to set different IP filter rules of a given protocol (TCP, UDP, or ICMP) and a specific direction (incoming, outgoing, or both) to filter the packets.

IP Filter is a more complex filtering tool, based more on IP and custom rules. Each of the indices can hold six rules, and each interface can have four associated indices, allowing 24 rules per

interface. If all six rules in an index are Next rules, the data will be sent to the next index for filtering.



IP Filter Set Index: The IP Filter Set Index from 1 to 12 and each index can set up to 6 IP Filter.

Interface: Choices from **PVC0** to **PVC7** and **LAN**.

Direction: Choices are **Both**, **Incoming** and **Outgoing**. Select which direction of data flow you wish to apply the filters to. **Note** that **Incoming and Outgoing** are from the point of view of your router, relative to the interface you select. **For WAN**, data coming from outside your system is considered Incoming and data leaving your system is Outgoing. **For LAN**, data leaving your system is considered Incoming and data entering your system is Outgoing.

IP Filter Rule Editing: Select the IP Filter Rule Index you wish to modify.

Active: Toggle this rule index on or off with Yes or No, respectively.

Source IP Address: Enter the source IP address you wish to deny access to your system.

Subnet Mask: Enter the subnet mask of the source IP address.

Port Number: Enter the port number of the source IP address. Note that 0 means all that ports are allowed.

Destination IP Address: Enter the destination IP address that you wish to deny access to your system.

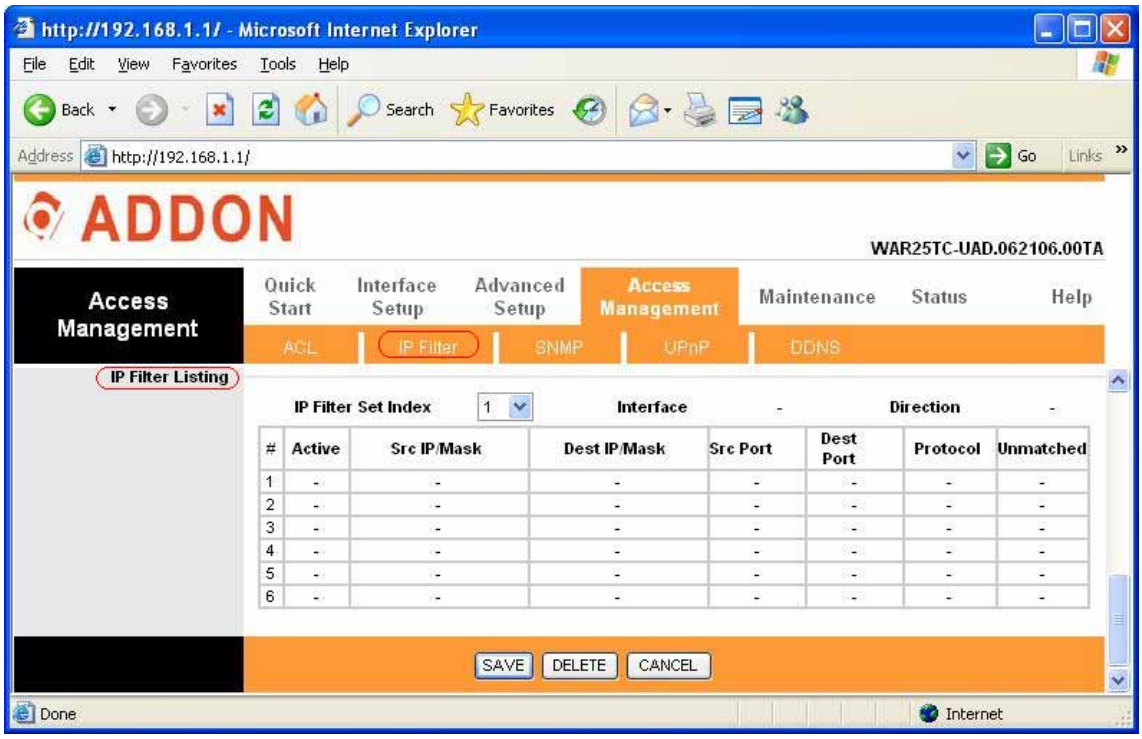
Subnet Mask: Enter the subnet mask of the destination IP address

Port Number: Enter the port number of the destination IP address. Note that 0 means that all ports are allowed

Protocol: Select the protocol to filter. Choices are TCP, UDP, and ICMP.

Rule Unmatched: Choices are **Forward** and **Next.** Select what happens to the data in question if the rule you are currently editing is unmatched. Next means that the data is then compared to the next IP filter rule. Forward means that the data will be allowed into your system. Note that a Forward rule should be the last rule, as no data will be compared to rules after a Forward rule.

IP Filter Set Index: Select the IP filter set you wish to view.



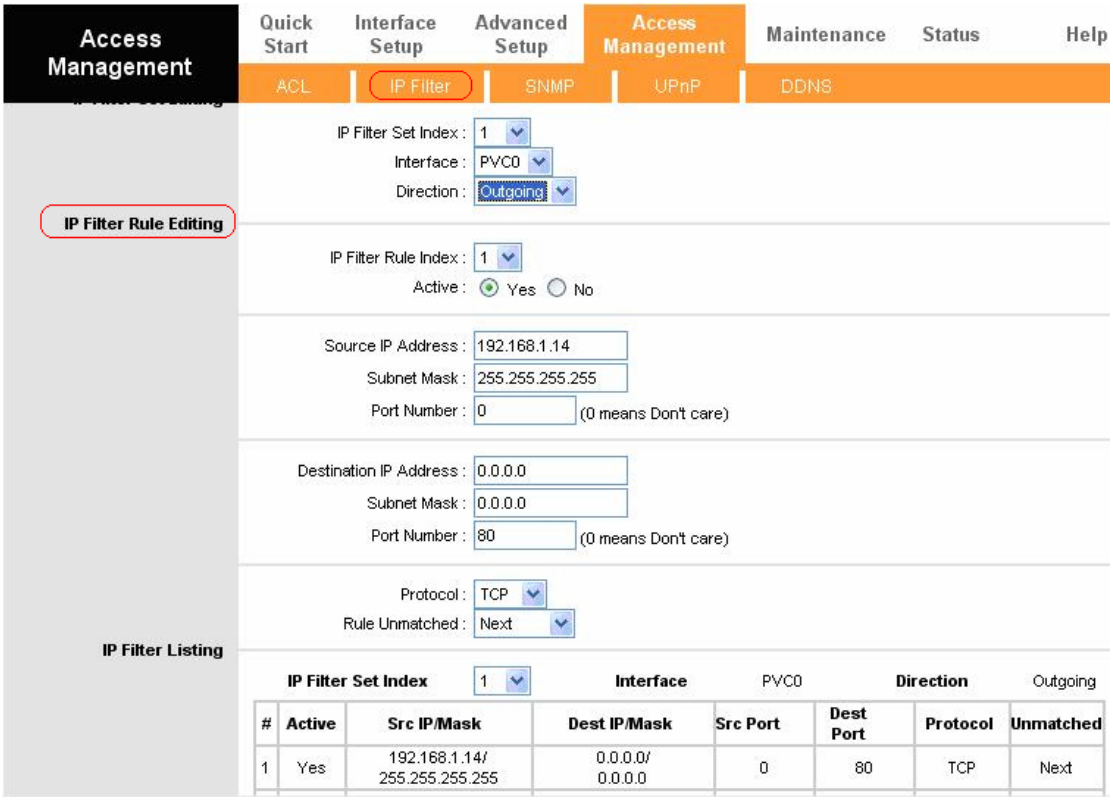
For Example

Please follow below steps to set your IP Filter:

1. **IP Filter Set Editing**: Choose your **IP Filter Set Index**, Interface and Direction options. Remember, Interface and Direction functions are affected with IP Filter Set Index. EX: if your 1st index set of IP filter set PVC0 as Interface and Outgoing as Direction, so the list of 1st IP Filter will be PVC0 and Outgoing as their settings.
2. **IP Filter Rule Editing:** Select the **IP Filter Rule Index** (up to 6 numbers for each set index) and choose **Active** option. As below example, **Source IP Address** is 192.168.1.4, **Subnet Mask** is 255.255.255.255, **Destination IP Address** & **Subnet Mask** is 0.0.0.0, **Port Number** is 80. And, **Protocol** sets TCP. From this setting, it filters 192.168.1.14, so it cannot

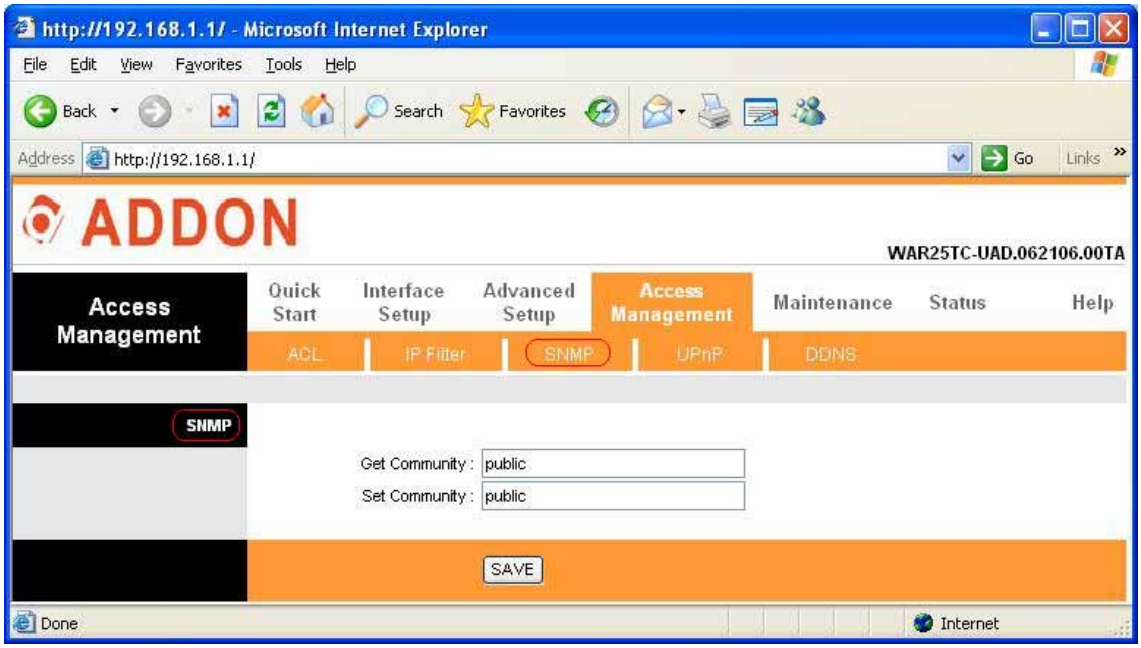
access the web. **Notice**, each IP Filter Set Index can has up to 6 filters IP. At "**Rule Unmatched**" option, you must choose **NEXT** until the last filter IP choose **Forward**.

3. After every setting is done, click **SAVE** to continue next IP Filter Editing.



8.3 SNMP

The **Simple Network Management Protocol (SNMP)** is used for exchanging information between network devices. It enables a host computer to access configuration, performance, and other system data that resides in a database on the modem. The host computer is called a *management station* and the modem is called an *SNMP agent*. The data that can be accessed via SNMP is stored in a *Management Information Database* (MIB) on the modem.



Get Community: Select to set the password for incoming Get- and GetNext request from management station.

Set Community: Select to set the password for incoming Set request from management station. The default password is '**public**'. When you are done making changes, click on **SAVE** to save your changes.

8.4 UPnP

UPnP (Universal Plug and Play) is a distributed, open networking standard that uses TCP/IP for simple peer-to-peer network connectivity between devices. An UPnP device can dynamically join a network, obtain an IP address, convey its capabilities and learn about other devices on the network. In turn, a device can leave a network smoothly an automatically when it is no longer in use. UPnP broadcasts are only allowed on the LAN.

How do I know if I'm using UPnP?

UPnP hardware is identified as an icon in the Network Connections folder (in Windows XP & Windows ME). Each UPnP-compatible device that is installed on your network will appear as a separate icon.

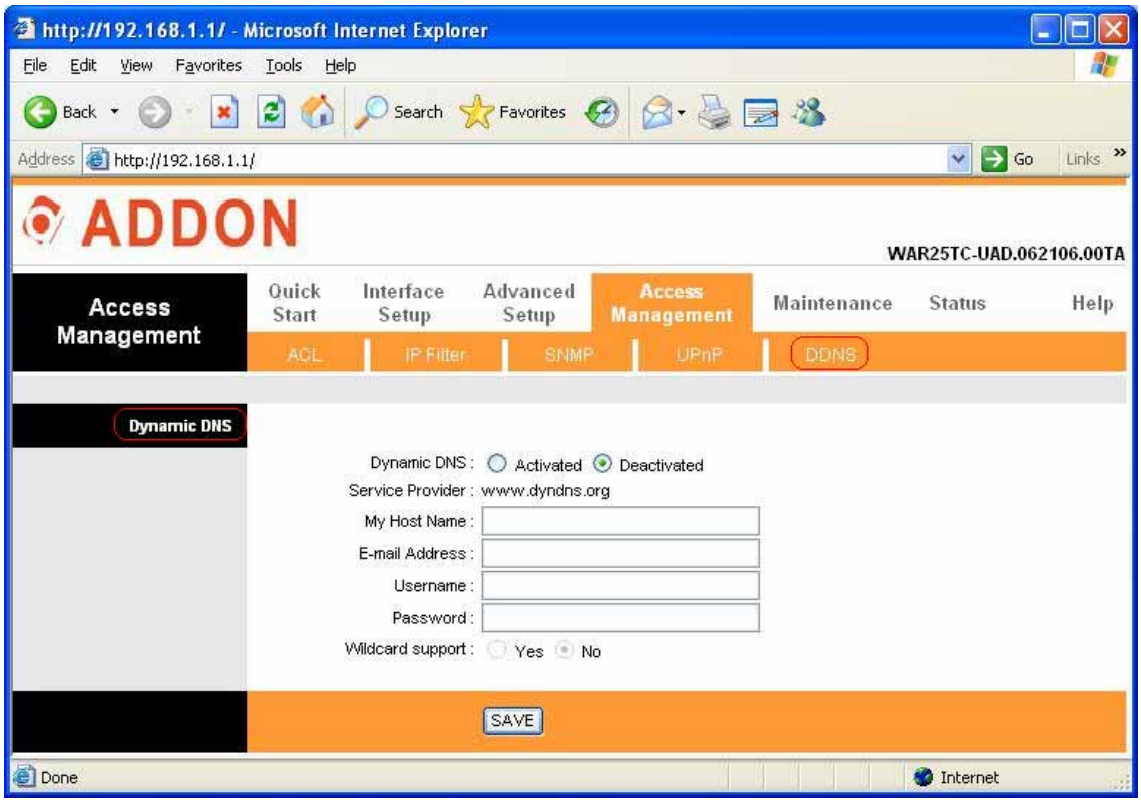
UPnP (Universal Plug and Play): You can choose **"Activated"** or **"Deactivated"** option from this session.

Auto-Configured (by UPnP Application): UPnP network devices can automatically configure network addressing, announce their presence in the network to other UPnP devices and enable exchange of simple product and service descriptions. Choose **"Activated"** option to allow UPnP-enabled applications to automatically configure the ADSL Router so that they can communicate through the ADSL Router, for example by using NAT traversal, UPnP applications automatically reserve a NAT forwarding port in order to communicate with another UPnP enabled device; this eliminates the need to manually configure port forwarding for the UPP enabled application. If you don't want to make configuration changes through UPnP, just choose **"Deactivated"**.

SAVE: Click **SAVE** to save the setting to the ADSL Router.

8.5 DDNS

The **Dynamic Domain Name System** allows you to update your current dynamic IP address with one or many dynamic DNS services so that anyone can contact you (in NetMeeting, CU-SeeMe, etc.). You can also access your FTP server or Web site on your own computer using a DNS-like address (for instance myhost.dhs.org, where my host is a name of your choice) that will never change instead of using an IP address that changes each time you reconnect. Your friends or relatives will always be able to call you even if they don't know your IP address. First of all, you need to have registered a dynamic DNS account with www.dyndns.org. This is for people with a dynamic IP from their ISP or DHCP server that would still like to have a DNS name. The Dynamic DNS service provider will give you a password or key.



Dynamic DNS: Choose the option for **Activated** or **Deactivated** DDNS.

Service Provider: The default Dynamic DNS service provider is **www.dyndns.org**.

My Host Name: Type the domain name assigned to your ADSL by your Dynamic DNS provider.

E-mail Address: Type your e-mail address.

Username: Type your user name.

Password: Type the password assigned to you.

Wildcard support: Select **Yes** or **No** to turn on DYNDNS Wildcard.

DYNDNS Wildcard --> Enabling the wildcard feature for your host causes *.yourhost.dyndns.org to be aliased to the same IP address as yourhost.dyndns.org. This feature is useful if you want to be able to use, for example, www.yourhost.dyndns.org and still reach your hostname.

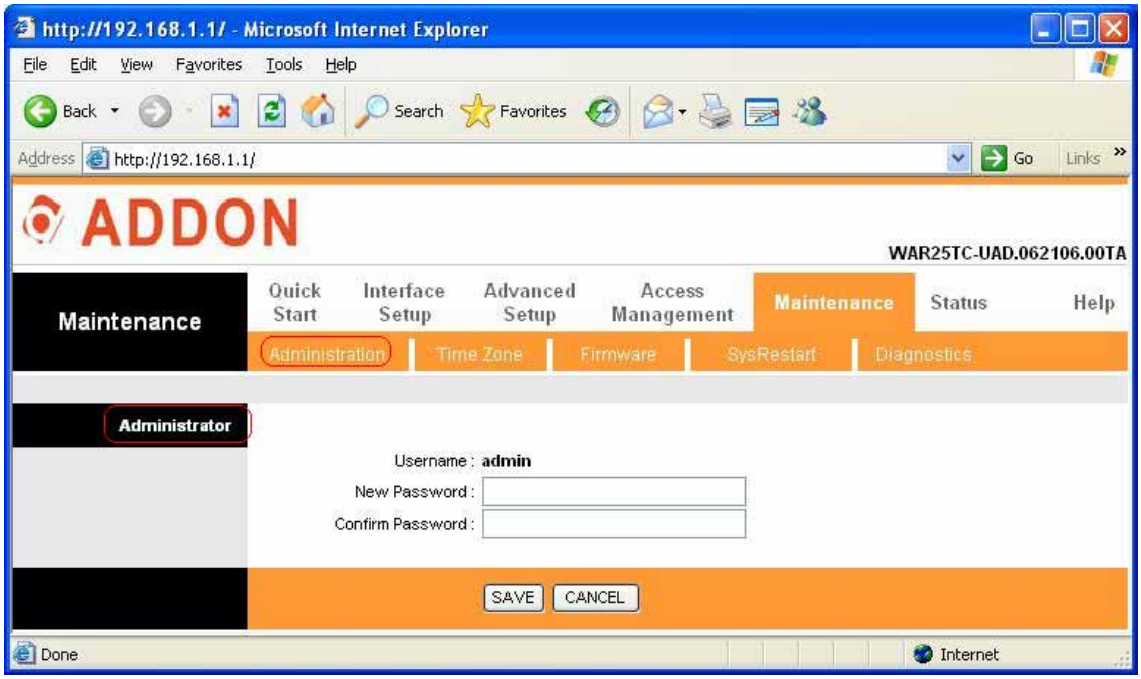
SAVE: Click **SAVE** to save your changes.

Note that you must enter the user name exactly as your ISP assigned it. If the assigned name is in the form of user@domain where domain identifies a service name, enter it exactly as given. When you are done making changes, click on SAVE to save your changes.

9. Maintenance

9.1 Administration

There is only one account that can access Web-Management interface-**Administration**. Admin has read/write access privilege. In this web page, you can set new password for admin.



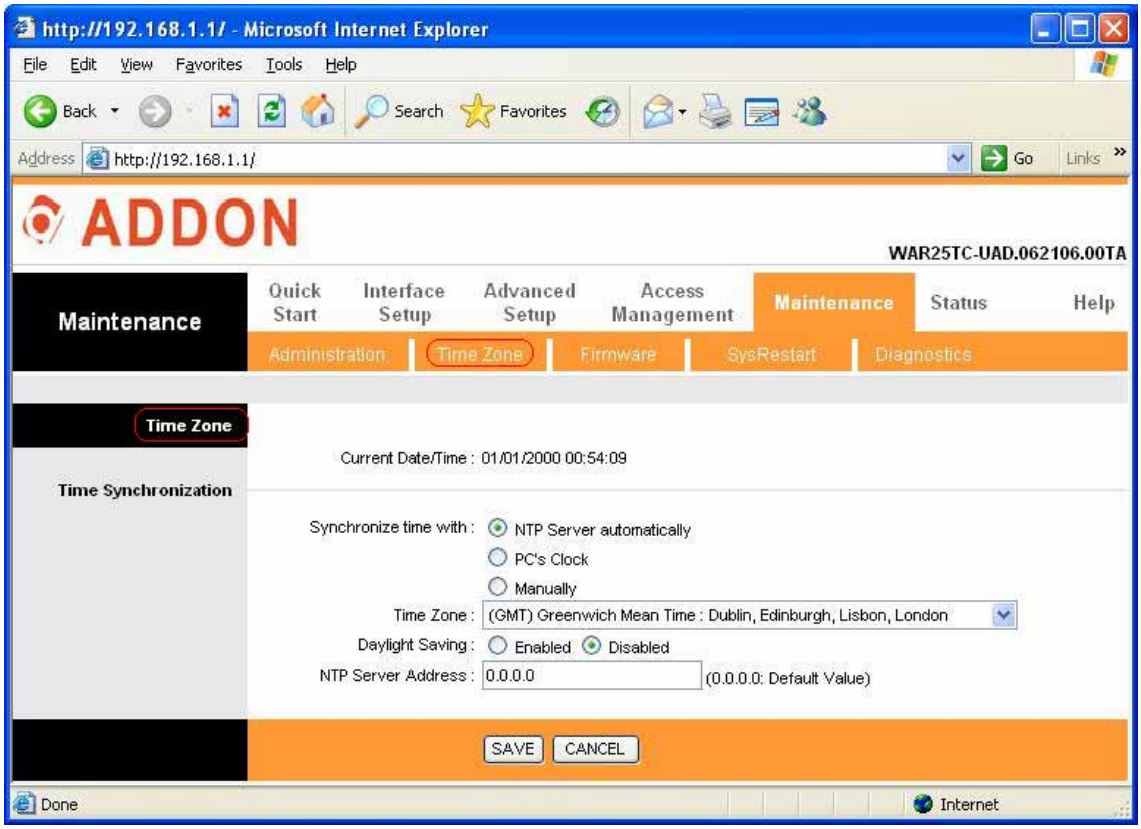
New Password: Type the new password in this field.

Confirm Password: Type the new password again in this field.

***Note:** If you ever forget the password to log in, you may press the RESET button up to 6 second to restore the factory default settings. The Factory Default Settings for User Name & Password are admin & admin.*

9.2 Time Zone

The system time is the time used by the device for scheduling services. You can manually set the time or connect to a NTP (Network Time Protocol) server. If an NTP server is set, you will only need to set the time zone. If you manually set the time, you may also set Daylight Saving dates and the system time will automatically adjust on those dates.



Current Date/Time: This field displays an updated Date and Time when you reenter this menu.

[Time Synchronization]

Synchronize time with: You can choose ***"NTP Server automatically", "PC's Clock", or "Manually"*** to coordinate the time.

Time Zone: Choose the Time Zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).

Daylight Saving: Choose **"Enabled"** or **"Disabled"** to use daylight savings time.

NTP Server Address: Type the IP address or domain name of your timeserver. Check with your ISP/network administrator if you are unsure of this information.

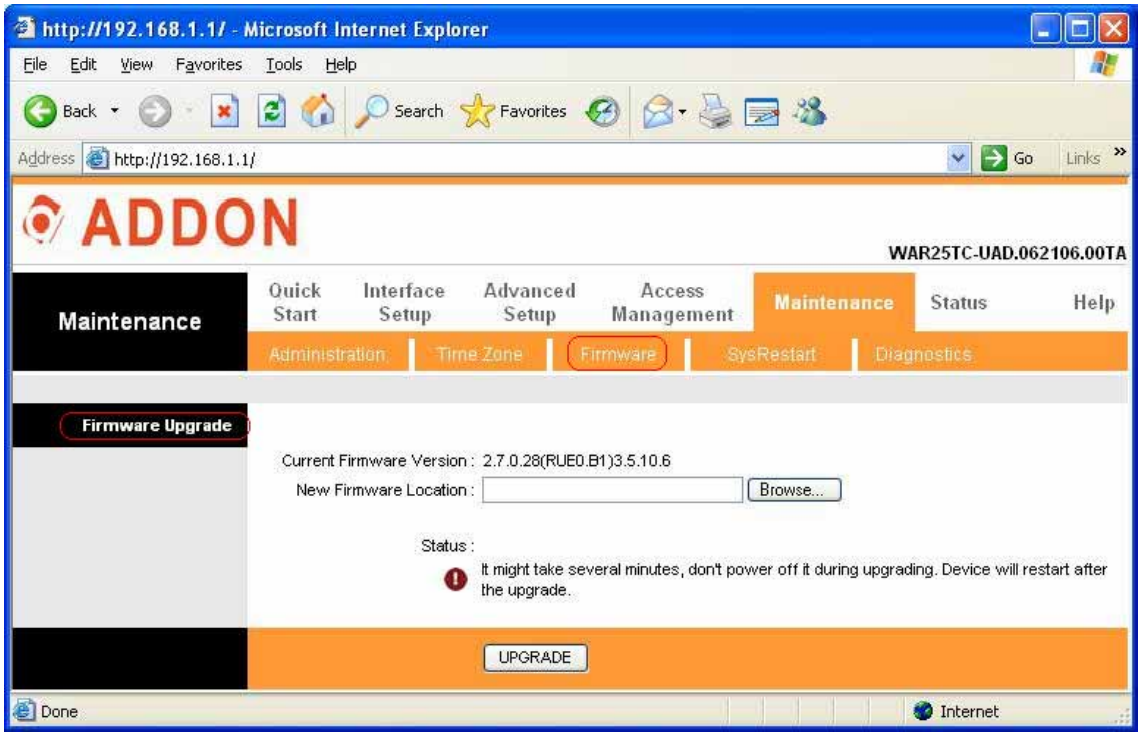
A ***Network Time Protocol (NTP)*** server can automatically set the router time for you. If you use an NTP server, you will only need to select your time zone. If you manually set the time, you can enable Daylight Saving. The router will automatically adjust when Daylight Saving goes into effect.

When you are done making changes, click on **SAVE** to save your changes or on **CANCEL** to exit without saving.

9.3 Firmware

You can upgrade the **firmware** of the router in this page. Make sure the firmware you want to use is on the local hard drive of the computer. Click on **Browse** to browse the local had drive and locate the firmware to be used for the update. Then press **UPGRADE** to upload new Firmware. **It might take several minutes, don't power off it during upgrading. Device will restart after the upgrade!!**

After a success upload, the system automatically restarts. Please wait for the device to finish restarting. This should take about 2 minutes or more. You need to log in again if you want to access the device.



Current Firmware Ver.: This filed displays the current firmware version.

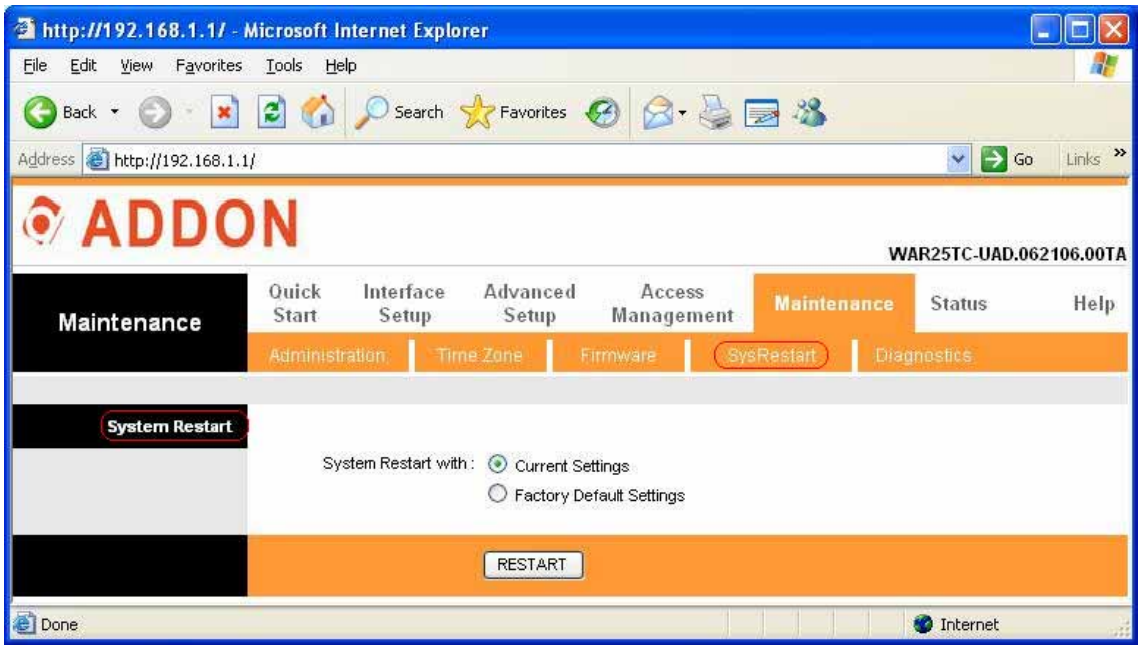
New Firmware Location: Type in the location of the file you want to upload in this field or click **Browse…** to find it.

UPGRADE: Click **UPGRADE** to begin the upload process.

9.4 System Restart

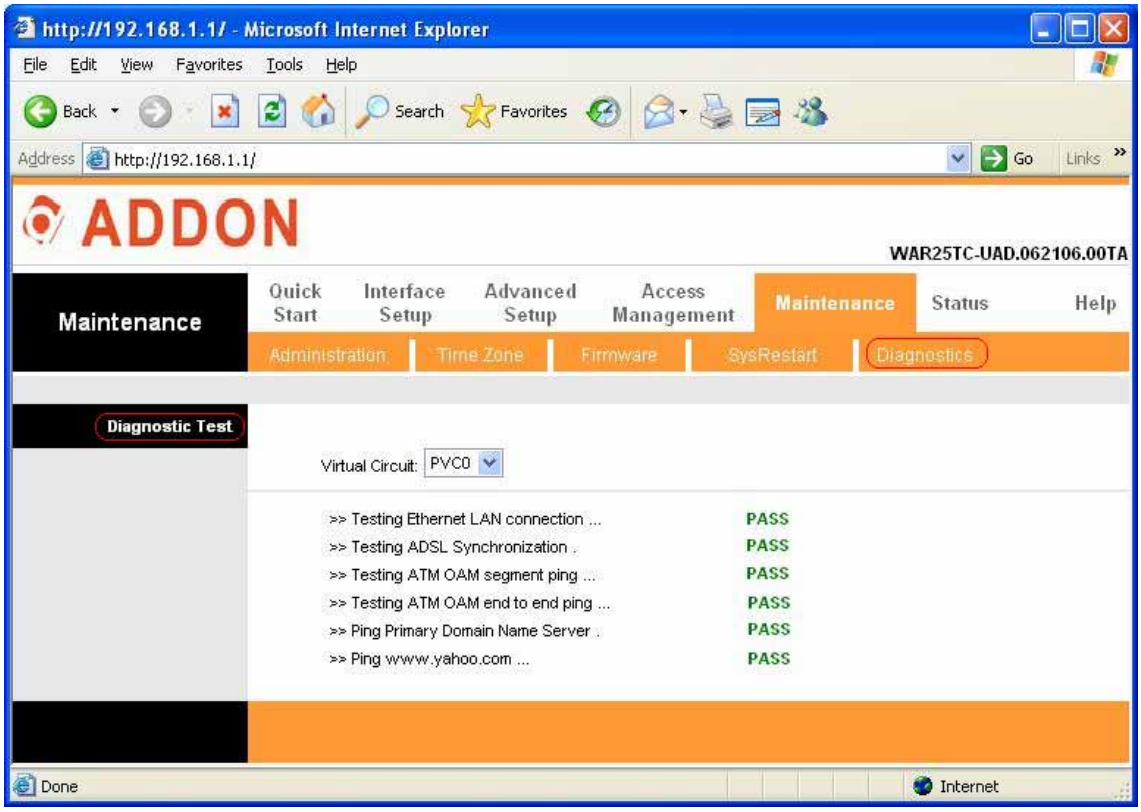
The SysRestart screen allows you to restart your router with either its current settings still in place or the factory default settings.

If you wish to restart the router using the factory default settings (for example, after a firmware upgrade or if you have saved an incorrect configuration), select **Factory Default Settings** to reset to factory default settings. Otherwise, you can select **Current Settings**. You may also reset your router to factory settings by holding the **DEFAULT** button on the back panel of your router in for 10-12 second while the router is turned on.



9.5 Diagnostic

The **Diagnostic Test** page shows the test results for the connectivity of the physical layer and protocol layer for LAN & WAN sides.



Select which PVC you wish to test from the dropdown list. The router will automatically run diagnostic tests on that circuit. A green **PASS** means that the given test was passed, a red **FAIL** means that the test was failed and a green **SKIPPED** means that the test was skipped.

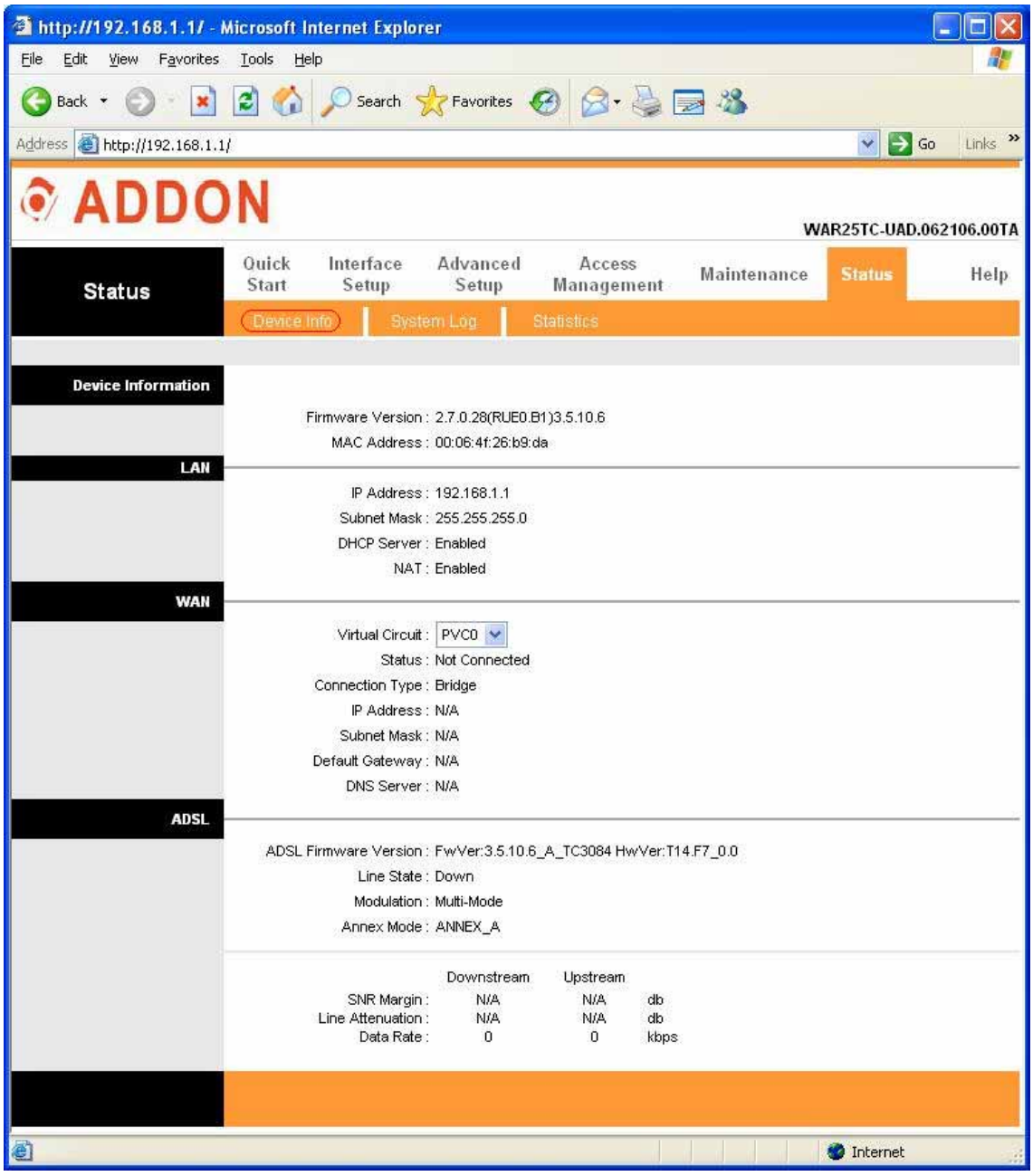
Note: 1) User ONLY can view **PVC0**'s Diagnostic Test connection.

2) **"Testing ADSL Synchronization"** might take 30 sec to execute the Diagnostic Test.

10. Status

10.1 Device Info

The **Device Info** screen is a tool that you use to monitor your ADSL Router. It shows the Firmware Version, WAN, LAN, and MAC address information. Note that these fields are read-only and are not meant for diagnostic purposes. Except the Virtual Circuit, click the drop-down list and select the name of the Virtual Circuit on which the system status is to be shown.



[Device Information]

Firmware Version: This filed displays current firmware version.

MAC Address: The MAC (Media Access Control) or Ethernet address unique to your modem.

[LAN]

IP Address: The LAN port IP address

Subnet Mask: The LAN port IP subnet mask.

DHCP Server: The status of **DHCP** Server (Enabled or Disabled)

[WAN]

Virtual Circuit: Click the drop-down list and select the name of the Virtual Circuit on which the system status is to be shown.

Status: Connected or Not Connected

Connection Type: The WAN Connection Type.

IP Address: The WAN port IP address

Subnet Address: The WAN port IP subnet mask.

Default Gateway: The IP address of the default gateway, if applicable.

DNS Server: The IP address of the DNS Server

[ADSL]

ADSL Firmware Version: This field displays current ADSL firmware version.

Line States: This field displays the ADSL connection process and status.

Modulation: This field displays the ADSL modulation status for G.dmt or T1.413.

Annex Mode: This field displays the ADSL annex modes for Annex A or Annex B. **Downstream and Upstream:** Status of SNR Margin, Line Attenuation and Data Rate

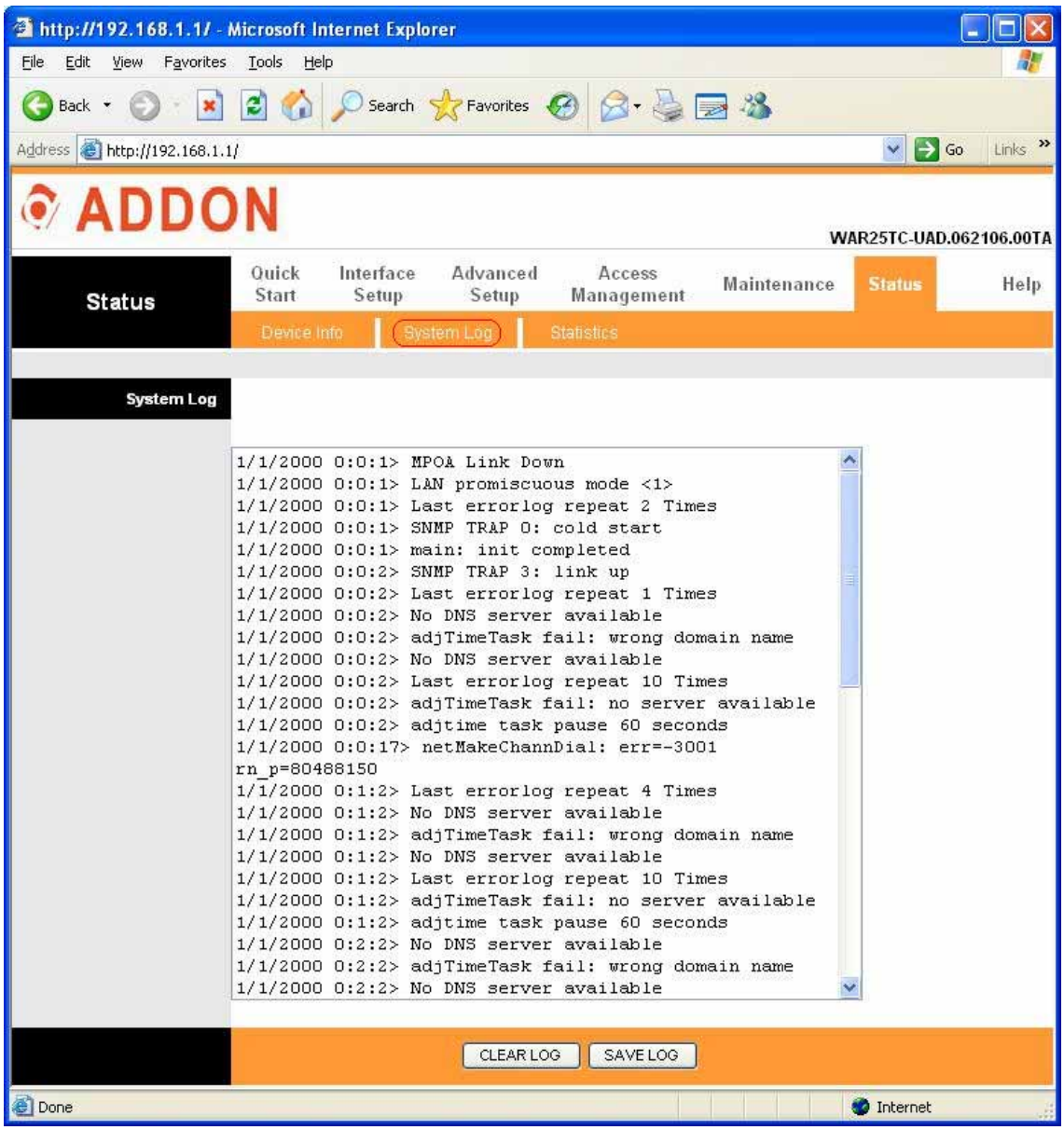
SNR Margin: Amount of increased noise that can be tolerated while maintaining the designed BER (bit error rate). The SNR Margin is set by Central Office DSLAM. If the SNR Margin is increased, bit error rate performance will improve, but the data rate will decrease. Conversely, if the SNR Margin is decreased, bit error rate performance will decrease, but the data rate will increase.

Line Attenuation: Attenuation is the decrease in magnitude of the ADSL line signal between the transmitter (Central Office DSLAM) and the receiver (Client ADSL Modem), measured in dB. It is measured by calculating the difference in dB between the signal power level received at the Client ADSL Router and the reference signal power level transmitted from the Central Office DSLAM.

Data Rate: This field displays the ADSL data rate.

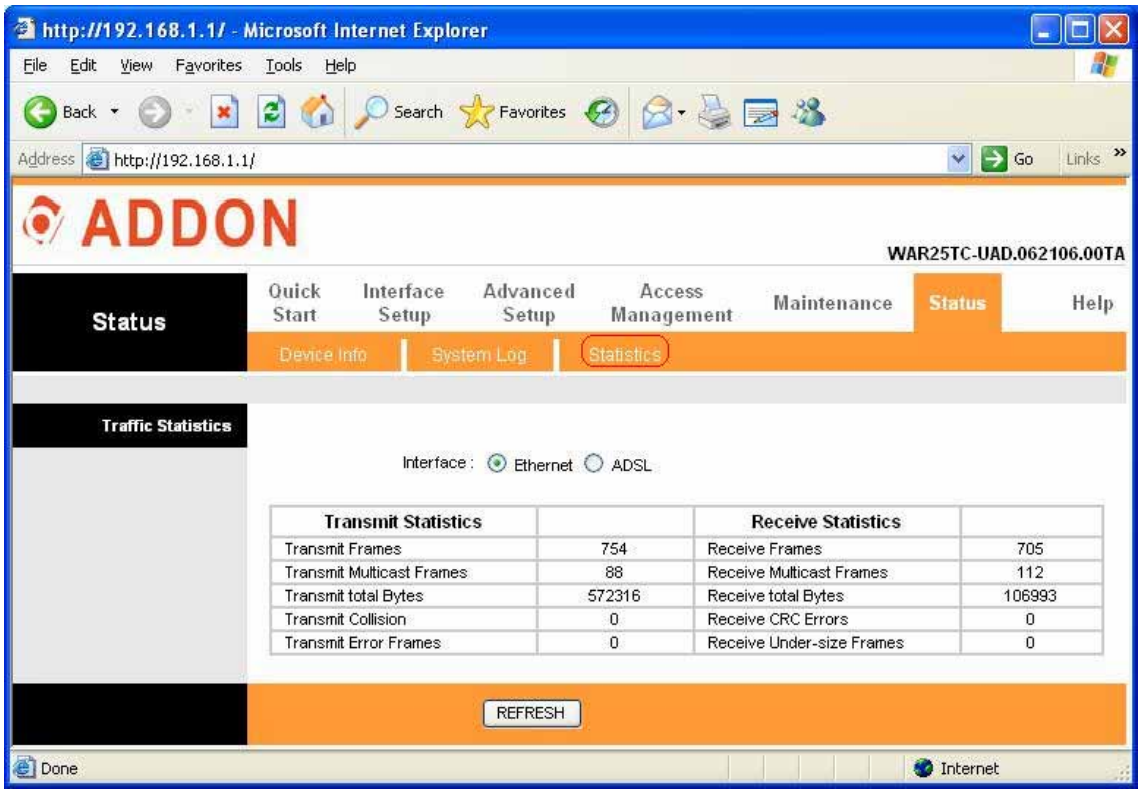
10.2 System Log

The **System Log** displays data generated or acquired by routine system communication with other devices, such as the results of negotiations with the ISP's computers for DNS and gateway IP addresses. The device keeps a running log of events and activities occurring on the Router. You can click **Save Log** to display a Windows File Download dialog box that enables opening or saving the contents of the log to your PC. To remove all entries from the list, click **Clear Log**. New entries will begin accumulating. If the device is rebooted, the logs are automatically cleared.



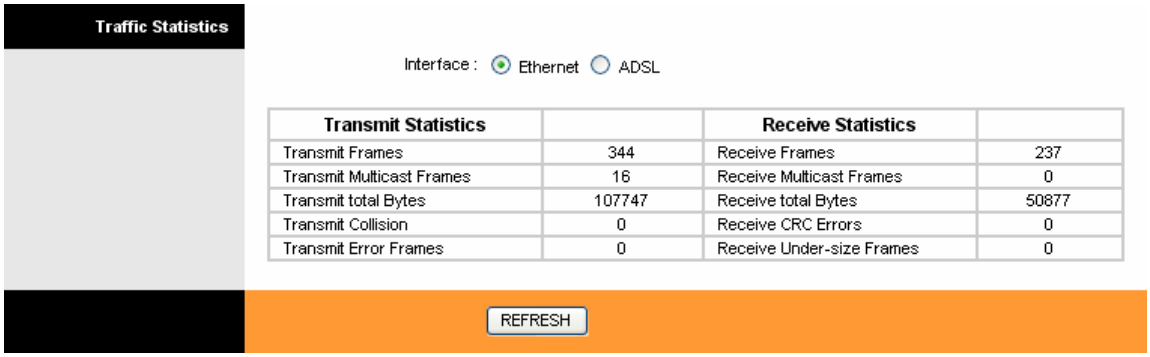
10.3 Statistics

The ADSL Router keeps **statistic** of traffic that passes through it. You are able to view the amount of packets that passes through the Router on both the WAN port & the LAN port. The traffic counter will reset if the device is rebooted. You can select **Ethernet/ADSL** to view the statistics report of LAN/WAN.



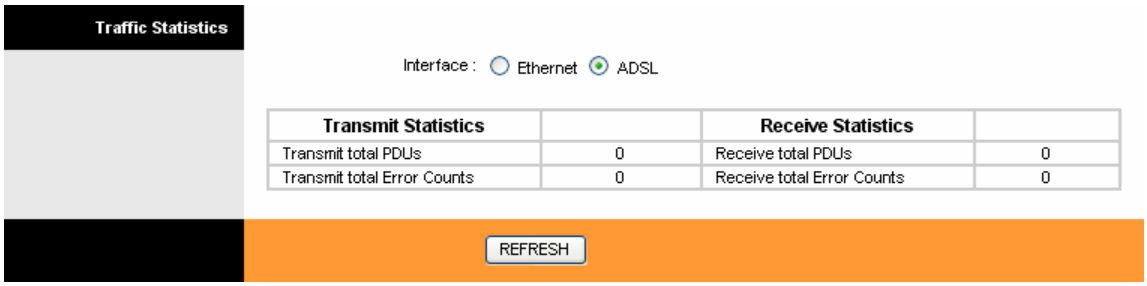
[Ethernet]

The Ethernet screen gives you information on how much data your router has transmitted and received across the Ethernet connection. Click on REFRESH to update the screen.



[ADSL]

The ADSL screen gives you information about how much data your router has transmitted or received across the ADSL connection. Click on REFRESH to update the screen.



11. Troubleshooting

If the router is not function properly, first check this session for simple troubleshooting before contacting your Internet service provider (ISP) for support.

11.1 Using LEDs to Diagnose Problems

The **LEDs** are useful aides for finding possible problem causes.

11.1.1 Power LED

The **PWR LED** on the front panel does not light up.

STEPS	CORRECTIVE ACTION
1	Make sure that the power adaptor is connected to the router and plugged in to an appropriate power source. Use only the supplied power adaptor.
2	Check that the router and the power source are both turned on and the router is receiving sufficient power.
3	Turn the router off and on.
4	If the error persists, you may have a hardware problem. In this case, you should contact your vendor.

11.1.2 LAN LED

The **LAN LED** on the front panel does not light up.

STEPS	CORRECTIVE ACTION
1	Check the Ethernet cable connections between your router and the computer or hub.
2	Check for faulty Ethernet cables.
3	Make sure your computer's Ethernet card is working properly.
4	If these steps fail to correct the problem, contact your local distributor for assistance.

11.1.3 ADSL LED

The **ADSL LED** on the front panel does not light up.

STEPS	CORRECTIVE ACTION
1	Check the telephone wire and connections between the router ADSL port and the wall jack.
2	Make sure that the telephone company has checked your phone line and set it up for ADSL service.
3	Reset your ADSL line to reinitialize your link to the DSLAM.
4	If these steps fail to correct the problem, contact your local distributor for assistance.

11.2 Problems with the Web Interface

I cannot access the web Interface.

STEPS	CORRECTIVE ACTION
1	Make sure you are using the correct IP address of the router. Check the IP address of the router.
2	Make sure that there is not a console session running.
3	Check that you have enabled web service access. If you have configured a secured client IP address, your computer's IP address must match it. Refer to the chapter on remote management for details.
4	For WAN access, you must configure remote management to allow server access from the WAN (or all).
5	Your computer's and the router's IP addresses must be on the same subnet for LAN access.
6	If you changed the router's LAN IP address, then enter the new one as the URL.
7	Remove any filters in LAN or WAN that block web service.

The web Interface does not display properly.

STEPS	CORRECTIVE ACTION
1	Make sure you are using Internet Explorer 5.0 and later versions.
2	Delete the temporary web files and log in again. In Internet Explorer, click **Tools**, **Internet Options** and then click the **Delete Files ...** button. When a **Delete Files** window displays, select **Delete all offline content** and click **OK**. (Steps may vary depending on the version of your Internet browser.)

11.3 Problems with the Login Username and Password

I forgot my login username and/or password.

STEPS	CORRECTIVE ACTION
1	If you have changed the password and have now forgotten it, you will need to upload the default configuration file. This will erase all custom configurations and restore all of the factory defaults including the password.
2	Press the **DEFAULT** button for five seconds, and then release it. When the **ADSL** LED begins to blink, the defaults have been restored and the router restarts.
3	The default username is "**admin**". The default password is "**trendchip**". The **Password** and **Username** fields are case-sensitive. Make sure that you enter the correct password and username using the proper casing.

4	It is highly recommended to change the default username and password. Make sure you store the username and password in a save place.

11.4 Problems with LAN Interface

I cannot access the router from the LAN or ping any computer on the LAN.

STEPS	CORRECTIVE ACTION
1	Check the Ethernet LEDs on the front panel. A LAN LED should be on for a port that has a PC connected. If it is off, check the cables between your router and the PC. Make sure you have uninstalled any software firewall for troubleshooting.
2	Make sure that the IP address and the subnet mask is consistent between the router and the workstation.

11.5 Problems with WAN Interface

Initialization of the ADSL connection failed.

STEPS	CORRECTIVE ACTION
1	Check the cable connections between the ADSL port and the wall jack. The ADSL LED on the front panel of the router should be on.
2	Check that your VPI, VCI, type of encapsulation and type of multiplexing settings are the same as what you collected from your telephone company and ISP.
3	Restart the router. If you still have problems, you may need to verify your VPI, VCI, type of encapsulation and type of multiplexing settings with the telephone company and ISP.

I cannot get a WAN IP address from the ISP.

STEPS	CORRECTIVE ACTION
1	Ensure that all other devices connected to the same telephone line as your router (e.g. telephones, fax machines, analogue modems) have a line filter connected between them and the wall socket (unless your are using a Central Splitter or Central Filter installed by the qualified and licensed electrician), and ensure that all line filters are correctly installed and right way around.
2	Missing line filters or line filters installed the wrong way around can cause problems with your ADSL connection, including causing frequent disconnects.

Frequent loss of ADSL line sync (disconnections).

STEPS	CORRECTIVE ACTION
1	The ISP provides the WAN IP address after authenticating you. Authentication may be through the user name and password, the MAC address or the host name.

2	The username and password apply to PPPoE and PPoA encapsulation only. Make sure that you have entered the correct **Service Type**, **User Name** and **Password** (be sure to use the correct casing).

11.6 Problems with the Internet Access

I cannot access the Internet.

STEPS	CORRECTIVE ACTION
1	Make sure the router is turned on and connected to the network.
2	If the ADSL LED is off, refer to *Section **11.1.3 (Page 71)**.*
3	Verify your WAN settings.
4	Make sure you entered the correct user name and password.
5	For wireless stations, check that both the router and wireless station(s) are using the same ESSID, channel and WEP keys (if WEP encryption is activated).

Internet connection disconnects.

STEPS	CORRECTIVE ACTION
1	Check the schedule rules.
2	If you use PPPoA or PPPoE encapsulation, check the idle time-out setting.
3	Contact your ISP.

If you have any troubles to configure or setup this ADSL Ethernet Router, please feel free to contact us.

Before contacting us, make sure collect following information. Submit complete detailed information of your problem will help us to provide you accurate answers.

Model Name:

Serial Number:

PC Settings:

Other: