

# **802.11g Wireless Four Port Ethernet ADSL2+ Router**

**User's Manual**

November 2007

## FCC Warning

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 equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

**FCC Caution:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

### **IMPORTANT NOTE:**

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of about eight inches (20cm) between the radiator and your body.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

## Notice

Changes or modifications to the equipment, which are not approved by the party responsible for compliance could affect the user's authority to operate the equipment. Company has an on-going policy of upgrading its products and it may be possible that information in this document is not up-to-date. Please check with your local distributors for the latest information.

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### **Trademarks:**

**All trade names and trademarks are the properties of their respective companies.**

### Revision History

<b>Revision</b>	<b>History</b>
V1.1	1 <sup>st</sup> release

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# 1. Introduction

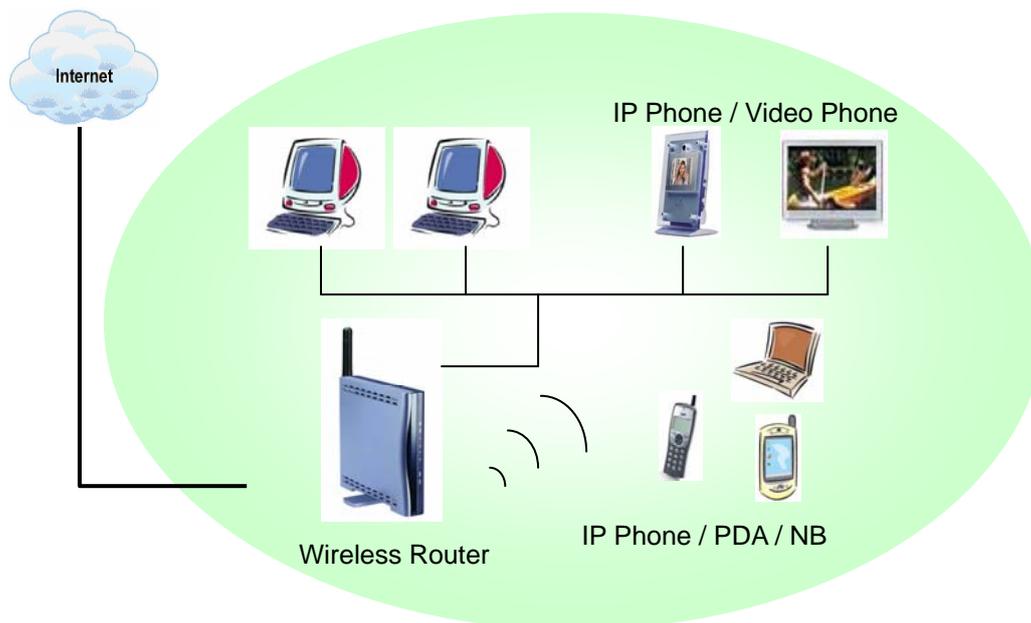
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## 1.1 Introduction

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 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 and Easy setup software to install 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)
- Supports OAM F4/F5 loop-back, AIS and RDI OAM cells.
- ATM Forum UNI 3.1/4.0 PVC
- Support up to 8PVCs.
- Traffic Shaping (ATM QoS) UBR, CBR, VBR-rt, VBR-nrt

#### ◆ **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)
- SNMP support (V.1 and V.2C)
- Telnet Remote Management
- Firmware upgrade via FTP / TFTP (Web-based GUI)
- Built-in Diagnostic tool
- TR-069 support (CPE WAN Management Protocol) (Optional)

### ◆ **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.

### ◆ **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-bit WEP, WPA, WPA2 security
- Dynamic data rate scaling at 54, 48, 36, 24, 18, 12, 9 and 6Mbps for IEEE802.11g
- Dynamic data rate scaling at 11, 5.5, 2 and 1Mbps for IEEE802.11b

- Supports Quality of Service (QoS), 802.11e, WMM
- MAC Address Filtering

### ◆ **Security**

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

## 2. Hardware Installation

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### 2.1 System Requirements

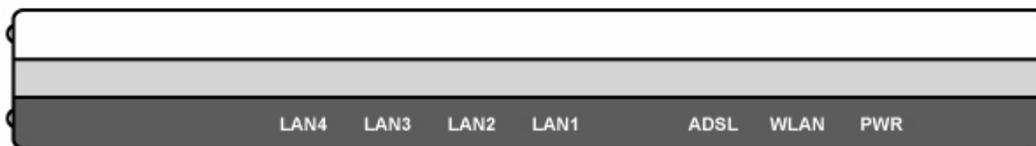
- Pentium III 266 MHz processor or higher
- 128 MB RAM minimum
- 20 MB of free disk space minimum
- RJ45 Ethernet Port

### 2.2 Package Contents

- Wireless ADSL2+ Router
- RJ-45 Ethernet cable
- RJ-11 Phone cable
- Power Adapter
- Quick Installation Guide
- One External Antenna (for detachable model)

### 2.3 Front Panel Indicators and Description

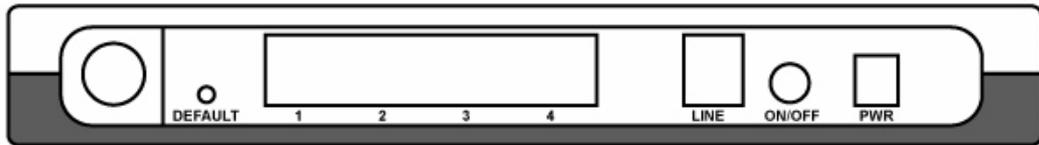
Front panel of this Wireless ADSL2+ router has LED indicators to display router's operating status.



#### 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.
ADSL	When connection with Internet (ADSL Connected) is established, this LED will light up. When this LED is flashing: NO ADSL physical connection
LAN1	When port 1 connection with PC or Switch / Hub is established, this LED will light up.
LAN2	When port 2 connection with PC or Switch / Hub is established, this LED will light up.
LAN3	When port 3 connection with PC or Switch / Hub is established, this LED will light up.
LAN4	When port 4 connection with PC or Switch / Hub is established, this LED will light up.

## 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.

### 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

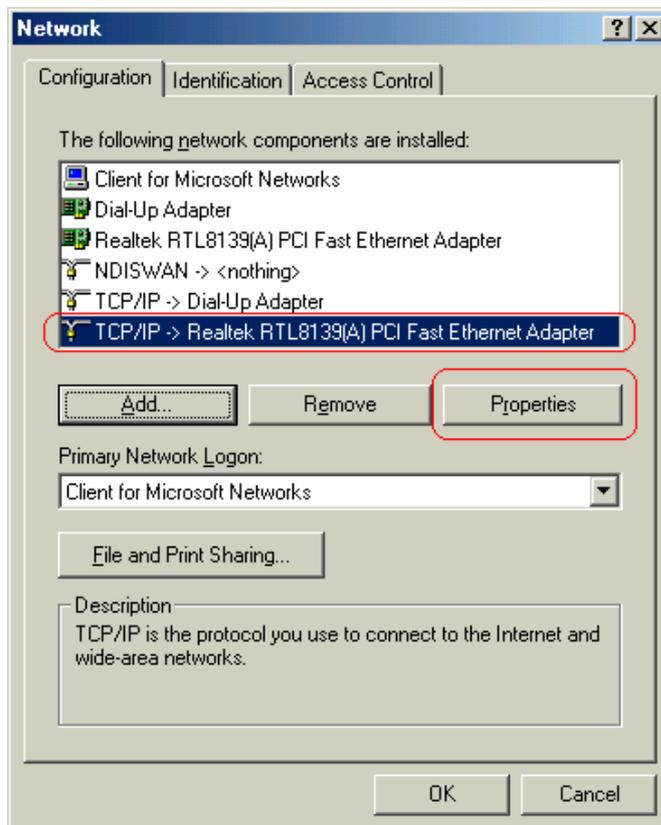
#### For Windows 98SE and ME

**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.

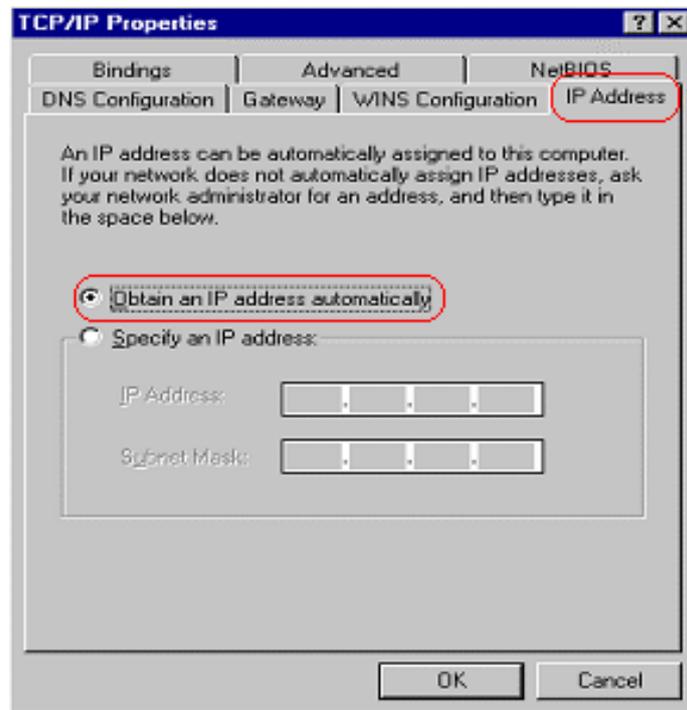
**Step 4:** You can setup the following configurations in **two** methods:



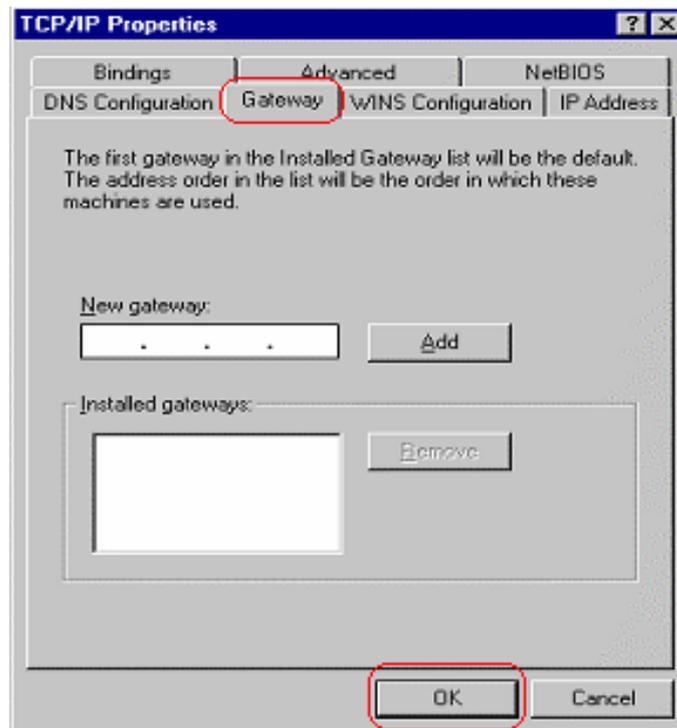
**Option1:** Get an IP from Router Automatically

Select the **IP Address** tab.

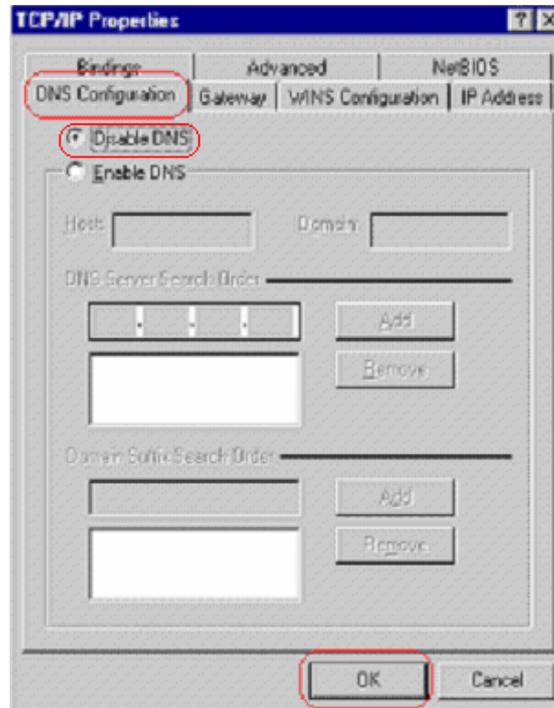
In this page, click **Obtain an IP address automatically** radio button.



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

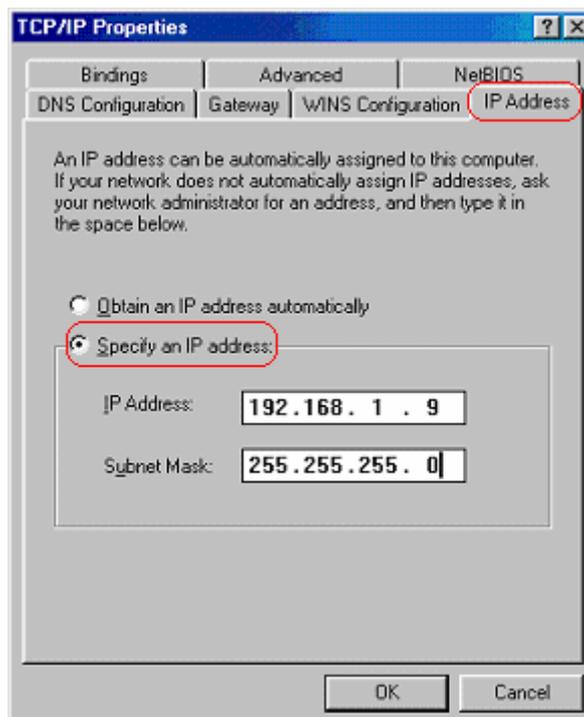


- 2) Then, select **DNS Configuration** tab and select **Disable DNS** then click **OK** to finish the configuration.

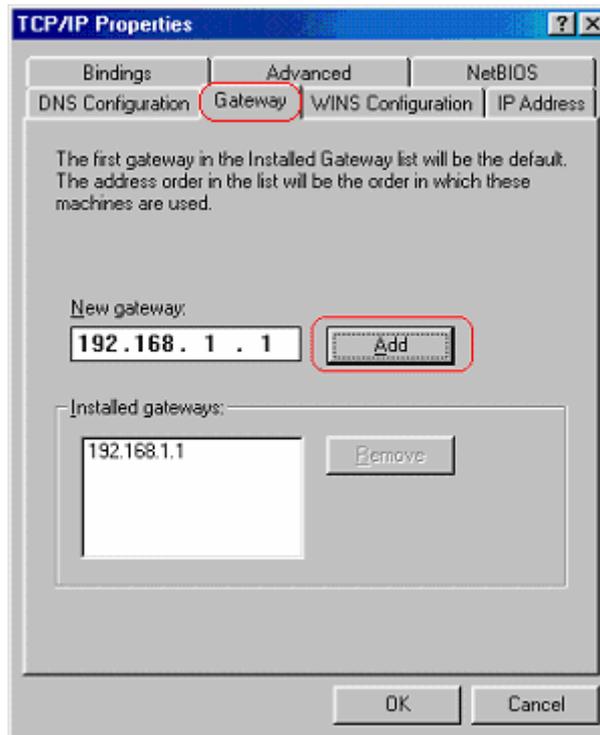


**Option2:** Configure IP Manually

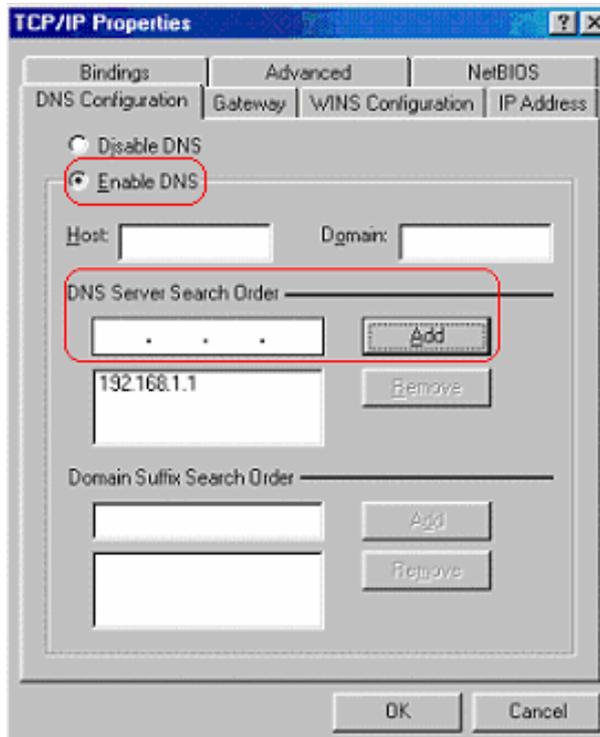
- 1) At **IP Address** tab, select **Specify an IP address**, set default IP address for the Router is **192.168.1.1**, so use **192.168.1.X** (X is a number between 2 to 254) for **IP Address** field and **255.255.255.0** for **Subnet Mask** field.



- 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**.

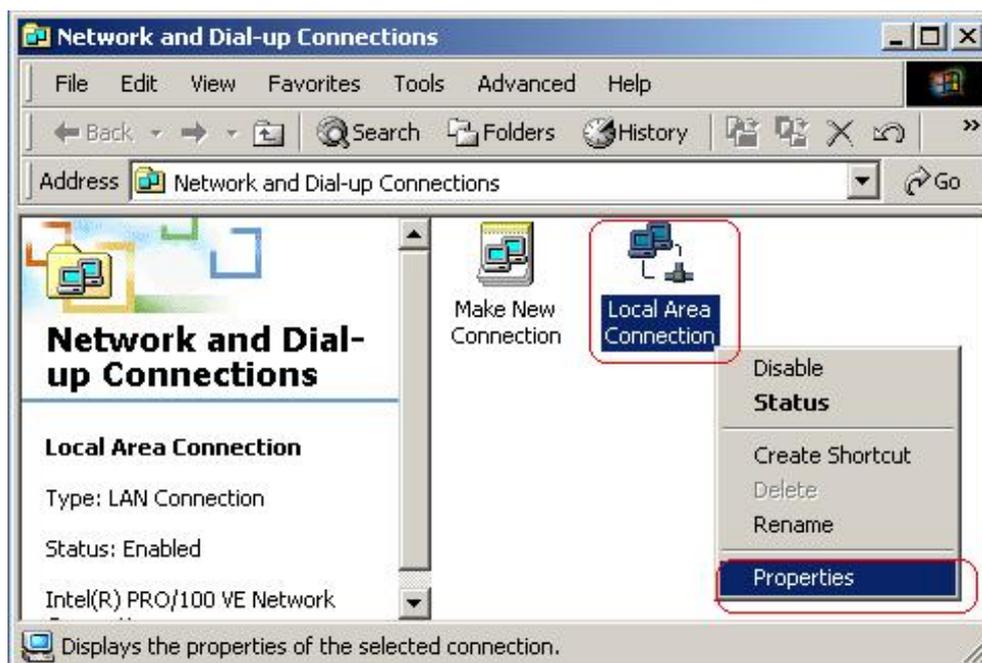


**For Windows 2000**

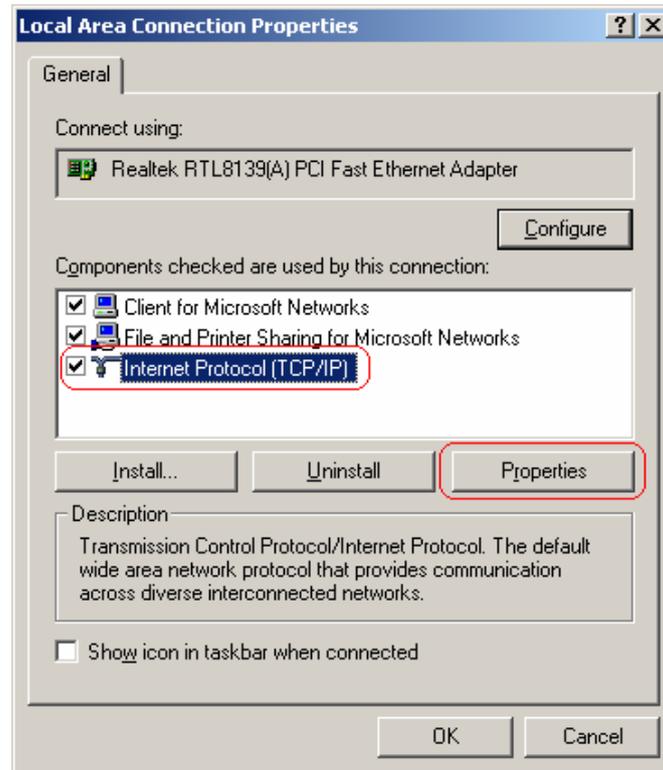
- Step 1:** (a) Right-click **My Network Places** and select **Properties** in the main window screen  
(b) Or, go to **Start / Settings / Control Panel**. In the **Control Panel**, double-click on **Network and Dial-up Connections**.



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

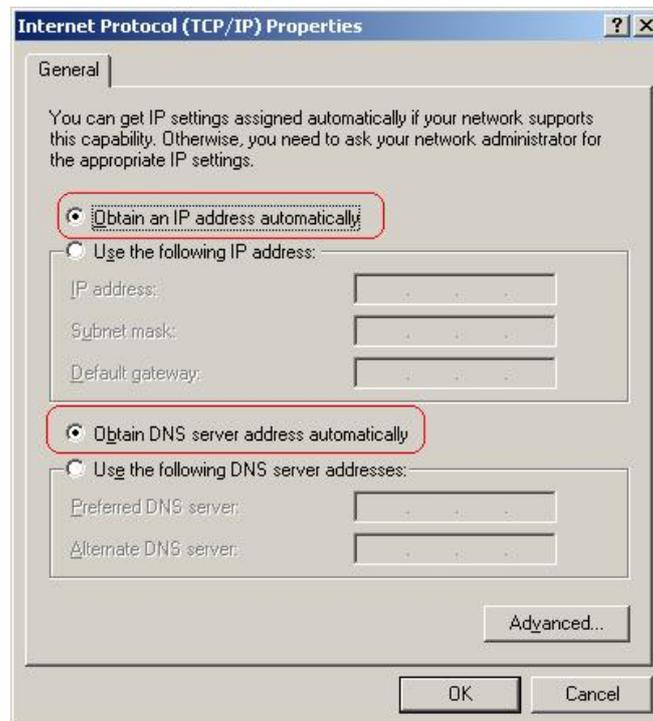


**Step 3:** Select **Internet Protocol (TCP/IP)** then click **Properties**:



**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**.

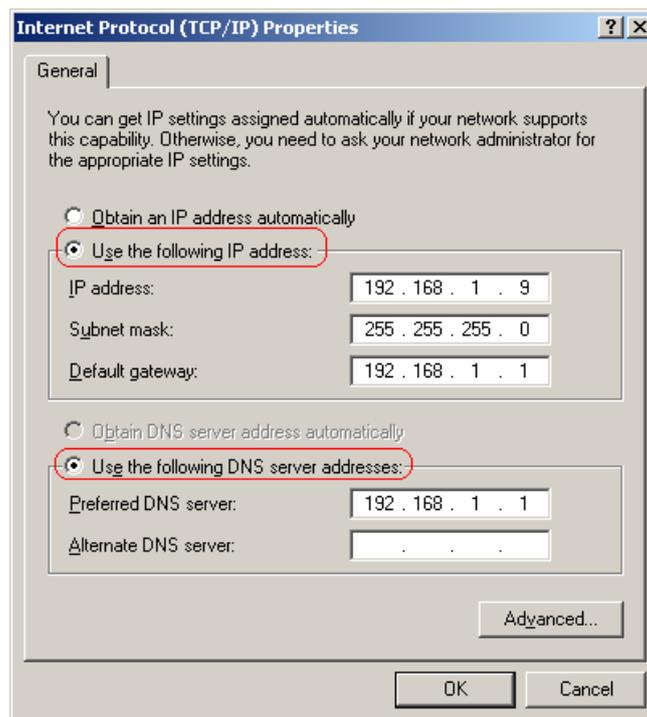
**IP address:** Fill in IP address 192.168.1.x (x is a number between 2 to 254).

**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.

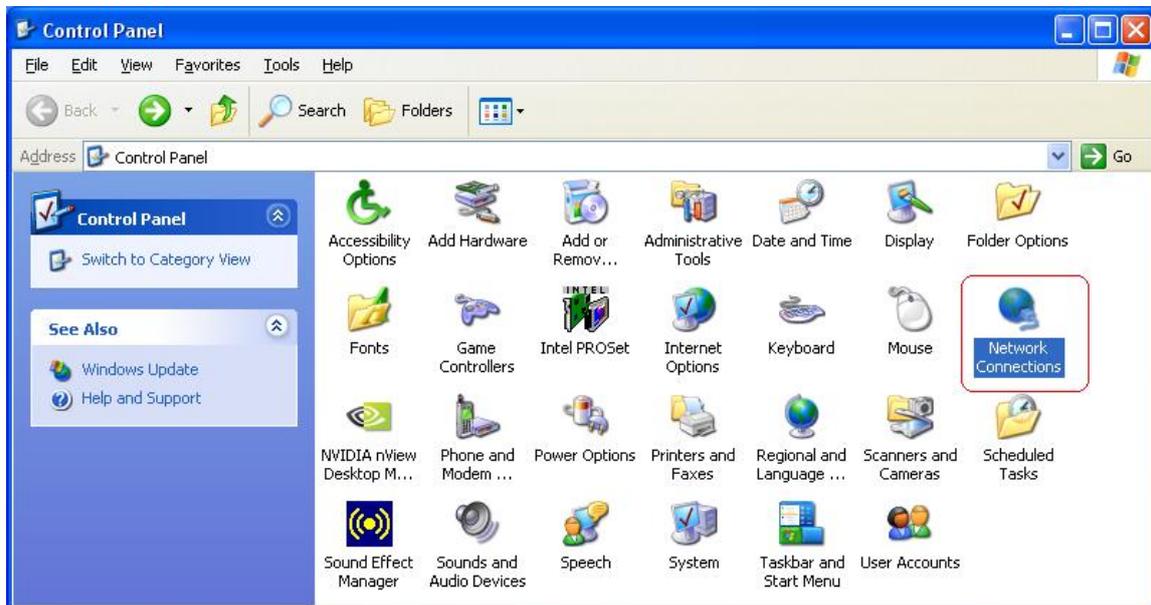


### For Windows XP

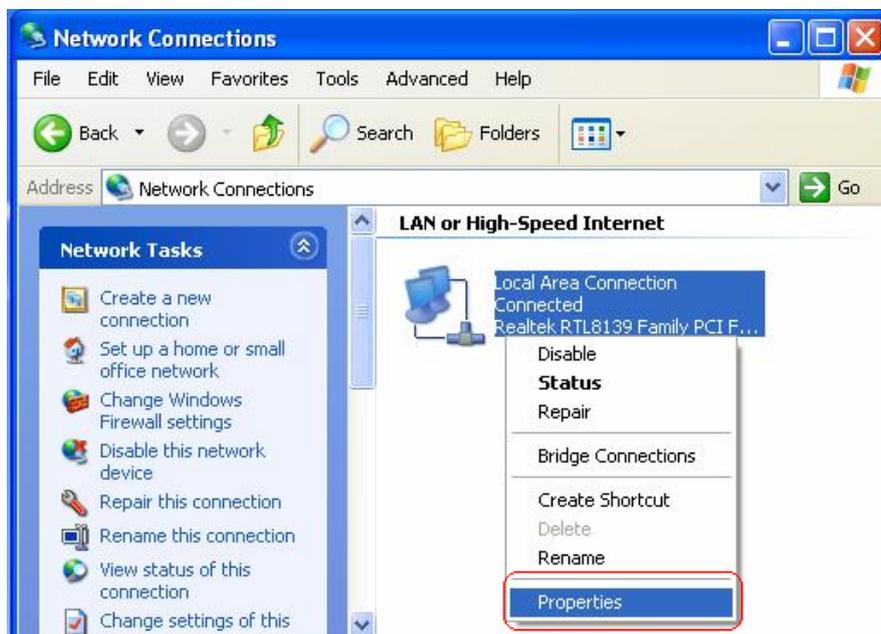
**Step 1:** Click **Start** then select **Control Panel**.



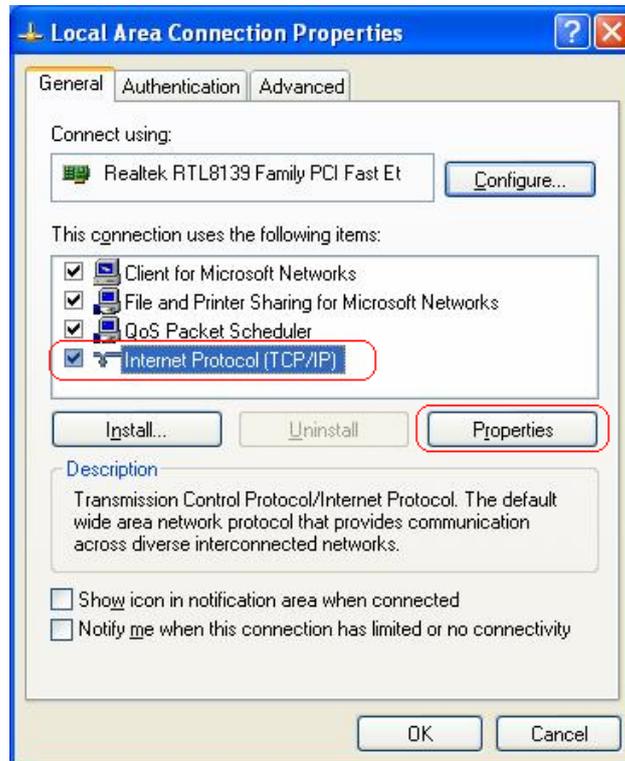
**Step 2:** Double-click **Network Connections** icon.



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

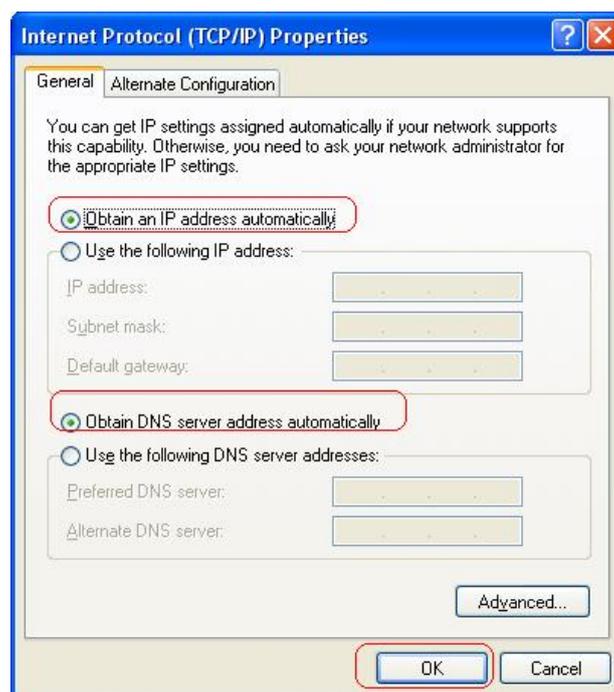


**Step 4:** Select **Internet Protocol (TCP/IP)** then click **Properties**:



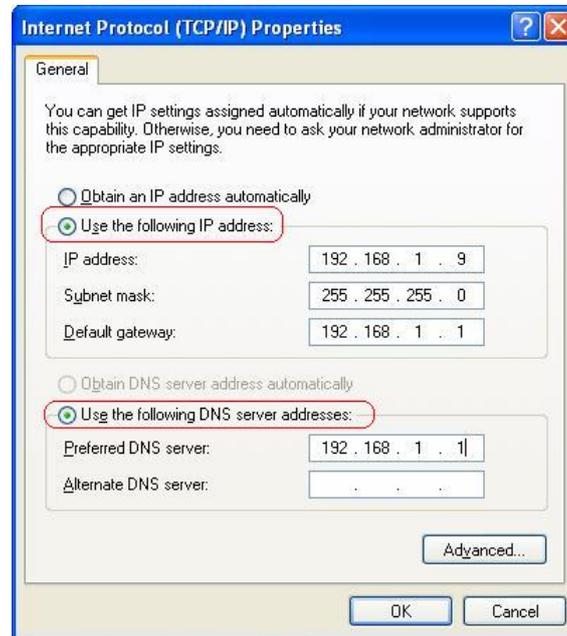
**Configure IP address Automatically:**

**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.

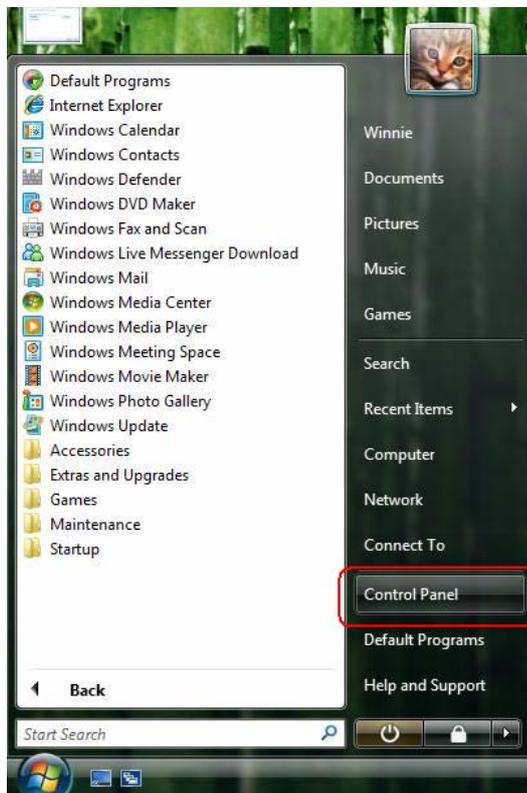
Request timed out.

Request timed out.

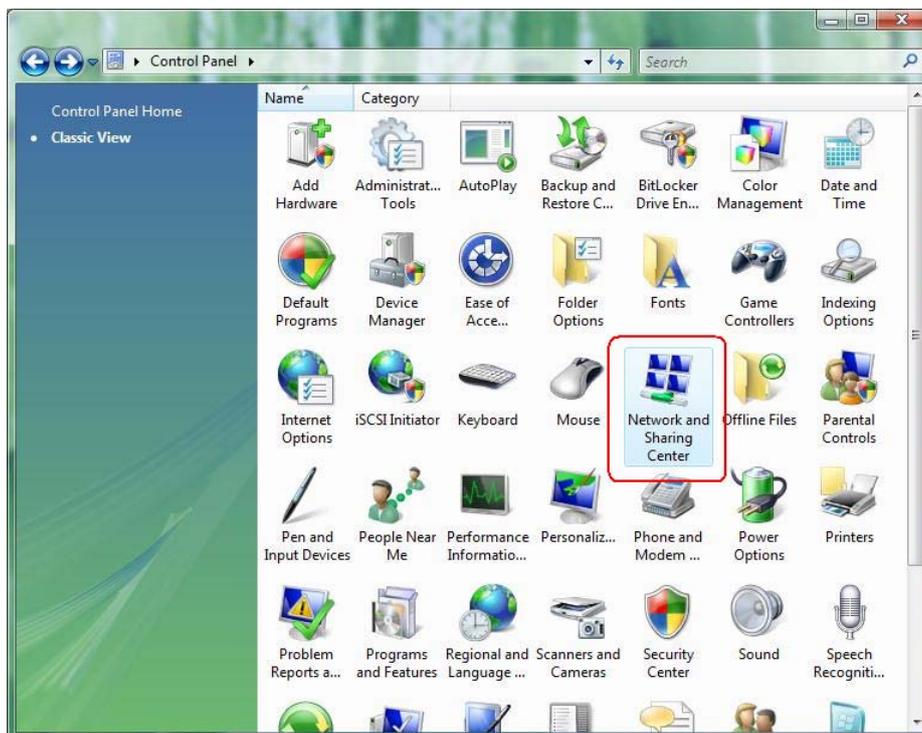
Cable issue or something wrong might cause this failure in configuration procedure.

## For Windows Vista

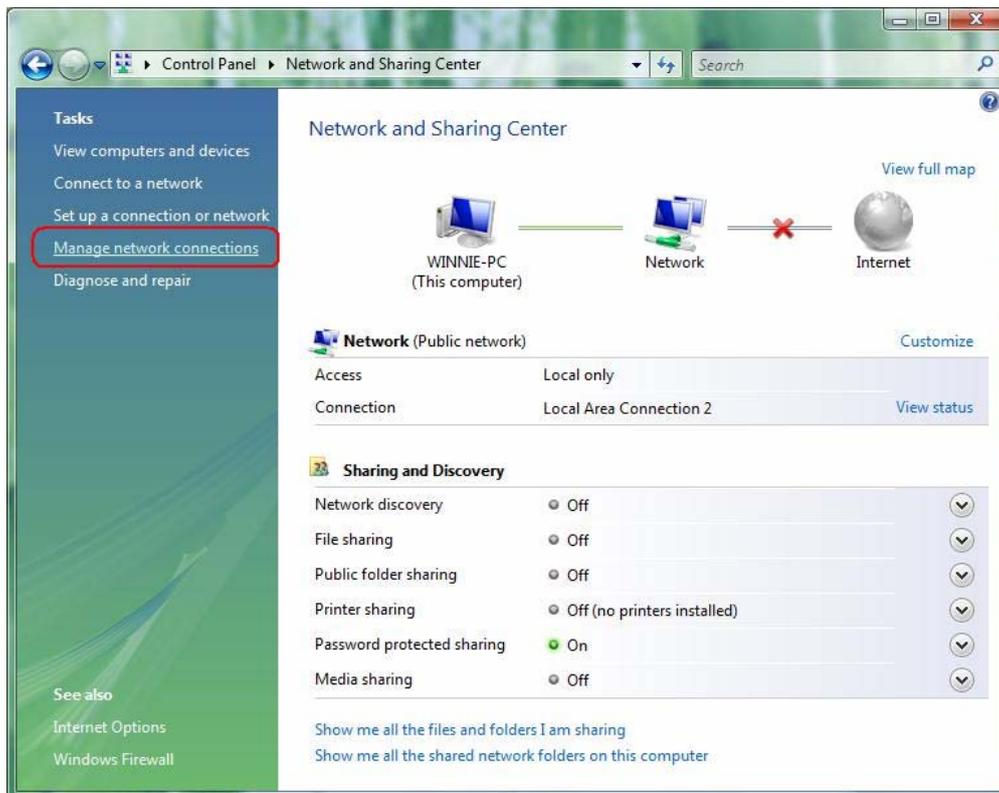
**Step 1:** Click **Start** then select **Control Panel (in the Classic View)**.



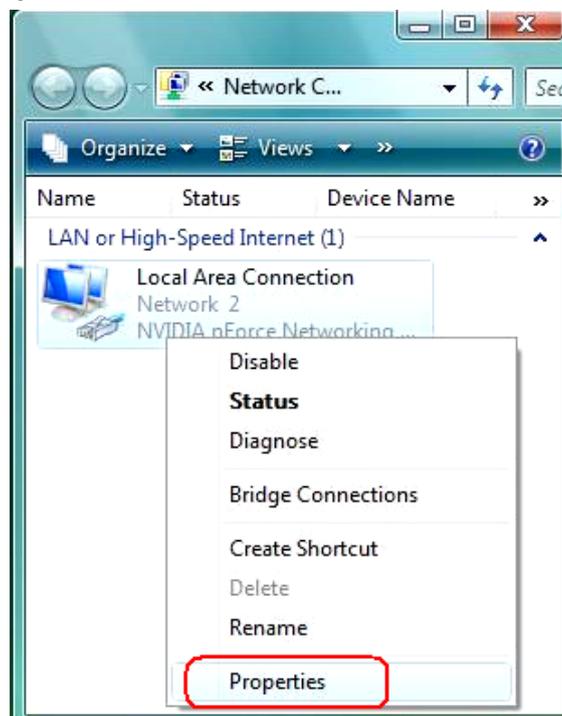
**Step 2:** Double-click **Network and Sharing Center** icon.



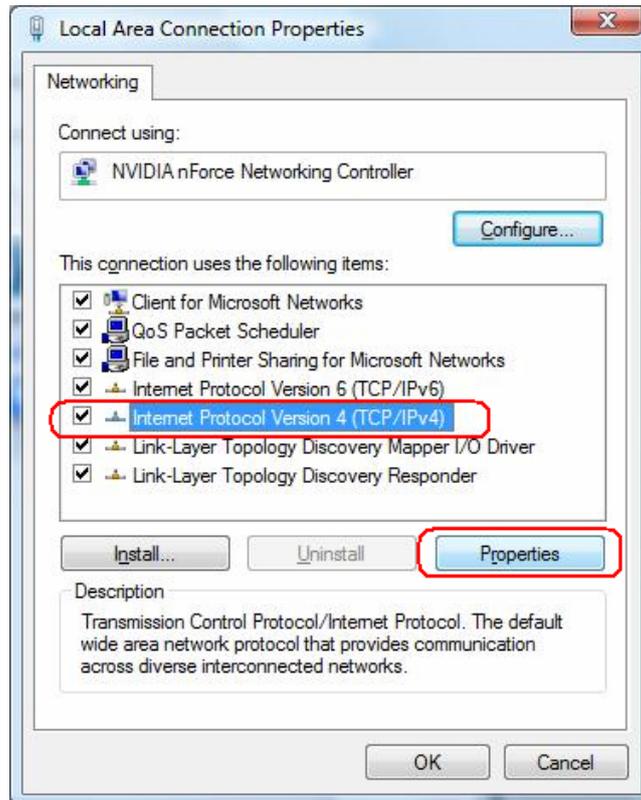
**Step 3:** Select “Manage Network connections”.



**Step 4:** Right-click **Local Area Connection** (local network your ADSL hooked up with) and select **Properties**:

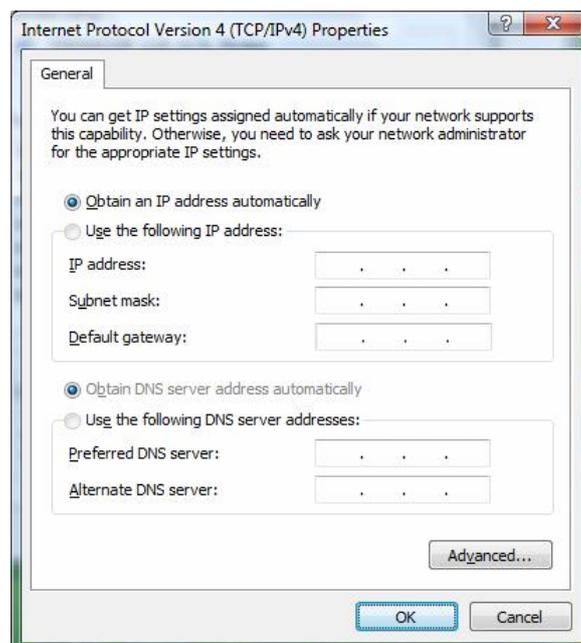


**Step 5:** Select **Internet Protocol (TCP/IP)** then click **Properties**:



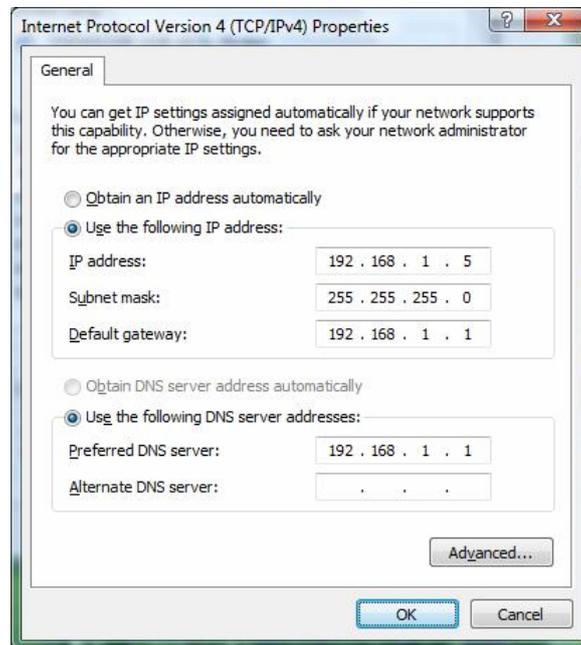
**Configure IP address Automatically:**

**Step 6:** Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**. Click **OK** to finish the configuration.



### Configure IP Address Manually:

**Step 7:** 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.

2) 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

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.

This failure might be caused by cable issue or something wrong 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**

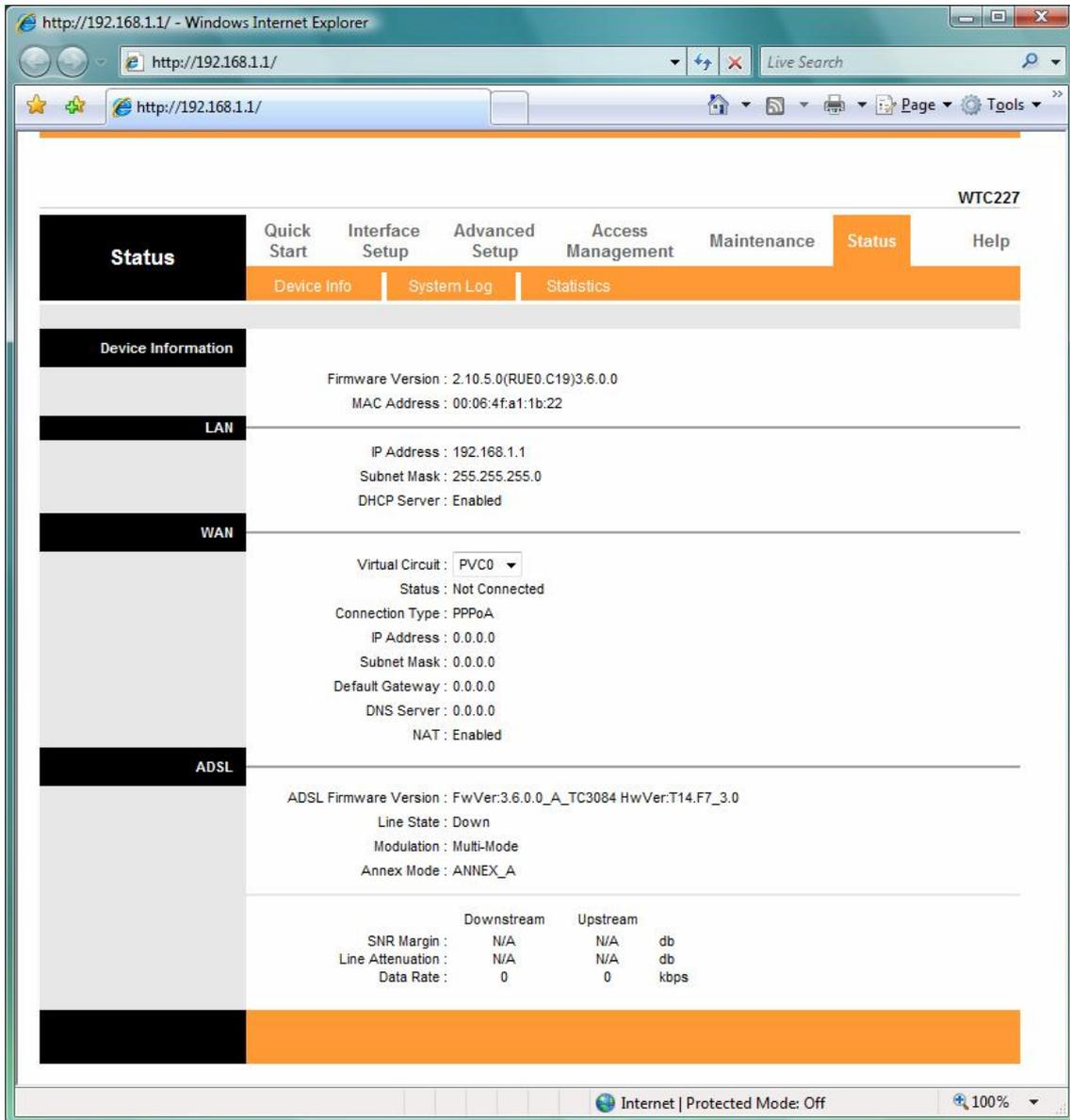
**User Name and Password:**

- 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.



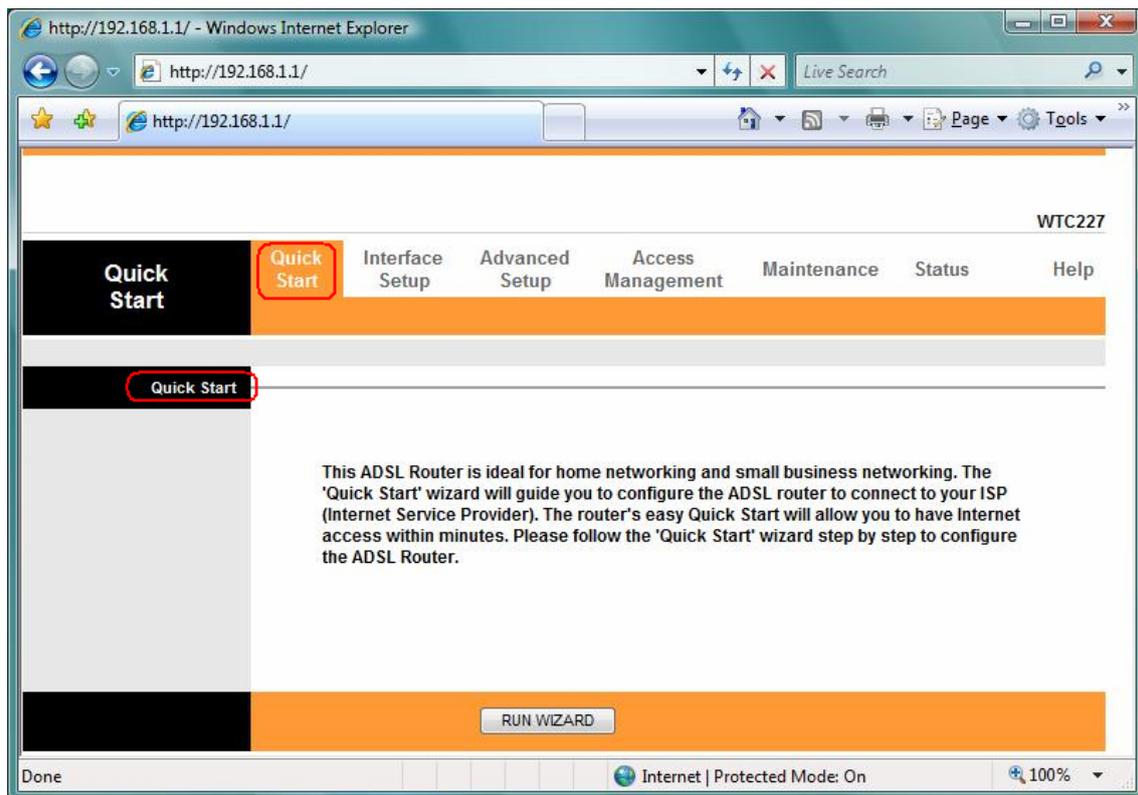
Steps to navigate the Web configuration from the Site Map are summarized below.

- 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.

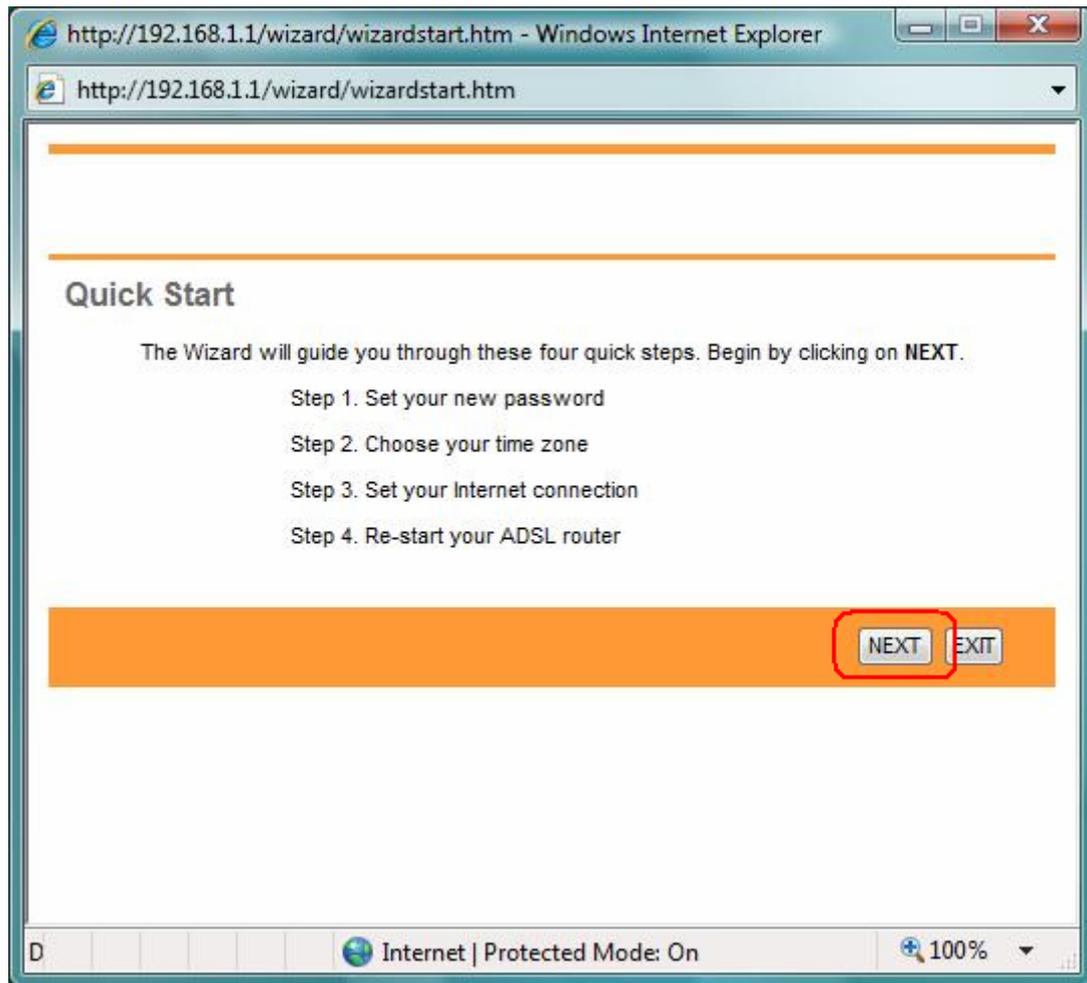
## 5. Quick Start Wizard

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.

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### Quick Start - Password

You may change the **admin** account password by entering in a new password. Click **NEXT** to continue.

New Password :

Confirmed 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.

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### Quick Start - Time Zone

Select the appropriate time zone for your location and click **NEXT** to continue.

(GMT) Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London ▼

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.

### Quick Start - ISP Connection Type

Select the Internet connection type to connect to your ISP. Click **NEXT** to continue.

- Dynamic IP Address      Choose this option to obtain a IP address automatically from your ISP.
- Static IP Address      Choose this option to set static IP information provided to you by your ISP.
- PPPoE/PPPoA      Choose this option if your ISP uses PPPoE/PPPoA. (For most DSL users)
- Bridge Mode      Choose this option if your ISP uses Bridge Mode.

BACK NEXT EXIT

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.

### Quick Start - Dynamic IP

Please select the dynamic connection provided to you by your ISP. Click **Next** to continue.

VPI:  (0~255)  
VC:  (1~65535)  
Connection Type:  ▼

BACK NEXT EXIT

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.

**Quick Start - Static IP Address**

Enter the static IP information provided to you by your ISP. Click **NEXT** to continue.

VPI:  (0~255)

VCI:  (1~65535)

IP Address:

Subnet mask:

ISP Gateway:

Connection Type: 

- 1483 Bridged IP LLC
- 1483 Bridged IP VC-Mux
- 1483 Routed IP LLC(IPoA)
- 1483 Routed IP VC-Mux

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.

**Quick Start - PPPoE/PPPoA**

Enter the PPPoE/PPPoA information provided to you by your ISP. Click **NEXT** to continue.

Username:

Password:

VPI:  (0~255)

VCI:  (1~65535)

Connection Type:

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.

## Quick Start - PPPoE/PPPoA

Enter the PPPoE/PPPoA information provided to you by your ISP. Click **NEXT** to continue.

Username:

Password:

VPI:  (0~255)

VCI:  (1~65535)

Connection Type:

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.

**Quick Start - Bridge Mode**

Enter the bridge information provided to you by your ISP. Click **NEXT** to continue.

VPI:  (0~255)

VCI:  (1~65535)

Connection Type: 

- 1483 Bridged IP LLC
- 1483 Bridged IP VC-Mux

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.

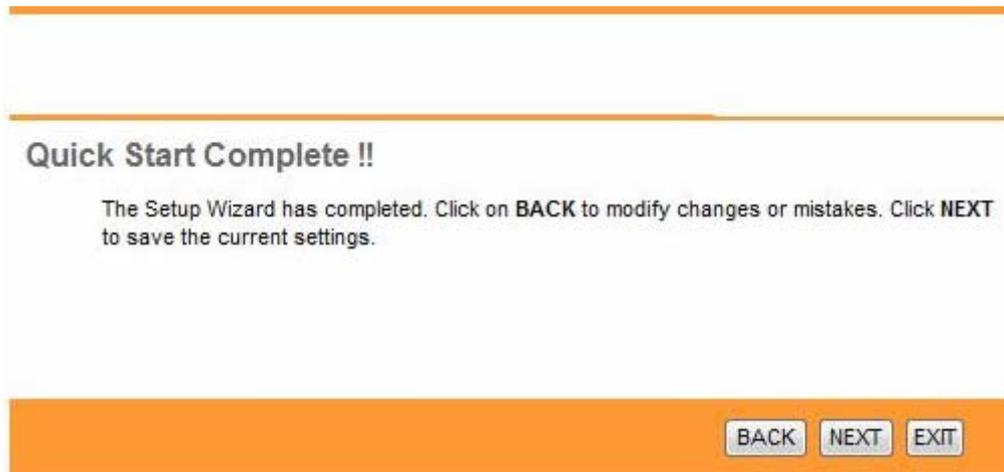
#### (2) LLC-Based Multiplexing

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.

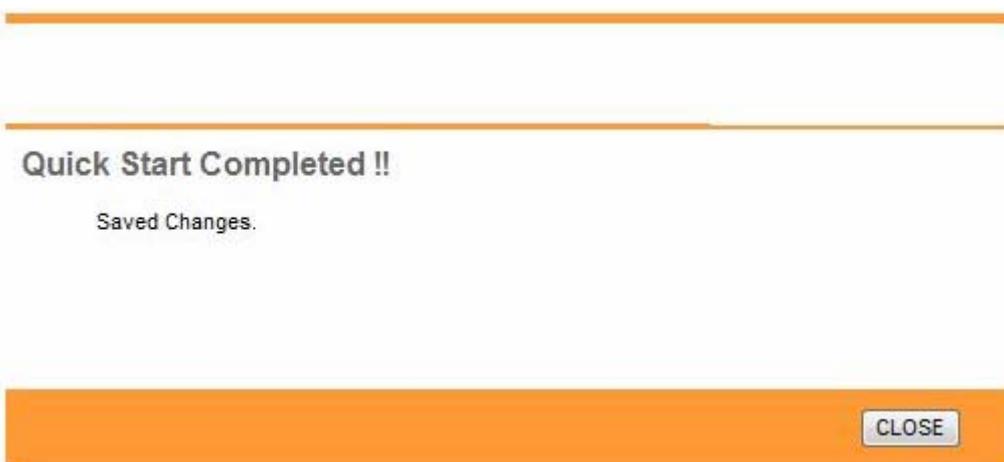
### 5.3.7 VPI and VCI

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.

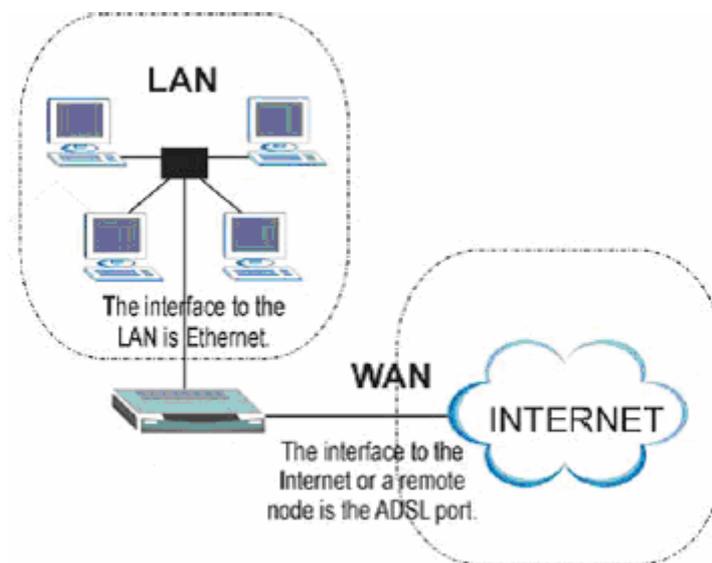
## 6. Interface Setup

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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.

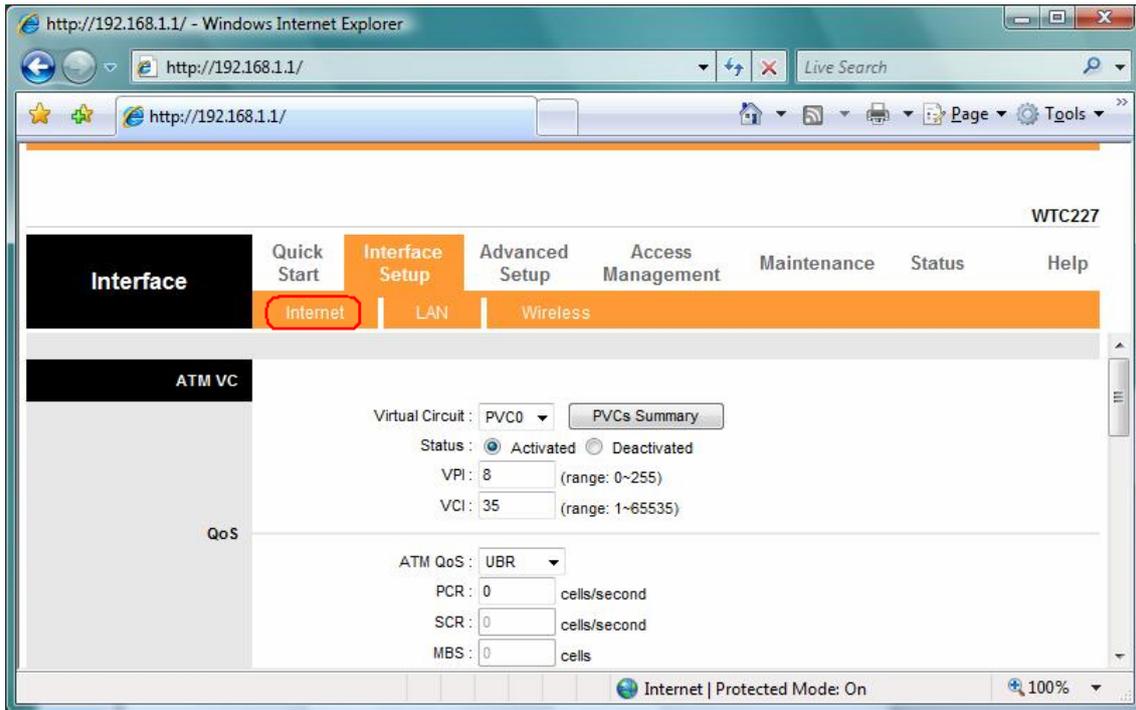
A WAN is an outside connection to another network or to the Internet.



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

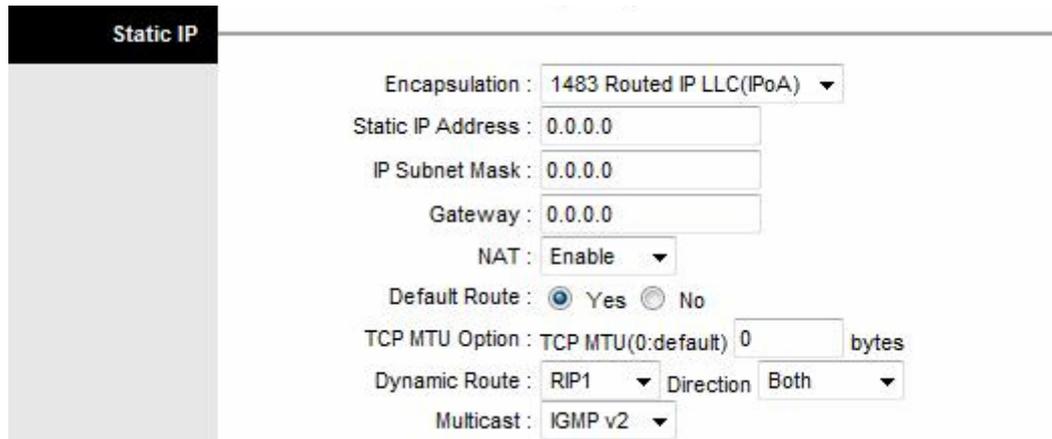
Select this option if your ISP provides you an IP address automatically. Please enter the Dynamic IP information accordingly.

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.

**PPPoE/PPPoA**

**Connection Setting**

Username : admin

Password : \*\*\*\*\*

Encapsulation : PPPoE LLC

Half Bridge :  Activated  Deactivated

**IP Address**

Connection :  Always On (Recommended)  
 Connect On-Demand (Close if idle for  minutes)  
 Connect Manually

TCP MSS Option : TCP MSS(0:default)  bytes

Get IP Address :  Static  Dynamic

Static IP Address :

IP Subnet Mask :

Gateway :

NAT : Enable

Default Route :  Yes  No

TCP MTU Option : TCP MTU(0:default)  bytes

Dynamic Route : RIP1 Direction Both

Multicast : IGMP v2

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.

The screenshot shows a web browser window displaying the configuration page for the LAN interface. The browser address bar shows 'http://192.168.1.1/'. The page has a navigation menu with tabs: Interface, Quick Start, Interface Setup, Advanced Setup, Access Management, Maintenance, Status, and Help. Under 'Interface Setup', there are sub-tabs: Internet, LAN (highlighted with a red box), and Wireless. The main content area is divided into sections: Router Local IP, DHCP, and DNS. In the DHCP section, the 'DHCP Server' option is selected and highlighted with a red box. The 'Router Local IP' section shows fields for IP Address (192.168.1.1), IP Subnet Mask (255.255.255.0), Dynamic Route (RIP2-B), Direction (None), Multicast (Disabled), and IGMP Snoop (Disabled). The DHCP section shows DHCP is Enabled, Starting IP Address (192.168.1.33), IP Pool Count (32), and Lease Time (259200 seconds). The DNS section shows DNS Relay set to 'Use Auto Discovered DNS Server Only', Primary DNS Server (N/A), and Secondary DNS Server (N/A). At the bottom, there are 'SAVE' and 'CANCEL' buttons.

### 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.

**IGMP Snoop:** You can disabled and enabled IGMP Snoop function.

### 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.

**DHCP**

DHCP :  Disabled  Enabled  Relay

---

**DHCP Server**

Starting IP Address :

IP Pool Count :

Lease Time :  seconds (0 sets to default value of 259200)

---

**DNS**

DNS Relay :  ▼

Primary DNS Server :

Secondary DNS Server :

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**

DHCP :  Disabled  Enabled  Relay

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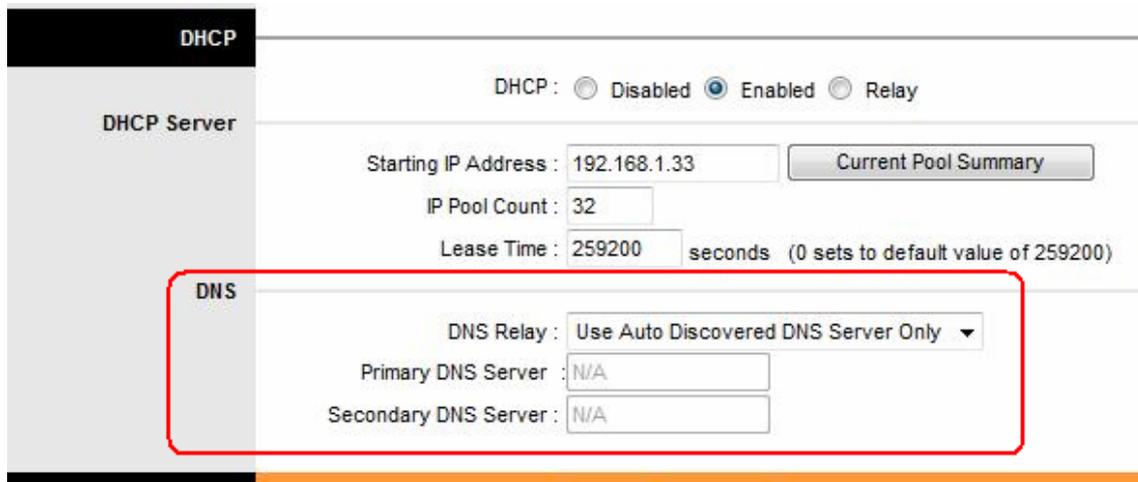
**DHCP Relay**

DHCP Server IP for Relay Agent :

**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.



The screenshot shows a web-based configuration interface for DHCP. On the left, there is a sidebar with 'DHCP' and 'DHCP Server' sections. The main area is titled 'DHCP' and contains three radio buttons: 'Disabled', 'Enabled' (which is selected), and 'Relay'. Below these are fields for 'Starting IP Address' (192.168.1.33), 'IP Pool Count' (32), and 'Lease Time' (259200 seconds). A 'Current Pool Summary' button is located next to the IP address field. The 'DNS' section is highlighted with a red box and contains a dropdown menu for 'DNS Relay' set to 'Use Auto Discovered DNS Server Only', and two text input fields for 'Primary DNS Server' and 'Secondary DNS Server', both containing 'N/A'.

**DNS Relay 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"**.