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AirLive WL-8064ARM

802.11G+ Wireless ADSL2/2+ Modem Router

User's Manual

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FCC Interference Statement

AirLive WL-WL-8064ARM 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 radio interference in a residential environment. AirLive WL-8064ARM can generate, use and radiate radio frequency energy and, if not installed and used in accordance with the instructions in this manual, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If AirLive WL-8064ARM does cause harmful interference to radio or television reception, which is found by turning the equipment ON and OFF, the user is encouraged to try to reduce the interference by one or more of the following measures:

- Adjust or relocate the receiving antenna
- Increase the separation between the equipment or device
- Consult a dealer or an experienced technician for assistance

CE Declaration of Conformity

This is to certify that this device complies the essential protection requirements of the European Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class B (CISPR 22). Compliance with the applicable regulations is dependent upon the use of shielded cables. It is the responsibility of the user to procure the appropriate cables.

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Chapter 1 Introduction

Congratulations on your purchase of this outstanding WL-8064ARM Wireless ADSL2/2+ Router. This device is an IEEE 802.11g Wireless and 4 Port Switch built-in ADSL2/2+ Router that allows ADSL/ADSL2/ADSL2+ connectivity while providing Wireless LAN capabilities for residential, industries and SOHO environments. Wireless-G or the so-called 11g is the upcoming 54Mbps wireless networking standard that's almost 5 times faster than the widely deployed Wireless-B or the so-called 11b products found in homes, businesses, and public wireless hotspots around the world.

ADSL2/2+ is a transmission technology used to carry user data over a single twisted-pair line between the Central Office and the Customer Premises. The downstream data rates can go up to 24 Mbps and the upstream data rates can go up to 1Mbps with length reach up to 22Kft for ADSL2/2+ connection and 54Mbps transfer data rate for the 11g connection. This device allows ADSL2/2+ connectivity while providing Wireless LAN capabilities for home or office users. This asymmetric nature lends itself to applications such as Internet access and video delivery.

With minimum setup, you can install and use the router within minutes.

1.1 Features

- **The WL-8064ARM Wireless ADSL2/2+ Router provides the following features:**
  - Compliant to ANSI T1.413 Issue 2, ITU-T G.992.1, ITU-T G.992.2, ITU-G.992.3, ITU 992.4, ITU G.992.5 and READSL2 standards. Support all Digital Loop ITU G.992.3 annex I and J specifications.Fully compliant with Annex A/B/B (U-R2) ADSL specifications.
  - Downstream and Upstream data rates up to 24Mbps and 1Mbps.
  - Support 11g+ WLAN features with transmission rate up to 108Mbps (Optional).
  - IEEE 802.11g WLAN supports up to 54Mbps transmission rate.Support WEP, WPA and 802.1X encryption for data security. Support RFC 1483 Bridge/Routing over ATM over ADSL.
  - Support PPPoE, PPPoA and IPoA Routing ATM over ADSL.
  - ATM Layer with Traffic Shaping QoS support (UBR, CBR, VBR-rt, VBR-nt).
  - Support UPnP functionality.
  - Web-based setup for installation and management.
  - Built-in 4*10/100 Mbps Fast Ethernet Switch port for LAN connection.
  - Compliant with IEEE 802.3/802.3u and auto-negotiation.
  - Support full-duplex 802.3 flow control.
  - Support VLAN functionality.
  - Support IP Filtering, MAC Filtering, Web Filtering and IPSec Pass-Through security functionality.
  - Support Dying Gasp functionality (Optional).
  - Flash memory for firmware upgrade.
  - Hardware Reset button for fast default setting recovery.
  - HTTP Web-Based Management/Configuration.
  - LEDs indicator indicates connection status.

- **ADSL Standards**
  - Full rate ANSI T1.413 Issue2, ITU-T G.992.1 and ITU-T G.992.2 standards compliant.
  - ITU G.992.3, ITU G.992.5 and READSL2 ADSL2/2+ standards compliant.
  - Downstream and Upstream data rates up to 24Mbps and 1Mbps.
  - Reach length up to 22Kft.
  - Support Dying Gasp functionality (Optional).

- **IEEE 802.11g Wireless Standards**
  - IEEE 802.11b/g standards compliant.
  - Support data rates up to 54Mbps (Auto-Rate Capable).
  - Support 11g+ with data transmission rate up to 108Mbps (Optional)
  - Support OFDM (64QAM, 16QAM, QPSK, BPSK) and DSSS (DBPSK, DQPSK, CCK) modulation.
  - Conforms to Wireless Ethernet Compatibility Alliance (WECA) Wireless Fidelity (Wi-Fi) Standard.
  - Support WEP/WPA/802.1X Encryption for data security.
  - Support 2.412GHZ ~ 2.484GHz frequency ranges.
- ATM Protocols
  - Support ATM ALL0, ALL2 & ALL5.
  - Support up to 8PVCs.
  - Support ATM UBR, CBR, VBR-rt and VBR-nt Traffic Shaping QoS.
  - Support OAM F4/F5 Loop Back.
  - Support PPPoA (RFC2364).
  - Support PPPoE (RFC2516).
  - Router/Bridged Ethernet over ATM (RFC2864 / RFC1483).
  - Classical IP over ATM (RFC2225 / RFC1577).
- **Router Mode**
  - IP Routing – RIPv1 and RIPv2.
  - Static Routing.
  - DHCP Server, Relay and Client.
  - Support DNS Relay/Server.
  - Support DMZ functionality.
  - Support NAT and NAPT (PAT) functionality with extensive ALG supported.
  - Support IPSec, L2TP, PPTP Pass-Through.
  - Support VPN Pass-Through.
  - Support SNMP functionality.
  - Support ICMP and IGMP.
  - Support PAP and CHAP PPP Authentication.

- **Bridge Mode**
  - Support Transparent Bridging (IEEE 802.1D).
  - Support RFC 2684/1483 Bridged.

- **Firewall**
  - Built in Firewall functionality.
  - Support IP Filtering.
  - Support MAC Filtering.
  - Support Web Filtering.
  - IPSec Pass-Through.
  - Protection against IP and MAC address spoofing.

- **UPnP**
  - Support UPnP functionality.

- **Ethernet Standards**
  - Built-in 4 Ports 10/100Mbps Ethernet Switch which compliant with IEEE 802.3x standards
  - Automatic MDI/MDI-X crossover for 100BASE-TX and 10BASE-T ports.
  - Auto-negotiation and speed-auto-sensing support.
  - Port based VLAN supported in any combination.

- **Web-Based Management**
  - Web-based Configuration / Management.
  - Remote / Local Management / Configuration.
  - Firmware upgrade and Reset to default via Web management.
  - Telnet, TFTP and FTP Management / Configuration.
  - SNMP MIB-II.
  - Restore factory default setting via Web or hardware reset button.
  - WAN and LAN connection statistics.
  - Configuration of static routes and routing table, NAT/NAPT and VCs.
  - Support Password Authentication.

1.2 Scope

This document provides the descriptions and usages for the WL-8064ARM Wireless ADSL2/2+ Router's Web pages that are used in the configuration and setting process. Both basic and advanced descriptions and concepts are discussed. To help the reader understand more about these Web pages, some questions and answers (Q&A) are appended after the definition of each Web page along with the appendices at the end of the guide.

1.3 Audience

This document is prepared for use by those customers who purchase the WL-8064ARM Wireless ADSL2/2+ Router and using the provided or embedded firmware. It assumes the reader has a basic knowledge of ADSL/ADSL2/ADSL2+, Wireless and networking.

1.4 Document Structure

Chapter 1: Introduction, provides a brief introduction to the product and user guide.

Chapter 2: Knowing The WL-8064ARM Wireless ADSL2/2+ Router, provides device specifications and hardware connection mechanism.

Chapter 3: Setting Up TCP/IP In Windows, provides Windows system Network's configurations.

Chapter 4: Device Administration, describes the pages found under the Admin menu. These pages allow the user to view, change, edit, update, and save the WL-8064ARM Wireless ADSL2/2+ Router's configurations or settings.

Appendix A: Router Terms, provides an introduction to basic Router Terms.

Appendix B: Frequently Asked Questions, is a compilation of useful questions regarding the WL-8064ARM Wireless ADSL2/2+ Router.

Appendix C: Troubleshooting Guide, is a compilation of questions and answers relating to common problems dealing with Windows networking and the WL-8064ARM Wireless ADSL2/2+ Router Configurations.

Appendix D: UPnP Setting provides UPnP configurations procedures under Windows XP.

Appendix E: Glossary provides definitions of terms and acronyms of this WL-8064ARM Wireless ADSL2/2+ Router.

1.5 System Requirement

Check and confirm that your systems confirm the following minimum requirements:

- Personal computer (PC/Notebook).
- Pentium II compatible processor and above.
- Ethernet LAN card or IEEE 802.11b or IEEE 802.11g Wireless adaptor installed with TCP/IP protocol.
- USB Port (Optional)
- 64 MB RAM or more.
- 50 MB of free disk space (Minimum).
- Internet Browser.
- CD-ROM Drive.

1.6 Packet Contents

The WL-8064ARM Wireless ADSL2/2+ Router package contains the following items:

- One WL-8064ARM Wireless ADSL2/2+ Router
- One Power Adapter
- One RJ-11 ADSL Cable
- One CAT-5 Ethernet Cable
- One detachable SMA Antenna
- One CD-ROM (Driver / Manual / Quick Setup Guide)

If any of the above items are damaged or missing, please contact your dealer immediately.

Chapter 2 Knowing WL-8064ARM Wireless ADSL2/2+ Router

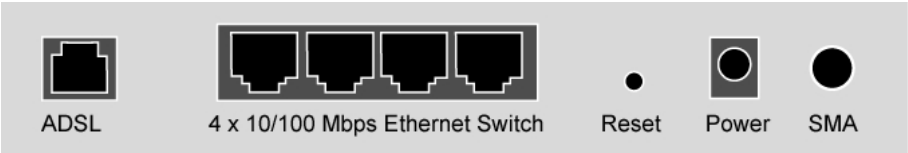
2.1 Front Panel:

The WL-8064ARM Wireless ADSL2/2+ Router's LEDs indicators display information about the device's status.

PWR	Lights up when WL-8064ARM Wireless ADSL2/2+ Router is powered on.
WL ACT	Lights up when Wireless system is ready.
	Blinking when WL-8064ARM Wireless ADSL2/2+ Router is sending/receiving data.
1 LINK/ACT	Blinking when WL-8064ARM Wireless ADSL2/2+ Router is Sending/Receiving data.
2 LINK/ACT	Blinking when WL-8064ARM Wireless ADSL2/2+ Router is Sending/Receiving data.
3 LINK/ACT	Blinking when WL-8064ARM Wireless ADSL2/2+ Router is Sending/Receiving data.
4 LINK/ACT	Blinking when WL-8064ARM Wireless ADSL2/2+ Router is Sending/Receiving data.
ADSL	Lights up when a successful ADSL2/2+ connection is established.
	Blinking when WL-8064ARM Wireless ADSL2/2+ Router is sending/receiving data.
PPP	Lights up when a PPP connection is established.

2.2 Back Panel:

The back panel of the WL-8064ARM Wireless ADSL2/2+ Router contains ADSL, Ethernet Switches, Reset, Power Adapter connection and SMA connector.



ADSL	Port for connecting to the ADSL2/2+ Service Provider.
Ports 1~4	Four 10/100Mbps Ethernet Ports for connecting to the network devices
RESET	Restore the WL-8064ARM Wireless ADSL2/2+ Router to factory default setting.
POWER	12V DC/1A Power adapter connector.
SMA	Detachable SMA Dipole Antenna.

All the Ethernet port of the WL-8064ARM Wireless ADSL2/2+ Router supports auto-crossover capability.

RESET Button:
Reboot & Restore the WL-8064ARM Wireless ADSL2/2+ Router to factory defaults.

Resetting Factory Defaults:

The reboot and restore to factory defaults feature will set the device to its factory default configuration by resetting the WL-8064ARM Wireless ADSL2/2+ Router.

To Reset the WL-8064ARM Wireless ADSL2/2+ Router:

- Ensure that the device is powered on.
- Press the Reset button for 10~15 seconds and release. The **"WL ACT"** LED indicators will turns OFF and ON again indicates that the reset is in progress. Do not power off the device during the reset process.
- Reset is completed when the **"WL ACT"** LED indicator return to steady green. The default settings are now restored.

2.3 Connection Mechanism:

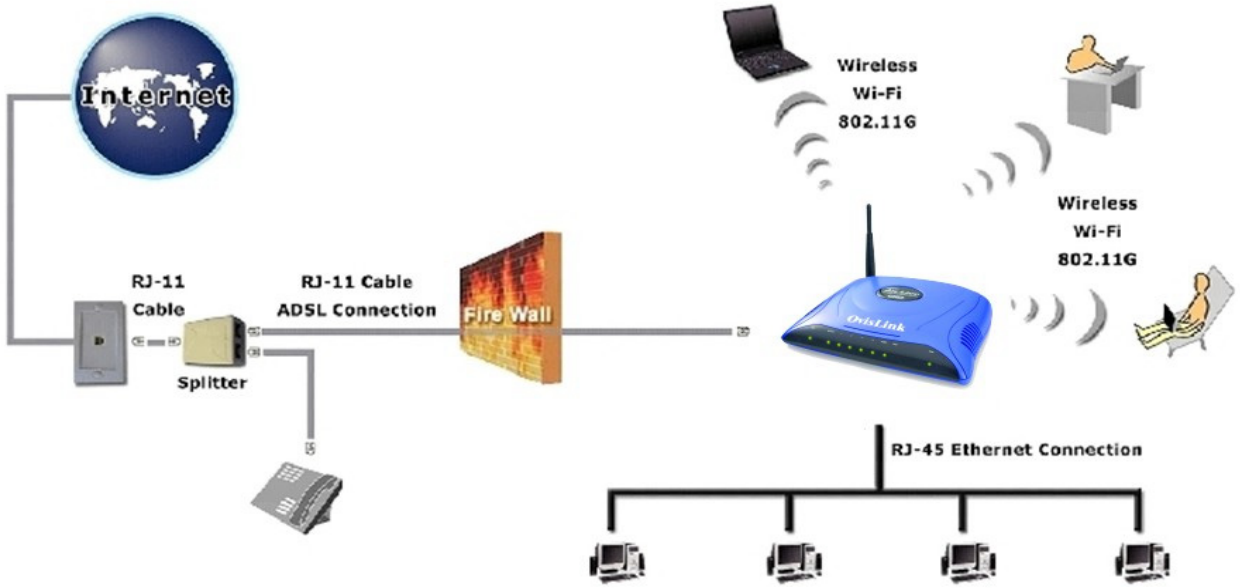
This section describes the hardware connection mechanism of WL-8064ARM Wireless ADSL2/2+ Router on your Local Area Network (LAN) connected to the Internet, how to configure your WL-8064ARM Wireless ADSL2/2+ Router for Internet access or how to manually configure your Internet connection.

You need to prepare the following items before you can establish an Internet connection through your WL-8064ARM Wireless ADSL2/2+ Router:

1. A computer/notebook which must have an installed Ethernet Adaptor and an Ethernet Cable, or
2. A computer/notebook which have Wireless-b or Wireless-g wireless adaptor properly installed.
3. ADSL/ADSL2/ADSL2+ service account and configuration information provided by your Internet Service Provider (ISP). You will need one or more of the following configuration parameters to connect your WL-8064ARM Wireless ADSL2/2+ Router to the Internet:

    a. VPI/VCI parameters
    b. Multiplexing Method or Protocol Type
    c. Host and Domain Names
    d. ISP Login Name and Password
    e. ISP Domain Name Server (DNS) Address
    f. Fixed or Static IP Address.

Figure below shows the overall hardware connection mechanism of your WL-8064ARM Wireless ADSL2/2+ Router.



Following are the steps to properly connect your WL-8064ARM Wireless ADSL2/2+ Router:

1. Turn off your computer/notebook.
2. Connect the ADSL port of your WL-8064ARM Wireless ADSL2/2+ Router to the wall jack of the ADSL/ADSL2/ADSL2+ Line with a RJ-11 cable.
3. Connect the Ethernet cable (RJ-45) from your WL-8064ARM Wireless ADSL2/2+ Router (Switch) to the Ethernet Adaptor in your computer.
4. Connect the Power adaptor to the WL-8064ARM Wireless ADSL2/2+ Router and plug it into a Power outlet.

The Power light will lit after turning on the WL-8064ARM Wireless ADSL2/2+ Router.
Auto and self-diagnostic process might turn the LED indicators ON and OFF during the process.

5. Turn on your computer.
6. Refer to the next section to setup or configure your system's Network Adaptor.

Chapter 3 Setting up the TCP/IP in Windows

The instruction in this chapter will help you configure your computers to be able to communicate with this WL-8064ARM Wireless ADSL2/2+ Router.

Computers access the Internet using a protocol called TCP/IP (Transmission Control Protocol/ Internet Protocol). Each computer/notebook on your network must have TCP/IP installed and selected as its networking protocol. If a Network Interface Card (NIC) is already installed in your PC, then TCP/IP is probably already installed as well.

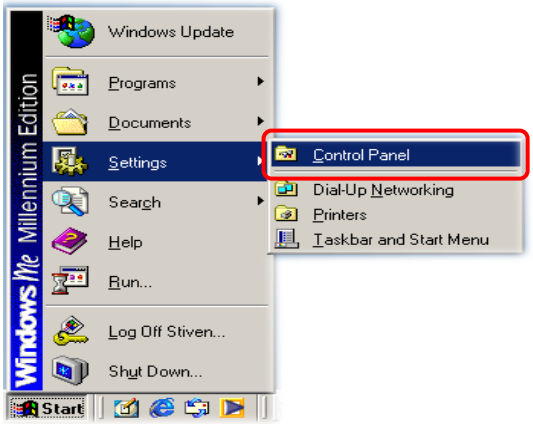
The following description assumes WL-8064ARM Wireless ADSL2/2+ Router been set to factory default. (If not, please hold the reset button down for 5~10 seconds). The default of the WL-8064ARM Wireless ADSL2/2+ Router's LAN IP is **192.168.1.1**.

Follow the procedures below to set your computer/notebook function as a **DHCP Client**.

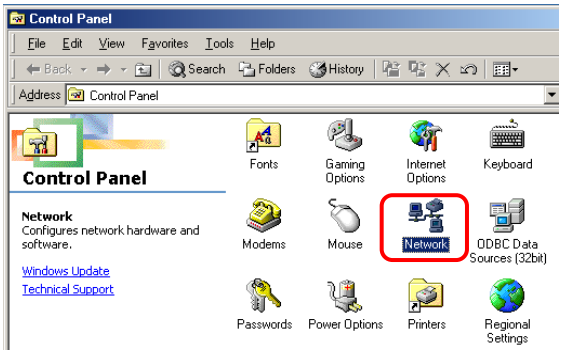
Restart and Reboot your Windows system might be necessary after setting your computer function as a DHCP Client. In order to properly activate your choice, click "OK" to restart your Windows system.

3.1 Windows ME / 98

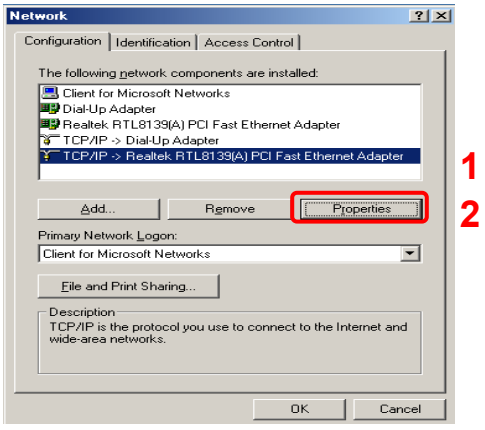
Step 1: Click **Start→Settings→Control Panel**.



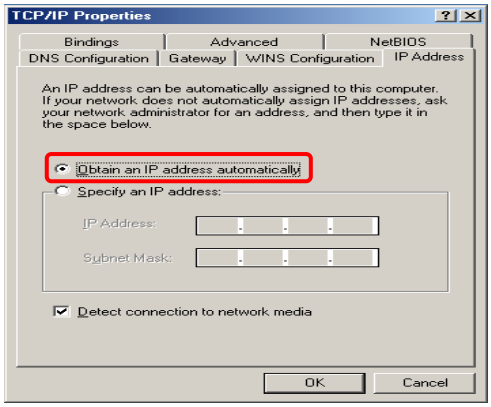
Step 2: Double-click the **Network** icon.



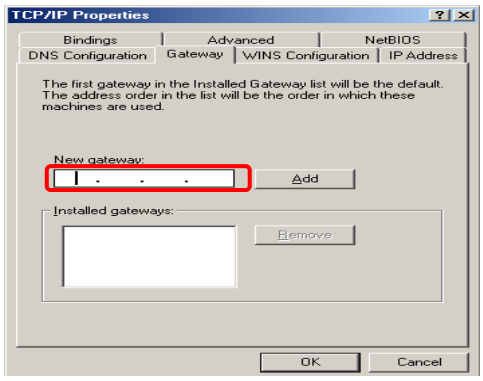
Step 3: Go to Configuration icon, select network adapter installed and click **Properties**.



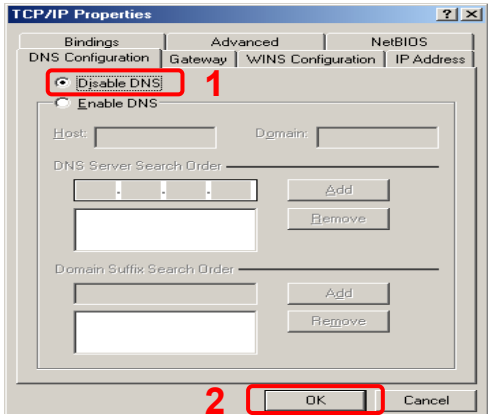
Step 4: Go to IP Address icon and select **Obtain an IP address**.



Step 5: Go to Gateway icon and erase all previous setting.

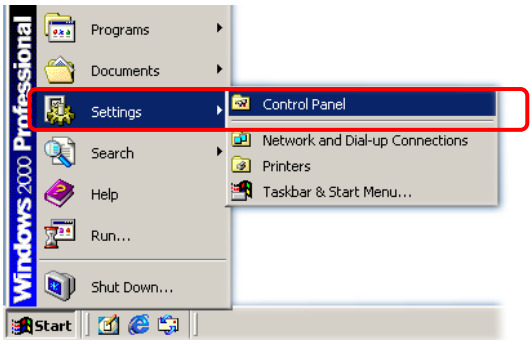


Step 6: Go to DNS Configuration icon, select **Disable DNS** and click **OK**.

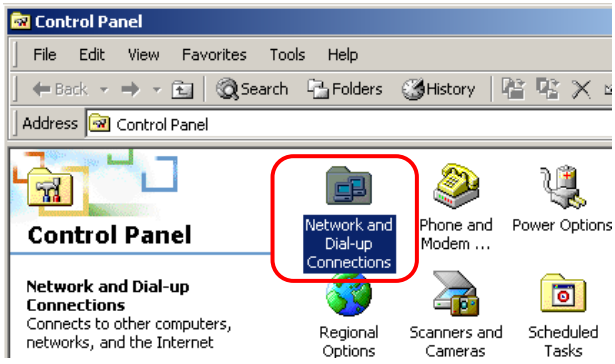


3.2 Windows 2000

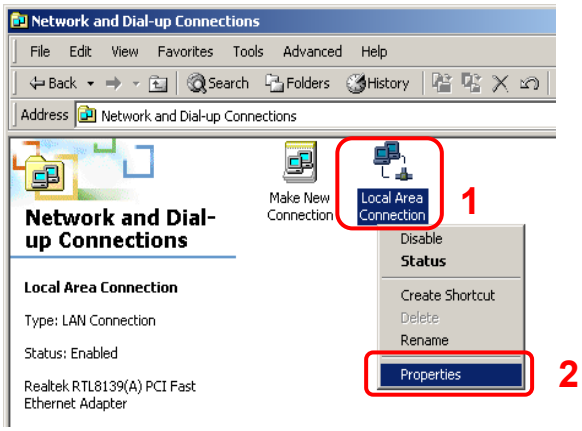
Step 1: Click **Start→Settings→Control Panel**.



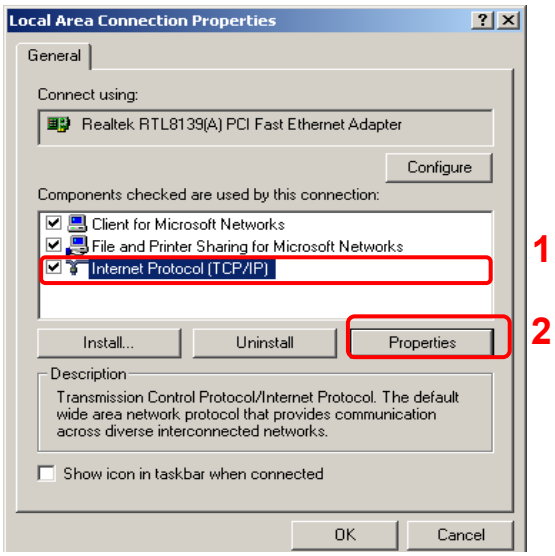
Step 2: Double-click the **Network and Dial-up Connections**.



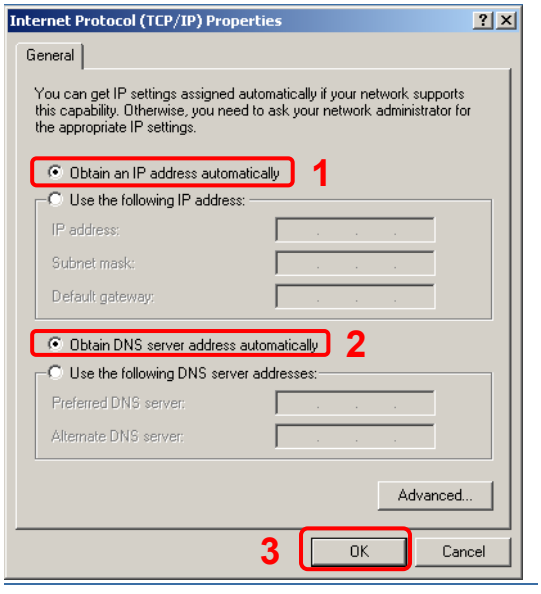
Step 3: Right Click the **Local Area Connection** and select **Properties**.



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

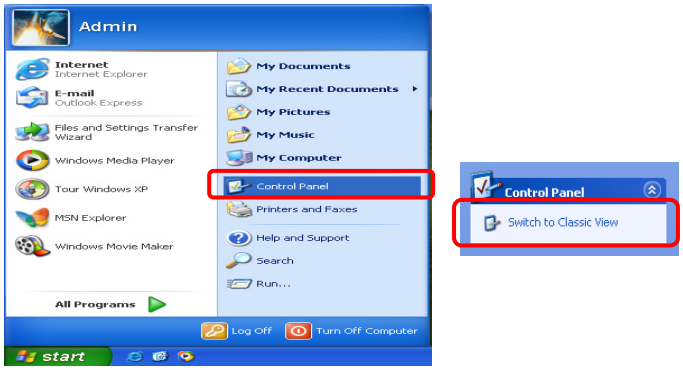


Step 5: Select **Obtain an IP address automatically** and **DNS server address automatically.** Then, click **OK**.

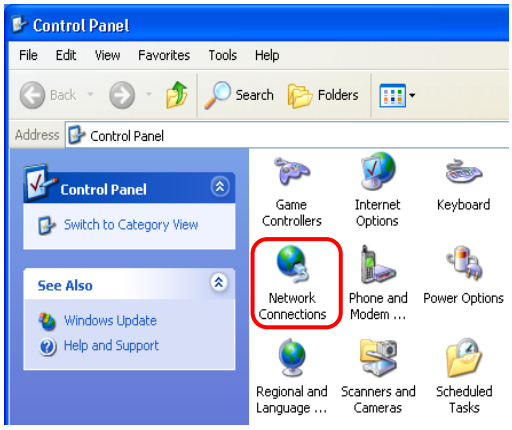


3.3 Windows XP

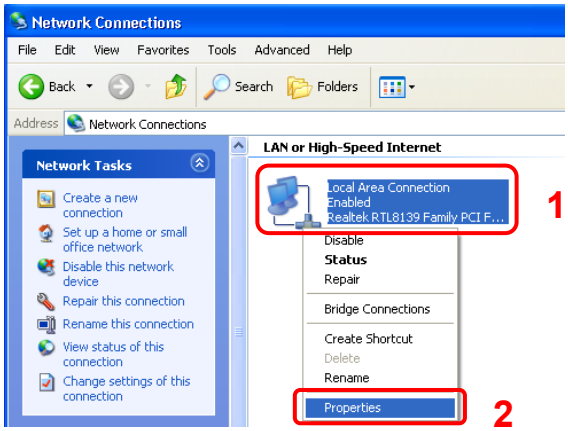
Step 1: Click **Start→Control Panel→Classic View**.



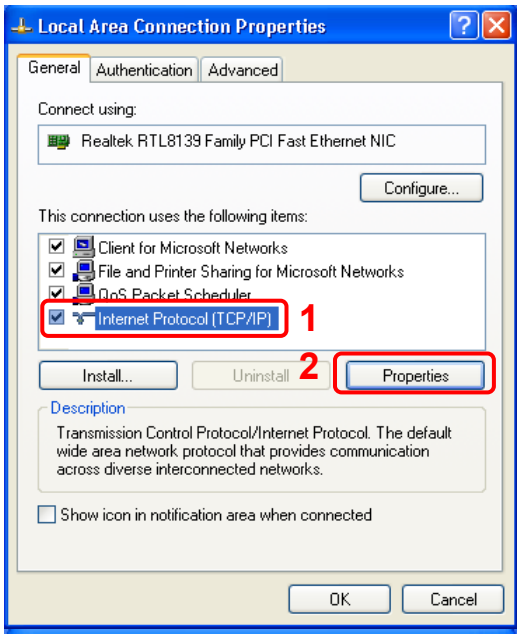
Step 2: Double-click the **Network Connections**.



Step 3: Right Click on the **Local Area Connection** and select **Properties**.

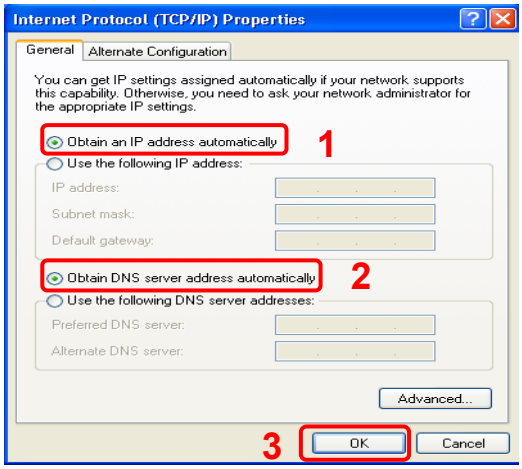


Step 4: Go to General icon, select **Internet Protocol (TCP/IP)** and click **Properties**.



Step 5: Go to General icon, select **Obtain an IP address automatically** and **DNS server address automatically**.

Then, click OK**.**

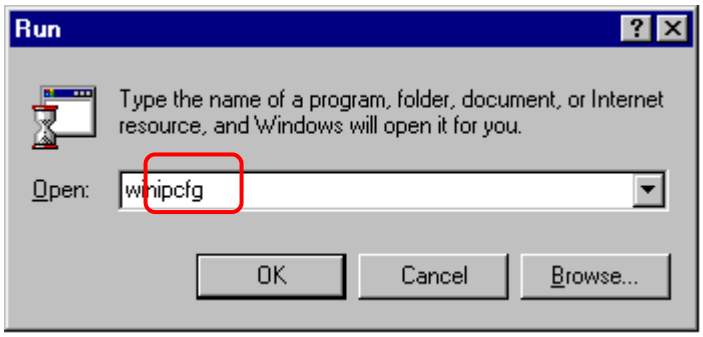


3.4 Checking TCP/IP Configuration

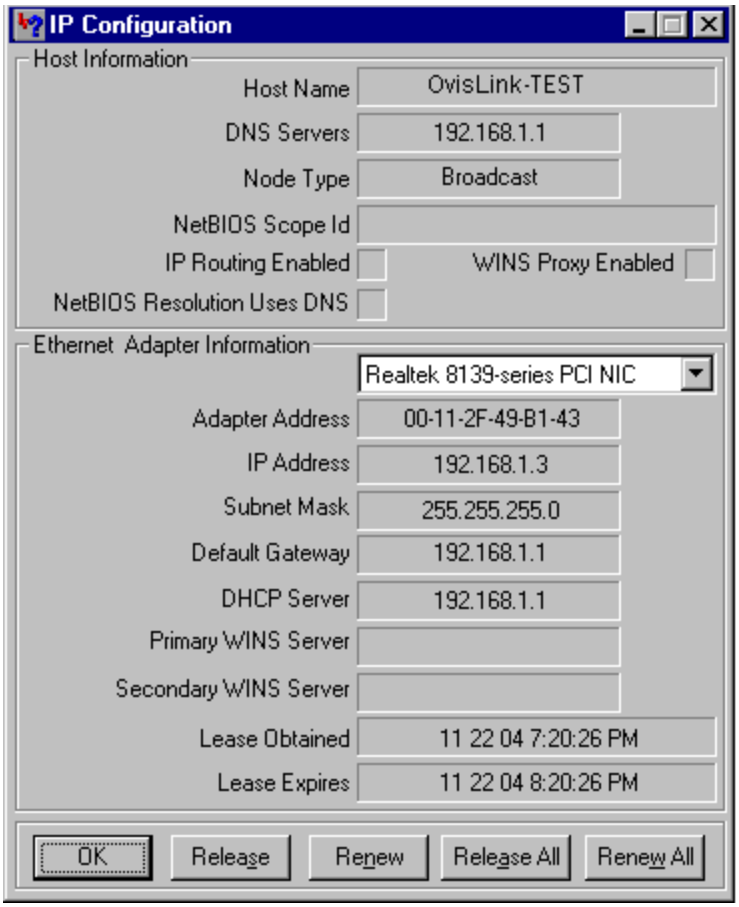
After your PC is configured and the system has rebooted, you can check the TCP/IP configuration using the following utility provided by your Windows system:

A. Windows 98/ME:

1. Click on **"Start"** and **"Run"**.
2. In the open field, enter **"winipcfg",** and then press **"OK"**.



3. All the Ethernet adapter information will be shown on the appear Windows. Check if you can get the following setting:

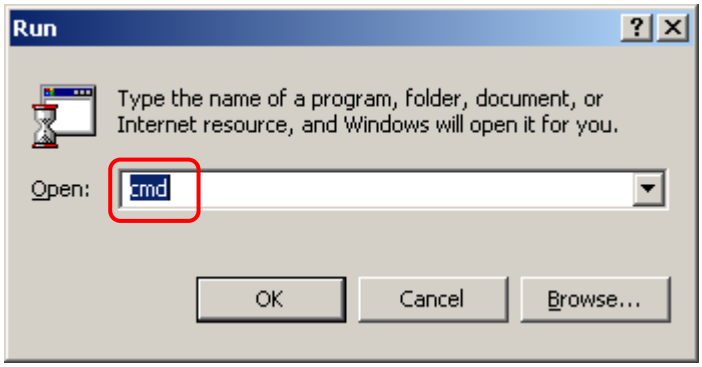


- The **IP Address** as **192.168.1.x**
- The **Subnet Mask** as **255.255.255.0**
- The **Default Gateway** as **192.168.1.1**

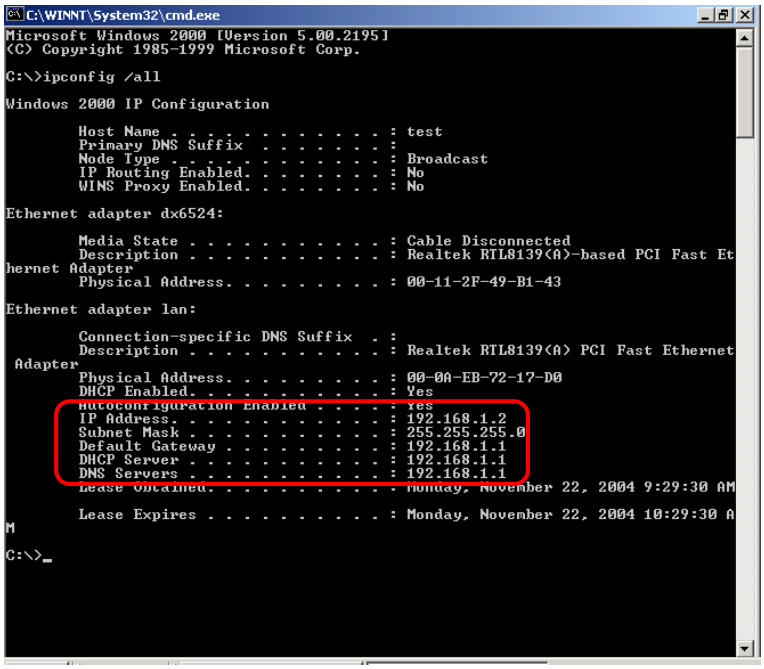
4. Type **"OK"** to end up the process.

B. Windows 2000:

1. Click **"Start"** and **"Run"**.
2. In the open field, enter **"cmd"** then click **"OK"**.



3. In the command prompt, type **"ipconfig /all"**, then press **"Enter"**.



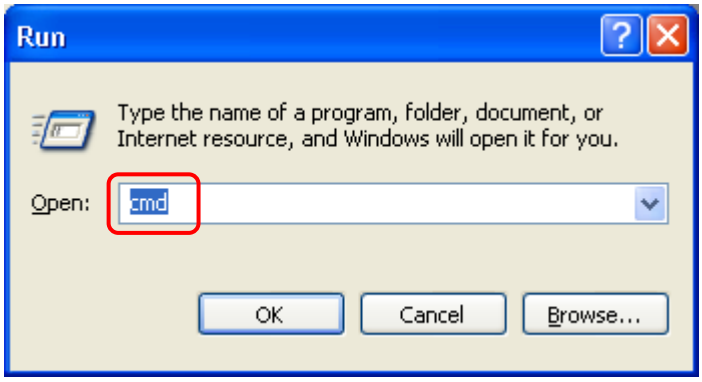
All the Ethernet adapter information will be shown in the appear Windows. Check if you can get the following setting:

- The **IP Address** as **192.168.1.x**
- The **Subnet Mask** as **255.255.255.0**
- The **Default Gateway** as **192.168.1.1**

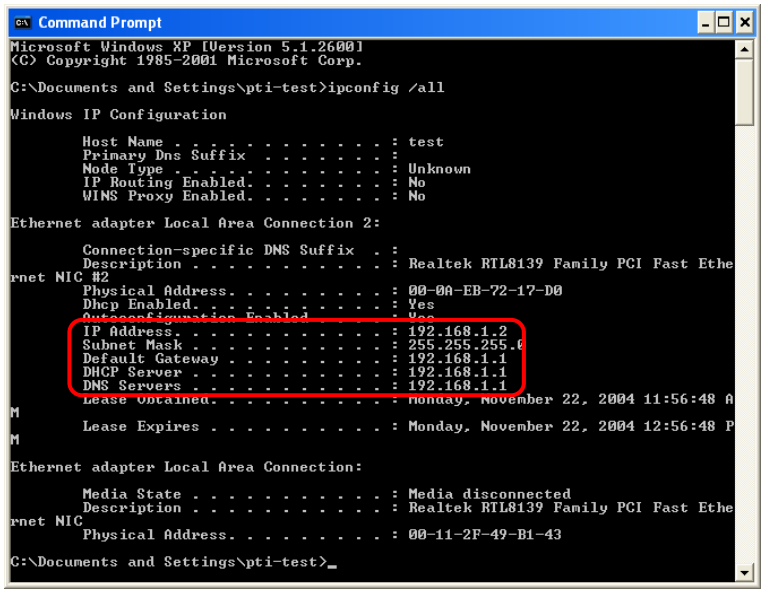
4. Type **"Exit"** to end up the process.

C. Windows XP:

1. Click **"Start"** and **"Run"**.
2. In the open field, enter **"cmd"** then click **"OK"**.



3. In the command prompt, type **"ipconfig /all"**, then press **"Enter"**



All the Ethernet adapter information will be shown in the appear Windows. Check if you can get the following setting:

- IP address as **192.168.1.x**
- The Subnet Mask as **255.255.255.0**
- the default gateway as **192.168.1.1**

4. Type **"Exit"** to end up the process.

Chapter 4 Device Administration

For your convenience, an Administrative Utility has been programmed into WL-8064ARM Wireless ADSL2/2+ Router. This chapter will explain all the functions in this utility. All the WL-8064ARM Wireless ADSL2/2+ Router based administrative tasks are performed through this web utility.

4.1 Login

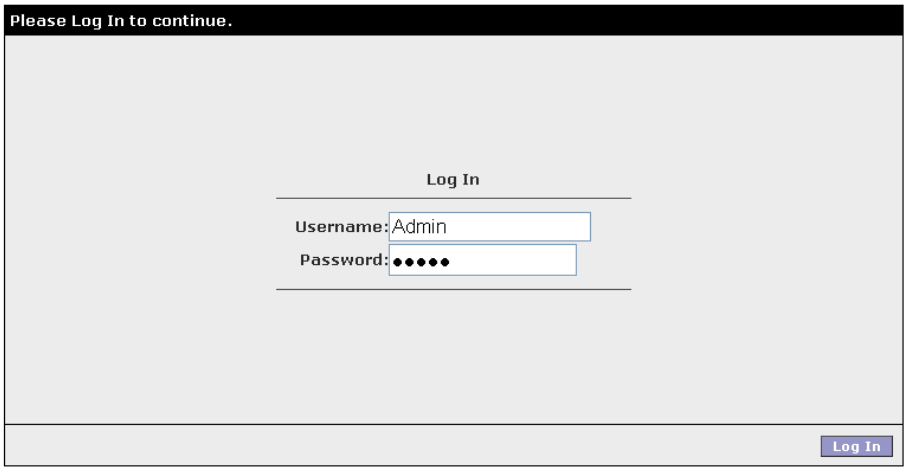
To access the WL-8064ARM Wireless ADSL2/2+ Router Configuration screens, follow the following steps will enable you to log into the WL-8064ARM Wireless ADSL2/2+ Router:

1. Launch the Web browser (Internet Explorer, Netscape, etc).

2. Enter the WL-8064ARM Wireless ADSL2/2+ Router default IP address (Default Gateway) http://192.168.1.1 in the address bar then press Enter to Log in.

3. Entry of the username and password will be prompted. Enter the default login **"Username"** and **"Password"**: The default login Username of the administrator is **"Admin"**, and the default login Password is **"ovislink"**.

■ **Note that the Username and Password are case sensitive.**



"Username" and **"Password"** can be changed after login. Refer to the **Tools** configuration section for further instruction.

Upon entering the address into the web browser, the configurable **HOME** page with all the device configuration information will pop up as shown in Figure below.

- **HOME:** The **Home** section show the current WL-8064ARM Wireless ADSL2/2+ Router's function information under different links.

- **EZ SETUP:** The **EZ Setup** is meant to help you install the WL-8064ARM Wireless ADSL2/2+ Router quickly and easily.

- **CONFIG:** The **Config** section allows you to create new connections, edit existing connections, and configure other basic settings.

- **ADVANCED:** The **Advanced** section lets you configure advanced features like RIP, Firewall, NAT, UPnP, IGMP, Bridge Filters, and LAN clients.

- **WIRELESS:** The **Wireless** section lets you configure wireless connection and related features.

- **TOOLS:** The **Tools** section lets you carry out system commands and perform simple system tests.

- **STATUS:** The **Status** section displays status, log and statistical information for all connections and interfaces.

- **HELP:** The **Help** section provides information on configuration and settings for each section.

- **Status Information:** Shows the current device connection status.

  - ☑ **System Uptime:** This field displays the time of the WL-8064ARM Wireless ADSL2/2+ Router has been in operation.
  - ☑ **DSL Status:** Shows the WL-8064ARM Wireless ADSL2/2+ Router connection status.
  - ☑ **DSL Speed:** This field displays the WL-8064ARM Wireless ADSL2/2+ Router Downstream/Upstream data rate in Kbps
  - ☑ **Wireless RF:** Show the WL-8064ARM Wireless ADSL2/2+ Router wireless system status.
  - ☑ **Ethernet:** This field displays the link up or down for the Ethernet connection.
  - ☑ **USB:** This field displays the link up or down for the USB connection (Optional).
  - ☑ **Software Version:** This field displays the WL-8064ARM Wireless ADSL2/2+ Router's code version.
  - ☑ **Firmware Version:** This field displays the WL-8064ARM Wireless ADSL2/2+ Router's firmware version.
  - ☑ **SSID:** The Service Set Identifier (**SSID**) is a unique name for your wireless network. If you have other wireless access points in your network, they must share the same SSID. The default SSID is **TI-AR7WRD**.

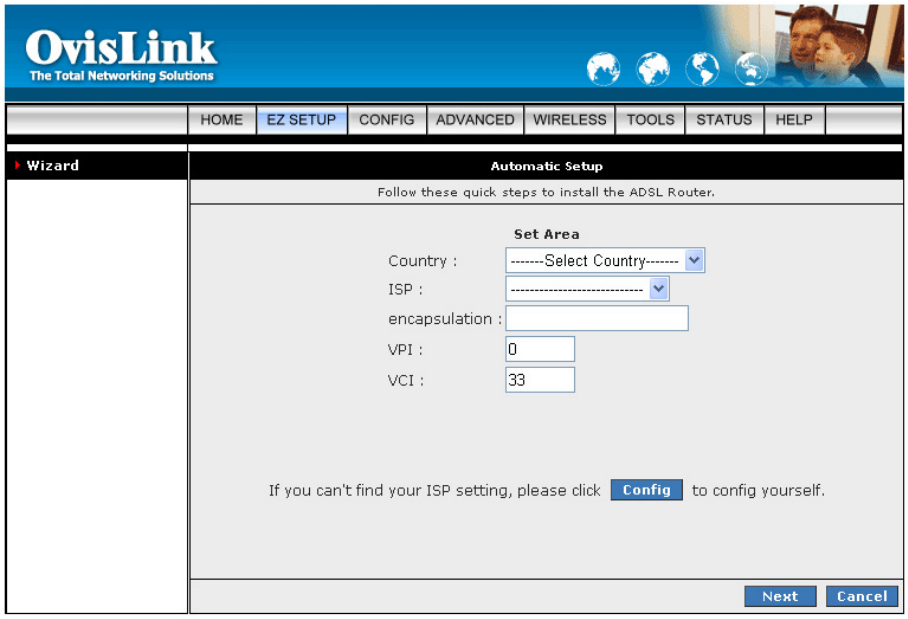
- **Log Out:** Click to Log Out the Administration configuration page.

- **Refresh:** Click to Refresh current page.

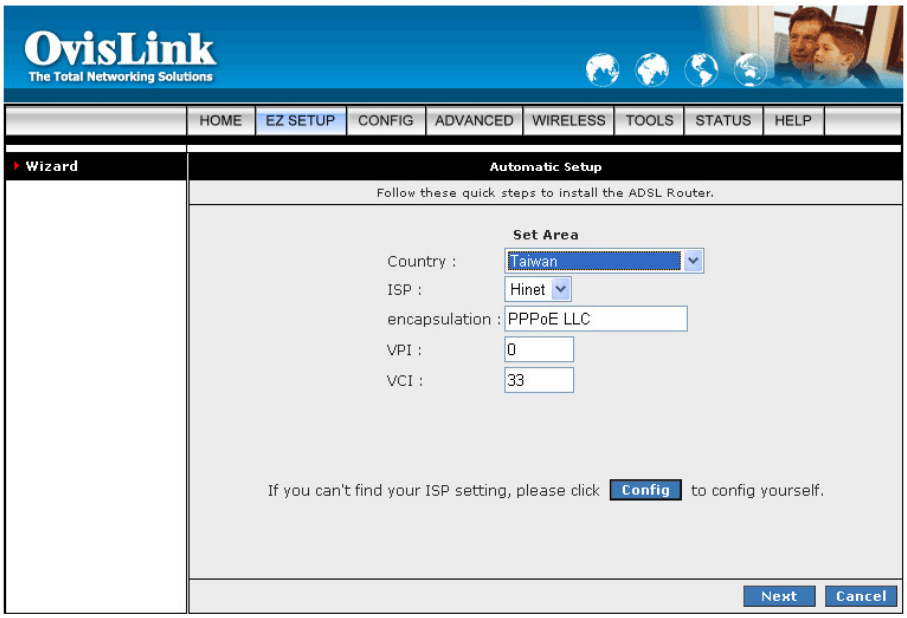
4.2 EZ SETUP

The **EZ SETUP** is meant to help you install the WL-8064ARM Wireless ADSL2/2+ Router quickly and easily.

Click on **"Wizard"** and the following screen will pop-up. Follow the **Steps** describe below to complete your installation.



STEP 1. Select your country from the **Country** list and the ADSL service provider from the **ISP** List (If there are more than two ISP in your country) and note the **"Encapsulation"** type and **"VPI/VCI"** setting.

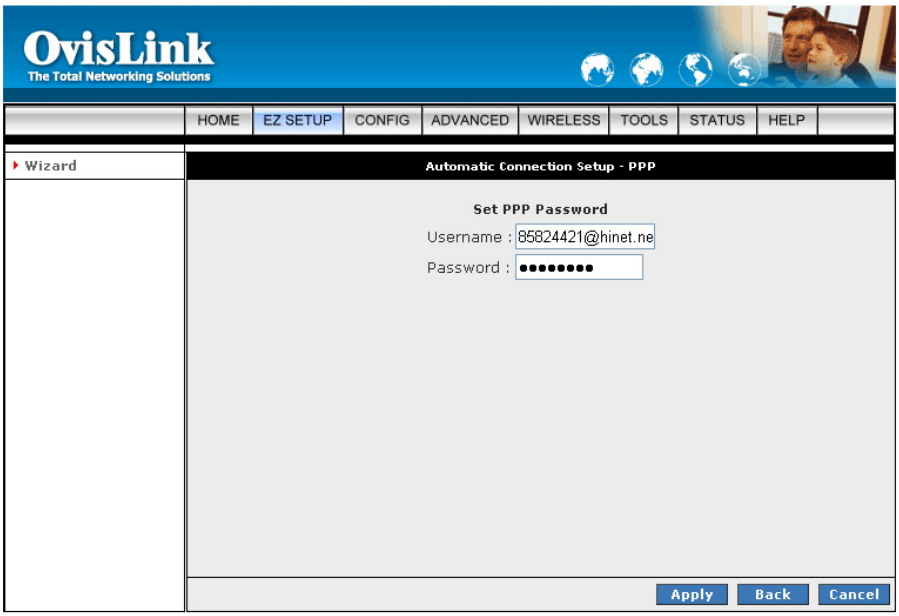


Click "Config" if you can't find any available parameters from the presetting country list.
Check your ISP immediately for the setting/configuration details.

The **"Encapsulation"** type differs in each country and there are two different kinds of setup windows wizard that will pop-up:

A. For the following **"Encapsulation"** type after clicking the **"Next"** button, the pop-up setup window wizard is shown below:

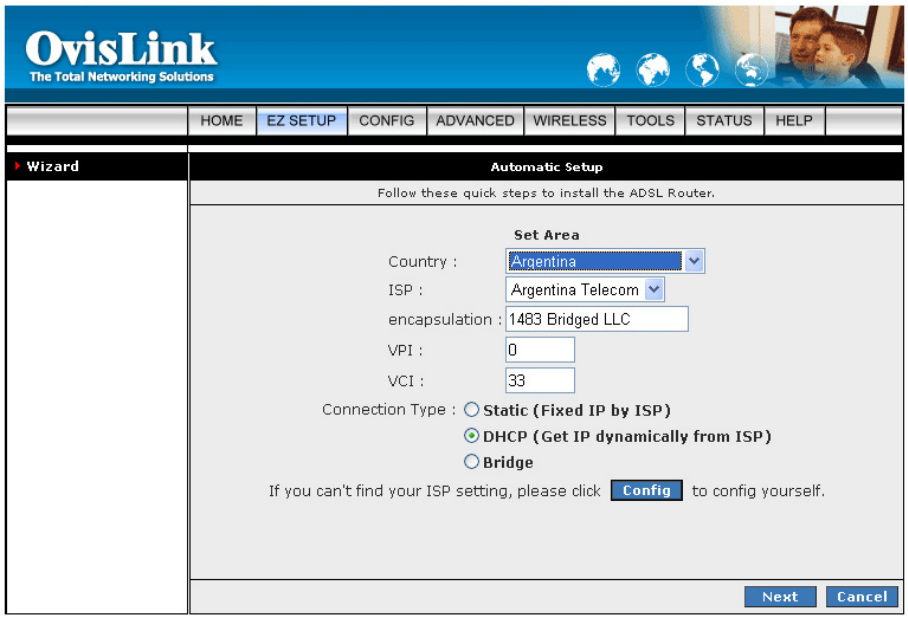
- ☑ **PPPoA VC-Mux**
- ☑ **PPPoA LLC**
- ☑ **PPPoE LLC**



Manually enter your **"User Name"** and **"Password"** which will be provided by your Service Provider (ISP). Click **"Apply"** after setup.

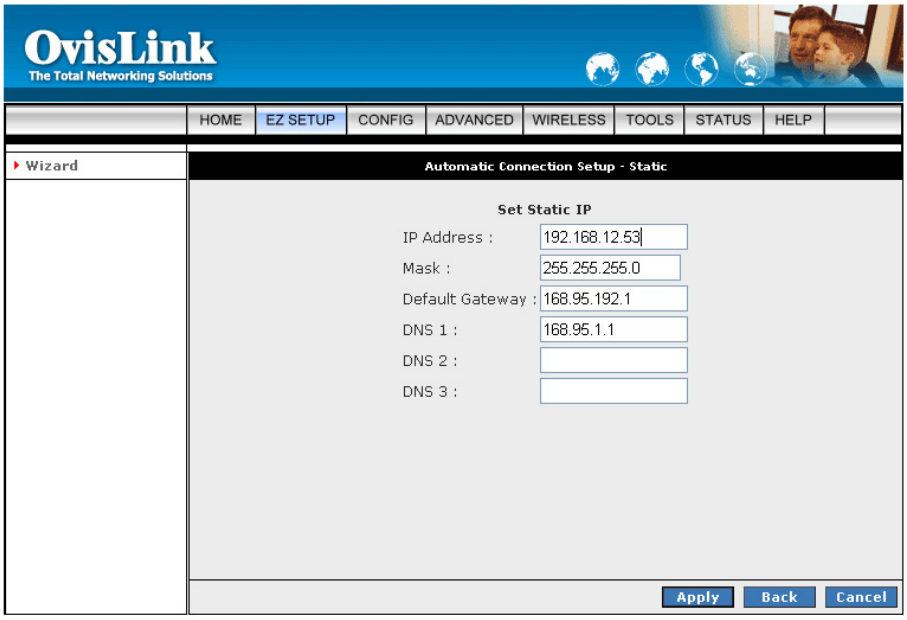
B. For countries with the following **"Encapsulation"** type after clicking the **"Next"** button, the pop-up window is shown below:

- ☑ **1483 Bridged LLC**
- ☑ **1483 Routed VC-MUX**



In this current window, you will find **THREE** different **Connection Type**:

1. **Static (Fixed IP by ISP):** Click the radio button to enable **Static (Fixed IP by ISP)** option, then click **"Next"**, the following window will pop-up:



- **Set IP Address:** Static IP Settings are for users who have a Static IP Address (WAN side) from their ISP.

  ☑ **"IP Address":** This is the static IP Address given by the ISP.
  Range for IP Address is x.x.x.y, where 0 ≦ x ≦ 255 and 1 ≦ y ≦ 254.

  ☑ **"Mask":** This is the subnet mask given by the ISP.
  Range for Subnet Mask is x.x.x.x, where 0 ≦ x ≦ 255.

  ☑ **"Default Gateway":** This is the Gateway given by the ISP.
  Range for Gateway is x.x.x.y, where 0 ≦ x ≦ 255 and 1 ≦ y ≦ 254.

- **"DNS": This is the DNS address specify by the user or ISP. Check your ISP for setting detail.**
  Range for DNS Address is x.x.x.y, where 0 ≦ x ≦ 255 and 1 ≦ y ≦ 254.

- Click **"Apply"** after your setting.

2. **DHCP (Get IP dynamically from ISP):** Click the radio button to enable **DHCP (Get IP dynamically from ISP)**. Click **"Next"** after your choice and the following window will pop-up:

- Place a check to enable the Default Gateway. The Default Gateway Address is provided by the ISP.

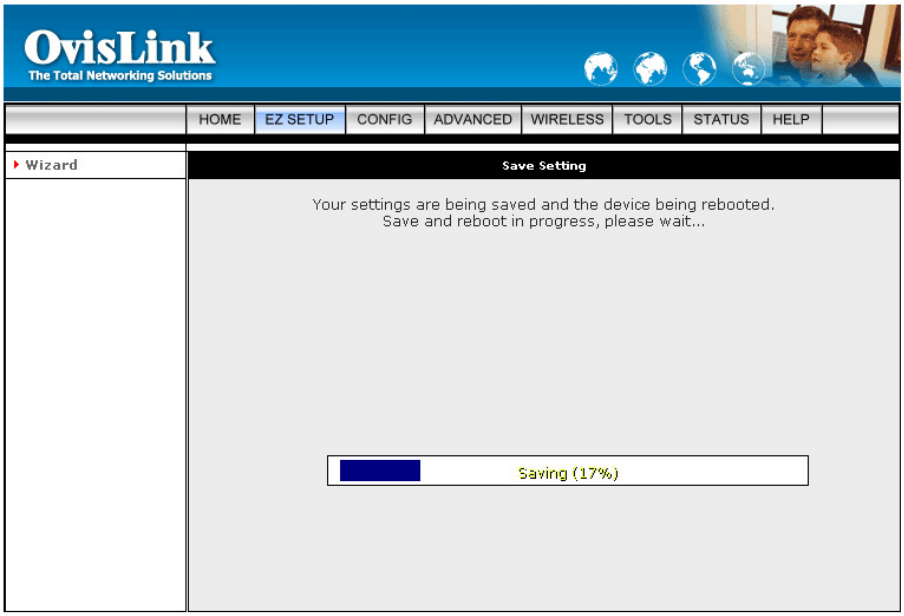
- Click **"Apply"** after your setting.

3. **Bridge:** Click the radio button to enable **DHCP (Get IP dynamically from ISP)**. Click **"Next"** after your choice and the following screen will pop-up:

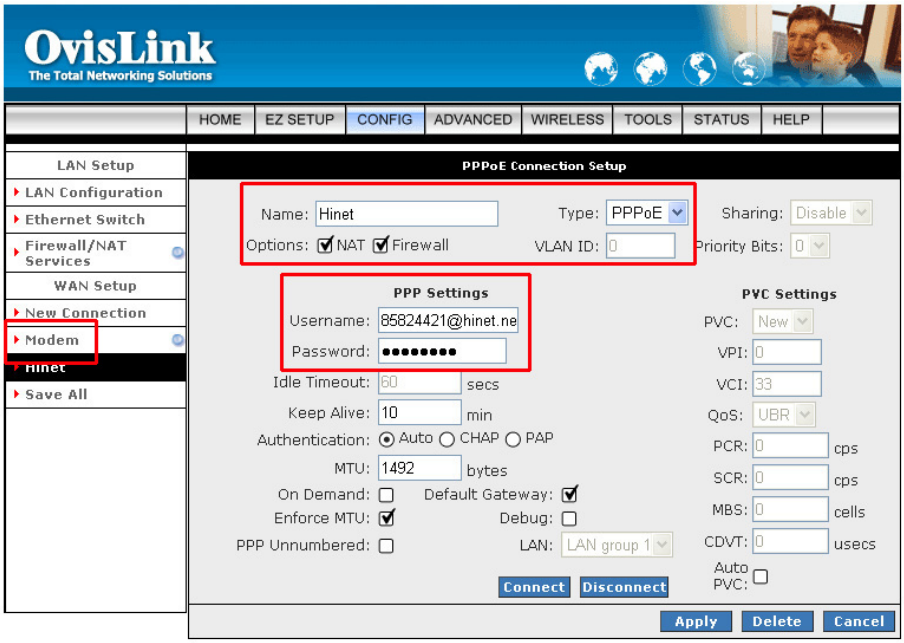
- **Select LAN:** Select LAN group from the drop down manual or leave it as it's default then click **"Apply"** after your setting.

- Click **"Apply"** after your setting.

STEP 2. Click **"Apply"** after setup. Following windows will pop-up.



The device's system will save and activate your setting after clicking the **"Apply"** button. The following windows will pop up after the reboot process.



- Check the following items when the above window pop-up.
  - ☑ **Name:** Show the **ISP** name selected in **STEP 1**.
  - ☑ **Type:** Show the **Encapsulation** type selected in **STEP 1**.
  - ☑ **Username:** Show the **Username** manually entered in **STEP 1**.
  - ☑ **Password:** Show the **Password** manually entered in **STEP 1**.
  - ☑ **VPI:** Show the **VPI** setting as shown in **STEP 1**.
  - ☑ **VCI:** Show the **VCI** setting as shown in **STEP 1**.

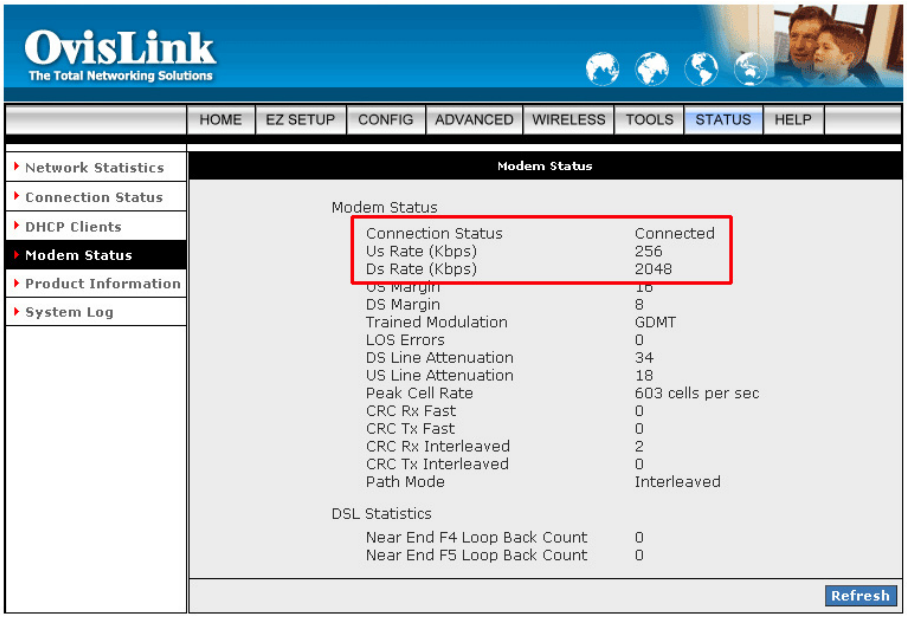
- A **Connection Profile** (Normally show the ISP Name) will be added to the left side of the configuration frame under **WAN Setup**.

NOTE: If the final setting are differ from what you'd selected in **STEP 1**, click **EZ SETUP** and redo the setup procedures or else check your dealer immediately for technical support.

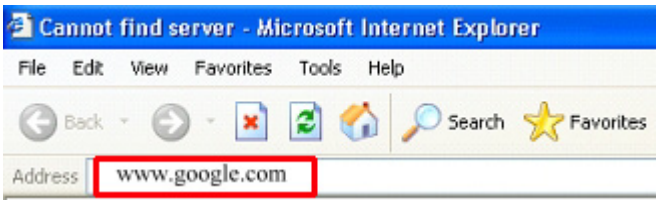
NOTE: The WL-8064ARM Wireless ADSL2/2+ Router can be configured to maintain up to 8 Connection Profiles. Different Connection Profiles may be required if you connect to more than one ADSL service provider, or if you vary the connection type/setting you use.

Note that in many cases, only one Connection Profile will be required and only one Connection Profile in used at one time.

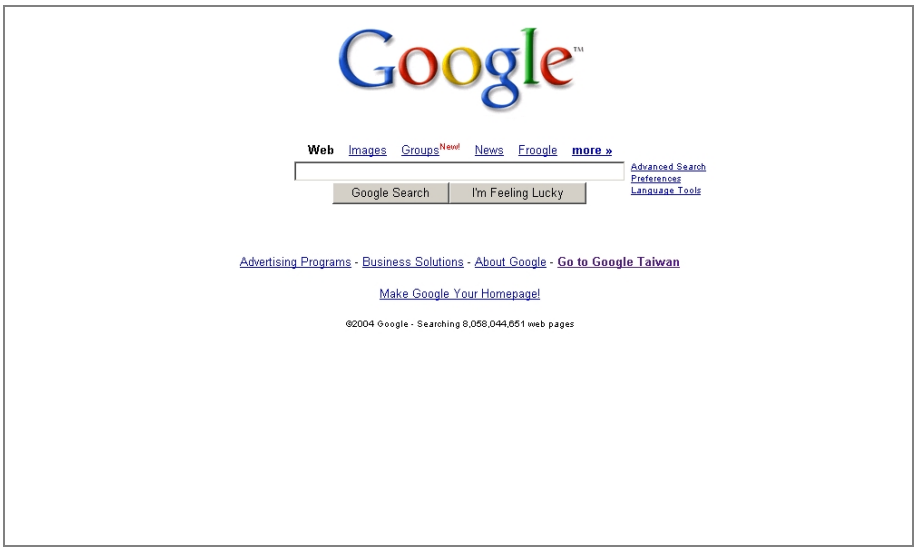
STEP 3. Go to **"STATUS"** → **"Modem Status"** and the following window will pop-up. Check the **"Connection Status"**, **"Us Rate"** and **"Ds Rate"**, the numbers/data show you the actual ADSL connection speed in Kbps.



STEP 4. Launch your web browser, and enter the Google Website Address: **"www.google.com"** in the address field then press **"Enter"**.



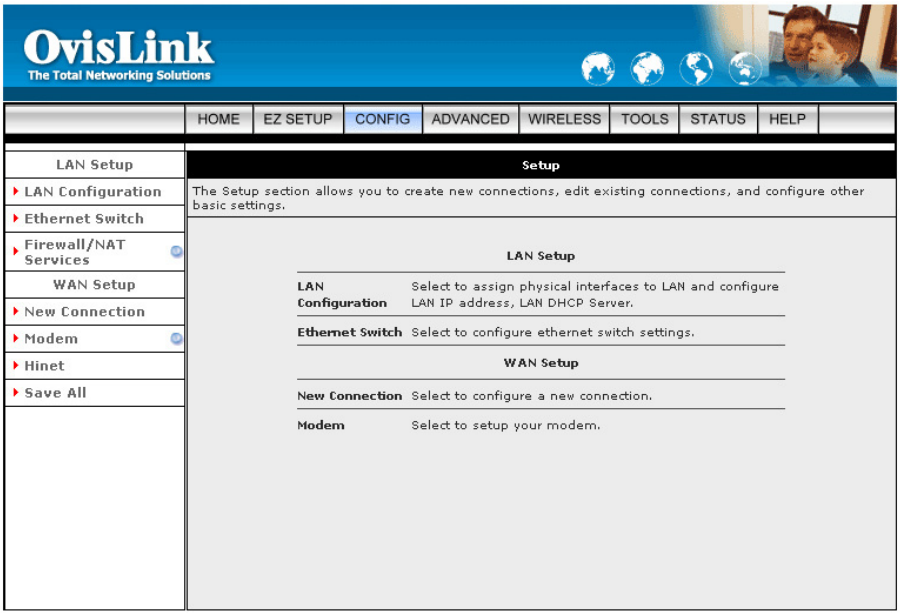
The following Google website index page will display on your screen. This shows your ADSL connection is correctly set and access to the Internet is now available.



4.3 CONFIG

The **CONFIG** configuration page allows you to create new connections, edit existing connections, and configure other basic settings in WAN and LAN mode.

The **CONFIG** Menu is divided into two sections : **LAN Setup** and **WAN Setup**. **WAN Setup** will be dealt with first.



4.3.1 CONFIG - WAN Setup

WAN Setup: The **WAN** configuration page allows you to set the configuration for the WAN/ADSL ports. ADSL connections can be configured in a variety of ways depending on the ISP/WAN configuration, and the requirements of your home or office LAN. This 4 Ports 11g ADSL2/2+ Router supports the following ADSL connection types:

- ☑ PPPoE (RFC2516)
- ☑ PPPoA (RFC2364)
- ☑ DHCP
- ☑ Static
- ☑ Bridged (RFC1483)
- ☑ CLIP (RFC1577)

Configuring the 4 Ports 11g ADSL2/2+ Router to match these connection types may require entry of some or all of the following values:

- ☑ ISP Account Username and Password
- ☑ VPI/VCI Setting
- ☑ Encapsulation Type/Multiplexing (Either LLC or VC, check with your ISP for details)
- ☑ ADSL Handshaking Mode (Default setting is MMODE)
- ☑ Network Settings for Bridged Mode operation:

For Bridged Mode connections (RFC1483), the ISP will need to provide the following information:

- ☑ DSL Fixed Internet IP address
- ☑ Subnet Mask
- ☑ Default Gateway IP Address
- ☑ Primary DNS IP address.

The next sections will describe in detail how to set up each of these connection types and save them as Connection Profiles.

4.3.1.1 CONFIG - WAN Setup – New Connection

Click **New Connection** to setup a new connection profile. Different connection profiles may be required if you connect to more than one ADSL service provider, or if you vary the connection type you use, or if this WL-8064ARM Wireless ADSL2/2+ Router is used in different locations or countries.

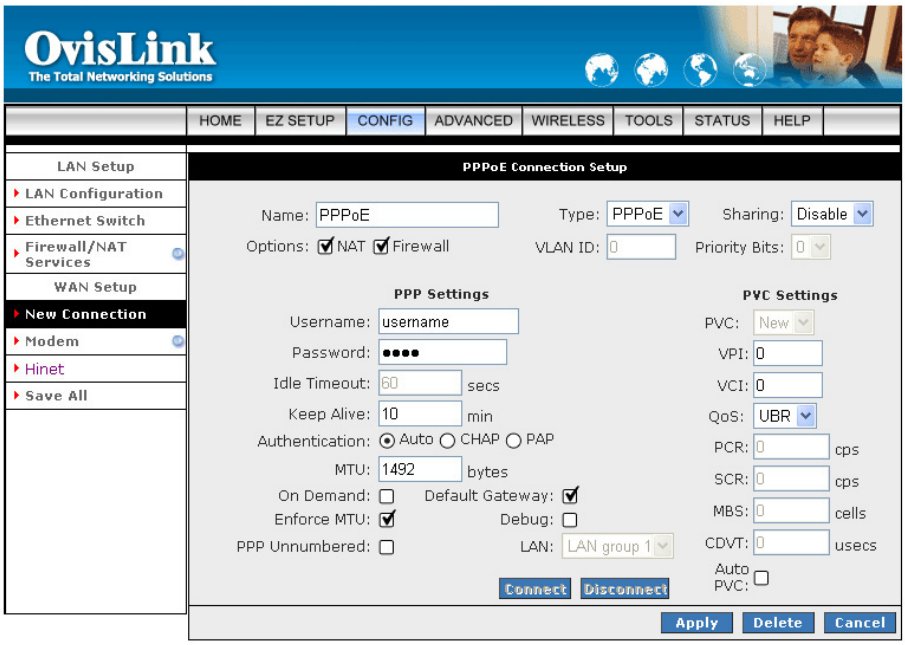
This WL-8064ARM Wireless ADSL2/2+ Router can be configured to maintain up to 8 Connection Profiles.

The **WAN Setup** configuration page enable the user to create, save and select connection profiles as required. (In many cases, only one connection profile will be required and only one connection profile will be used at one time).

To complete and save the new Connection Profile, click the **Apply** button, and then click **Save All**.

4.3.1.1.1 New Connection - PPPoE Connection Setup

PPPoE: When **PPPoE Mode** is selected, the following screen will pop-up. Point-to-Point Protocol (PPP) is a method of establishing a network connection between network hosts. PPPoE, also known as RFC 2516, adapts PPP to work over Ethernet for ADSL connections. PPPoE provides a mechanism for authenticating users by providing User Name and Password fields and it is a connection type provided by many ISP or Telecom.



- **Name:** Enter the PPPoE connection name. The name must be unique and must not contain spaces and must not begin with a number.
- **Type:** Connection Type : PPPoE.
- **Sharing:** Select **"Disable"**, **"Enable"** or **"VLAN"** sharing. Default setting is **"Disable"**.
- **Options:** Click to enable **"NAT"** and/or **"Firewall"** functionality. Default is **"Enable"**.
- **VLAN ID:** If **"VLAN"** is selected, manually enter the **"VLAN ID"** and select **"Priority Bits"** from the drop down manual.
- **PPP Settings:**
  - ☑ **Username:** Your ISP Account ID. Check your ISP for details.
  - ☑ **Password:** Your ISP Account Password. Check your ISP for details.
  - ☑ **Idle Timeout:** The Idle Timeout allows you to set the specific period of time, in seconds, to disconnect from the ISP if the link has no activity detected.
  - ☑ **Keep Alive:** When the On-Demand option is not enabled, this value specifies the time to wait without being connected to your provider before terminating the connection. To ensure that the link is always active, enter 0 in this field.
  - ☑ **Authentication:** The different types of available authentications are:
    - **Auto:** When auto is selected, PAP mode will run by default. However, if PAP fails, then will run as the secondary protocol. This is the default setting.
    - **PAP:** Password Authentication Procedure. Authentication is done through username and password.

- **CHAP:** Challenge-Handshake Authentication Protocol. Typically more secure than PAP, CHAP uses username and password in combination with a randomly generated challenge string which has to be authenticated using a one-way hashing function.

☑ **MTU:** Maximum Transmission Unit. The largest size packet that can be sent by the modem. If the network stack of any packet is larger than the MTU value, then the packet will be fragmented before the transmission. This can be set from a minimum 128 to maximum 1500.

☑ **On Demand:** If enable On Demand mode, the connection will be dropped if no activity is detected after the specified Idle Timeout value.

☑ **Default Gateway:** Check box to make this the default connection.

☑ **Enforce MTU:** Check box if you experience problems accessing the Internet over a PPPoE connection. This feature will force all TCP traffic to conform with PPP MTU by changing TCP Maximum Segment Size to PPP MTU. MTU (Maximum Transmission Unit) is defined as the maximum packet size (In bytes), that a particular interface can handle.

☑ **Debug:** Click to enable the Debug function. The complete debugging information will show and listed in the System Log file.

☑ **PPP Unnumbered:** Click to enable PPP Unnumbered function then select LAN Group from the LAN dropdown manual.

■ **PVC Settings:**

☑ **PVC:** This field allows you to choose the specific PVC for the PPP session.

☑ **VPI:** Virtual Path Identifier is a virtual path used for cell routing that is identified by an eight bit field in the ATM cell header. The VPI field specifies this eight-bit identifier for routing.

☑ **VCI:** A Virtual Channel Identifier is a virtual channel that is identified by a unique numerical tag that is defined by a 16-bit field in the ATM cell header. The purpose of the virtual channel is to identify where the cell should travel. The VCI field specifies this 16 bit numerical tag that determines the destination.

☑ **QoS:** Select the Quality of Service (QoS) type. If in doubt leave as default.

☑ **PCR:** Peak Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the rate cells per second that the source device may never exceed. Available only when VBR QoS is chosen.

☑ **SCR:** Security Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the security cell transmitted per second.

☑ **MBS:** Maximum Burst Size. A term used in ATM (Asynchronous Transfer Mode) to specify the maximum number of cells that can be transmitted at the contracted PCR (Peak Cell Rate). Available only when VBR QoS is chosen.

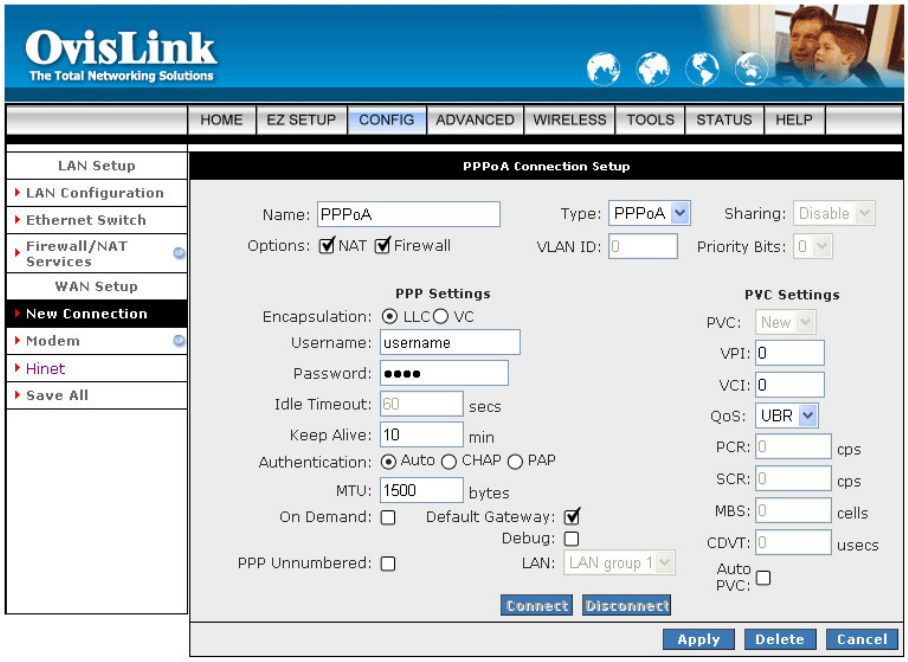
☑ **CDVT:** Cell Delay Variation Time. The Cell Delay Variation is a term used in ATM (Asynchronous Transfer Mode) to describe the time difference that is acceptable between cells being presented at the receiving host. Available only when VBR QoS is chosen.

☑ **Auto PVC:** Click to enable Auto PVC features. Auto PVC allows detection of virtual channels via the built-in mechanism for communicating ATM Layer information from DSLAM to the WL-8064ARM Wireless ADSL2/2+ Router.

- **Connect:** Click **Connect** to attempt an ADSL connection under this connection profile.
- **Disconnect:** Click **Disconnect** to drop the ADSL connection under this connection profile.
- **Apply:** Click **Apply** to complete the connection profile's setting.
- **Delete:** Click **Delete** to delete a connection.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the connection profile, click **Save All** after clicking the **Apply** button.

4.3.1.1.2 New Connection - PPPoA Connection Setup

PPPoA: When **PPPoA** mode is selected, the following screen will pop-up. Point-to-Point Protocol (PPP) is a method of establishing a network connection between network hosts. PPPoA, also known as RFC 2346, adapts PPP to work over ATM cells for ADSL connections.



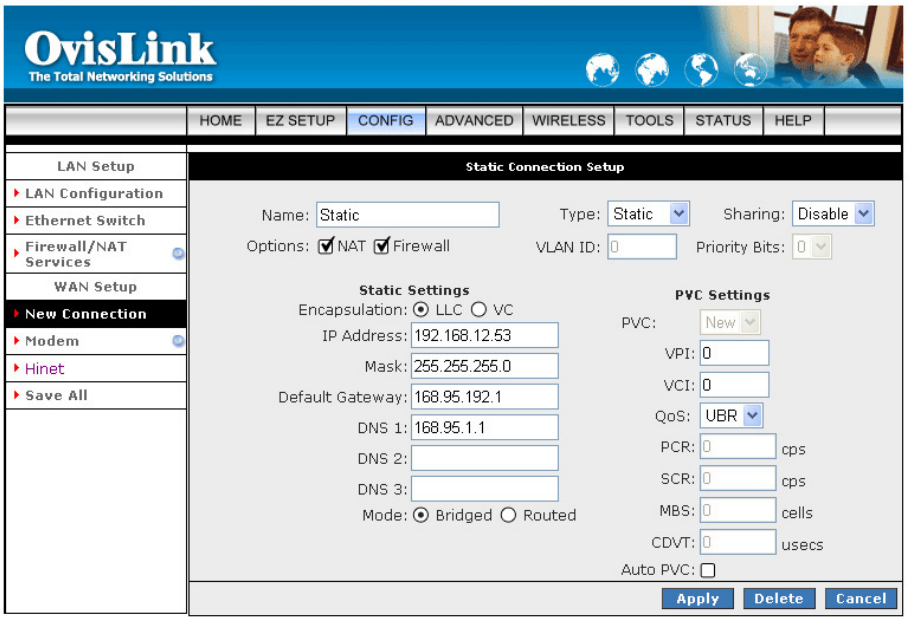
- **Name:** Enter the PPPoA connection name. The name must be unique and must not contain spaces and must not begin with a number.
- **Type:** Connection Type : PPPoA.
- **Options:** Click to enable **"NAT"** and/or **"Firewall"** functionality. Default is **"Enable"**.
- **PPP Settings:**
  - ☑ **Username:** Your ISP Account ID. Check your ISP for details.
  - ☑ **Password:** Your ISP Account Password. Check your ISP for details.
  - ☑ **Idle Timeout:** The Idle Timeout allows you to set the specific period of time, in seconds, to disconnect from the ISP if the link has no activity detected.
  - ☑ **Keep Alive:** When the On-Demand option is not enabled, this value specifies the time to wait without being connected to your provider before terminating the connection. To ensure that the link is always active, enter 0 in this field.
  - ☑ **Authentication:** The different types of available authentications are:
    - **Auto:** When auto is selected, PAP mode will run by default. However, if PAP fails, then will run as the secondary protocol. This is the default setting.
    - **PAP:** Password Authentication Procedure. Authentication is done through username and password.
    - **CHAP:** Challenge-Handshake Authentication Protocol. Typically more secure than PAP, CHAP uses username and password in combination with a randomly generated challenge string which has to be authenticated using a one-way hashing function.

- ☑ **MTU:** Maximum Transmission Unit. The largest size packet that can be sent by the modem. If the network stack of any packet is larger than the MTU value, then the packet will be fragmented before the transmission. This can be set from a minimum 128 to maximum 1500.
- ☑ **On Demand:** If enable On Demand mode, the connection will be dropped if no activity is detected after the specified Idle Timeout value.
- ☑ **Default Gateway:** Check box to make this the default connection.
- ☑ **Debug:** Click to enable the Debug function. The complete debugging information will show and listed in the System Log file.
- ☑ **PPP Unnumbered:** Click to enable PPP Unnumbered function then select LAN Group from the LAN dropdown manual.

- **PVC Settings:**
  - ☑ **VPI:** Virtual Path Identifier is a virtual path used for cell routing that is identified by an eight bit field in the ATM cell header. The VPI field specifies this eight bit identifier for routing.
  - ☑ **VCI:** A Virtual Channel Identifier is a virtual channel that is identified by a unique numerical tag that is defined by a 16-bit field in the ATM cell header. The purpose of the virtual channel is to identify where the cell should travel. The VCI field specifies this 16 bit numerical tag that determines the destination.
  - ☑ **QoS:** Select the Quality of Service (QoS) type. If in doubt leave as default.
  - ☑ **PCR:** Peak Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the rate cells per second that the source device may never exceed. Available only when VBR QoS is chosen.
  - ☑ **SCR:** Security Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the security cell transmitted per second.
  - ☑ **MBS:** Maximum Burst Size. A term used in ATM (Asynchronous Transfer Mode) to specify the maximum number of cells which can be transmitted at the contracted PCR (Peak Cell Rate). Available only when VBR QoS is chosen.
  - ☑ **CDVT:** Cell Delay Variation Time. The Cell Delay Variation is a term used in ATM (Asynchronous Transfer Mode) to describe the time difference that is acceptable between cells being presented at the receiving host. Available only when VBR QoS is chosen.
  - ☑ **Auto PVC:** Click to enable Auto PVC features. Auto PVC allows detection of virtual channels via the built-in mechanism for communicating ATM Layer information from DSLAM to the WL-8064ARM Wireless ADSL2/2+ Router.
- **Connect:** Click **Connect** to attempt an ADSL connection under this connection profile.
- **Disconnect:** Click **Disconnect** to drop the ADSL connection under this connection profile.
- **Apply:** Click **Apply** to complete the connection profile's setting.
- **Delete:** Click **Delete** to delete a connection.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the connection profile, click **Save All** after clicking the **Apply** button.

4.3.1.1.3 New Connection - Static Connection Setup

Static: When Static mode is selected, the following screen will pop-up. Most Internet users are provided with a dynamic IP address by their ISP for each session, however certain situations call for a Static IP address. This is typically when you want to host a website, or use VoIP or video-conferencing applications where other users must regularly connect to your computer. Static IP numbers are generally made available by ISPs for these purposes for an additional fee.

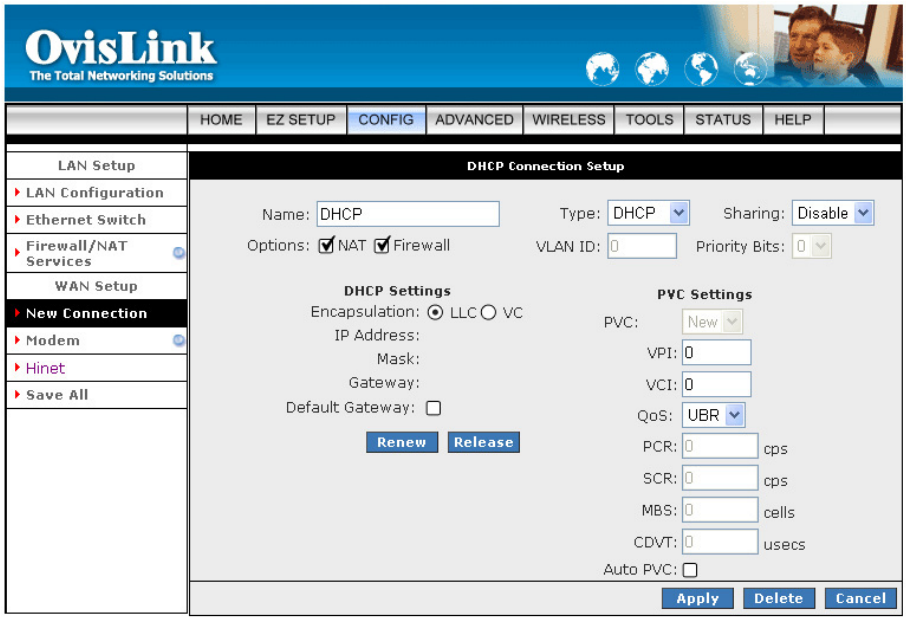


- **Name:** Enter the Static connection name. The name must be unique and must not contain spaces and must not begin with a number.
- **Type:** Connection Type : Static.
- **Sharing:** Select **"Disable"**, **"Enable"** or **"VLAN"** sharing. Default setting is **"Disable"**.
- **Options:** Click to enable **"NAT"** and/or **"Firewall"** functionality. Default is **"Enable"**.
- **VLAN ID:** If **"VLAN"** is selected, manually enter the **"VLAN ID"** and select **"Priority Bits"** from the drop down manual.
- **Static Settings:**
  - ☑ **Encapsulation:** Select the encapsulation type (LLC or VC) according to the information provided by the ISP.
  - ☑ **IP Address:** Enter the IP Address provided by your ISP.
  - ☑ **Mask:** Enter the Subnet mask specified by your ISP.
  - ☑ **Default Gateway:** Enter the Default Gateway as specified by the ISP.
  - ☑ **DNS:** Up to three Domain Name Server (DNS) addresses can also be specified.
  - ☑ **Mode:** For static configuration, you can also select a bridge connection or a routed connection. Since a Static IP address is typically used to host WEB servers, Bridged connection is usual however Routed is provided also. Check with ISP for confirmation.

- **PVC Settings:**
  - ☑ **PVC:** This field allows you to choose the specific PVC for the PPP session.
  - ☑ **VPI:** Virtual Path Identifier is a virtual path used for cell routing that is identified by an eight bit field in the ATM cell header. The VPI field specifies this eight bit identifier for routing.
  - ☑ **VCI:** A Virtual Channel Identifier is a virtual channel that is identified by a unique numerical tag that is defined by a 16-bit field in the ATM cell header. The purpose of the virtual channel is to identify where the cell should travel. The VCI field specifies this 16 bit numerical tag that determines the destination.
  - ☑ **QoS:** Select the Quality of Service (QoS) type. If in doubt leave as default.
  - ☑ **PCR:** Peak Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the rate cells per second that the source device may never exceed. Available only when VBR QoS is chosen.
  - ☑ **SCR:** Security Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the security cell transmitted per second.
  - ☑ **MBS:** Maximum Burst Size. A term used in ATM (Asynchronous Transfer Mode) to specify the maximum number of cells which can be transmitted at the contracted PCR (Peak Cell Rate). Available only when VBR QoS is chosen.
  - ☑ **CDVT:** Cell Delay Variation Time. The Cell Delay Variation is a term used in ATM (Asynchronous Transfer Mode) to describe the time difference that is acceptable between cells being presented at the receiving host. Available only when VBR QoS is chosen.
  - ☑ **Auto PVC:** Click to enable Auto PVC features. Auto PVC allows detection of virtual channels via the built-in mechanism for communicating ATM Layer information from DSLAM to the WL-8064ARM Wireless ADSL2/2+ Router.
- **Apply:** Click **Apply** to complete the connection profile's setting.
- **Delete:** Click **Delete** to delete a connection.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the connection profile, click **Save All** after clicking the **Apply** button.

4.3.1.1.4 New Connection - DHCP Connection Setup

DHCP: When DHCP mode is selected, the following screen will pop-up. Dynamic Host Configuration Protocol (DHCP) allows the ADSL Router to automatically obtain the IP address from the server. This option is commonly used in situations where the IP address is dynamically assigned and is not known prior to assignment.



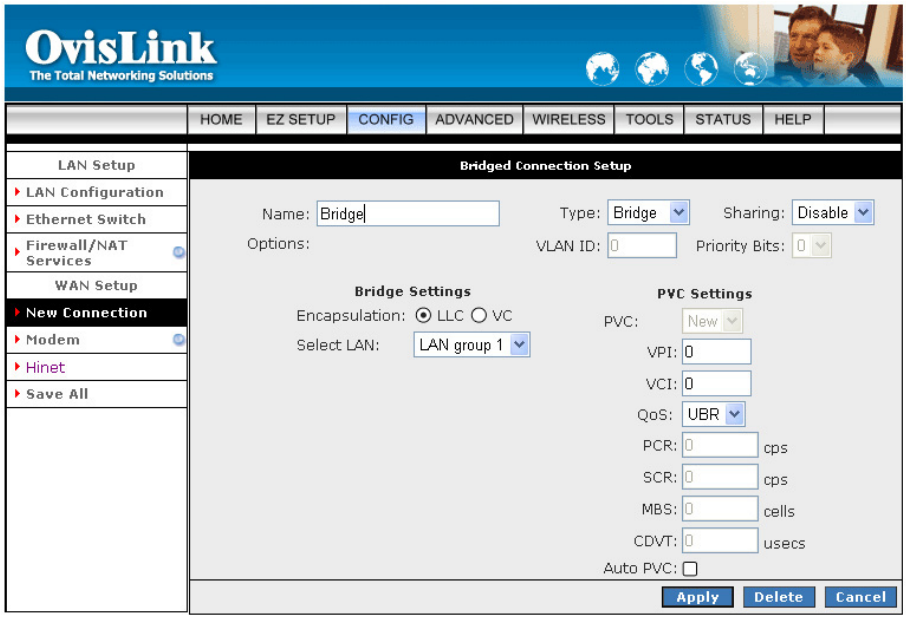
- **Name:** Enter the DHCP connection name. The name must be unique and must not contain spaces and must not begin with a number.
- **Type:** Connection Type : DHCP.
- **Sharing:** Select **"Disable"**, **"Enable"** or **"VLAN"** sharing. Default setting is **"Disable"**.
- **Options:** Click to enable **"NAT"** and/or **"Firewall"** functionality. Default is **"Enable"**.
- **VLAN ID:** If **"VLAN"** is selected, manually enter the **"VLAN ID"** and select **"Priority Bits"** from the drop down manual.
- **DHCP Settings:**
  - ☑ **Encapsulation:** Select the encapsulation type (LLC or VC) according to the information provided by the ISP.
  - ☑ **Default Gateway:** Click to enable the Default Gateway.
- **PVC Settings:**
  - ☑ **PVC:** This field allows you to choose the specific PVC for the PPP session.
  - ☑ **VPI:** Virtual Path Identifier is a virtual path used for cell routing that is identified by an eight bit field in the ATM cell header. The VPI field specifies this eight bit identifier for routing.
  - ☑ **VCI:** A Virtual Channel Identifier is a virtual channel that is identified by a unique numerical tag that is defined by a 16-bit field in the ATM cell header. The purpose of the virtual channel is to identify where the cell should travel. The VCI field specifies this 16 bit numerical tag that determines the destination.

- ☑ **QoS:** Select the Quality of Service (QoS) type. If in doubt leave as default.
- ☑ **PCR:** Peak Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the rate cells per second that the source device may never exceed. Available only when VBR QoS is chosen.
- ☑ **SCR:** Security Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the security cell transmitted per second.
- ☑ **MBS:** Maximum Burst Size. A term used in ATM (Asynchronous Transfer Mode) to specify the maximum number of cells which can be transmitted at the contracted PCR (Peak Cell Rate). Available only when VBR QoS is chosen.
- ☑ **CDVT:** Cell Delay Variation Time. The Cell Delay Variation is a term used in ATM (Asynchronous Transfer Mode) to describe the time difference that is acceptable between cells being presented at the receiving host. Available only when VBR QoS is chosen.
- ☑ **Auto PVC:** Click to enable Auto PVC features. Auto PVC allows detection of virtual channels via the built-in mechanism for communicating ATM Layer information from DSLAM to the WL-8064ARM Wireless ADSL2/2+ Router.

- **Renew:** Click the **Renew** button and the gateway will retrieve the IP Address, Subnet Mask, and Gateway Address.
- **Release:** Click the **Release** button to release the IP Address, Subnet Mask and Gateway Address.
- **Apply:** Click **Apply** to complete the connection profile's setting.
- **Delete:** Click **Delete** to delete a connection.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the connection profile, click **Save All** after clicking the **Apply** button.

4.3.1.1.5 New Connection - Bridge Connection Setup

Bridge: When Bridge mode is selected, the following screen will pop-up. A Bridged connection basically disables the routing, firewall and NAT features of the WL-8064ARM Wireless ADSL2/2+ Router. In a Bridged connection, the WL-8064ARM Wireless ADSL2/2+ Router acts as a modem or hub, and just transmits packets between the WAN interface and the LAN interface. A Bridged connection assumes that another device is providing the routing functionality that is now disabled in the WL-8064ARM Wireless ADSL2/2+ Router.



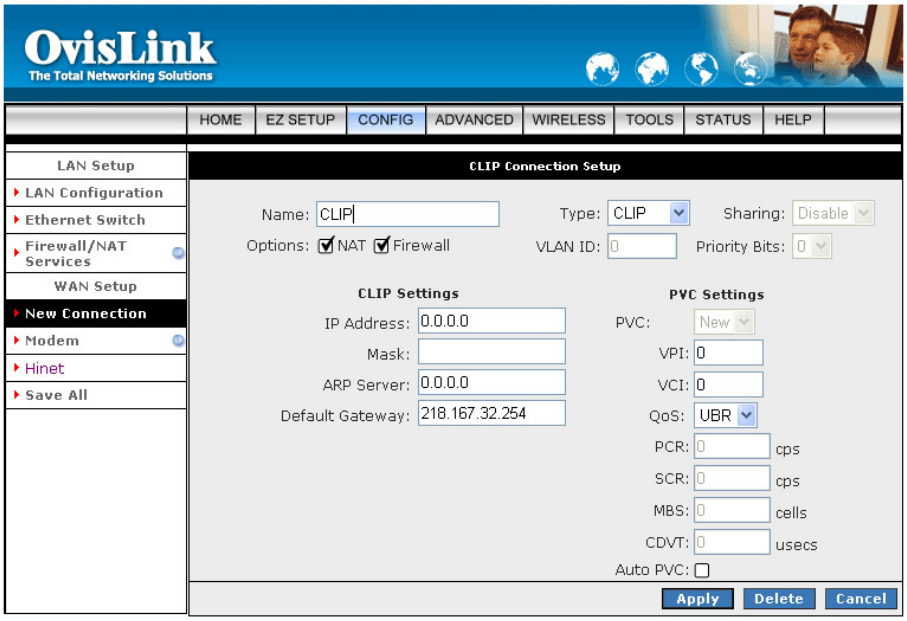
- **Name:** Enter the Bridge connection name. The name must be unique and must not contain spaces and must not begin with a number.
- **Type:** Connection Type : DHCP.
- **Sharing:** Select **"Disable"**, **"Enable"** or **"VLAN"** sharing. Default setting is **"Disable"**.
- **VLAN ID:** If **"VLAN"** is selected, manually enter the **"VLAN ID"** and select **"Priority Bits"** from the drop down manual.
- **Bridge Settings:**
  - ☑ **Encapsulation:** Select the encapsulation type (LLC or VC) according to the information provided by the ISP.
  - ☑ **Select LAN:** Up to three LAN Group can be specified. Select your LAN Group from the drop down manual.
- **PVC Settings:**
  - ☑ **PVC:** This field allows you to choose the specific PVC for the PPP session.
  - ☑ **VPI:** Virtual Path Identifier is a virtual path used for cell routing that is identified by an eight bit field in the ATM cell header. The VPI field specifies this eight bit identifier for routing.
  - ☑ **VCI:** A Virtual Channel Identifier is a virtual channel that is identified by a unique numerical tag that is defined by a 16-bit field in the ATM cell header. The purpose of the virtual channel is to identify where the cell should travel. The VCI field specifies this 16 bit numerical tag that determines the destination.

- ☑ **QoS:** Select the Quality of Service (QoS) type. If in doubt leave as default.
- ☑ **PCR:** Peak Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the rate cells per second that the source device may never exceed. Available only when VBR QoS is chosen.
- ☑ **SCR:** Security Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the security cell transmitted per second.
- ☑ **MBS:** Maximum Burst Size. A term used in ATM (Asynchronous Transfer Mode) to specify the maximum number of cells which can be transmitted at the contracted PCR (Peak Cell Rate). Available only when VBR QoS is chosen.
- ☑ **CDVT:** Cell Delay Variation Time. The Cell Delay Variation is a term used in ATM (Asynchronous Transfer Mode) to describe the time difference that is acceptable between cells being presented at the receiving host. Available only when VBR QoS is chosen.
- ☑ **Auto PVC:** Click to enable Auto PVC features. Auto PVC allows detection of virtual channels via the built-in mechanism for communicating ATM Layer information from DSLAM to the WL-8064ARM Wireless ADSL2/2+ Router.

- **Apply:** Click **Apply** to complete the connection profile's setting.
- **Delete:** Click **Delete** to delete a connection.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the connection profile, click **Save All** after clicking the **Apply** button.

4.3.1.1.6 New Connection - CLIP Connection Setup

CLIP: When CLIP mode is selected, the following screen will pop-up. The Classical IP over ATM (CLIP) support provides the ability to transmit IP packets over an ATM network, CLIP support will encapsulate IP in an AAL5 packet data unit (PDU) frame using RFC1577and utilizes an ATM-aware version of the ARP protocol.



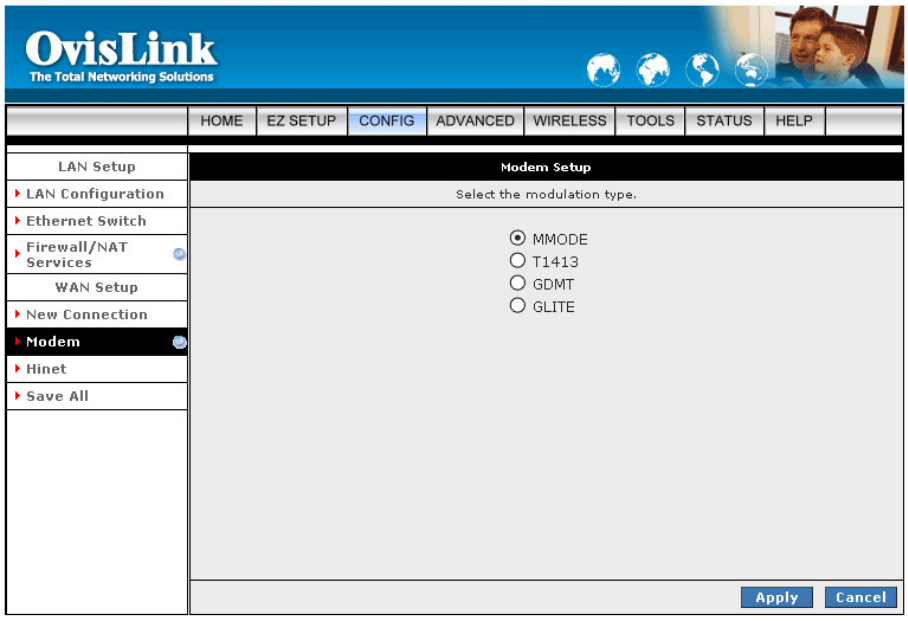
- **Name:** Enter the CLIP connection name. The name must be unique and must not contain spaces and must not begin with a number.
- **Type:** Connection Type : CLIP.
- **CLIP Settings:**
  - ☑ **IP Address:** Enter the IP Address provided by your ISP.
  - ☑ **Mask:** Enter the Subnet mask specified by your ISP.
  - ☑ **ARP Server:** Leave as Default (0.0.0.0) unless advised by ISP.
  - ☑ **Default Gateway:** Enter the Default Gateway as specified by the ISP.
- **PVC Settings:**
  - ☑ **VPI:** Virtual Path Identifier is a virtual path used for cell routing that is identified by an eight bit field in the ATM cell header. The VPI field specifies this eight bit identifier for routing.
  - ☑ **VCI:** A Virtual Channel Identifier is a virtual channel that is identified by a unique numerical tag that is defined by a 16-bit field in the ATM cell header. The purpose of the virtual channel is to identify where the cell should travel. The VCI field specifies this 16 bit numerical tag that determines the destination.
  - ☑ **QoS:** Select the Quality of Service (QoS) type. If in doubt leave as default.
  - ☑ **PCR:** Peak Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the rate cells per second that the source device may never exceed. Available only when VBR QoS is chosen.
  - ☑ **SCR:** Security Cell Rate. This is an ATM (Asynchronous Transfer Mode) term to describe the security cell transmitted per second.

- ☑ **MBS:** Maximum Burst Size. A term used in ATM (Asynchronous Transfer Mode) to specify the maximum number of cells which can be transmitted at the contracted PCR (Peak Cell Rate). Available only when VBR QoS is chosen.
- ☑ **CDVT:** Cell Delay Variation Time. The Cell Delay Variation is a term used in ATM (Asynchronous Transfer Mode) to describe the time difference that is acceptable between cells being presented at the receiving host. Available only when VBR QoS is chosen.
- ☑ **Auto PVC:** Click to enable Auto PVC features. Auto PVC allows detection of virtual channels via the built-in mechanism for communicating ATM Layer information from DSLAM to the WL-8064ARM Wireless ADSL2/2+ Router.

- **Apply:** Click **Apply** to complete the connection profile's setting.
- **Delete:** Click **Delete** to delete a connection.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the connection profile, click **Save All** after clicking the **Apply** button.

4.3.1.2 CONFIG - WAN Setup - Modem

Modem: This field allows you to select from the following ADSL handshake protocols. Check your ISP for the connection type.



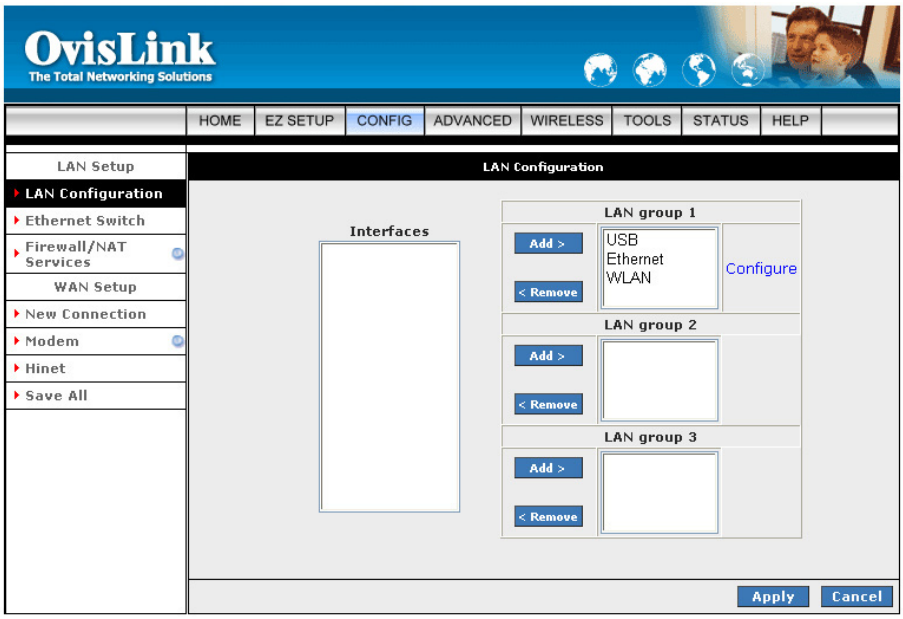
- **MMODE:** Multiple Mode (Default).
- **T1413:** T1.413 Mode.
- **GDMT:** G.dmt Mode.
- **GLITE:** G.Lite Mode.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the connection profile, click **Save All** after clicking the **Apply** button.

4.3.2 CONFIG - LAN Setup

The **LAN Configuration** page allow you to select or assign physical interfaces to LAN group and configure LAN IP Address and DHCP functionality.

4.3.2.1 LAN Setup - LAN Configuration

Click LAN Configuration and the following screen will be shown.



- Click **Add** or **Remove** Interfaces from list under the different LAN Group. The LAN Group features only supported under **Bridge Mode** setting. Interfaces under the same LAN Group (WLAN, Ethernet and USB) will have the ability to communicate with each other. Different LAN Group are prohibited to communicate with one another.

- Click **Configure** for detail LAN Group setting. Refer to next section for detail LAN Configuration or Setting.

- **Apply:** Click **Apply** to complete the setting.

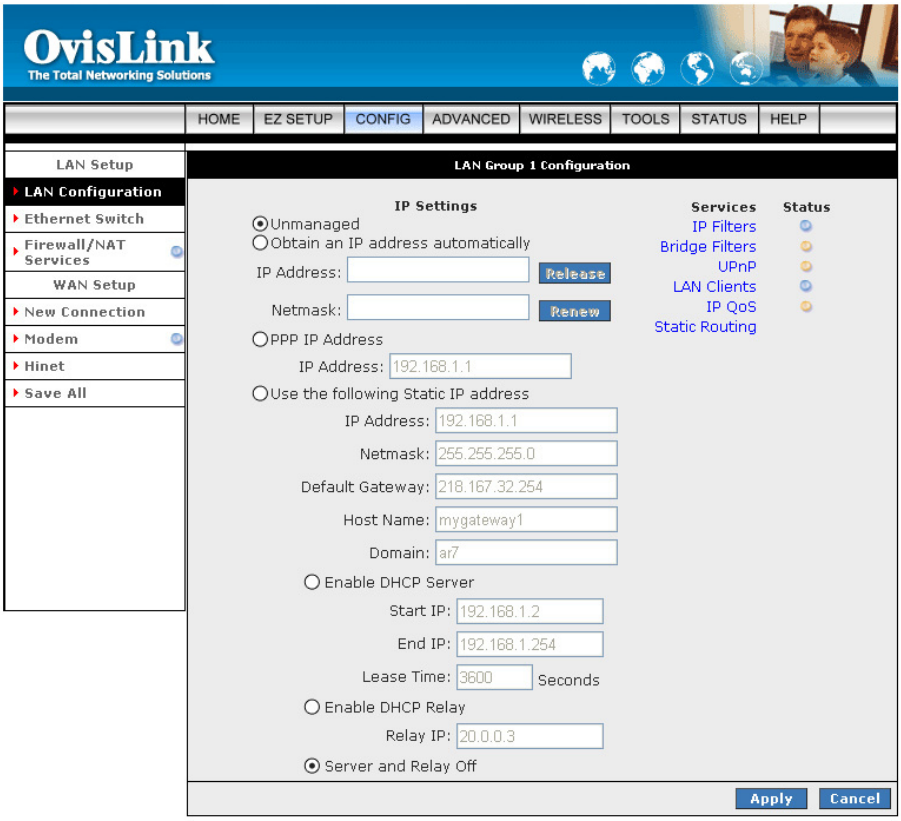
- **Cancel:** Click **Cancel** to ignore all the changes.

- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.3.2.1.1 LAN Configuration - Unmanaged

Unmanaged: Click the **Unmanaged** radio button, the following configuration screen will pop-up. All filling items are hidden except the **Server and Relay Off** (Unchangeable) radio button will turn on.

Click the **Services** items will guides you to detail setting. Refer to **ADVANCED** section for setting/configuration details.

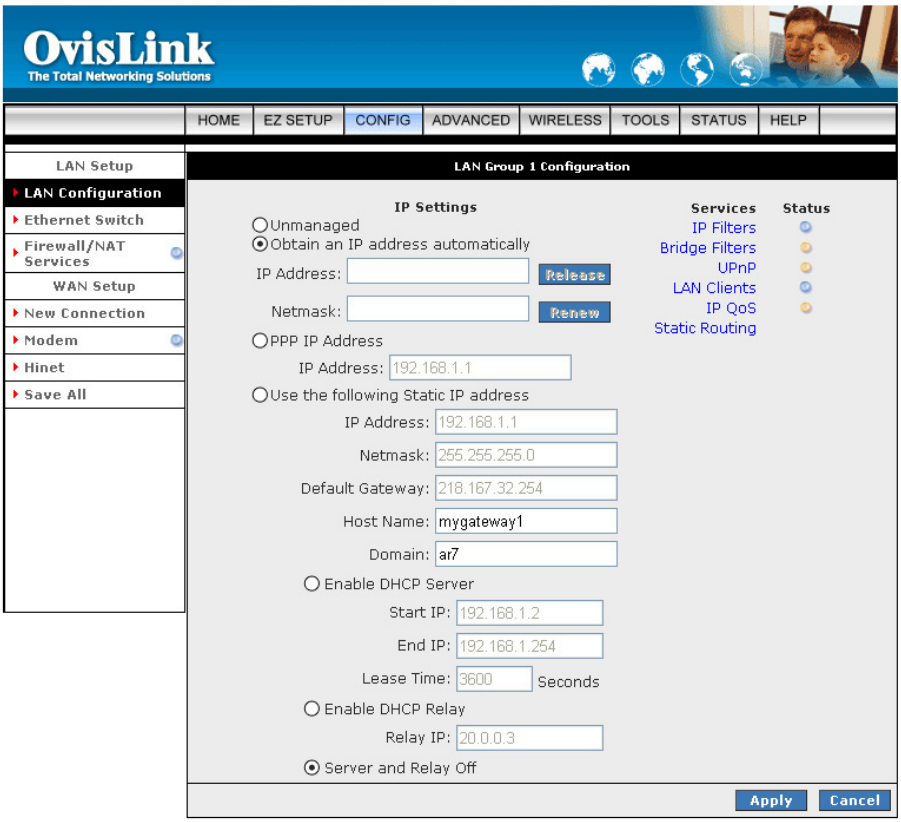


- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.3.2.1.2 LAN Configuration – Obtain an IP Address Automatically

Obtain an IP address automatically: The following configuration screen will pop-up. All filling items will be hidden except **Host Name**, **Domain Name** and **Server and Relay Off** (Unchangeable) radio button will turn on.

Click **Services** selection items will guides you to detail setting. Refer to **ADVANCED** section for setting/configuration details.



- **Host Name:** Can be any alpha-numeric expression that does not contain spaces.

- **Domain Name:** Used in conjunction with the host name to uniquely identify the gateway. To access the WL-8064ARM Wireless ADSL2/2+ Router's web pages, the user can type **192.168.1.1** (The default IP Address) or type **mygateway1.ar7** in the Web browser's address bar.

- **Apply:** Click **Apply** to complete the setting.

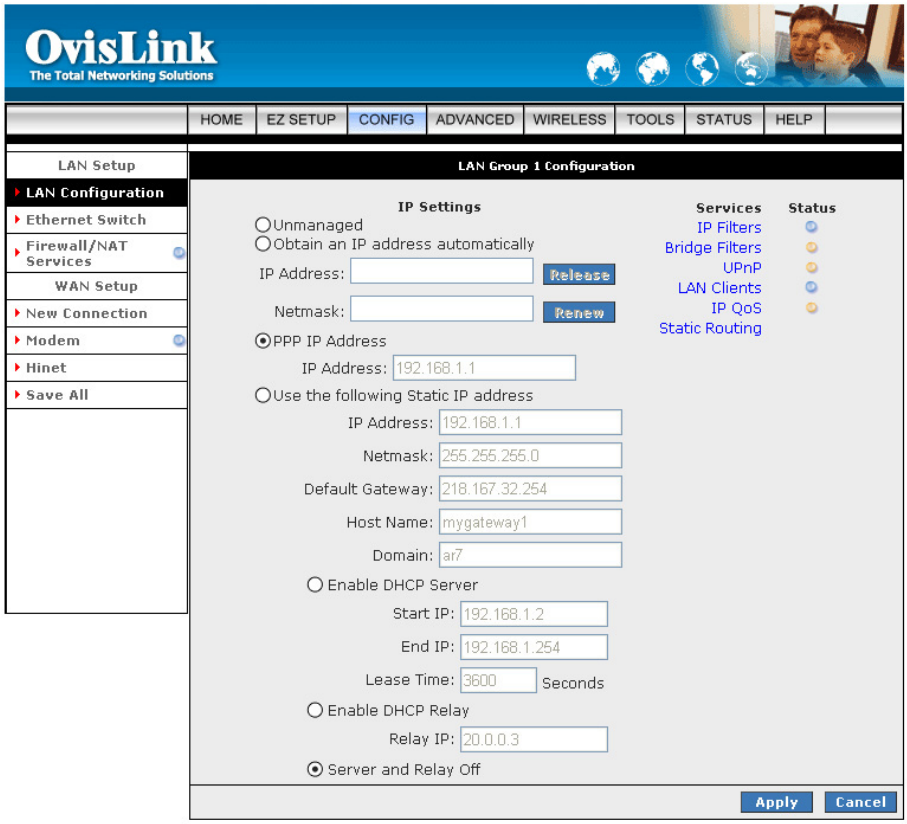
- **Cancel:** Click **Cancel** to ignore all the changes.

- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.3.2.1.3 LAN Configuration – PPP IP Address

PPP IP Address: Click the **PPP IP Address** radio button, the following configuration screen will pop-up. All filling items are hidden except the **Server and Relay Off** (Unchangeable) radio button will turn on.

Click the **Services** items will guides you to detail setting. Refer to **ADVANCED** section for setting/configuration details.

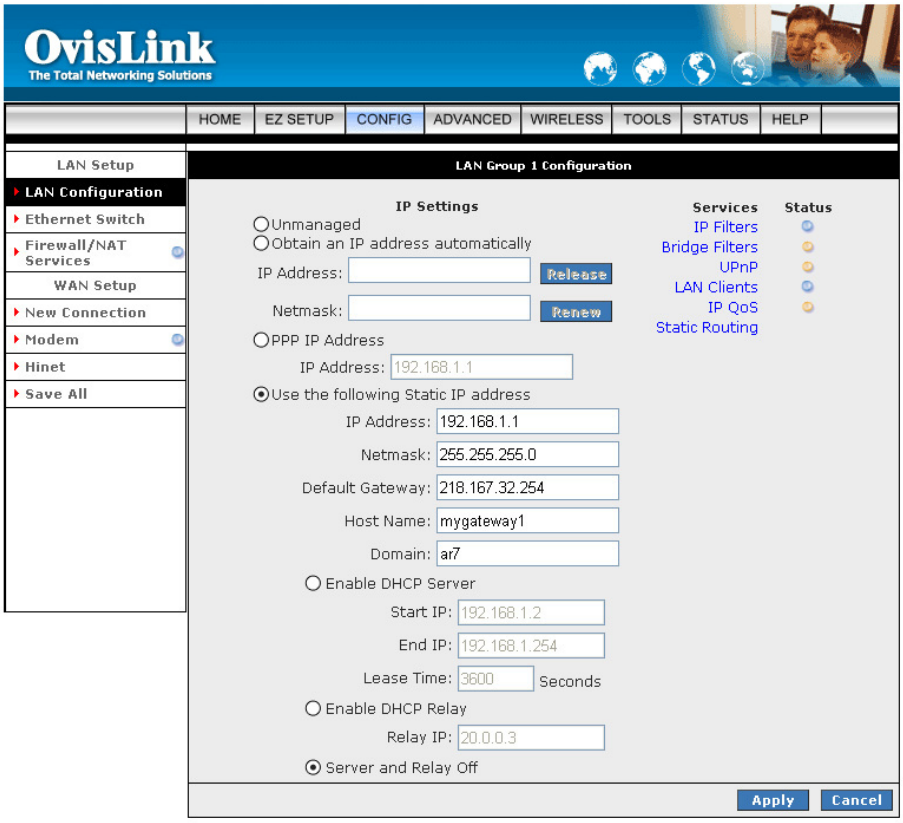


- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.3.2.1.4 LAN Configuration – Use The Following Static IP Address

Use the following Static IP address: The following configuration screen will pop-up.

Click the radio button to select **Enable DHCP Server** or **Enable DHCP Relay** or **Server and Relay Off**. Manually enter the necessary items based on each selection.



- **IP Address:** This is the static IP Address given by the ISP.
- **Netmask:** This is the subnet mask given by the ISP.
- **Default Gateway:** This is the Gateway given by the ISP.
- **Host Name:** Can be any alpha-numeric expression that does not contain spaces.
- **Domain:** Used in conjunction with the host name to uniquely identify the gateway.
- **Enable DHCP Server:** Click the radio button to enable the DHCP Server**.**

  ☑ **Start IP:** The Start IP Address indicates the beginning of the range at which the DHCP server starts issuing IP addresses.
  This value must be greater than the Routers IP address value. If the Routers IP address is 192.168.1.1 (The default) than the starting IP address must be 192.168.1. 2 or higher.

  ☑ **End IP:** The End IP Address indicates the end of the IP address range.
  The ending address must not exceed a Subnet Limit of 253; hence the maximum value that can be entered in this example is 192.168.1.254.

- ☑ **Lease Time:** Lease Time is the amount of time a network user will be allowed connection to the WL-8064ARM Wireless ADSL2/2+ Router with their current Dynamic IP address. The amount of time is in units of minutes; the default value is 3600 minutes (60 hours).

- **Enable DHCP Relay:** Click the radio button to enable the DHCP Relay.

  - ☑ **Relay IP:** This is the IP Address given by the ISP.

- **Server and Relay Off:** Click the radio button to enable.

Caution: If the **Server and Relay Off** function is selected, careful attention must be paid to the IP Address setup of each computer on the LAN. IP Addresses will no longer be allocated automatically.

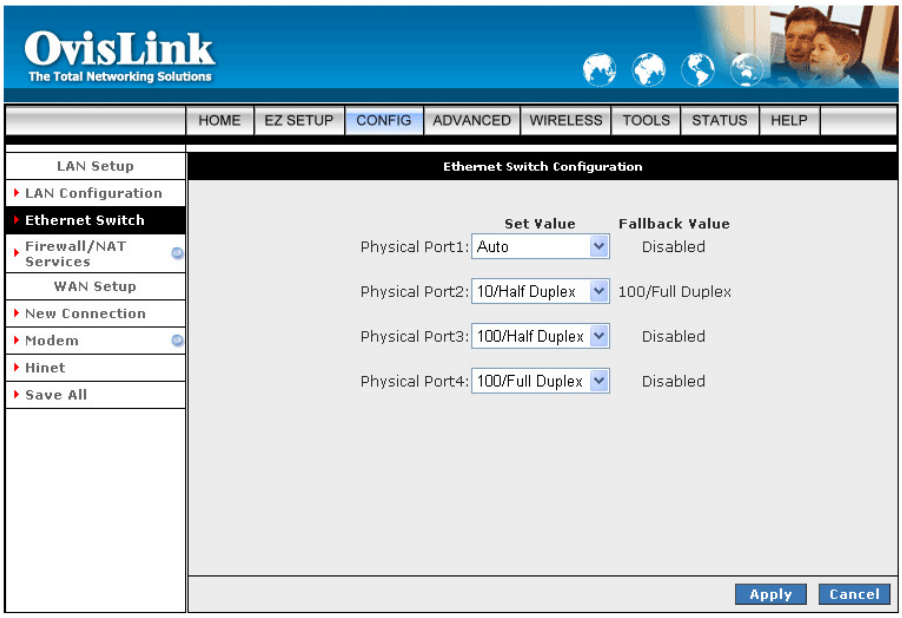
- **Apply:** Click **Apply** to complete the setting.

- **Cancel:** Click **Cancel** to ignore all the changes.

- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.3.3 LAN Setup - Ethernet Switch

The **Ethernet Switch** page allows you to set the LAN port into the following modes (Default is **"Auto"**).



- **Auto:** The WL-8064ARM Wireless ADSL2/2+ Router will automatically sense which mode to use, selecting between 100 Mbps Full Duplex, 100 Mbps Half Duplex, 10 Mbps Full Duplex, and 10 Mbps Half Duplex. Default setting is **"Auto"**.

- **10/Half Duplex:** Data cannot be transferred and received at the same time. For example, data can be sent, and once the transmission is complete, data can be received. This is done at a transfer rate of 10Mbps.

- **10/Full Duplex:** Data can be transferred and received simultaneously at the transfer rate of 10Mbps.

- **100/Half Duplex:** Data cannot be transferred and received at the same time. For example, data can be sent, and once the transmission is complete, data can be received. This is done at a transfer rate of 100Mbps.

- **100/Full Duplex:** Data can be transferred and received simultaneously at the transfer rate of 100Mbps.

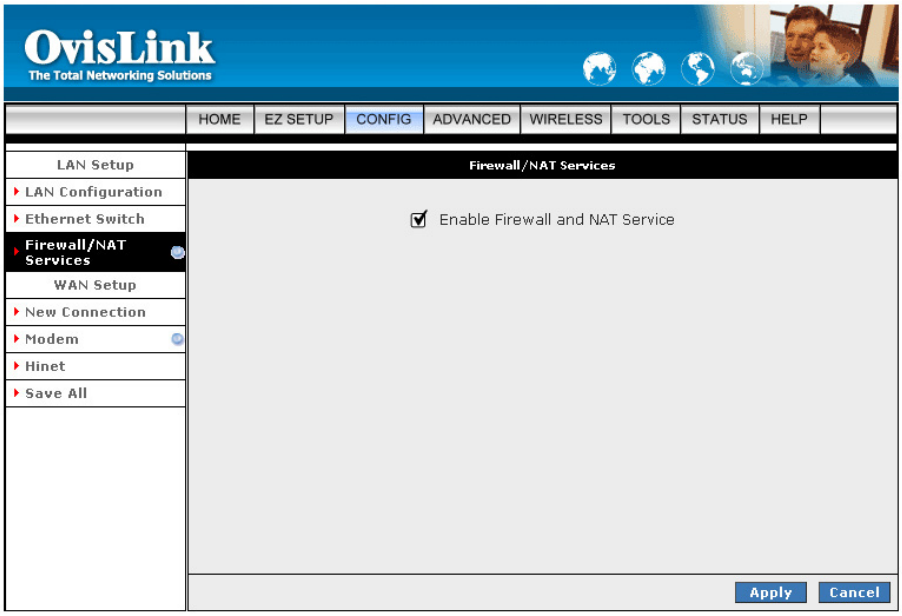
- **Apply:** Click **Apply** to complete the setting.

- **Cancel:** Click **Cancel** to ignore all the changes.

- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.3.4 LAN Setup - Firewall/NAT Services

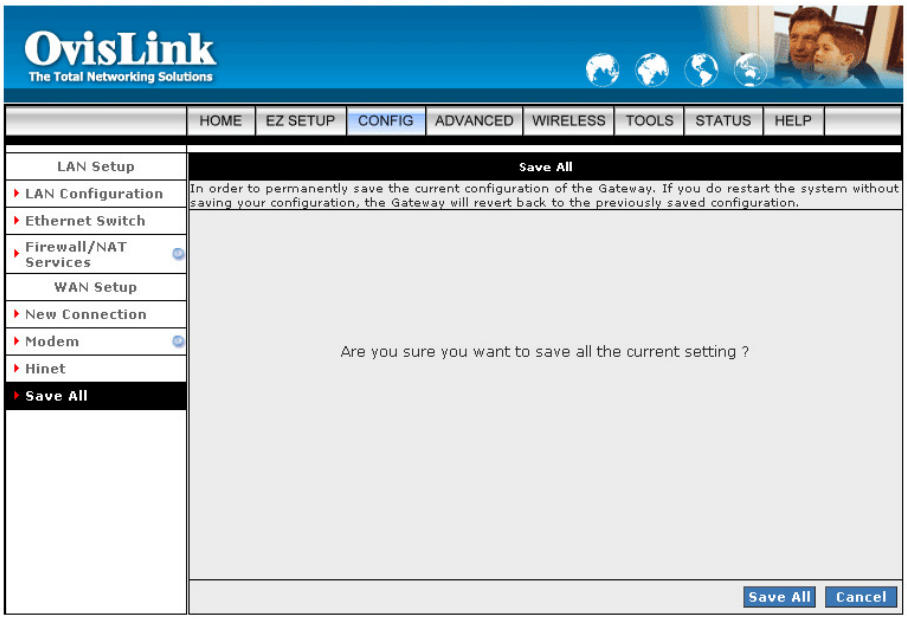
Firewall/NAT Services: Place a check to **"Enable"** the most basic Firewall and NAT Service to secure your system. The WL-8064ARM Wireless ADSL2/2+ Router is equipped with advanced Firewall features to provide security from malicious attack, hacking or eavesdropping across the Internet. It's strongly recommend that you enable this feature for security purpose. The default setting is **"Enable"**.



- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.3.5 CONFIG – Save All

Save All: Click **Save All** in order to permanently save the current configuration of the 4 Ports 11g Wireless ADSL2/2+ Router. If you do restart the system without saving your configuration, the 4 Ports 11g Wireless ADSL2/2+ Router will revert back to the previously saved configuration.

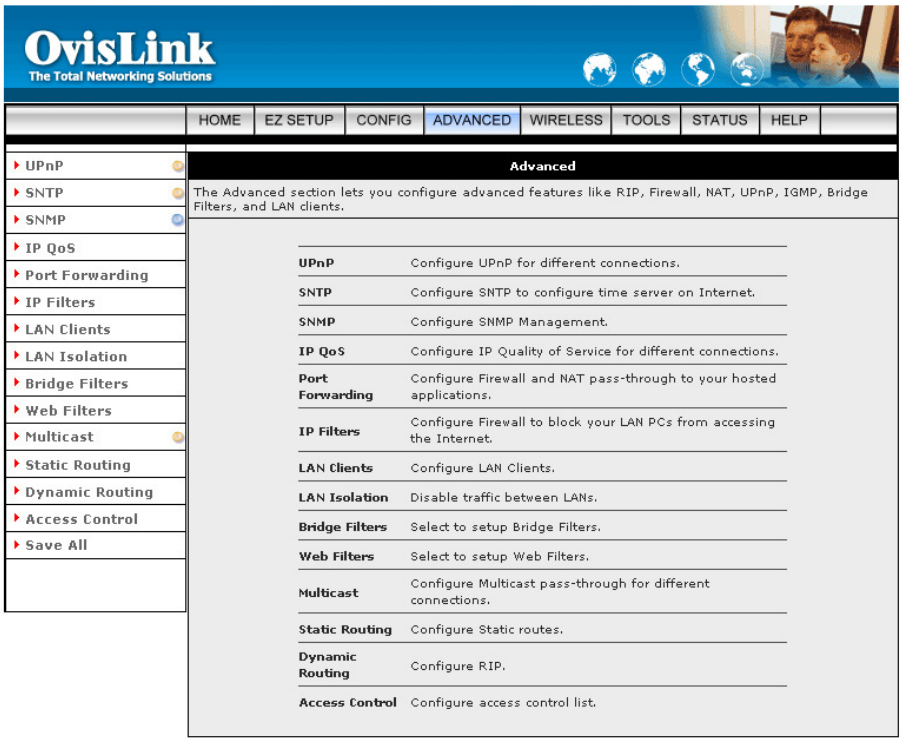


- **Save All:** Click **Save All** to complete and permanently save the setting.

- **Cancel:** Click **Cancel** to ignore all the changes.

4.4 ADVANCED

The Advanced Menu provides access to advanced networking, management and routing capabilities. Click the ADVANCED tab and the following screen will pop-up.

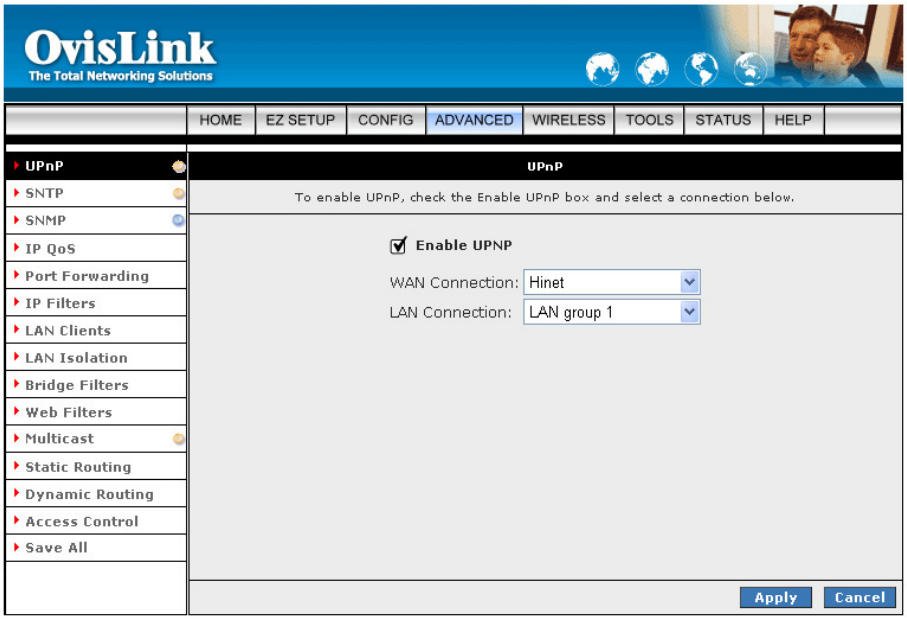


- **UPnP:** Configure UPnP for different connections.
- **SNTP:** Configure SNTP to configure time server on Internet.
- **SNMP:** Configure SNMP Management.
- **IP QoS:** Configure IP Quality of Service for different connections.
- **Port Forwarding:** Configure Firewall and NAT pass-through to your hosted applications.
- **IP Filters:** Configure Firewall to block your LAN PCs from accessing the Internet.
- **LAN Clients:** Configure LAN Clients.
- **LAN Isolation:** Disable traffic between LANs.
- **Bridge Filters:** Select to setup Bridge Filters.
- **Web Filters:** Select to setup Web Filters.
- **Multicast:** Configure Multicast pass-through for different connections.
- **Static Routing:** Configure Static routes.
- **Dynamic Routing:** Configure RIP.
- **Access Control:** Configure access control list.

4.4.1 ADVANCED - UPnP

UPnP: Universal Plug and Play is a protocol which automates connectivity between network devices, including computers, game consoles, digital cameras and other systems which connect via TCP/IP. Applications which implement the UPnP protocol are able to negotiate a connection with a UPnP-enabled device without requiring manual device configuration.

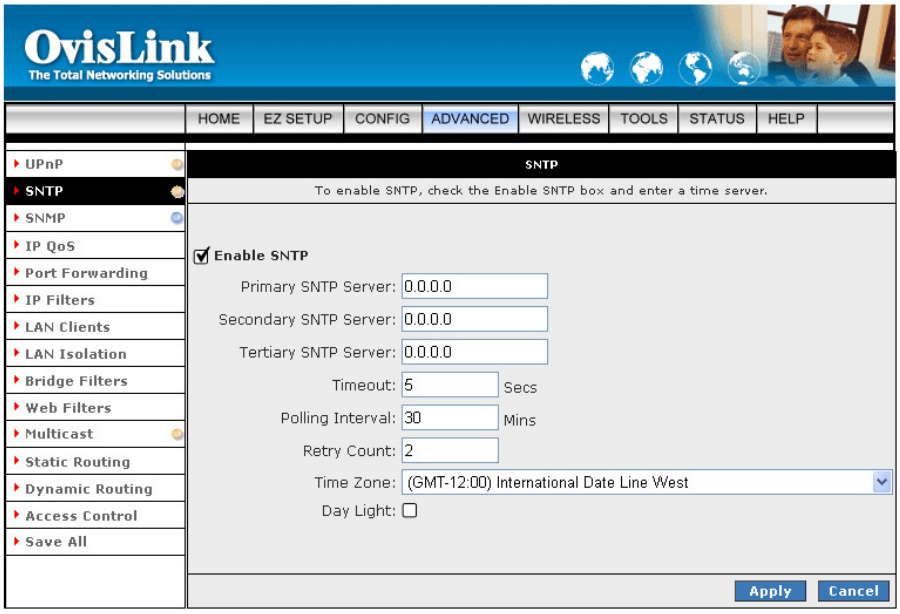
To enable UPnP, place a check at the **Enable UPNP**. This will reveal the Enable UPnP screen. UPnP can only be enabled on a saved Connection Profile (Refer to **EZ SETUP** or **CONFIG → WAN Setup** for information on creating Connection Profiles).



- **Enable UPNP:** Place a check to enable the UPnP feature.
- **WAN Connection:** Select the required **WAN Connection Profile** by clicking on the drop down button adjacent to the Connection Profile name.
- **LAN Connection:** Select the **LAN Group** fro the drop down manual.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.4.2 ADVANCED - SNTP

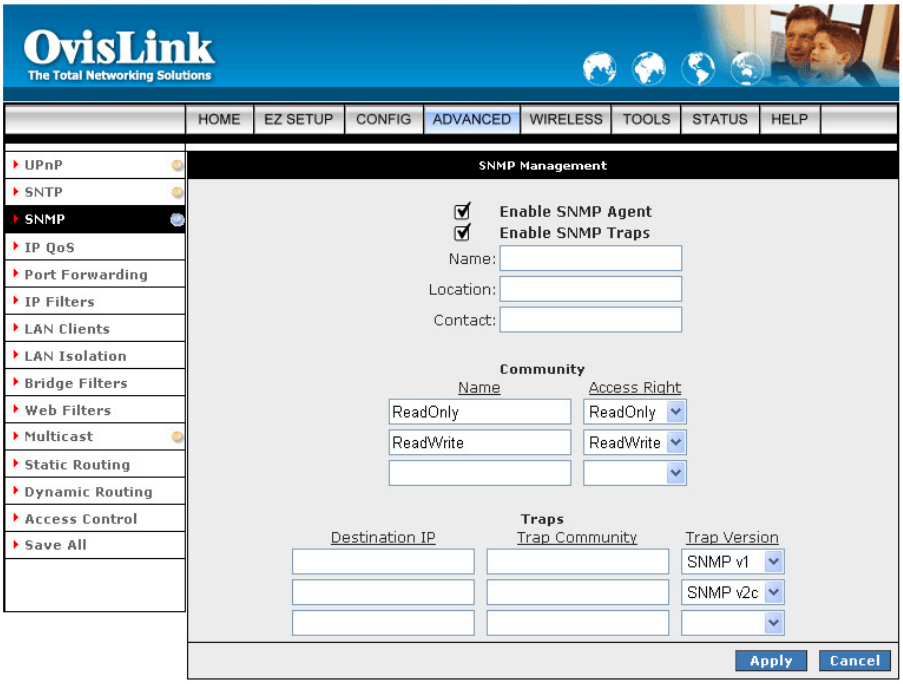
SNTP: Simple Network Time Protocol is an efficient method of obtaining the time from a Time Server. Place a check at Enable SNTP to enable the SNTP functionality.



- **Enable SNTP:** Place a check to enable SNTP feature.
- **SNTP Server:** Enter the SNTP Server IP Address. This WL-8064ARM Wireless ADSL2/2+ Router support up to three SNTP Server IP Address; **Primary**, **Secondary** and **Tertiary SNTP Server**.
- **Timeout:** A time limit for an operation.
- **Polling Interval:** The length of time (In Minutes) the WL-8064ARM Wireless ADSL2/2+ Router retrieves the time from the SNTP Server.
- **Retry Count:** Enter the Retry Count to access the SNTP Server.
- **Time Zone:** This specifies the time zone (Geographical location).
- **Day Light:** Place a check at the Day Light to activate Daylight Savings Time.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.4.3 ADVANCED - SNMP

SNMP: Simple Network Management Protocol (**SNMP**) is an application layer protocol that is used for managing networks. There are several components that make up the SNMP structure, including agents, network management stations (NMS), network management protocols, and a management information base (MIB).



- **SNMP Agent:** Click to enable the **SNMP Agent**. An SNMP agent is a node that resides on the network, typically a computer or a router. The SNMP agent is controlled and configured by the NMS by sending SNMP messages between one another. SNMP agents are logged and identified in a Management Information Base (MIB), in which they are identified by an object identifier (OID).

- **SNMP Traps:** Click to enable the **SNMP Traps**. SNMP traps are used to notify network managers of significant events that have taken place in the network. These traps are sent to the SNMP NMS (NMS Server located at Trap IP) through the specified Ports.

- **SNMP System Identification:** The **Name**, **Contact**, **Location**, and **Vendor OID** are provided to identify the SNMP NMS. The Vendor OID is the ID number placed in all Trap reports.
  The System Name, System Contact, and System Location can be up to 127 characters. Default value for Vendor OID is 1.3.6.1.4.1.294.

- **Community ReadOnly:** This is the password to access public information. The Community ReadOnly can be up to 127 characters. Default is **"Public"**.

- **Community ReadWrite:** This is the password to access private information. The Community ReadWrite can be up to 127 characters.

- **Trap Destination IP:** This is the IP address to which SNMP traps are sent. There can be up to 5 different SNMP trap destination IP addresses.

- **Trap Community:** This is the password to access and view SNMP traps. The Trap Community can be up to 127 characters. Default is **"Trap community"**.

- **Trap Version:** Select from Version 1 or Version v2c. Default is **"Version 1"**.

- **Apply:** Click **Apply** to complete the setting.

- **Cancel:** Click **Cancel** to ignore all the changes.

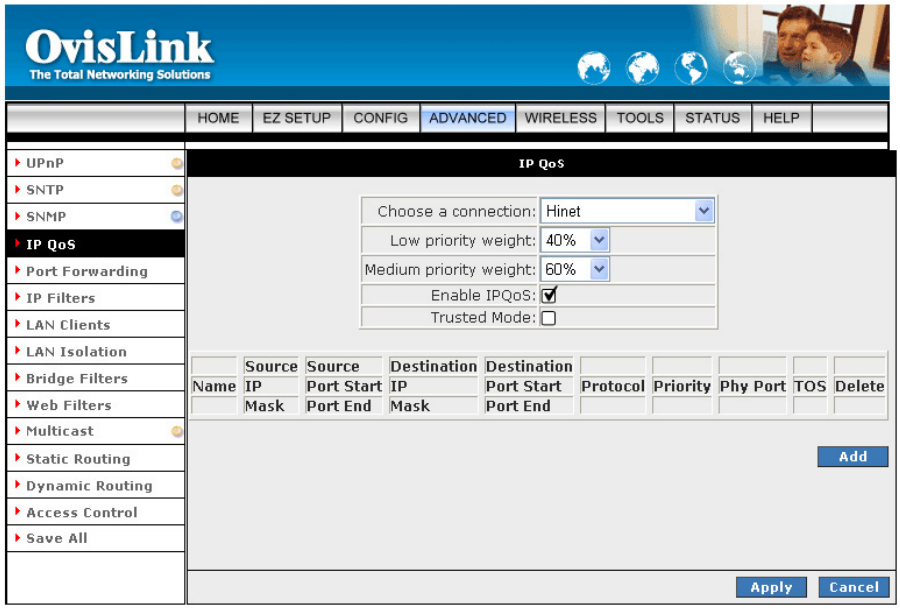
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.4.4 ADVANCED - IP QoS

IP QoS: IP Quality of Service (QoS) prioritize data streams to ensure that basic connectivity is maintained when running multiple services over one connection.

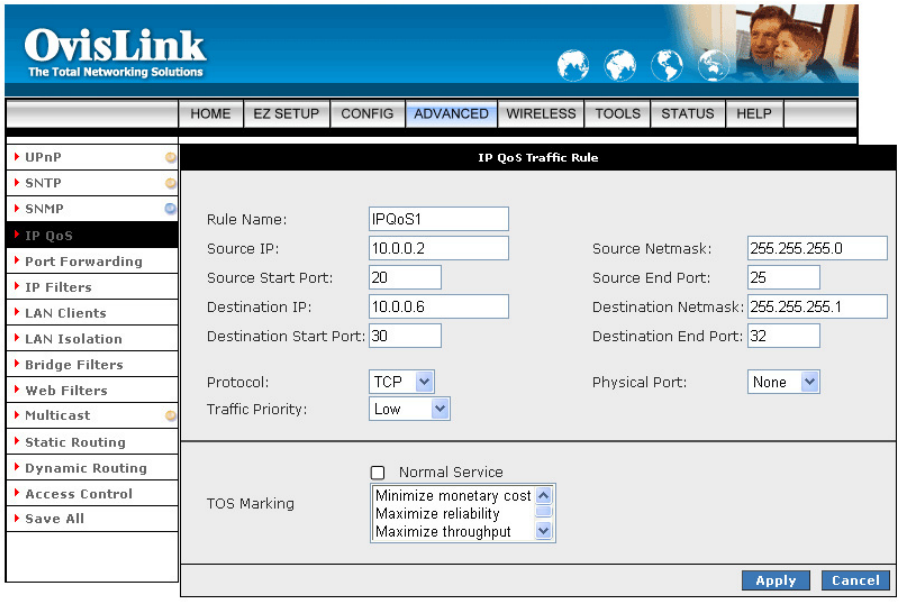
For example, if you are using a peer-to-peer file-sharing program at the same time as performing normal web browsing, you can configure QoS to limit the resources dedicated to the peer-to-peer session in order to ensure web browser connectivity.

Leave it at its default setting if you do not know the QoS.



- **Choose a connection:** Click to select a LAN group from the drop down manual.
- **Low priority weight :** Click to select the low priority weight from the drop down manual. The default is 40%.
- **Medium priority weight:** Click to select the low priority weight from the drop down manual. The default is 60%.
- **Enable IPQoS:** Click to enable IP QoS features.
- **Trusted Mode:** Click to enable Trusted Mode.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

- **ADD:** To add an IP QoS session, place a check at the Enable IPQoS then click **Add** button. The following screen will pop-up.

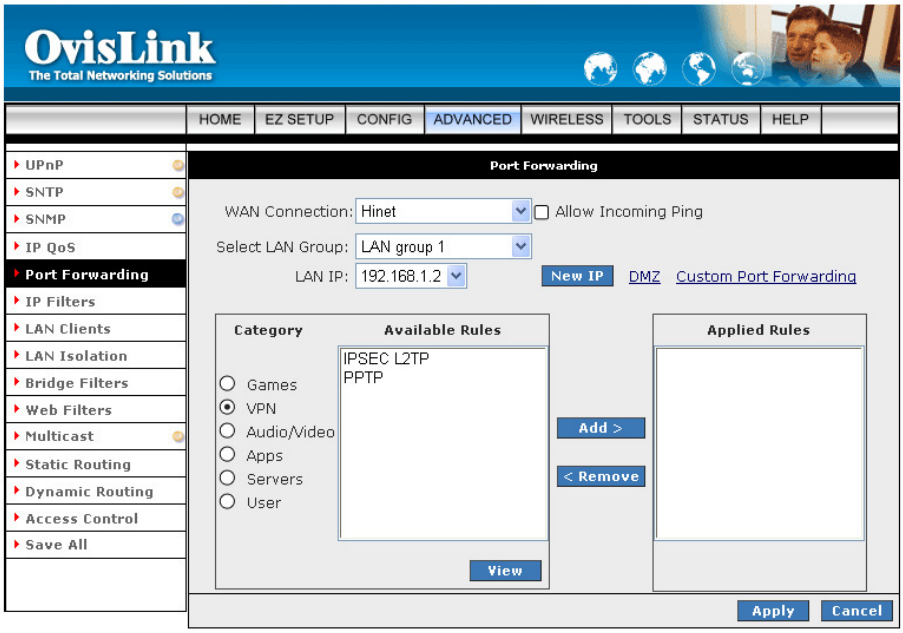


- **Rule Name:** Enter the IP QoS session name.
- **Source IP**: Enter the Source IP Address.
- **Source Netmask**: Enter the Source IP Subnet Mask.
- **Source Start Port**: Enter the Source IP Start Port which PPP session can be activated.
- **Source End Port**: Enter the Source IP End Port which PPP session can be activated.
- **Destination IP**: Enter the Destination IP Address.
- **Destination Netmask**: Enter the Destination IP Subnet Mask.
- **Destination Start Port**: Enter the Destination IP Start Port which PPP session can be activated.
- **Destination End Port**: Enter the Destination IP End Port which PPP session can be activated.
- **Protocol**: Select the protocol from the drop down manual. The protocols supported are TCP, UDP, ICMP and ANY.
- **Physical Port**: Select the QoS Physical Port from the drop down manual.
- **Traffic Priority**: Click and select the QoS session Traffic Priority from the drop down manual.
- **TOS Marking**: Select the TOS Marking from the list or place a check at the Normal Service.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.4.5 ADVANCED - Port Forwarding

Port Forwarding: Port Forwarding is necessary because NAT (Network Address Translation) only forwards traffic from the Internet to the LAN if a specific port mapping exists in the NAT translation table. Because of this, the NAT provides a level of protection for computers that are connected to your LAN. However, this also creates a connectivity problem when you want to make LAN resources available to Internet clients, which you may want to do to play network games or host network applications.

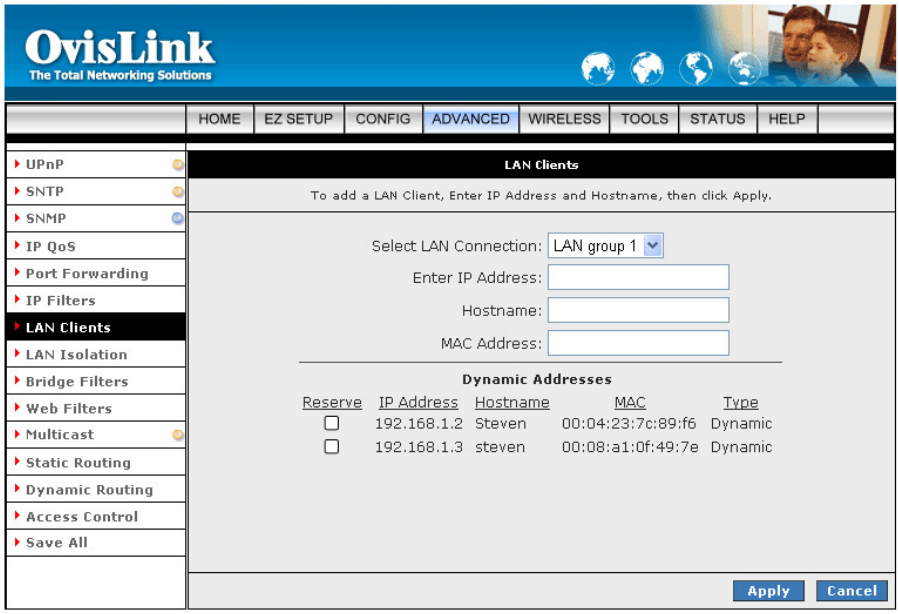
Thus Port Forwarding is necessary to run certain games, chat clients, video-conferencing and other kinds of application. You might also need to configure port forwarding if you intend to host a web server or mail server that is to be visible outside your LAN.



- **WAN Connection**: Select the WAN Connection profile from the drop down manual.
- **Allow Incoming Ping**: Place a check to enable the incoming ping.
- **Select LAN Group**: Select the LAN Group from the drop down manual.
- **LAN IP**: Enter the Router's LAN IP address.

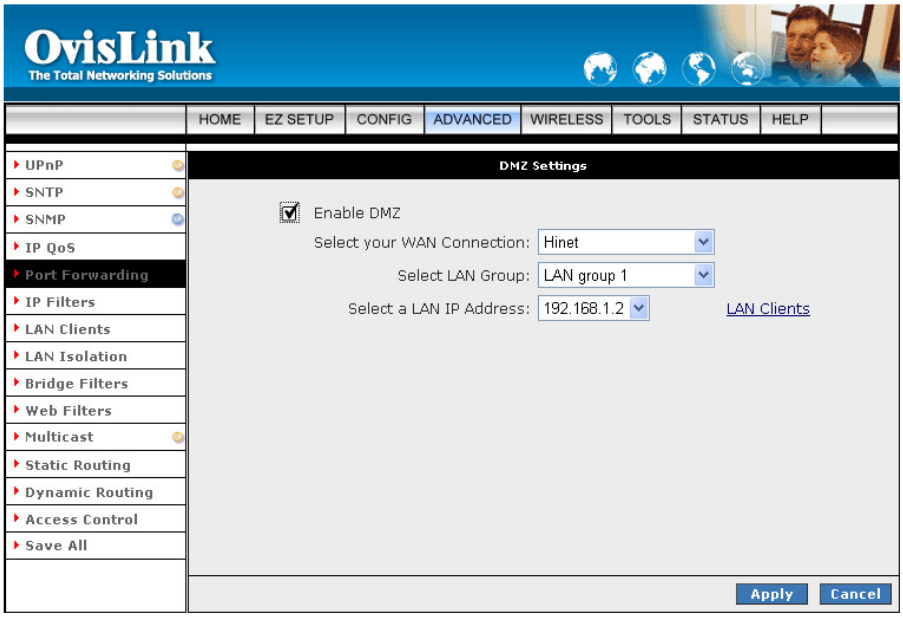
- **New IP:** If you wish to manually add a LAN client so that you can apply rules to it, click on the **New IP** button. The following screen will pop-up. Refer to **ADVANCED ➔ LAN Clients** setting for more details.

  Enter the **IP Address**, **Hostname** and **MAC Address** as shown then click **Apply** to save your setting.

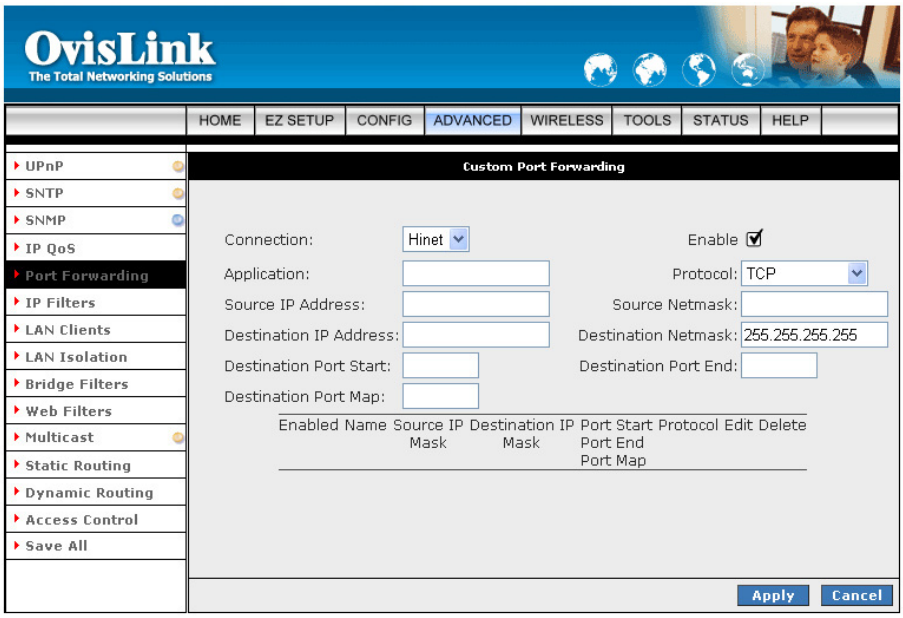


- **DMZ:** A DMZ (Demilitarized Zone) is added between a protected network and an external network, in order to provide an additional layer of security. When there is a suspected packet coming from WAN, the firewall will forward this packet to the DMZ host.

  The following screen will pop-up after clicking the DMZ button. Place a check to enable the DMZ functionality. Select the **WAN Connection**, **LAN Group** and **LAN IP Address** from the drop down manual. Click **Apply** to save and activate your setting.



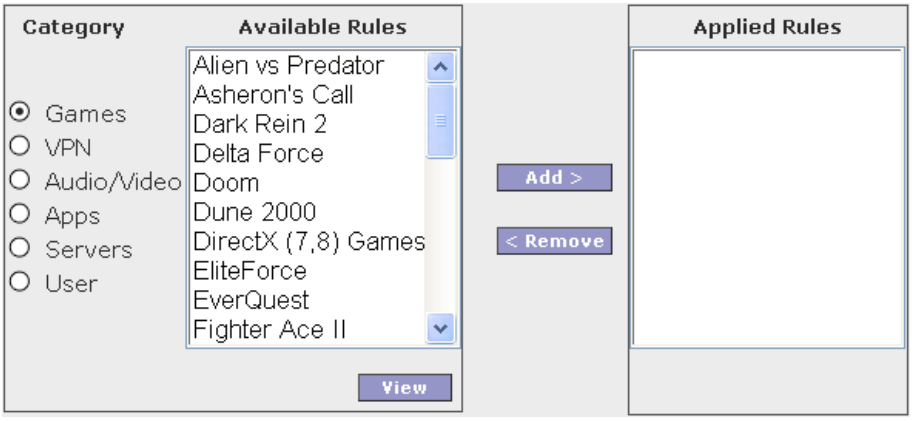
- **Custom Port Forwarding**: If there is no pre-defined Port Forwarding Rule for a particular application, a user rule can be created which defines the required Ports, Protocols and Port forwarding rules. Click the Custom Port Forwarding button and the following screen will pop-up.



To create a custom rule you will need to know the specific port number and port type that the application requires. Some applications specify a range of ports in which case you will need to know both the starting and ending port numbers in the range, which are mapped by the start port and end port fields.

The Port Map specifies the internal port that the data will be directed to on the LAN Client. When dealing with port ranges, the Internal Port will be the same as the first port in the range. When you simply want to forward a single port from outside to inside, then all three fields (Port Start, Port End and Port Map) will have the same port number.

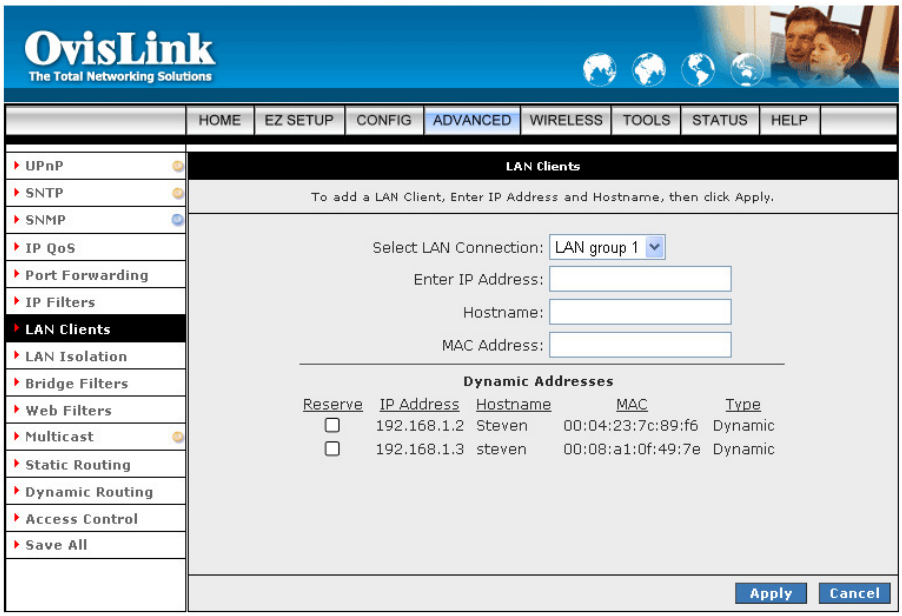
- Available pre-defined rules are categorized according to the application type. Click the radio button adjacent to the appropriate **Category**, and then select the required application name. Click on the **Add** button to move the application into the **Applied Rules** box. To remove a rule from the Applied Rules box, select the rule and click on the **Remove** button. To complete and save the setting, click **Save All** after clicking the **Apply** button.



4.4.6 ADVANCED - IP Filters

The **IP Filters** page allows you to specify normal Port Forwards, Block traffic to specific LAN Clients or specify Custom IP Filters that will control the flow of data across the router.

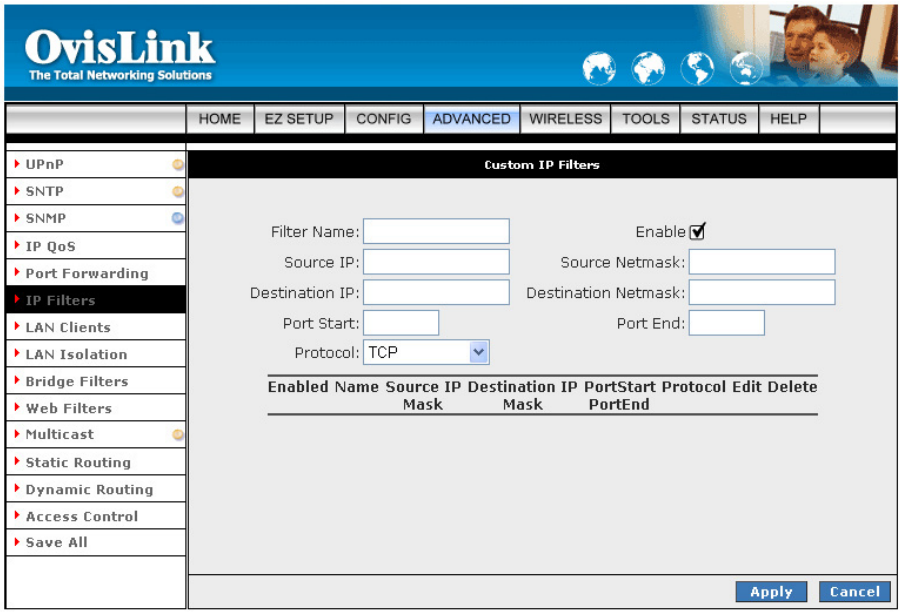
- **Select LAN Group**: Select LAN Group from the drop down manual.
- **LAN IP**: Enter the router's LAN IP Address.
- **Block All Traffic:** Click to enable blocking all traffic to specific LAN Clients.
- **Block Outgoing Ping:** Click to enable blocking all outgoing ping from LAN clients.
- **NEW IP:** Click **NEW IP** if you wish to manually add a LAN client so that you can apply rules to it.



- **Custom IP Filters**: Custom IP Filters allow you to specify individual rules that will deny traffic by defining the following:

  ☑ Source IP address or Source IP Subnet Mask.
  ☑ Destination IP address or Destination IP Subnet Mask.
  ☑ Port or Port range.
  ☑ Protocol.

  Customer IP filter are different from Port forwards, or Block All traffic because they allow greater scopes of IP addresses to be included in the block.



- **Apply:** Click **Apply** to complete the setting.

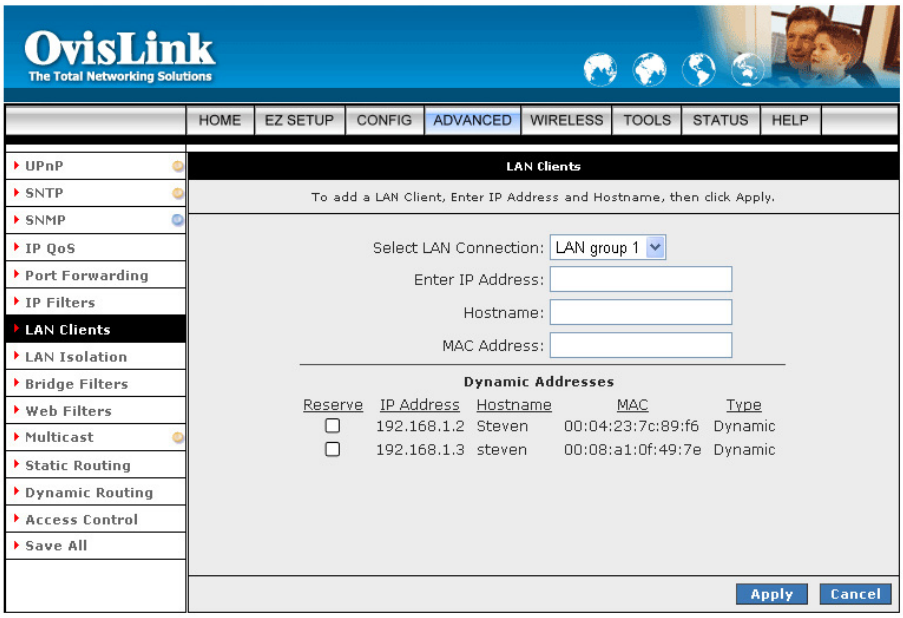
- **Cancel:** Click **Cancel** to ignore all the changes.

- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.4.7 ADVANCED - LAN Clients

LAN Client names are a way of applying specific Port-forwarding, Access Control and QoS rules to individual computers on the LAN. If DHCP is used, all DHCP clients are automatically assigned and are designated as a LAN client.

Enter the IP Address, Hostname and MAC Address as shown. Click Apply to activate your setting.



4.4.8 ADVANCED - LAN Isolation

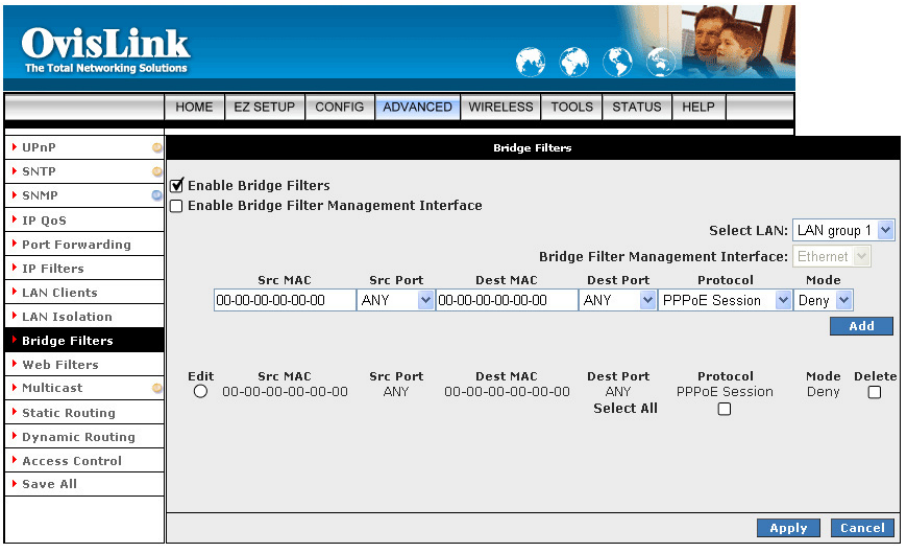
LAN Isolation provide blocking traffic from one LAN to another LAN. Place a check at the selected rules and click Apply to activate your setting.

4.4.9 ADVANCED - Bridge Filters

Bridge Filtering allows packets to be forwarded or blocked, depending on the MAC address. The **Bridge Filtering** configuration page allows you to set the configuration of MAC filtering.

Bridge Filter (Or sometimes known as MAC Filter) enable rules to be defined which allow or deny data to pass through the Router based on the source and destination MAC address and data type of each data frame.

Most of the Bridge Filter Rule is to specify which computers on a network are allowed Internet access; or to determine which particular computers are allowed to access services provided by the Router.



- **Enable Bridge Filters:** Place a tick at the check box to enable the Bridge Filters functionality. If the check box is selected, Bridge Filtering is enabled according to the list of Bridge Filter Rules that has been created. If the box is de-selected, Bridge Filtering will not be enabled, even if Bridge Filter Rules have been created.
- **Enable Bridge Filter Management Interface:** Place a check to enable the Bridge Filter Management Interface. There are three interface provided for the setting, Ethernet, USB and Wireless Interface.
- **Edit:** To edit an existing Bridge Filter Rule, click the **Edit** radio button adjacent to the Bridge Filter Rule name.
- **Src MAC:** This is the Source MAC to block or from which to forward. The Source MAC must consist of 12 hexadecimal characters.
- **Src Port:** Select the Source Port from the drop down manual.
- **Dest MAC:** This is the Destination MAC to block or to forward to. The Destination MAC must consist of 12 hexadecimal characters.
- **Dest Port:** Select the Destination Port from the drop down manual.
- **Protocol:** Select the Protocol type for the rule from the drop down manual. Place a check to make chances to the existing Bridge Filter Rule.

- **Mode:** Select t **Allow** or **Deny** for the rule.
- **Delete:** Place a check adjacent to the Bridge Filter Rule and click Apply to Delete the Bridge Filter Rule.
- **Add:** Click **Add** button to add the rule to the list of rules.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

☑ **Create Bridge Filter Rules:**

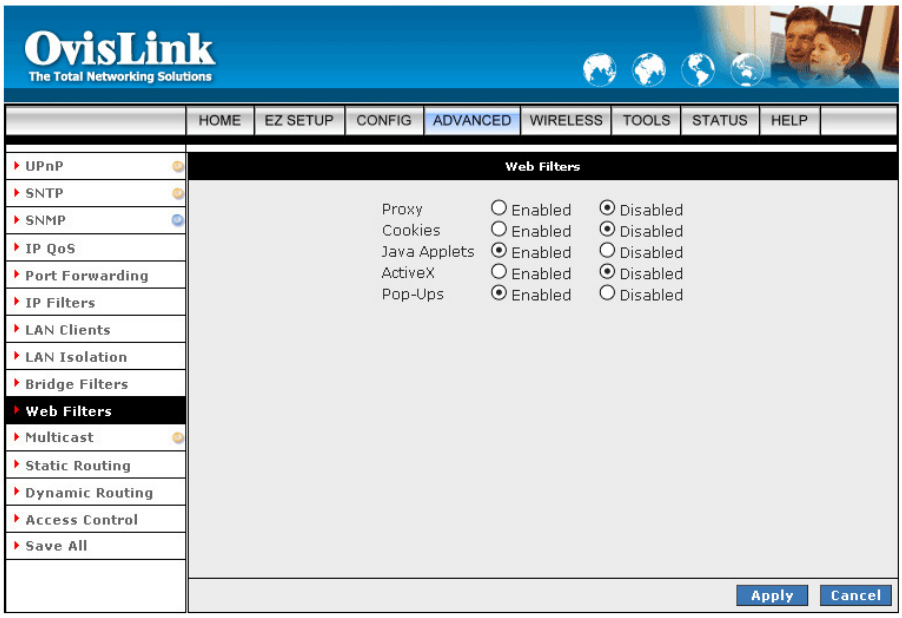
- Enter the Source MAC (Src MAC) and Destination MAC (Dest MAC) details.
- Select the Source Port and Destination Port from the drop down manual.
- Select the protocol type from the drop down manual. Protocol provides the choice of protocol type for the rule.
- Mode provides the choice of Allow or Deny for the rule.
- When all selections are made, click on Add to add the rule to the list of rules. A maximum of 20 MAC Filter Rules can be defined and saved.

☑ **Edit or Delete MAC Filter Rules:** To edit an existing MAC Filter Rule, click the radio button adjacent to the Filter Rule name (Edit). The Rule will then appear in the top of the MAC Filter control screen where it can be edited. When editing is complete, click Add to return the Rule to the list of existing rules.

☑ **To delete MAC Filter Rules:** click on the Delete tick box. Select All will select every rule. When the desired selections are made, effect deletion by clicking on Apply.

4.4.10 ADVANCED – Web Filters

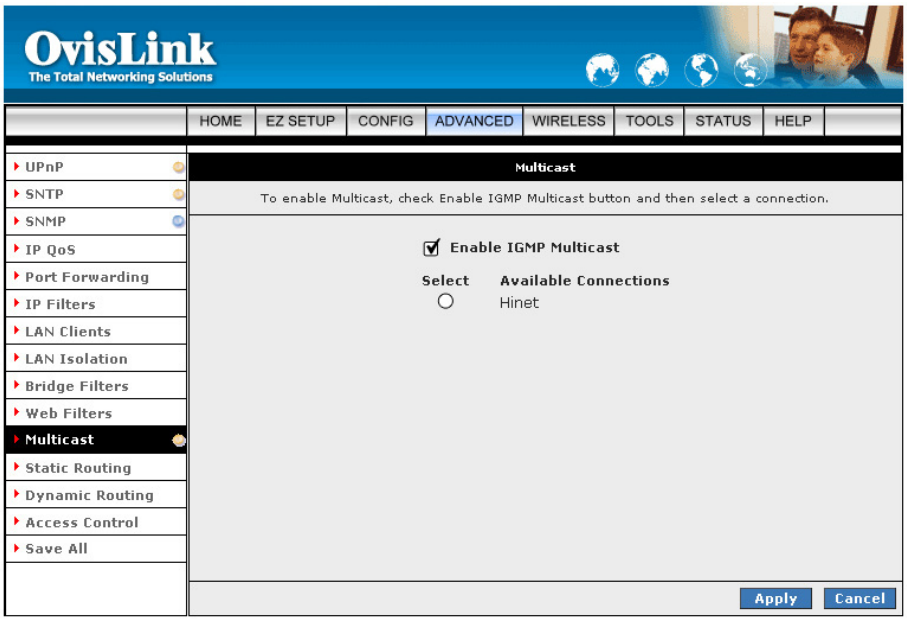
Web Filter is a tool that have the ability to filter Internet content. Using an easy, category-based listing, you can control exactly what website content can or can not be accessed. Click the radio button to Enable or Disable the filter rules to ensure an accurate representation of the world of information reachable on the Internet.



- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.4.11 ADVANCED - Multicast

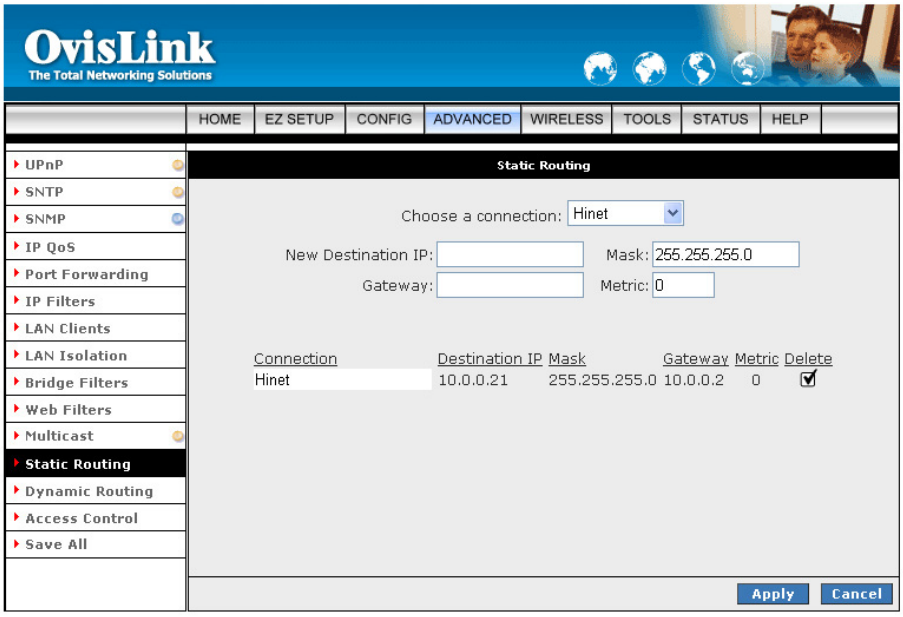
IGMP (Internet Group Management Protocol) Multicast enables communication between a single sender and multiple receivers on a network. It is used when data needs to be sent from one to many devices.



- **Enable IGMP Multicast:** Click to enable IGMP Multicast and then select a connection listed.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.4.12 ADVANCED – Static Routing

If the Router is required to serve more than one network, you will need to set up a Static Route between the networks. Static routing can be used to allow users from one IP domain to access the Internet through the Router in another domain. A Static Route provides the defined pathway that network information must travel to reach the specific host or network which is providing Internet access.

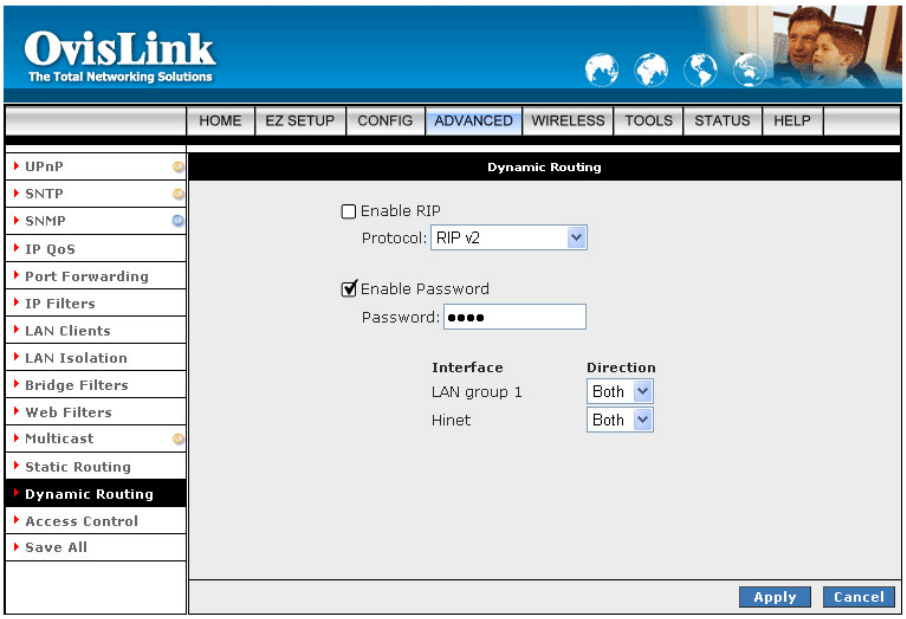


- **Configuring Static Routing:** If the Router is connected to more than one network, it may be necessary to set up a static route between them. A static route is a pre-determined pathway that network information must travel to reach a specific host or network. Follow the following steps to create a Static Route:

  - ☑ **Choose a Connection:** Presents list of saved Connections. Select appropriate connection from the list.
  - ☑ **The New Destination IP:** Enter the address of the remote LAN network or host to which you want to assign a static route.
  - ☑ **Mask:** The Subnet Mask identifies which portion of an IP address is the network portion, and which portion is the host portion. The subnet mask defaults to 255.25.255.0
  - ☑ **Gateway:** The Gateway IP address is the IP address for the gateway device that provides contact between the gateway and the remote network.
  - ☑ **Metric:** Enter the Metric or cost for the destination.
  - ☑ **Delete:** Place a check adjacent to the rule and click Apply to Delete the rule from the list.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.4.13 ADVANCED – Dynamic Routing

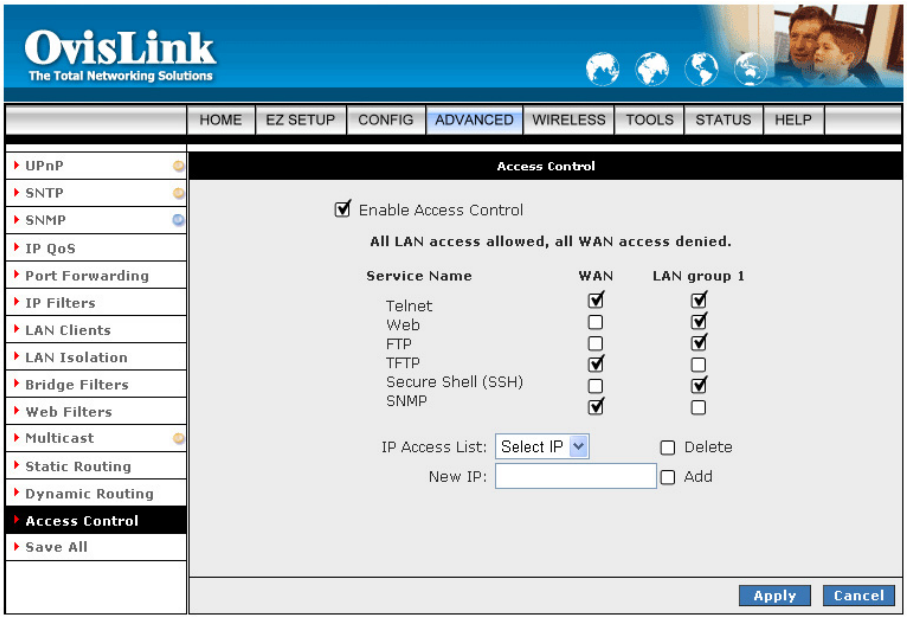
Dynamic Routing makes use of the RIP Protocol to allow the ADSL2/2+ Router to automatically adjust to physical changes in the network. This 4 Ports ADSL2/2+ 11g Wireless Router, using the RIP (v1 or v2) protocol, will determine the network packet route based on the fewest number of hops between the Source and the Destination. The RIP protocol regularly broadcasts routing information to other ADSL Routers on the network and is part of the IP suite.



- **Enable RIP:** If this box is checked, Dynamic Routing is enabled.
- **Protocol:** Select the protocol from the drop-down manual. The choice is dependent upon the network environment. Most networks support Rip v1. If RIP v1 is selected, routing data will be sent in RIP v1 format. If Rip V2 is selected, routing data will be sent in RIP v2 format using Subnet Broadcasting. If Rip V1 Compatible is selected, routing data will be sent in RIP v2 format using Multicasting.
  - ☑ **RIPv1:** RIP Version 1: One of the first dynamic routing protocols introduced used in the Internet, RIPv1 was developed to distribute network reach ability information for what is now considered simple topologies.
  - ☑ **RIPv2:** RIP Version 2: Shares the same basic concepts and algorithms as RIPv1 with added features such as subnet masks, authentication, external route tags, next hop addresses, and multicasting in addition to broadcasting.
- **Enable Password:** Place a check to enable the entered password.
- **Direction:** Determines the direction that RIP routes will be updated.
  - ☑ **In:** the Router will only incorporate received RIP information.
  - ☑ **Out:** the ADSL Router will only send out RIP information.
  - ☑ **Both:** the ADSL Router will both incorporate received RIP information and send out updated RIP information.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.4.14 ADVANCED – Access Control

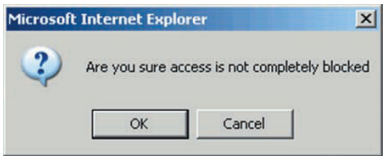
Use Access Control to configure advanced security functions by customizing the WL-8064ARM Wireless ADSL2/2+ Router. Access control enables the user to selectively direct such traffic, for example to a Web Host in the DMZ or to specific ports opened for such applications as Telnet, Web, TFTP or FTP.



- **Enable Access Control:** Check this box to enable selective access from the WAN to your LAN for applications of the class indicated by the relevant check boxes. If Access Control is not enabled, the individual check boxes cannot be checked.

  The default configuration enables Telnet, Web, FTP and SSH access from LAN to WAN. If Access Control is enabled, and an enable WAN checkbox is selected, then the WAN access to the matching service is enabled.

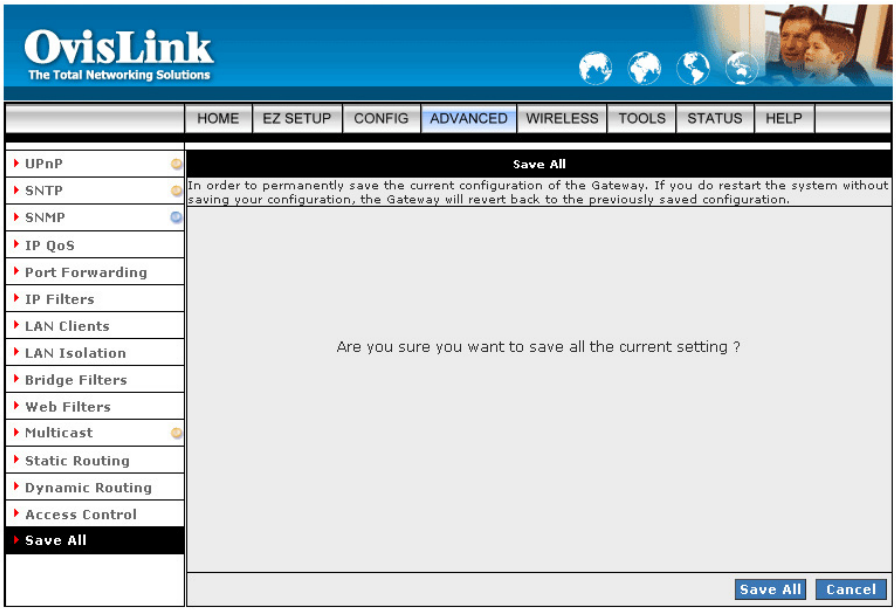
- **IP Access List:** This enables you to specify which LAN/WAN IP addresses are allowed access to the WL-8064ARM Wireless ADSL2/2+ Router configuration services specified.
- **Delete:** Delete the IP Access List from the drop down manual.
- **Add:** Add new IP Access to the list.
- **Apply:** The following dialog box will pop-up when clicking the Apply button indicates that you should not disable LAN Web Access or else you might not be able to connect to the device. Click **OK** to confirm your setting.



- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.4.15 ADVANCED – Save All

Save All: Click **Save All** in order to permanently save the current configuration of the WL-8064ARM Wireless ADSL2/2+ Router. If you do restart the system without saving your configuration, the WL-8064ARM Wireless ADSL2/2+ Router will revert back to the previously saved configuration.

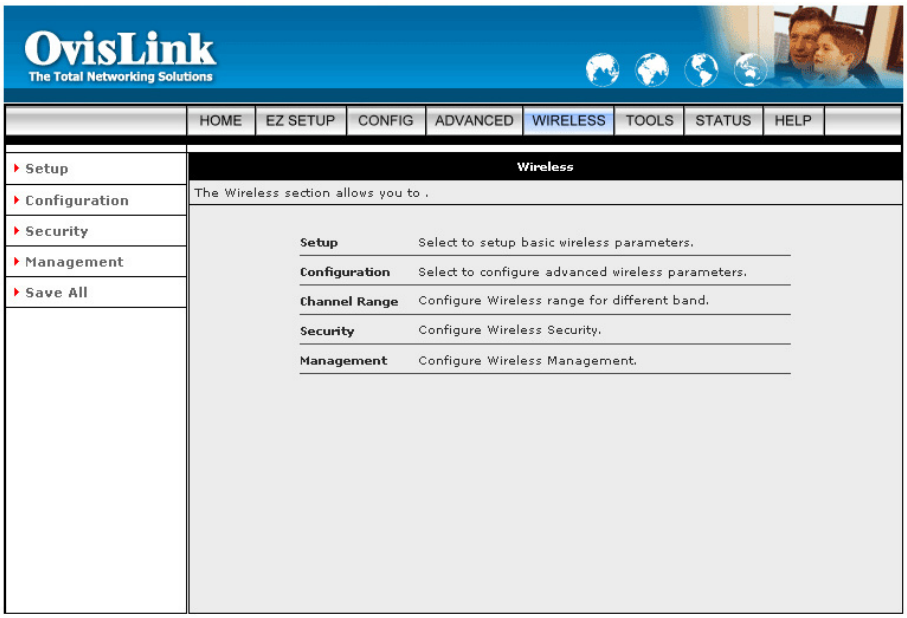


- **Save All:** Click **Save All** to complete and permanently save the setting.

- **Cancel:** Click **Cancel** to ignore all the changes.

4.5 WIRELESS

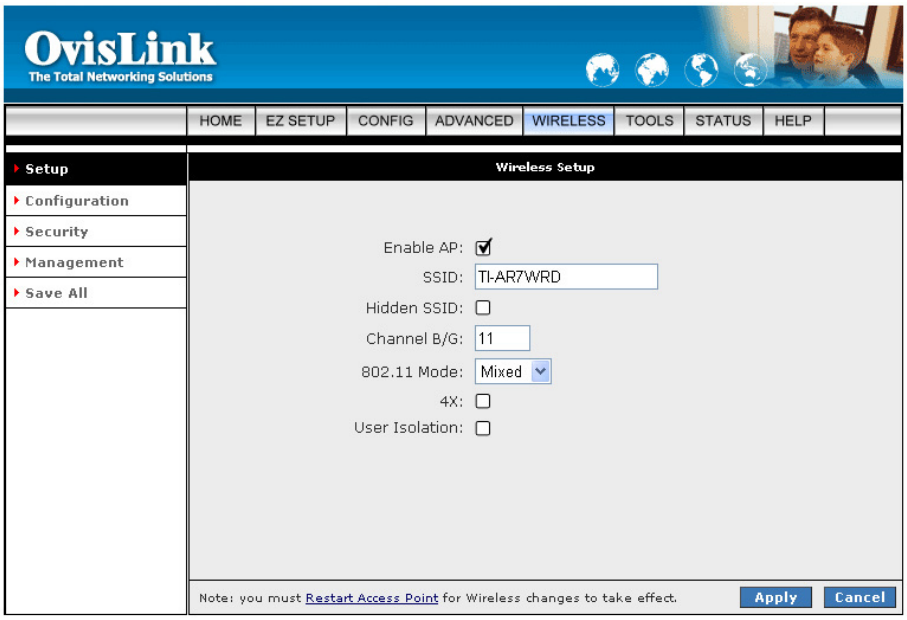
The Wireless configuration page describe the detail instruction on Setup, Configuration, Channel Range, Security and Management for 11g Wireless user.



4.5.1 WIRELESS - Setup

The Setup configuration page describe the basic wireless setting for the WL-8064ARM Wireless ADSL2/2+ Router.

By default, any wireless PC that is configured with the correct SSID will be allowed access to your wireless network.



- **Enable AP:** Place a check to Enable or Disable the built in Wireless Access Point built in the WL-8064ARM Wireless ADSL2/2+ Router. The Wireless Access Point must be enabled to allow wireless stations to access the Internet.

- **SSID:** The Service Set Identifier, also known as the Wireless Network name. The Service Set Identifier (SSID) is a unique name for your wireless network. If you have other wireless access points in your network, they must share the same SSID.

  The default SSID is **TI-AR7WRD**, but it is strongly recommends that you change your network Name to a different value for security purpose. The SSID can be up to 31 characters.
- **Hidden SSID:** Place a check to enable the hidden of your WL-8064ARM Wireless ADSL2/2+ Router SSID.
- **Channel B/G:** This field determines which operating frequency will be used. It should not be necessary to change the wireless channel unless you notice interference problems with another nearby access point.
- **802.11 Mode:** The default is **"Mixed"**, which allows both 802.11g and 802.11b wireless stations to access this device. **"B only"** allows 802.11b wireless stations to be used, **"B+"** allows 802.11b+ wireless station to be used and **"G only"** allows only 802.11g wireless stations to be used to access the WL-8064ARM Wireless ADSL2/2+ Router.

- **User Isolation:** If enabled, Wireless Stations will not be able to communicate with each other or with stations on the wired network. This feature normally should be disabled.

- **Apply:** Click **Apply** to complete the setting.

- **Cancel:** Click **Cancel** to ignore all the changes.

- To complete and save the setting, click **Save All** after clicking the **Apply** button.

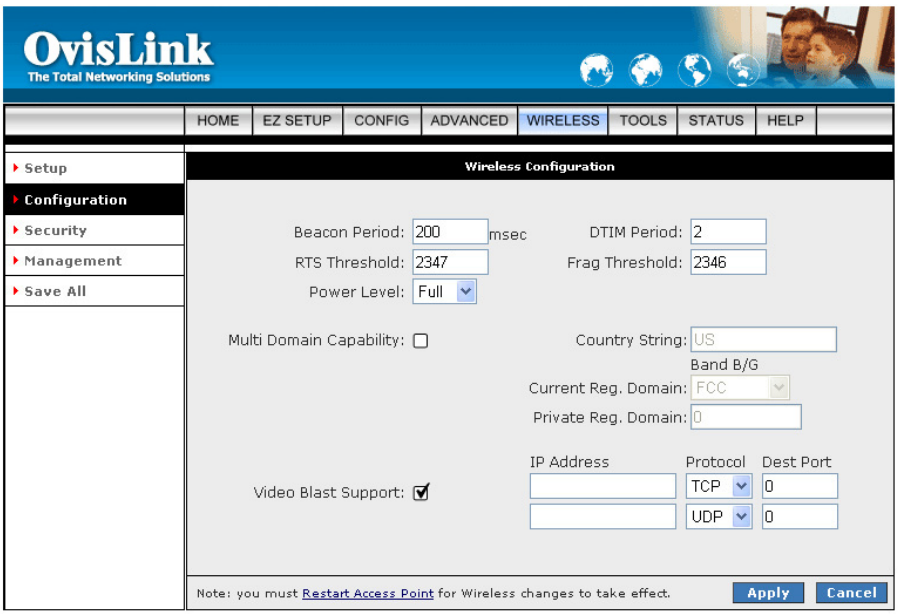
☐ How to Set Up and Test Basic Wireless Connectivity

Follow the instructions below to set up and test basic wireless connectivity. Once you have established basic wireless connectivity, you can enable security settings appropriate to your needs.

1. Log in to the WL-8064ARM Wireless ADSL2/2+ Router default IP address http://192.168.1.1 with its default username: **Admin** and default password: **ovislink**, or using whatever IP Address and Username and Password you have set up.
2. Click the **WIRELESS** → **Setup** link in the main menu of the WL-8064ARM Wireless ADSL2/2+ Router.
3. Click to **Enable AP** feature.
4. Choose a suitable descriptive name for the wireless network name (SSID). In the SSID box, enter a value of up to 32 alphanumeric characters. The default SSID is **TI-AR7WRD**.
   Note: The SSID of any wireless access adapters must match the SSID you configure in the WL-8064ARM Wireless ADSL2/2+ Router . If they do not match, you will not get a wireless connection to the WL-8064ARM Wireless ADSL2/2+ Router.
5. Uncheck the **Hidden SSID**.
6. Set the **Channel B/G**. The default channel is 11. This field determines which operating frequency will be used. It should not be necessary to change the wireless channel unless you notice interference problems with another nearby wireless router or access point.
7. Set the 802.11 Mode as its default, **Mixed**.
8. Uncheck the **User Isolation** feature.
9. Click **Apply** to complete the setting.
10. To complete and save the setting, click **Save All** after clicking the **Apply** button.
11. Configure and test your computers for wireless connectivity. Program the wireless adapter of your computers to have the same SSID and channel that you configured in the WL-8064ARM Wireless ADSL2/2+ Router. Check whether they have a wireless link and are able to obtain an IP address by DHCP from the WL-8064ARM Wireless ADSL2/2+ Router.
    Once your computers have basic wireless connectivity to the WL-8064ARM Wireless ADSL2/2+ Router, then you can configure the advanced wireless security functions of the firewall.

4.5.2 WIRELESS - Configuration

The Configuration page describes how to configure the wireless features of your WL-8064ARM Wireless ADSL2/2+ Router.



- **Beacon Period:** Enter a value between 1 ~ 4095 milliseconds. The Beacon Interval value indicates the frequency interval of the beacon. A beacon is a packet broadcast by the WL-8064ARM Wireless ADSL2/2+ Router to synchronize the wireless network. The default value is 200.
- **DTIM Period:** This value, between 1 ~ 65535, indicates the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the WL-8064ARM Wireless ADSL2/2+ Router has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. Its clients hear the beacons and awaken to receive the broadcast and multicast messages. The default value is 2.
- **RTS Threshold:** The range is 0 ~ 3000 bytes. If a network packet is smaller than the preset RTS threshold size, the RTS/CTS mechanism will not be enabled. The WL-8064ARM Wireless ADSL2/2+ Router sends Request to Send (RTS) frames to a particular receiving station and negotiates the sending of a data frame. After receiving an RTS, the wireless station responds with a Clear to Send (CTS) frame to acknowledge the right to begin transmission. This default setting is 2347.
- **Frag Threshold:** The Fragmentation Threshold. The range is 256 ~ 2346 bytes. It specifies the maximum size for a packet before data is fragmented into multiple packets. If you experience a high packet error rate, you may slightly increase the Fragmentation Threshold. Setting the Fragmentation Threshold too low may result in poor network performance. Only minor modifications of this value are recommended. This default setting is 2346.
- **Power Level:** Select “Full”, “50%”, “25%”, “12%” or “6%” Power Level from the drop down manual. The default is **“Full”**.

- **Video Blast Support:** Place a check to enable the Video Blast functionality. Check the following items when Video Blast features is enabled.
  - ☑ **IP Address:** Enter the IP Address which support the Video Blast feature.
  - ☑ **Protocol:** The Protocol selected to support Video Blast feature.
  - ☑ **Dest Port:** Enter the Destination Port to support the Video Blast feature.

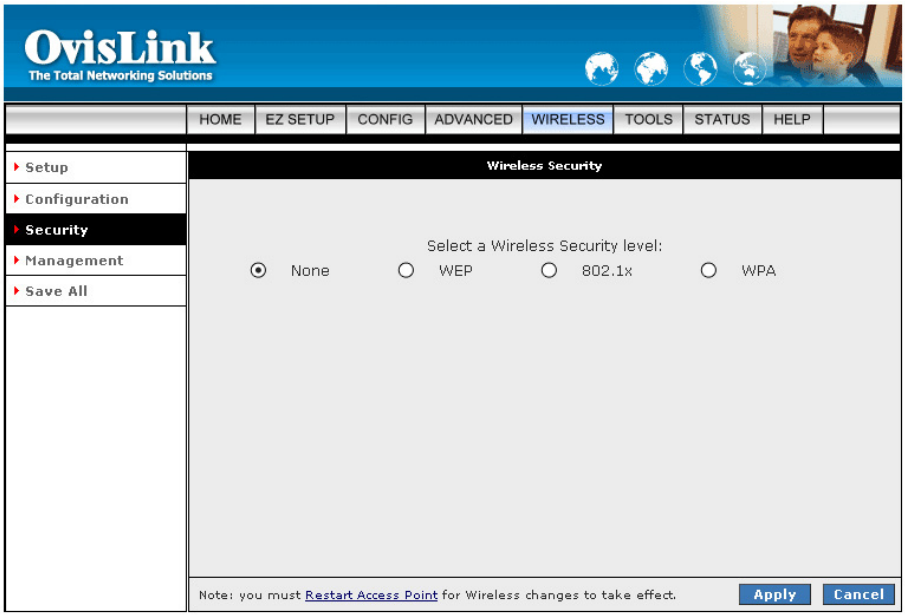
- **Apply:** Click **Apply** to complete the setting.

- **Cancel:** Click **Cancel** to ignore all the changes.

- To complete and save the setting, click **Save All** after clicking the **Apply** button.

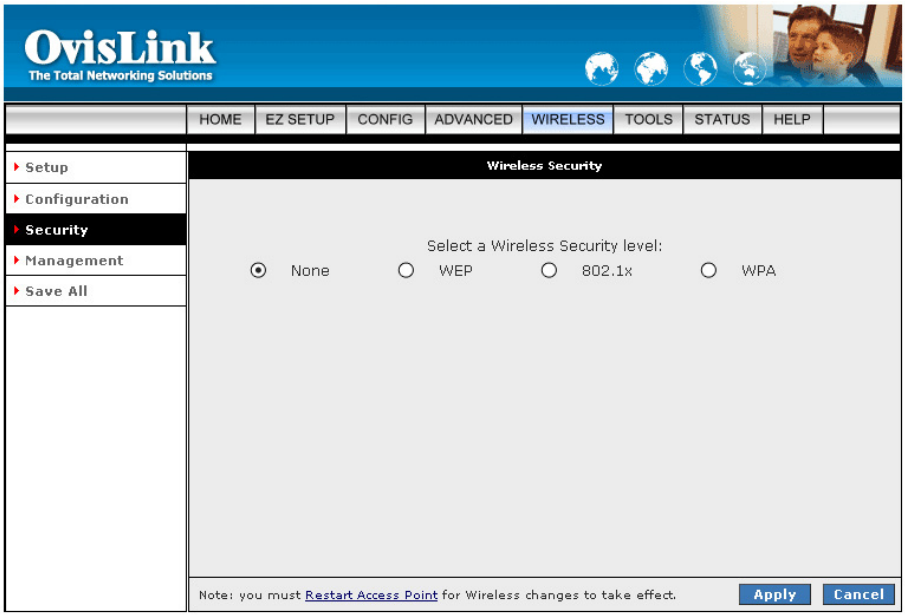
4.5.3 WIRELESS - Security

The Security page describes how to configure the Wireless Security Level of your WL-8064ARM Wireless ADSL2/2+ Router. There are four security level provided by this WL-8064ARM Wireless ADSL2/2+ Router : **“None”**, **“WEP”**, **“802.1x”** and **“WPA”**.



4.5.3.1 WIRELESS – Security - None

None: The Wireless security is not been used. No encryption will be applied. This setting is useful for troubleshooting your wireless connection, but leaves your wireless data fully exposed.



- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.5.3.2 WIRELESS – Security - WEP

WEP: Wired Equivalent Privacy. WEP is a security protocol for wireless local area networks defined in the 802.11b standard. WEP is designed to provide the same level of security as that of a wired LAN. WEP aims to provide security by encrypting data over radio waves so that it is protected as it is transmitted from one end point to another.

- **Enable WEP Wireless Security:** Place a check to enable WEP Security.
- **Authentication Type:** Select the Authentication Type from the drop down manual. To provide a certain level of security, the IEEE 802.11 standard has defined three types of authentication methods, **"Open"**, **"Shared"** and **"Both"**.
  - ☑ **Open:** The WL-8064ARM Wireless ADSL2/2+ Router does not perform any Authentication. Open system keys are always authenticated at the device level. After authentication, data is then encrypted between the gateway and the connected device. This is the weakest form of security and should not be used for sensitive data.
  - ☑ **Shared:** WEP shared key authentication. With **"Shared"** key authentication, only those PCs that possess the correct authentication key can join the network. Shared keys accept a string of unencrypted data from a device. The gateway encrypts with a WEP key and sends back the encrypted data to the attached device.

- **Encryption Key:** Select the level of encryption. The available WEP settings are 64 bits, 128 bits and 256 bits. The higher the bit value on the encryption, the more secure the data transmission.
  For 64 bit WEP, enter 10 Hexadecimal digits (any combination of 0-9, A-F).
  For 128 bit WEP, enter 26 Hexadecimal digits (any combination of 0-9, A-F).
  For 256 bit WEP, enter 58 Hexadecimal digits (any combination of 0-9, A-F).
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

☐ How To Configure WEP:

To configure WEP data encryption, follow these steps:

1. Log in to the WL-8064ARM Wireless ADSL2/2+ Router at its default LAN address of *http:///192.168.1.1* with its default Username : **Admin** and default password : **Admin**.

2. Click the WIRELESS configuration link in the main menu of the WL-8064ARM Wireless ADSL2/2+ Router.

3. Go to the Security page.

4. Select the Wireless Security Level.

5. Click Enable WEP Wireless Security.

6. Select the Authentication Type.

7. Select the Encryption Type (64 bits, 128 bits or 256 bits).

8. Enter the Encryption Keys. Manually enter hexadecimal digits (any combination of 0-9, a-f, or A-F).

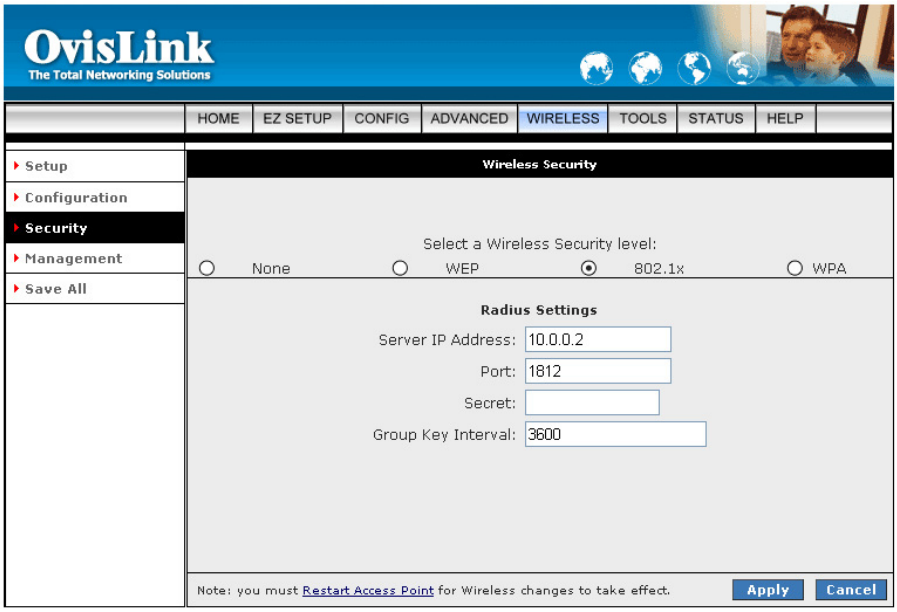
9. Select the radio button for the key you want to make active. Be sure you clearly understand how the WEP key settings are configured in your wireless adapter.

10. Click **Apply** to complete the setting.

11. To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.5.3.3 WIRELESS – Security – 802.1x

802,1x: IEEE 802.1X defines the architecture that contains three major components: Authenticator, Supplicant, and Authentication Server.



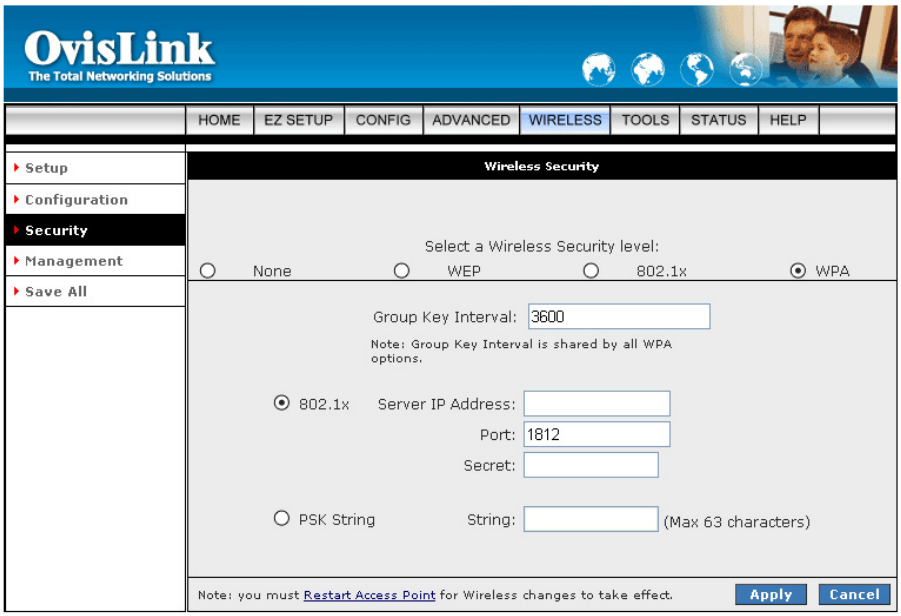
- **Server IP Address:** This field is required. Enter the IP address of the Radius Server on your LAN.
- **Port:** Enter the port number used for connections to the Radius Server.
- **Secret:** Enter the Radius shared key. This key enables the WL-8064ARM Wireless ADSL2/2+ Router to log in to the Radius server and must match the value used on the Radius server.
- **Group Key Interval:** Type a numeric value (In seconds) of the time lapse in changing the key in the **"Group Key Interval"** box.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.5.3.4 WIRELESS – Security - WPA

WPA: Wi-Fi Protected Access (WPA) is a specification of standards-based, interoperable security enhancements that increase the level of data protection and access control for existing and future wireless LAN systems.

WPA-PSK. Wi-Fi Protected Access (WPA) data encryption provides data security. The very strong authentication along with dynamic per frame re-keying of WPA make it virtually impossible to compromise. Because this is a new standard, wireless device driver and software availability may be limited.

Note: Not all wireless adapters support WPA. Furthermore, client software is required on the client.



- **Group Key Interval:** Type a numeric value (In seconds) of the time lapse in changing the key in the **"Group Key Interval"** box.
- **802.1x:** Click the radio button to enable 802.1x functionality and enter the IP Address, Port Number and Secret Key of the RADIUS Server.
- **PSK String:** Click the radio button to enable PSK functionality and enter the PSK String.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.5.4 WIRELESS - Management

Unlike wired network data, your wireless data transmissions can extend beyond your walls and can be received by anyone with a compatible adapter. The Management configuration page allow you to set the security features of your WL-8064ARM Wireless ADSL2/2+ Router which are appropriate to your needs. Click on **WIRELESS** then **Management**, the following screen will pop-up.

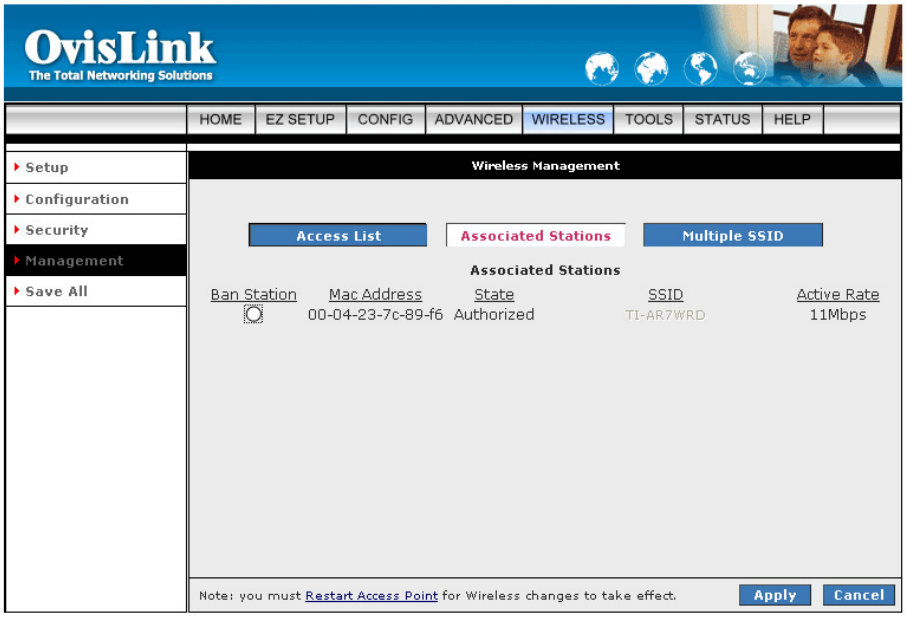
4.5.4.1 WIRELESS – Management – Access List

Access List: By default, any wireless computer that is configured with the correct wireless network name or SSID will be allowed access to your wireless network. For increased security, you can restrict access to the wireless network to only specific computers based on their MAC addresses.

- **Enable Access List:** Select **Allow** or **Ban** to setup your Access List.
- **MAC Address:** Enter the MAC Address of the wireless network that are Allow or Ban to access your WL-8064ARM Wireless ADSL2/2+ Router. Then click **Add** to include to your Access List.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.5.4.2 WIRELESS – Management – Associated Stations

Associated Stations: Click on Associated Stations and the following screen will pop-up. Restricting access by MAC address adds an obstacle against unwanted access to your network.

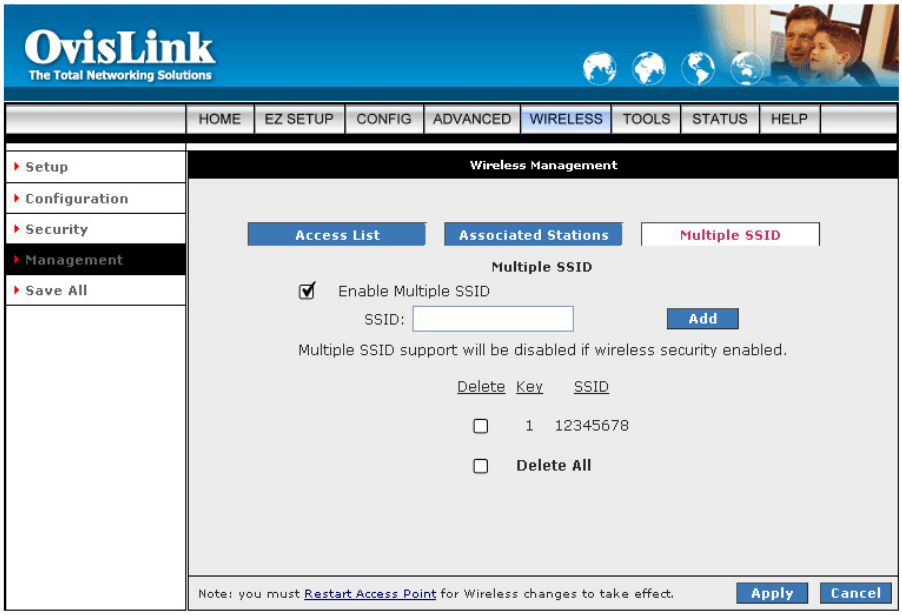


- **Ban Station:** Click and select the Ban Station from the list.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.5.4.3 WIRELESS – Management – Multiple SSID

Multiple SSID: Click on Multiple SSID and the following screen will pop-up. By default, any wireless PC that is configured with the correct SSID will be allowed access to your wireless network.

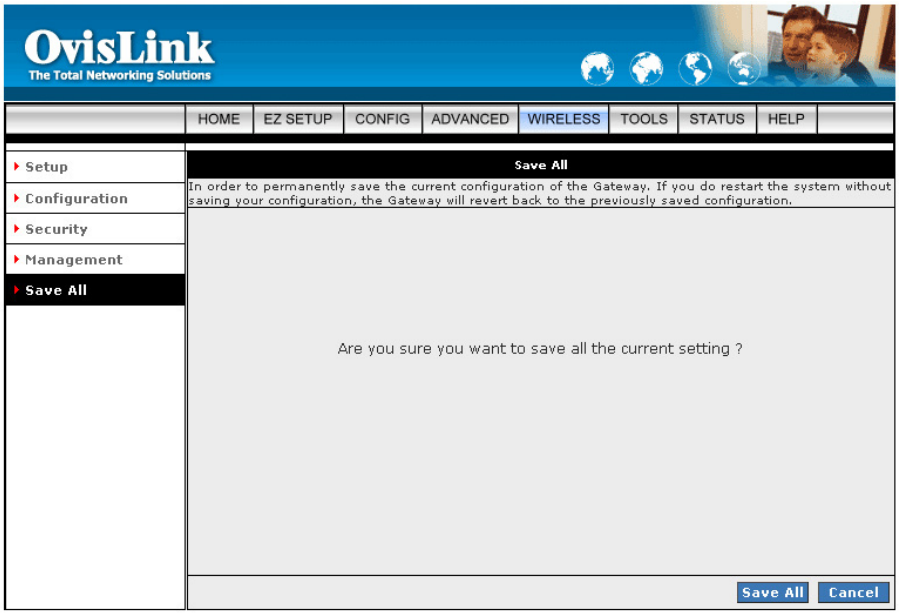
An SSID is a 32 character (maximum) alphanumeric key identifying the name of the wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID.



- **Enable Multiple SSID:** Place a check to Enable Multiple SSID. Enter the SSID that are authorized to access the WL-8064ARM Wireless ADSL2/2+ Router and click the **Add** button to add your entry.
- **SSID:** Manually enter the SSID. An SSID is a 32 character (maximum) alphanumeric key identifying the name of the wireless local area network.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.5.5 WIRELESS – Save All

Save All: Click **Save All** in order to permanently save the current configuration of the WL-8064ARM Wireless ADSL2/2+ Router. If you do restart the system without saving your configuration, the WL-8064ARM Wireless ADSL2/2+ Router will revert back to the previously saved configuration.

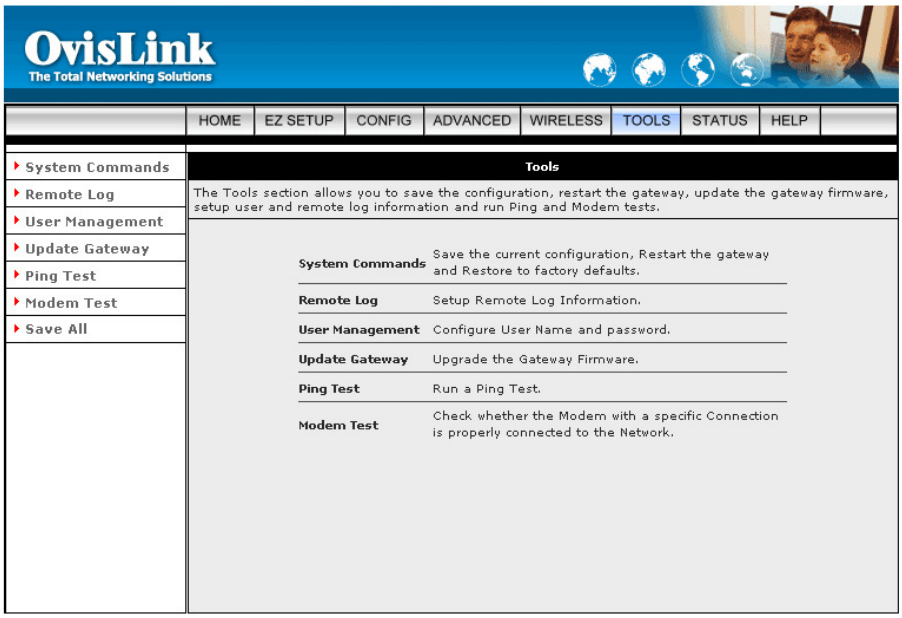


- **Save All:** Click **Save All** to complete and permanently save the setting.

- **Cancel:** Click **Cancel** to ignore all the changes.

4.6 TOOLS

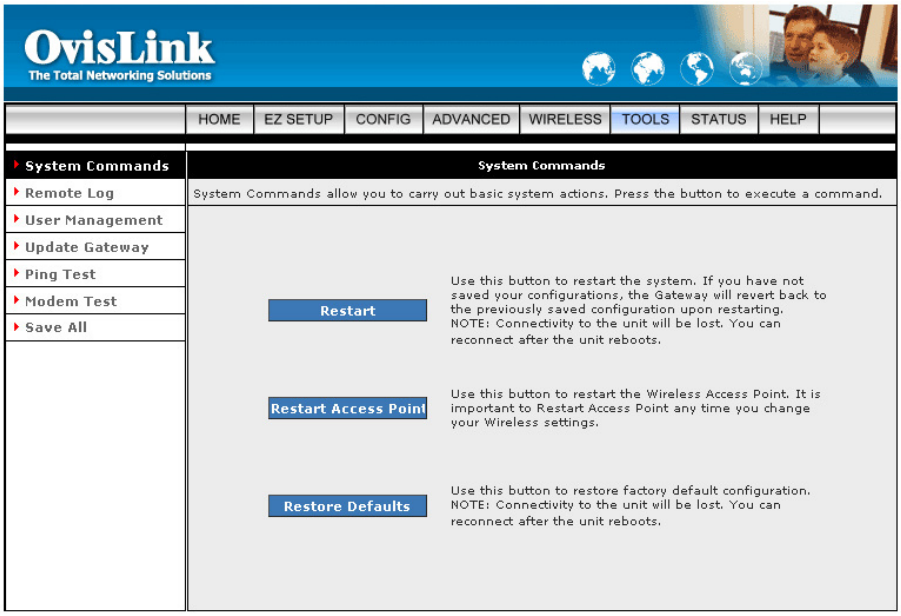
TOOLS: The **TOOLS** page allows you to save the configuration, restart the device, update the firmware/image code, setup user and remote log information and run ping/test of the WL-8064ARM Wireless ADSL2/2+ Router.



- **System Commands:** Save the current configuration, restart the WL-8064ARM Wireless ADSL2/2+ Router and restore to factory defaults setting.
- **Remote Log:** Setup Remote Log Information.
- **User Management:** Configure user name and password.
- **Update Gateway:** Upgrade the WL-8064ARM Wireless ADSL2/2+ Router firmware.
- **Ping Test:** Run a ping test.
- **Modem Test:** Check whether the modem with a specific connection is properly connected to the network.

4.6.1 TOOLS - System Commands

The System Commands page allow you to carry out basic system actions.



- **Restart:** Use this button to restart the WL-8064ARM Wireless ADSL2/2+ Router system.

  NOTE: You will be redirected to the WL-8064ARM Wireless ADSL2/2+ Router Homepage after the unit has successfully rebooted.

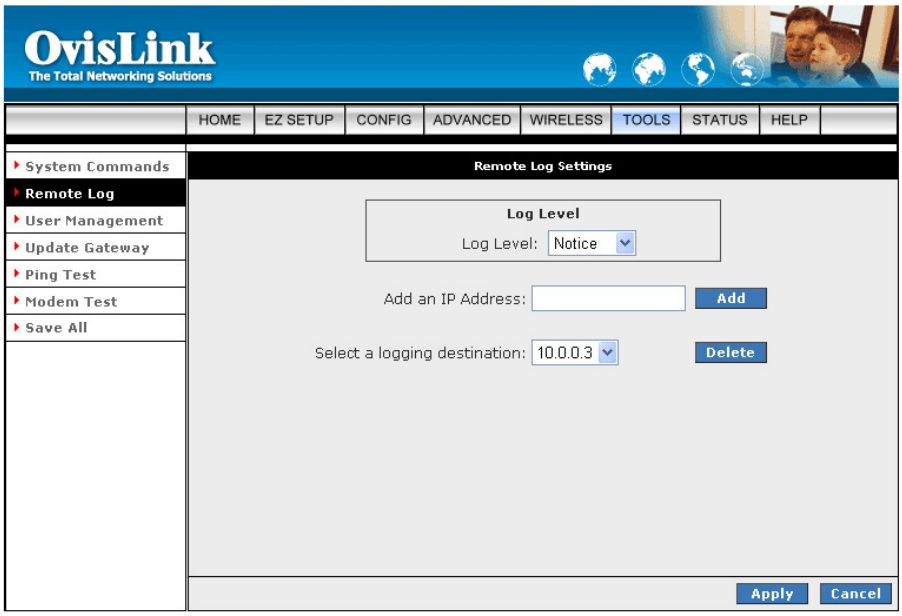
- **Restart Access Point:** Use this button to restart the Wireless Access Point. It is important to Restart the Access Point any time when changing the Wireless Setting.

- **Restore Defaults:** Use this button to restore factory default configurations.

  NOTE: You will be redirected to the WL-8064ARM Wireless ADSL2/2+ Router Homepage after the unit has successfully been restored to factory default configurations.

4.6.2 TOOLS - Remote Log

Remote Log: Using the Remote Log page, you can allow a user or users on the Internet to configure, upgrade and check the status of your WL-8064ARM Wireless ADSL2/2+ Router.



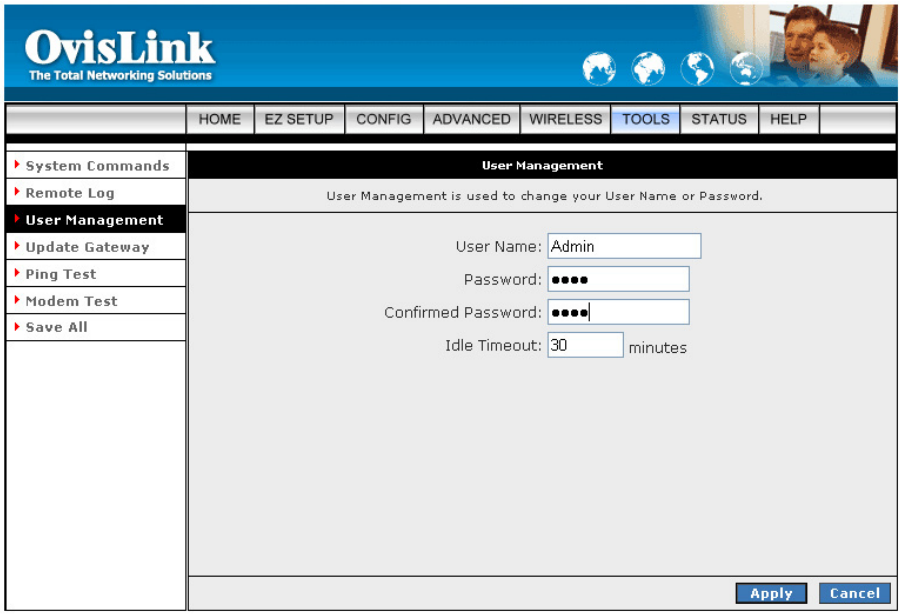
- **Log Level:** Select the Log Level from the drop down manual. The WL-8064ARM Wireless ADSL2/2+ Router provides the following Log Level : Panic, Alert, Critical, Error, Warning, Notice, Info and Debug.
- **Add an IP Address:** Manually enter the logging destination IP Address then click **Add** button to add your entry.
- **Delete:** Delete the logging destination IP Address from the drop down list.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.6.3 TOOLS - User Management

User Management: The User Management page enables you to change your User Name and/or Password. It is recommended that you change the User Name and password from the default Admin to ensure the security of the WL-8064ARM Wireless ADSL2/2+ Router.

For security reasons, the router has its own user name and password. Also, after a period of inactivity for a set length of time, the administrator login will automatically disconnect. When prompted, enter the router User Name: **Admin** and the router Password: **Admin** to log in.

NOTE: If you forget your user name and password, access to the WL-8064ARM Wireless ADSL2/2+ Router can only be gained by resetting the unit to factory defaults. Pressing the **"Reset"** button for 10 seconds, the LED indicators will turns OFF and ON again indicates that the Reset process is successfully done.



- **User Name:** Enter the user specify User Name
- **Password:** Enter the user specify Password.
- **Idle Timeout:** For security, the administrator's login to the router configuration will timeout after a period of inactivity.
- **Apply:** Click **Apply** to complete the setting.
- **Cancel:** Click **Cancel** to ignore all the changes.
- To complete and save the setting, click **Save All** after clicking the **Apply** button.

4.6.4 TOOLS - Update Gateway

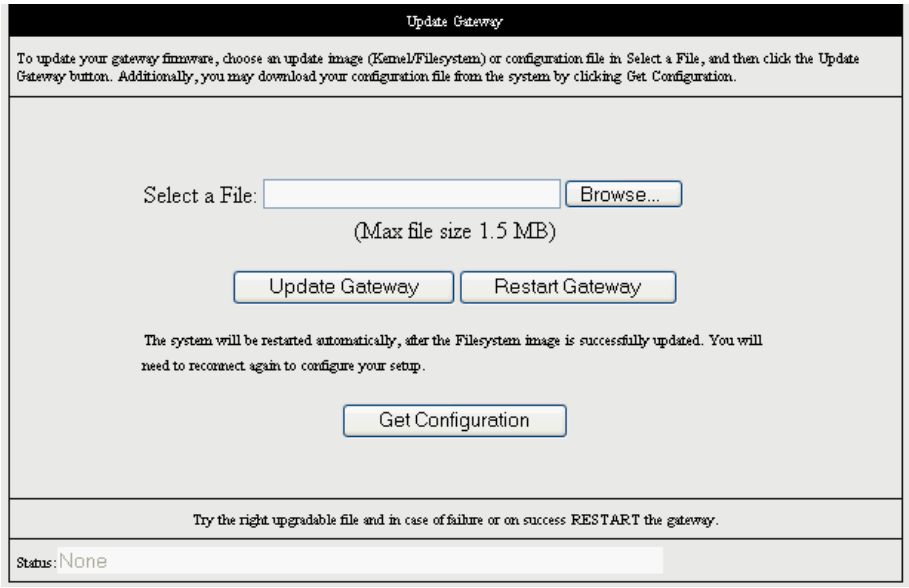
Update Gateway: Firmware is the software that controls the WL-8064ARM Wireless ADSL2/2+ Router and also provides the user interface that is subject of this manual. The Firmware resides in the WL-8064ARM Wireless ADSL2/2+ Router internal Flash memory; currently loaded firmware version can be found under **STATUS → Product Information**.

Note: It is recommends that you back up your configuration before doing a firmware upgrade. After the upgrade is complete, you may need to restore your configuration settings.

To access Firmware Updates, click on **TOOLS → Update Gateway**. The following window screen will pop-up.

- **Select a File:** Click on the **Browse…** button to locate the Firmware or update image file from your computer's hard drive.
- **Update Gateway:** Click the **Update Gateway** button to upgrade your WL-8064ARM Wireless ADSL2/2+ Router. The system will be restarted automatically after the Firmware/Image is successfully uploaded. You will need to reconnect again to configure your setup.
- **Get Configuration:** You may download your configuration file from the system by clicking **Get Configuration**. Follow the instruction and save your configuration file in your hard drive.

The following screen will pop-up when clicking the **Update Gateway** button. Click **Browse** button to locate the configuration file or update image file from your computer's hard drive then click **Update Gateway**. After the configuration file upgrade process, click **Restart Gateway** to activate your previous setting.

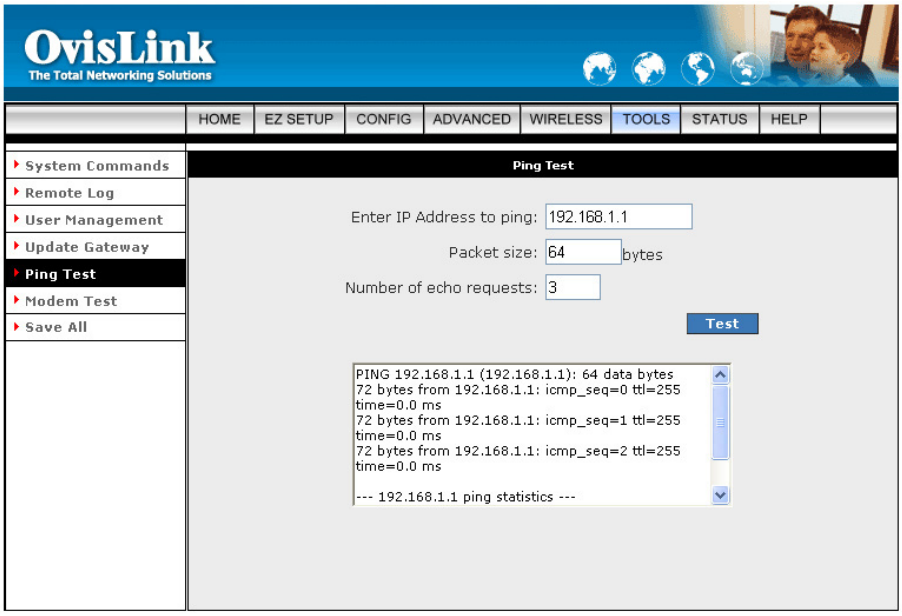


- **Select a File:** Click on the **Browse…** button to locate the configuration file from your computer's hard drive.
- **Update Gateway:** Click the **Update Gateway** button to upgrade your configuration file.
- **Restart Gateway:** Click **Restart Gateway** after the upgrade process to activate your setting.

Note: When uploading Firmware/Configuration File to the WL-8064ARM Wireless ADSL2/2+ Router, it is important not to interrupt the Web browser by closing the window, clicking a link, or loading a new page. If the browser is interrupted, it may corrupt the upgrading process. When the upload is complete, your WL-8064ARM Wireless ADSL2/2+ Router will automatically reboot and restart. The upgrade process will typically take about 1~2 minutes.

4.6.5 TOOLS - Ping Test

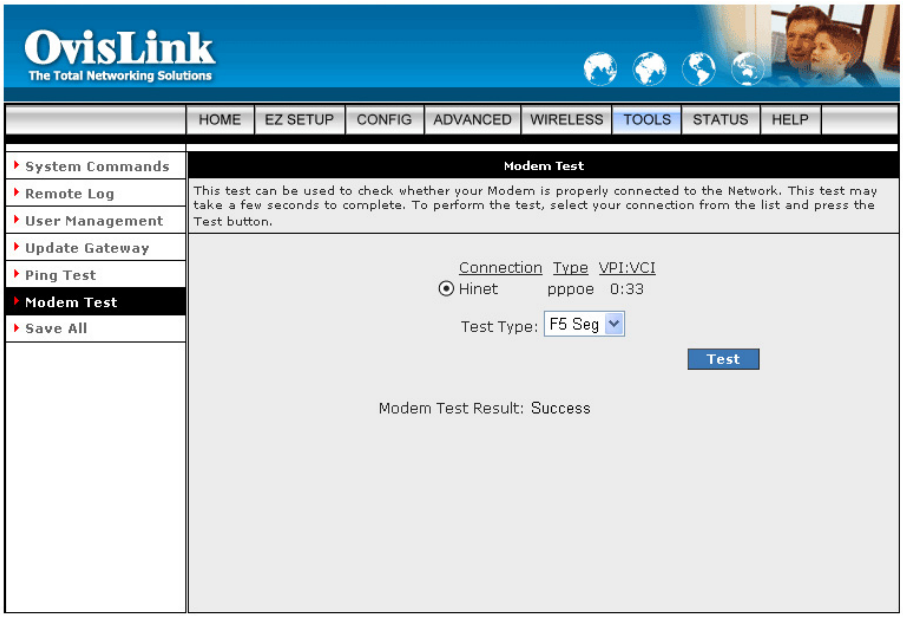
Ping Test: The Ping Test page provides an easy way to ping the WL-8064ARM Wireless ADSL2/2+ Router without invoking the command line interface.



- **Enter IP Address to ping:** Enter the IP Address to ping.
- **Packet size**: Enter the packet size in bytes.
- **Number of echo requests**: Enter the number of echo request.
- **Test**: Click Test to start the ping test. The result will be shown in the window underneath.

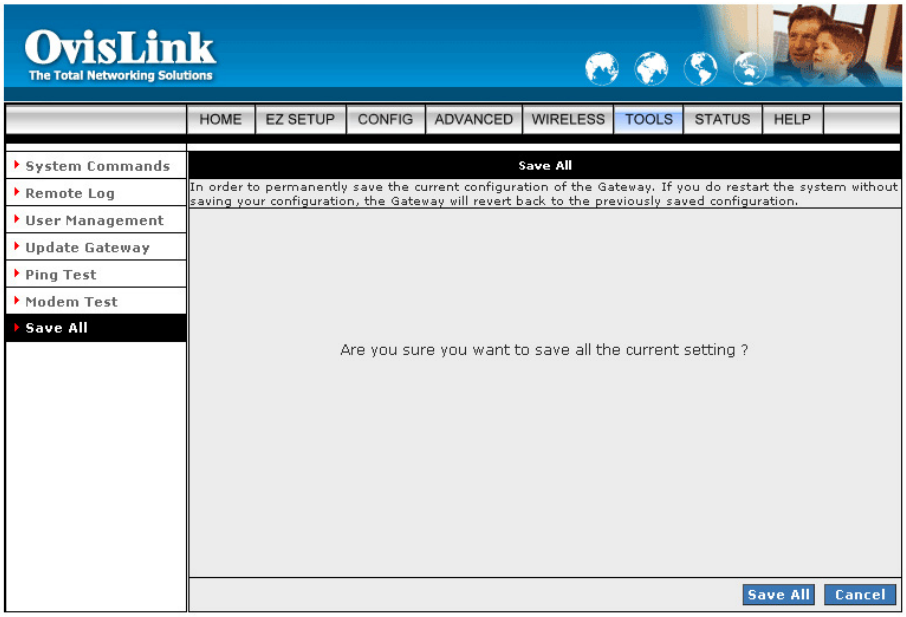
4.6.6 TOOLS - Modem Test

Modem Test: The Modem Test page can be used to check whether your Modem is properly connected to the Network. This test may take a few seconds to complete. To perform the test, select your connection from the list and press the **Test** button. The value returned will either be **Success** or **Fail**.



4.6.7 TOOLS – Save All

Save All: Click **Save All** in order to permanently save the current configuration of the WL-8064ARM Wireless ADSL2/2+ Router. If you do restart the system without saving your configuration, the WL-8064ARM Wireless ADSL2/2+ Router will revert back to the previously saved configuration.

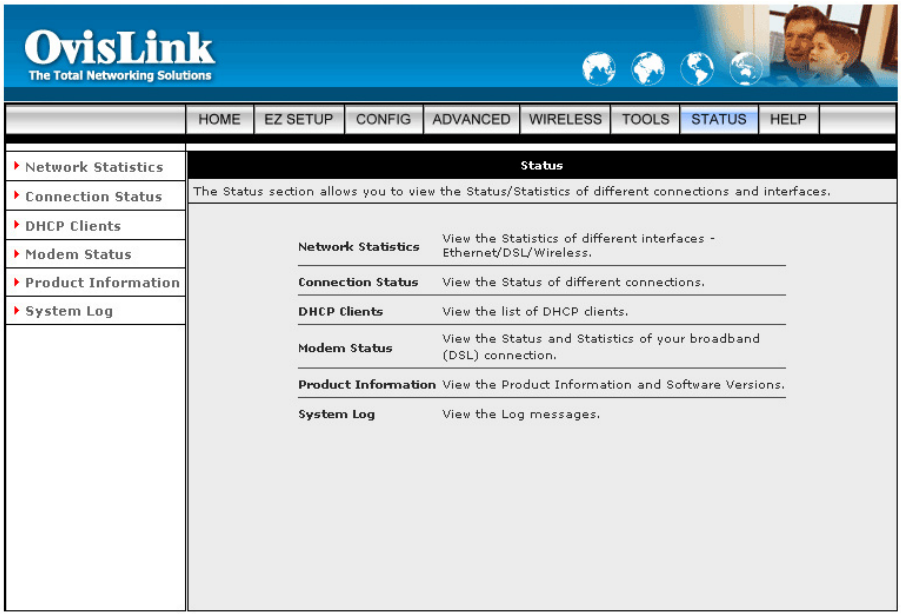


- **Save All:** Click **Save All** to complete and permanently save the setting.

- **Cancel:** Click **Cancel** to ignore all the changes.

4.7 STATUS

The Status Menu provides dynamically-updated information about your WL-8064ARM Wireless ADSL2/2+ Router's Network Status, Connection Status, Modem Status and device performance.



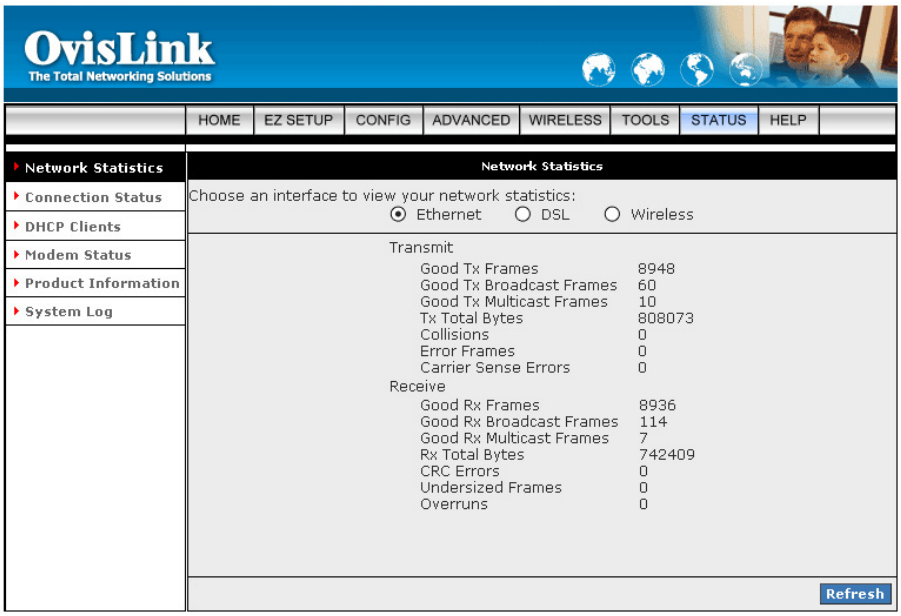
- **Network Statistics:** View the Statistics of different interfaces - Ethernet/USB/ADSL/Wireless.
- **Connection Status:** View the Status of different connections.
- **DHCP Clients:** View the list of DHCP clients.
- **Modem Status:** View the Status and Statistics of your broadband (DSL) connection.
- **Product Information:** View the Product Information and Software Versions.
- **System Log:** View the Log messages.

4.7.1 STATUS - Network Statistics

The Network Statistics show the Select Network Interface type to peruse statistics for each type of connection. Click Ethernet, USB, DSL or Wireless to view your Network Statistics.

4.7.1.1 STATUS - Network Statistics - Ethernet

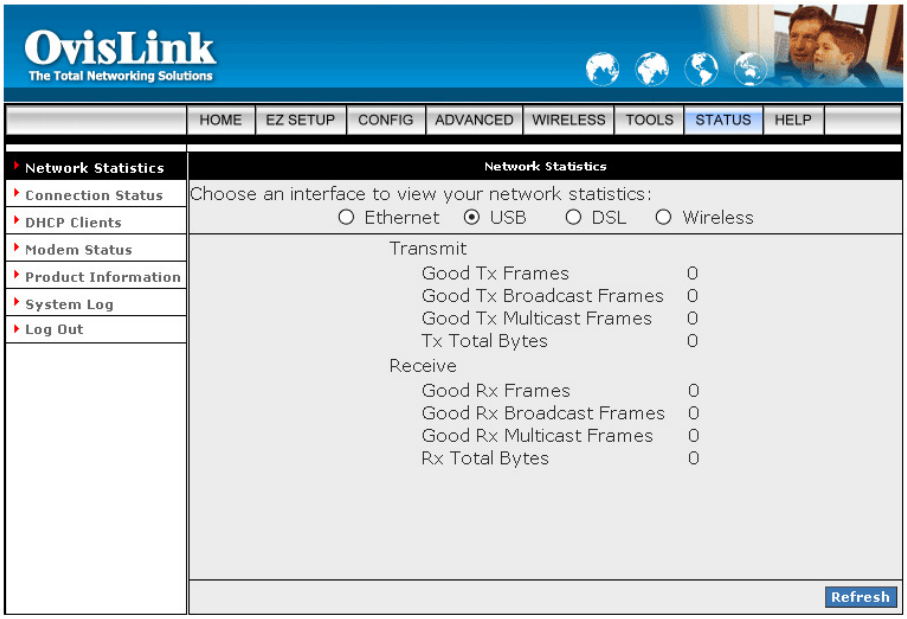
Ethernet: Shows the Transmit/Receive Frames, Error Frames, Collision and CRC Errors information of the Ethernet Interface. The traffic counter will reset if the device is rebooted.



- **Refresh:** Click **Refresh** button to reload Web browser. Changes may have occurred, but the Web browser may be caching the old configuration.

4.7.1.2 STATUS - Network Statistics – USB (Optional)

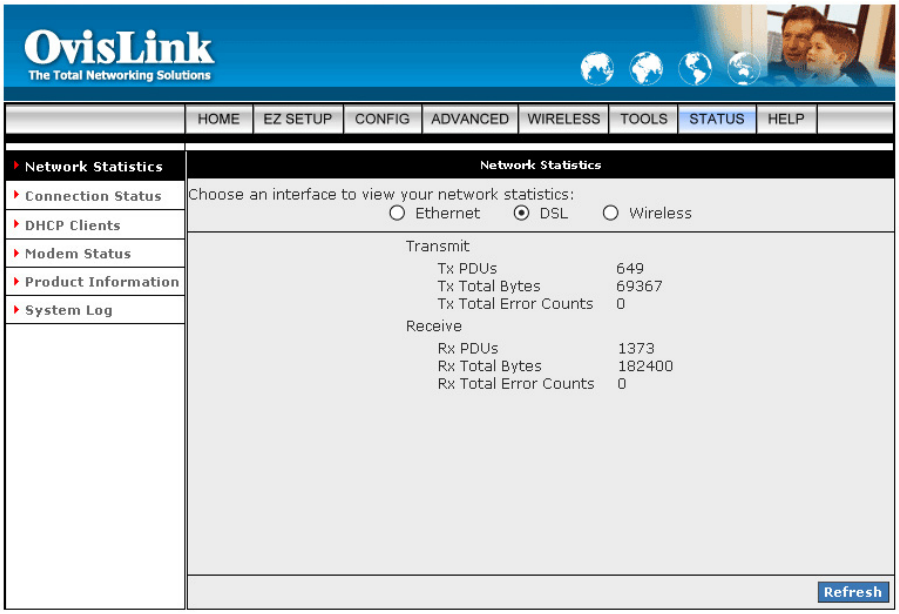
USB: Shows the Transmit/Receive Frames and Total Bytes Receive/Transmit information of the USB Interface. The traffic counter will reset if the device is rebooted.



- **Refresh:** Click **Refresh** button to reload Web browser. Changes may have occurred, but the Web browser may be caching the old configuration.

4.7.1.3 STATUS - Network Statistics - DSL

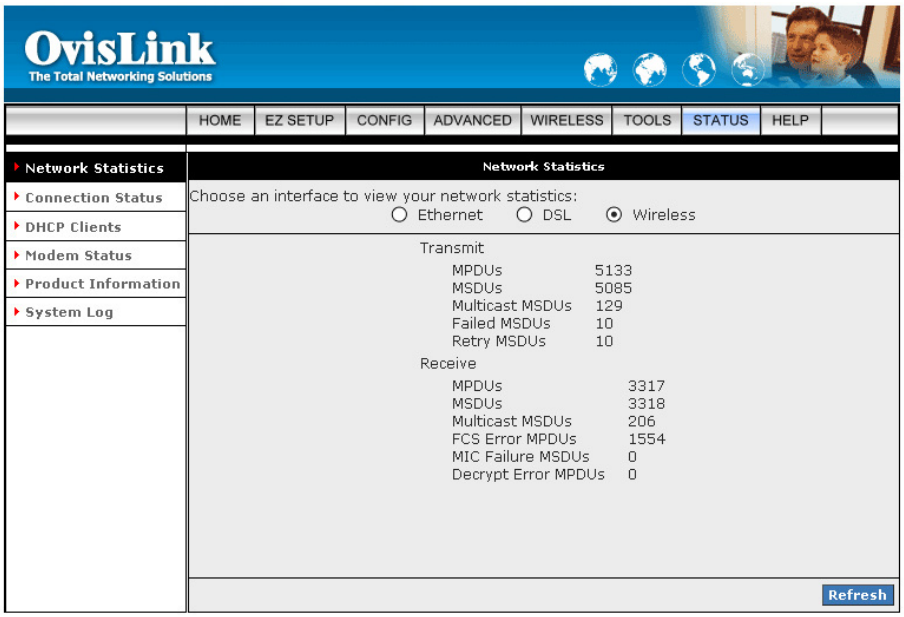
DSL: Shows the Total Bytes Receive/Transmit and Error Count information of the ADSL (WAN) Interface. The traffic counter will reset if the device is rebooted.



- **Refresh:** Click **Refresh** button to reload Web browser. Changes may have occurred, but the Web browser may be caching the old configuration.

4.7.1.4 STATUS - Network Statistics - Wireless

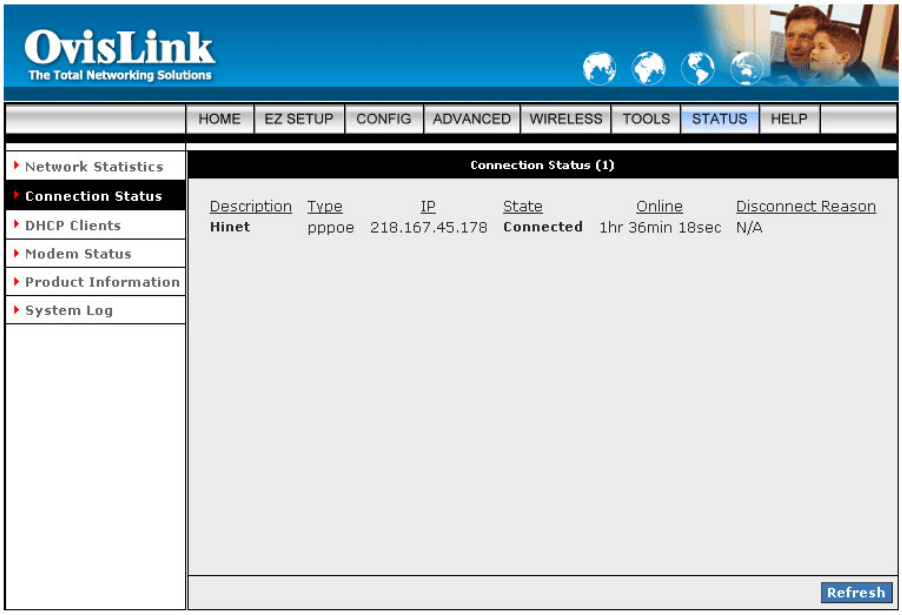
Wireless: Shows the packets transmit/receive information through the Wireless Interface. The traffic counter will reset if the device is rebooted.



- **Refresh:** Click **Refresh** button to reload Web browser. Changes may have occurred, but the Web browser may be caching the old configuration.

4.7.2 STATUS – Connection Status

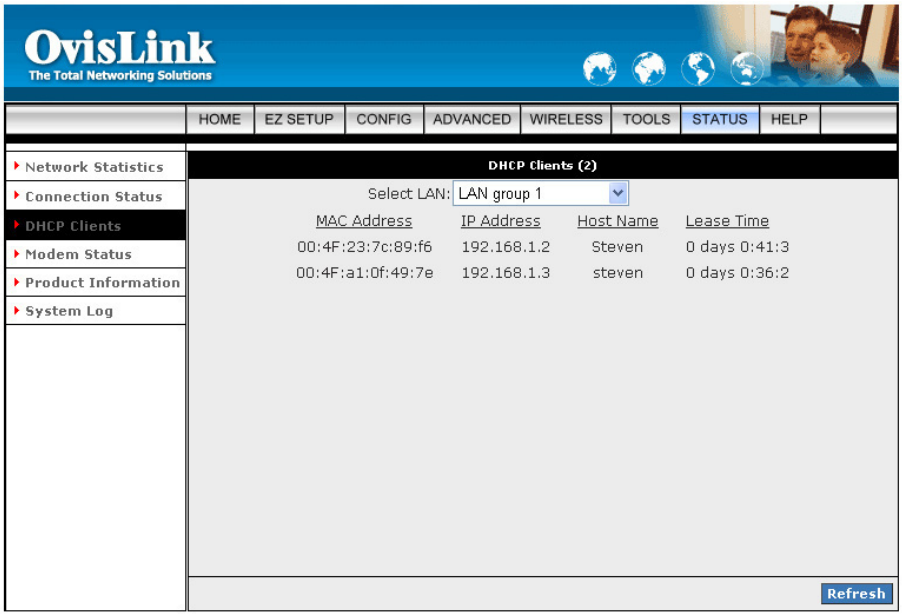
The Connection Status page display status of the current active connection.



- **Refresh:** Click **Refresh** button to reload Web browser. Changes may have occurred, but the Web browser may be caching the old configuration.

4.7.3 STATUS - DHCP Clients

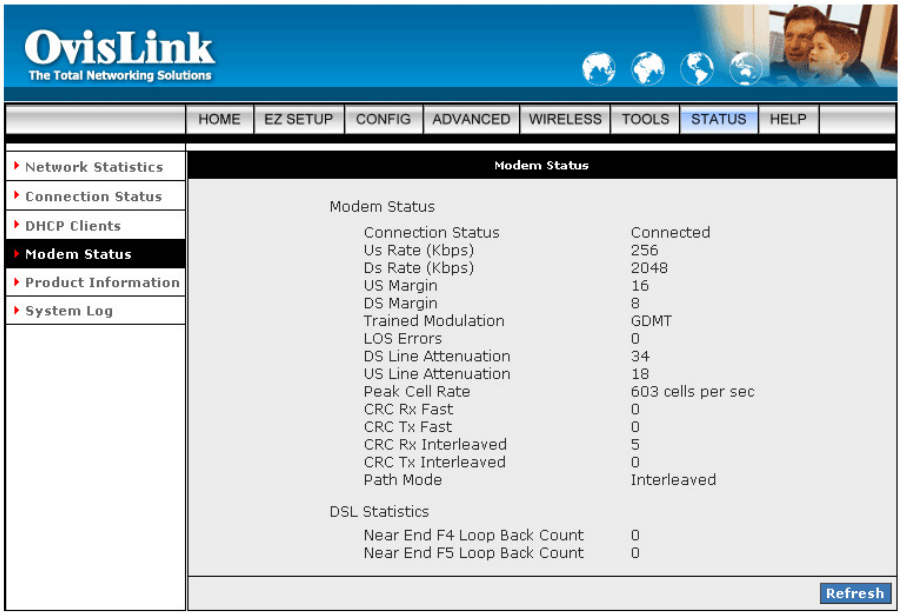
The DHCP Clients page shows the MAC Address, IP Address, Host Name and Lease Time for each DHCP client connected to the WL-8064ARM Wireless ADSL2/2+ Router.



- **Refresh:** Click **Refresh** button to reload Web browser. Changes may have occurred, but the Web browser may be caching the old configuration.

4.7.4 STATUS - Modem Status

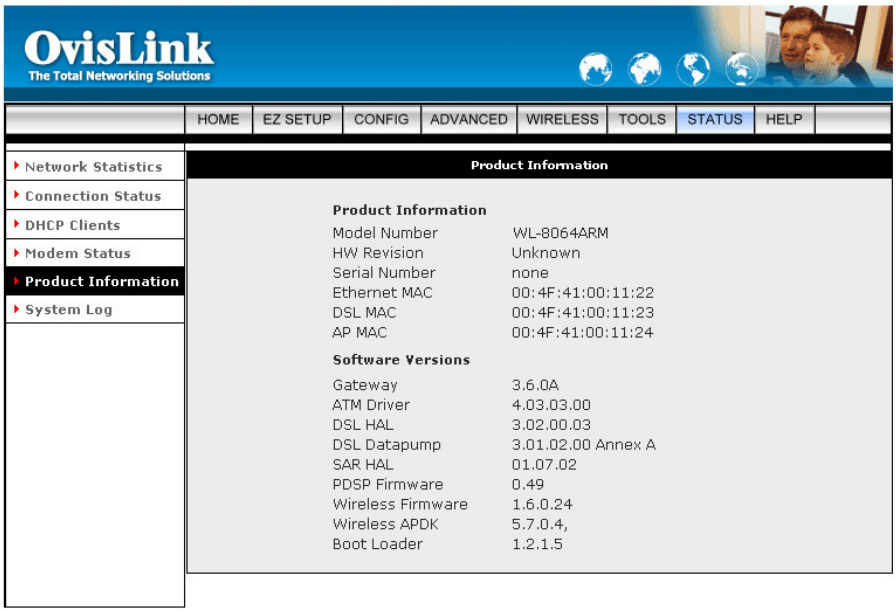
The **Modem Status** page shows the 4 Ports 11g Wireless ADSL2/2+ physical layer or link status. The information displayed on this page is either inherent to the WL-8064ARM Wireless ADSL2/2+ Router or set by the ADSL Central Office (CO) DSLAM, neither of which cannot be changed by the user.



- **Refresh:** Click **Refresh** button to reload Web browser. Changes may have occurred, but the Web browser may be caching the old configuration.

4.7.5 STATUS - Product Information

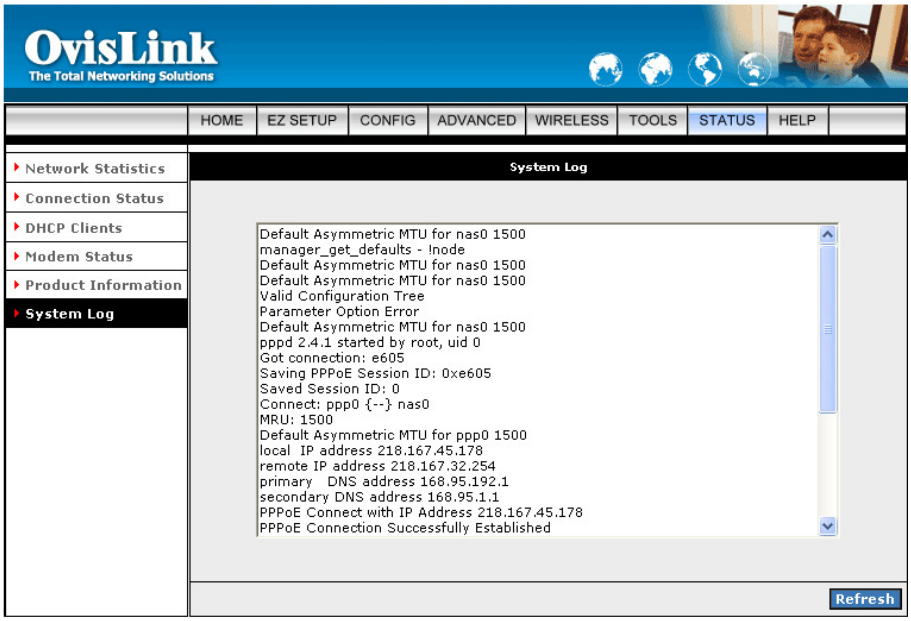
The **Product Information** show the complete information and various parameters of the WL-8064ARM Wireless ADSL2/2+ Router including Software Versions.



4.7.6 STATUS - System Log

The **System Log** page shows the events triggered by the system. Click System Log to access the WL-8064ARM Wireless ADSL2/2+ Router's System Log information.

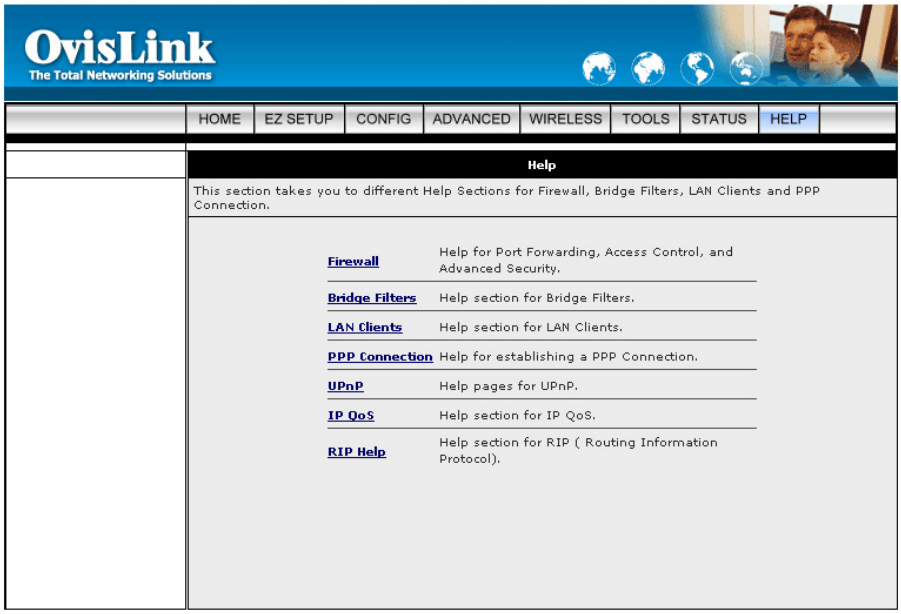
This page contains information that is dynamic and will refresh every 5~10 seconds..



- **Refresh:** Click **Refresh** button to reload Web browser. Changes may have occurred, but the Web browser may be caching the old configuration.

4.8 HELP

The **HELP** section is used to display a Help system for this WL-8064ARM Wireless ADSL2/2+ Router. Click the HELP button for more information on configuration and settings for each section at anytime.



Appendix A: Router Terms

What is a firewall?

A firewall is a device that protects one network from another, while allowing communication between the two. A firewall incorporates the functions of the NAT router, while adding features for dealing with a hacker intrusion or attack. Several known types of intrusion or attack can be recognized when they occur. When an incident is detected, the firewall can log details of the attempt, and can optionally send email to an administrator notifying them of the incident. Using information from the log, the administrator can take action with the ISP of the hacker. In some types of intrusions, the firewall can fend off the hacker by discarding all further packets from the hacker's IP address for a period of time.

What is NAT?

NAT stands for Network Address Translation. Another name for it is Connection Sharing. What does this mean? Your ISP provides you with a single network address for you to access the Internet through. However, you may have several machines on your local network that want to access the Internet at the same time. The router provides NAT functionality that converts your local network addresses to the single network address provided by your ISP. It keeps track of all these connections and makes sure that the correct information gets to the correct local machine.

Occasionally, there are certain programs that don't work well through NAT. Some games, and some specialty applications have a bit of trouble. The router contains special functionality to handle the vast majority of these troublesome programs and games. NAT does cause problems when you want to run a SERVER though. When running a server, please see the DMZ section below.

What is a DMZ?

DMZ really stands for Demilitarized Zone. It is a way of separating out part of your local network so that is more open to the Internet. Suppose that you want to run a web-server, or a game server. Normal servers like these are blocked from working by the NAT functionality. The solution is to "isolate" the single local computer into a DMZ. This makes the single computer look like it is directly on the Internet, and others can access this machine.

Your machine isn't really directly connected to the Internet, and it really has an internal local network address. When you provide the servers network address to others, you must provide the address of the router. The router "fakes" the connection to your machine.

You should use the DMZ when you want to run a server that others will access from the Internet. Internal programs and servers (like print servers, etc) should NOT be connected to the DMZ

What is a Gateway?

The Internet is so large that a single network cannot handle all of the traffic and still deliver a reasonable level of service. To overcome this limitation, the network is broken down into smaller segments or subnets that can deliver good performance for the stations attached to that segment. This segmentation solves the problem of supporting a large number of stations, but introduces the problem of getting traffic from one subnet to another.

To accomplish this, devices called routers or gateways are placed between segments. If a machine wishes to contact another device on the same segment, it transmits to that station directly using a simple discovery technique. If the target station does not exist on the same segment as the source station, then the source actually has no idea how to get to the target.

One of the configuration parameters transmitted to each network device is its default gateway. This address is configured by the network administrators and it informs each personal computer or other network device where to send data if the target station does not reside on the same subnet as the source. If your machine can reach all stations on the same subnet (usually a building or a sector within a building), but cannot communicate outside of this area, it is usually because of an incorrectly configured default gateway.

Appendix B: Frequently Asked Questions

The Frequently Asked Questions addresses common questions regarding WL-8064ARM Wireless ADSL2/2+ Router settings.

Some of these questions are also found throughout the guide, in the sections to which they reference.

1. **How do I determine if a link between the Ethernet card (NIC) and the WL-8064ARM Wireless ADSL2/2+ Router has been established?**

Ans. A ping test would determine if a connection is established between your WL-8064ARM Wireless ADSL2/2+ Router and computer. Using, the ping command, ping the IP address of the WL-8064ARM Wireless ADSL2/2+ Router, in this case, 192.168.1.1 (default). For more information on Ping Testing, refer to Appendix C: Troubleshooting Guide. Alternatively, if the Ethernet LINK LED is solidly on, then the Ethernet link is established.

2. **How do I determine if a link between the WL-8064ARM Wireless ADSL2/2+ Router and the Internet has been established?**

Ans. Similar to the previous question, a ping test would determine whether or not a connection is established. However, this time use a URL instead of and IP Address, such as http://www.ovislink.com.tw/ Alternatively, if the ADSL LED is solidly on, then the ADSL link is established.

3. **How can I find/verify my WL-8064ARM Wireless ADSL2/2+ Router and/or computer Ethernet MAC Address?**

Ans. Refer to Chapter 3, Section 3.4 for details.

4. **What is ad-hoc mode?**

Ans. When a wireless network is set to ad-hoc mode, the wireless-equipped computers are configured To communicate directly with each other, peer-to-peer without the use of an access point.

5. **What is infrastructure mode?**

Ans. When a wireless network is set to infrastructure mode, the wireless network is configured to communicate with a network through a wireless access point.

6. **What is roaming?**

Ans. Roaming is the ability of a portable computer user to communicate continuously while moving freely throughout an area greater than that covered by a single access point. Before using the roaming function, the computer must make sure that it is the same channel number with the access point of dedicated coverage area.

7. What is ISM band?

Ans. The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4 GHz, in particular, is being made available worldwide. This presents a truly revolutionary opportunity to place convenient high-speed wireless capabilities in the hands of users around the globe.

8. What is MAC Address?

Ans. Short for **Me**dia **A**ccess **C**ontrol **Address.** It is a hardware address that uniquely identifies each node of a Ethernet networking device. This address is usually permanent.

9. What is IEEE 802.11b standard?

Ans. IEEE 802.11b is an extension standards to 802.11 that applies to Wireless LAN and provides 11Mbps transmission speed in the 2.4 GHz band.

10. What is IEEE 802.11g standard?

Ans. IEEE 802.11g is an extension standards to 802.11 that applies to Wireless LAN and provides 54Mbps transmission speed in the 2.4 GHz band.

11. What is NAT (Network Address Translation) and what is it used for?

Ans. NAT translates multiple IP Address on the private LAN to one public IP Address (in WAN) that is sent out to the Internet. NAT adds a level security since the IP address of a PC connected to the private LAN is never transmitted on the Internet.

12. What can I do when I am not able to get the web configuration screen for this WL-8064ARM Wireless ADSL2/2+ Router?

Ans. Remove the proxy settings on your Internet Browsers or remove the dial-up settings on your browser.

13. What is DMZ (DeMilitarized zone)?

Ans. DMZ allows one IP Address (computer) to be exposed to the Internet. Some applications require multiple TCP/IP ports to be open. It is recommended that you set your computer with a static IP if you want to use DMZ features.

14. What is BSS ID?

Ans. A specific Ad-Hoc LAN is called a Basic Service Set (BSS). Computers in a BSS must be configured with the same BSS ID.

15. What is SSID?

Ans. Short for Service Set Identifier. SSID is a 32 character unique identifier attached to the header of packets sent over a WLAN that acts as a password when a mobile device tries to connect to the BSS. The SSID differentiates one WLAN from another, so all Access Point and all devices attempting to connect to a specific WLAN must use the same SSID. A device will not be permitted to join the BSS unless it can provide the unique SSID.

16. What is WEP?

Ans. Short for **W**ired **E**quivalent **P**rivacy. WEP is a security protocol for wireless local area networks defined in the 802.11b standard. WEP is designed to provide the same level of security as that of a wired LAN. WEP aims to provide security by encrypting data over radio waves so that it is protected as it is transmitted from one end point to another.

17. **What is WPA?**

Ans. Wi-Fi Protected Access (WPA) is a specification of standards-based, interoperable security enhancements that increase the level of data protection and access control for existing and future wireless LAN systems.

18. What is the maximum IP addresses supported by this WL-8064ARM Wireless ADSL2/2+ Router?

Ans. The WL-8064ARM Wireless ADSL2/2+ Router can support up to 253 IP addresses.

Appendix C: Troubleshooting Guide

The Troubleshooting Guide provides answers to common problems regarding the WL-8064ARM Wireless ADSL2/2+ Router settings, connections, and computer settings.

1. The WL-8064ARM Wireless ADSL2/2+ Router does not work (None of the LEDs light up)

Ans. Check the following:

1. Make sure that the WL-8064ARM Wireless ADSL2/2+ Router is plugged into a power socket.
2. Make sure that you are using the correct power supply for your WL-8064ARM Wireless ADSL2/2+ Router device.
3. Make sure the power switch on the WL-8064ARM Wireless ADSL2/2+ Router is turned on

2. I changed the LAN IP Address in the LAN configuration page and my PC is no longer able to detect the WL-8064ARM Wireless ADSL2/2+ Router.

Ans. After changing the LAN IP Address of the WL-8064ARM Wireless ADSL2/2+ Router, proceed to the following step before a PC is able to recognize the WL-8064ARM Wireless ADSL2/2+ Router:

1. Click **"Start"** → **"Run"**.
2. In the open field, enter **"cmd"** then click **"OK"**.
3. In the command prompt, type **"ipconfig/release"** then press **"Enter"**.
4. Type **"ipconfig / renew"** then press **"Enter"**.

3. No wireless connectivity.

Ans. Check the following:

1. Make sure both wireless client adapter and the WL-8064ARM Wireless ADSL2/2+ Router is allowed to connect through wireless channels as defined for local regulatory domain.
2. Make sure that the WLAN client is configured for the correct wireless settings (SSID, WEP).

4. Poor wireless connectivity or reach.

Ans. Check the following:

1. Choose automatic channel selection or be careful to select a DSSS channel that doesn't interfere with other radio channels.
2. Check the location of the WL-8064ARM Wireless ADSL2/2+ Router in the building.
3. Make sure both WLAN client adapter and the WL-8064ARM Wireless ADSL2/2+ Router are allowed to connect through wireless channels as defined for local regulatory domain.

5. LAN (Link/Act) LED does not light up.

Ans. Check the following:

1. Make sure that the LAN cables are securely connected to the 10/100Base-T port.
2. Make sure that you are using the correct cable type for your Ethernet equipment.
3. Make sure the computer's Ethernet port is configured for auto-negotiation.

6. Failed to configure the WL-8064ARM Wireless ADSL2/2+ Router through web browser (By a client PC in LAN)

Ans. Check the following:

1. Check the hardware connection of the WL-8064ARM Wireless ADSL2/2+ Router's LAN port. The LED will lit when a proper connection is made.
2. Check your Windows TCP/IP setting (Refer to Chapter 3 for setting details).
3. Open the Windows System Command Prompt:

   - For Windows 9x/ME: Manually enter **winipcfg**, then press **Enter**.
   - For Windows 2000/XP: Manually enter **ipconfig/all**, then press **Enter**.

4. You should have the following information listed on your Window System:

   - **IP Address: 192.168.1.x**
   - **Submask: 255.255.255.0**
   - **Default Gateway IP: 192.168.1.1**

7. I forgot or lost my Administrator Password.

Ans. Reset the WL-8064ARM Wireless ADSL2/2+ Router to factory default by pressing the **"Reset"** button for 10 seconds.

If you are still getting prompted for a password when saving settings:

1. Access the Router's web interface by going to **http://192.1681.1.**
2. Enter the default **"username"** and **"password"** then click **"Enter"** to log in.
3. Click on **"TOOLS"** then click "**User Management"**.
4. Enter a new **"Password"** and new **"Username"** in the **"Username"** and "**Password"** field, and enter the same password in the second field to confirm the password.
5. Click **"Apply"** after your setting.

8. I need to upgrade the Firmware.

Ans. In order to upgrade the Firmware with the latest features, go to the OvisLink's website and download the latest Firmware at http://www.ovislink.com.tw/. Before proceed the upgrading process, check the following details:

1. Download the latest Firmware and save at your pointed location.
2. Read the firmware release note carefully before proceed the upgrading process.
3. Refer to **TOOLS → Update Gateway** section for the upgrading process.

9. Testing LAN path to your WL-8064ARM Wireless ADSL2/2+ Router.

Ans. To verify whether the LAN path from your PC to your WL-8064ARM Wireless ADSL2/2+ Router is properly connected, you can **"Ping"** the WL-8064ARM Wireless ADSL2/2+ Router with the following procedures:

1. From the Windows toolbar, click **"Start"** and select **"Run".**
2. In the open field, type **"Ping 192.168.1.1"** and click **"OK"**
3. If the path is working, you should see the message in the following format:
   Reply from 192.168.1.1 bytes = 32 time < 10ms TTL = 60
4. If the path is not working, you should see the following message:
   Request timed out

If the path is not functioning correctly:

1. Make sure the LAN port LED indicator is on.
2. Check whether you are using the correct LAN cable.
3. Check your Ethernet Adaptor installation and configurations.
4. Verify that the IP address for your WL-8064ARM Wireless ADSL2/2+ Router and your workstation are correct and that the addresses are on the same subnet.

10. Failed to connect with the WL-8064ARM Wireless ADSL2/2+ Router via Wireless LAN card.

Ans. Ensure that the WL ACT LED indicator of the WL-8064ARM Wireless ADSL2/2+ Router is correctly illuminated.

1. Check whether your Wireless LAN setting (e.g. SSID, Channel Number) is the same as your WL-8064ARM Wireless ADSL2/2+ Router.
2. Check whether you'd used the same WEP Key Encryption for both your Wireless LAN and your WL-8064ARM Wireless ADSL2/2+ Router.

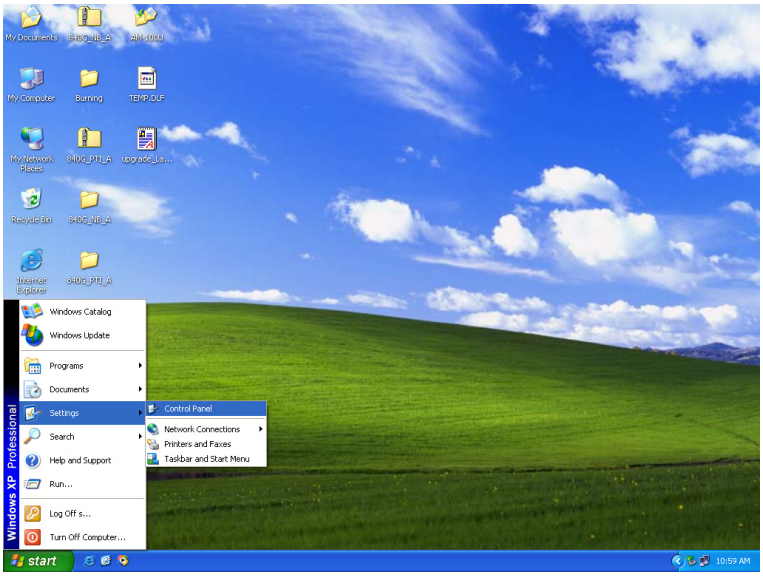
Appendix D: UPnP Setting on Windows XP

D.1 Adding UPnP:

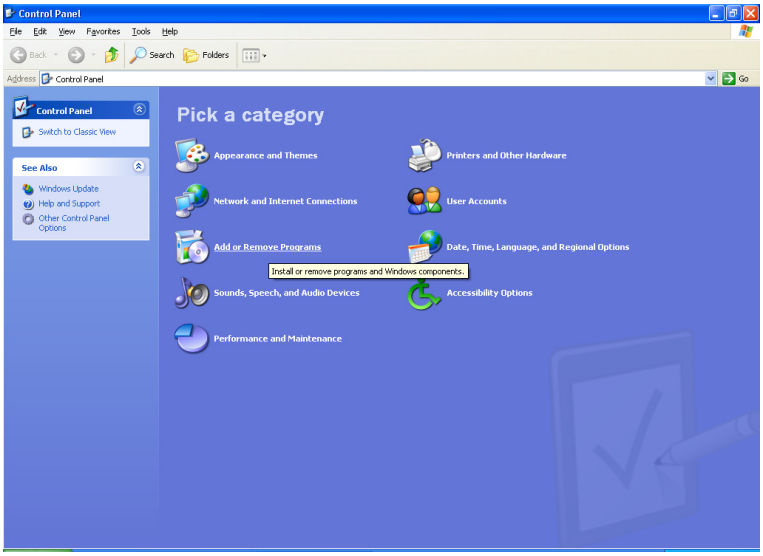
If you are running Microsoft Windows XP, it is recommended to add the UPnP component to your system.

Proceed as follows:

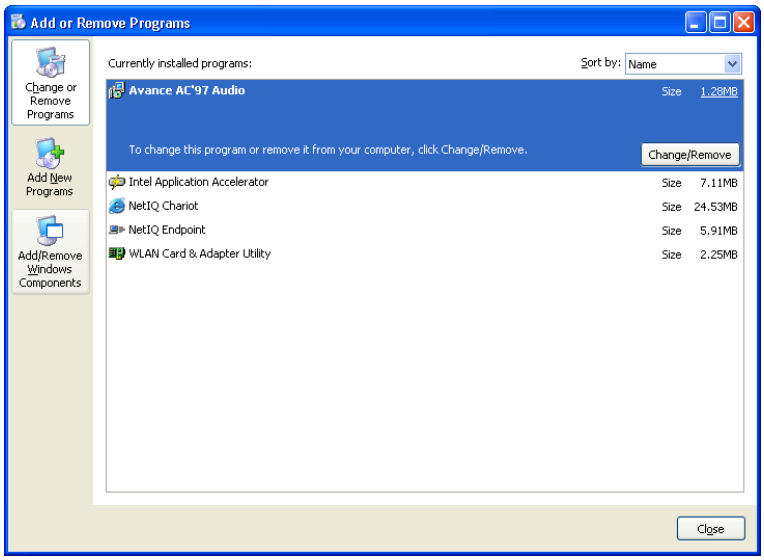
1. Click **"Start"** → **"Settings"** then **"Control Panel"**.



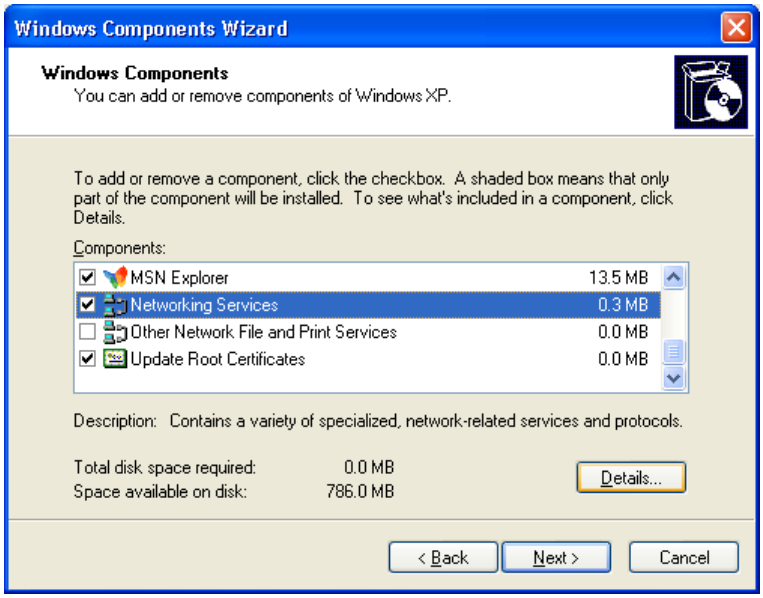
2. The **"Control Panel"** window appears. Click **"Add or Remove Programs"**.



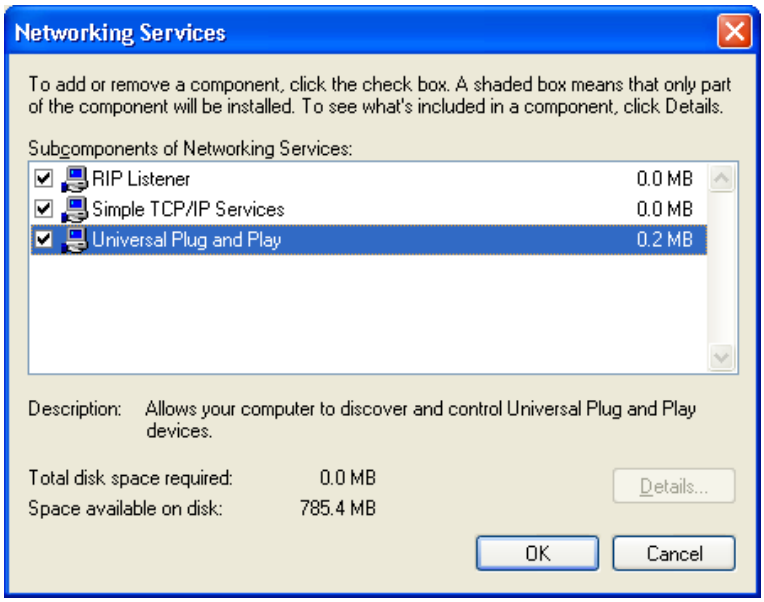
3. The **"Add or Remove Programs"** window appears. Click **"Add/Remove Windows Components"**.



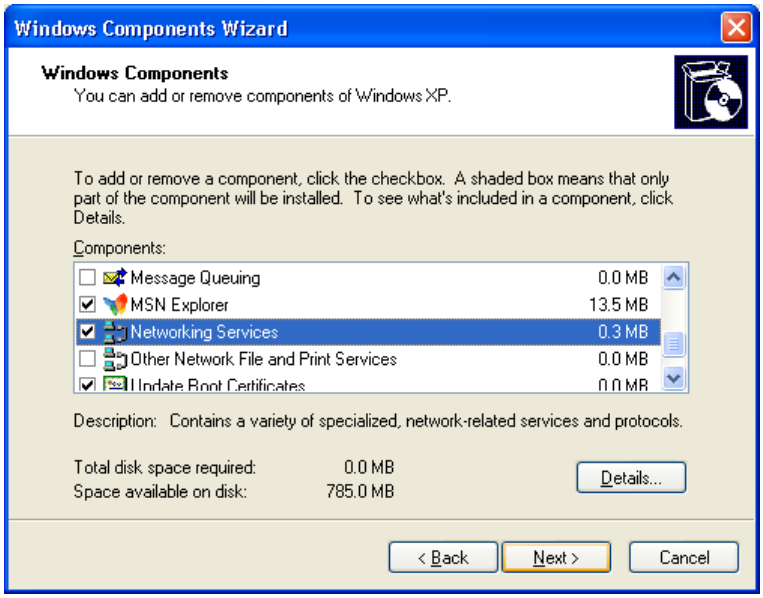
4. The **"Windows Components Wizard"** appears. Select **"Networking Services"** in the Components list and click **"Details"**.



5. The **"Networking Services"** window appears. Select **"Universal Plug and Play"** and click **"OK"**.



6. Click **"Next"** to start the installation and follow the instructions in the Windows Components Wizard.



Note : ***System may ask for original Windows XP CD-ROM. Insert the CD-ROM and direct Windows to the proper location of the CD-ROM.***

Restart your Windows system to activate your setting might be necessary. Click "OK" to restart your Windows system.

7. A **"Completing the Windows Components Wizard"** will appears indicating the installation was successful. Click **"Finish"** to quit.

Appendix E: Glossary

The Glossary provides an explanation of terms and acronyms discussed in this user guide.

10BASE-T: IEEE 802.3 specification for 10 Mbps Ethernet over twisted pair wiring.

100BASE-Tx: IEEE 802.3 specification for 100 Mbps Ethernet over twisted pair wiring.

802.11b: IEEE specification for wireless networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz.

802.11g: IEEE specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz.

802.11x: 802.1x defines port-based, network access control used to provide authenticated network access and automated data encryption key management. The IEEE 802.1x draft standard offers an effective framework for authenticating and controlling user traffic to a protected network, as well as dynamically varying encryption keys.

AP: Access Point: A station that transmits and receives data in a WLAN (Wireless Local Area Network). An access point acts as a bridge for wireless devices into a LAN.

ATM: Asynchronous Transfer Mode: A method of transfer in which data is organized into 53-byte cell units. ATM cells are processed asynchronously in relation to other cells.

BC: Broadcast: Communication in which a sender transmits to everyone in the network.

BER: Bit Error Rate: Percentage of Bits that contain errors relative to the total number of bits transmitted.

Bridge: A device that connects two networks and decides which network the data should go to.

Bridge Mode: Bridge Mode is used when there is one PC connected to the LAN-side Ethernet or USB port. IEEE 802.1D method of transport bridging is used to bridge between the WAN (ADSL) side and the LAN (Ethernet or USB) side, i.e., to store and forward.

CBR: Constant Bit Rate: A constant transfer rate that is ideal for streaming (executing while still downloading) data, such as audio or video files.

Cell: A unit of transmission in ATM, consisting of a fixed-size frame containing a 5-octet header and a 48-octet payload.

CHAP: Challenge Handshake Authentication Protocol: Typically more secure than PAP, CHAP uses username and password in combination with a randomly generated challenge string which has to be authenticated using a one-way hashing function.

CLP: Cell Loss Priority: ATM cells have two levels of priority, CLP0 and CLP1. CLP0 is of higher priority, and in times of high traffic congestion, CLP1 error cells may be discarded to preserve the Cell Loss Ratio of the CLP0 cells.

CO: Central Office: In a local loop, a Central Office is where home and office phone lines come together and go through switching equipment to connect them to other Central Offices. The distance from the Central Office determines whether or not an ADSL signal can be supported in a given line.

CPE: Customer Premises Equipment. This specifies equipment on the customer, or LAN, side.

CRC: Cyclic Redundancy Checking: A method for checking errors in a data transmission between two computers. CRC applies a polynomial function (16 or 32-bit) to a block of data. The result of that polynomial is appended to the data transmission. Upon receipt, the destination computer applies the same polynomial to the block of data. If the host and destination computer share the same result, the transmission was successful. Otherwise, the sender is notified to re-send the data block.

DHCP: Dynamic Host Configuration Protocol: A communications protocol that allows network administrators to manage and assign IP addresses to computers within the network. DHCP provides a unique address to a computer in the network which enables it to connect to the Internet through Internet Protocol (IP). DHCP can lease and IP address or provide a permanent static address to those computers who need it (servers, etc.).

DMZ: Demilitarized Zone: A computer Host or network that acts as a neutral zone between a private network and a public network. A DMZ prevents users outside of the private network from getting direct access to a server or any computer within the private network. The outside user sends requests to the DMZ, and the DMZ initiates sessions in the public network based on these requests. A DMZ cannot initiate a session in the private network, it can only forward packets to the private network as they are requested.

DNS: Domain Name System: A method to locate and translate Domain Names into Internet Protocol (IP) addresses, where a Domain Name is a simple and meaningful name for an Internet address.

DSL: Digital Subscriber Line: A technology that provides broadband connections over standard phone lines.

DSLAM: Digital Subscriber Line Access Multiplexer: Using multiplexing techniques, a DSLAM receives signals from customer DSL lines and places the signals on a high-speed backbone line. DSLAMs are typically located at a telephone company's CO (Central Office).

Encapsulation: The inclusion of one data structure within another. For example, packets can be encapsulated in an ATM frame during transfer.

FEC: Forward Error Correction: An error correction technique in which a data packet is processed through an algorithm that adds extra error correcting bits to the packet. If the transmitted message is received in error, these bits are used to correct the error bits without retransmission.

Firewall: A firewall is a method of implementing common as well as user defined security policies in an effort to keep intruders out. Firewalls work by analyzing and filtering out IP packets that violate a set of rules defined by the firewall administrator. The firewall is located at the point of entry for the network. All data inbound and outbound must pass through the firewall for inspection.

Fragmentation: Breaking a packet up into smaller packets that is caused either by the transmission medium being unable to support the original size of the packet or the receiving computer not being able to receive a packet of that size. Fragmentation occurs when the sender's MTU is larger than the receiver's MRU.

FTP: File Transfer Protocol. A standardized internet protocol which is the simplest way to transfer files from one computer to another over the internet. FTP uses the Internet's TCP/IP protocols to function.

Full Duplex: Data transmission can be transmitted and received on the same signal medium and at the same time. Full Duplex lines are bidirectional.

G.dmt: Formally G.992.1, G.dmt is a form of ADSL that uses Discrete MultiTone (DMT) technology. G.dmt incorporates a splitter in its design.

G.lite: Formally G.992.2, G.lite is a standard way to install ADSL service. G.lite enables connections speeds up to 1.5 Mbps downstream and 128 kbps upstream. G.lite does not need a splitter at the user end because splitting is preformed at the remote end (telephone company).

Gateway: A point on the network which is an entrance to another network. For example, a router is a gateway that connects a LAN to a WAN.

Half Duplex: Data transmission can be transmitted and received on the same signal medium, but not simultaneously. Half Duplex lines are bidirectional.

HEC: Headed Error Control: ATM error checking by using a CRC algorithm on the fifth octet in the ATM cell header to generate a check character. Using HEC, either a single bit error in the header can be corrected or multiple bit errors in the header can be detected.

HNP: Home Network Processor

Host: In context of Internet Protocol, a host computer is one that has full two way access to other computers on the Internet.

IAD: Integrated Access Device: A device that multiplexes and demultiplexes communications in the CPE onto and out of a single telephone line for transmission to the CO.

IP: Internet Protocol: The method by which information is sent from one computer to another through the Internet. Each of these host computers have a unique IP address which distinguishes it from all the other computers on the internet. Each packet of data sent includes the sender's IP address and the receiver's IP address.

LAN: Local Area Network: A group of computers, typically covering a small geographic area, that share devices such as printers, hard disk drives, scanners, and optical drives. Computers in a LAN typically share an internet connection through some sort of router that connects the computers to a WAN.

LLC: Logical Link Control: Provides an interface point to the MAC sublayer. LLC Encapsulation is needed when several protocols are carried over the same Virtual Circuit.

MAC Address: Media Access Control Address: A unique hardware number on a computer or device that identifies it and relates it to the IP address of that device.

MC: Multicast: Communication involving a single sender and multiple specific receivers in a network.

MRU: Maximum Receive Unit: MRU: Maximum Receive Unit (MRU) is the largest size packet that can be received by the modem. During the PPP negotiation, the peer of the PPP connection will indicate its MRU and will accept any value up to that size. The actual MTU of the PPP connection will be set to the smaller of the two (MTU and the peer's MRU). In the normal negotiation, the peer will accept this MRU and will not send packet with information field larger than this value.

MSS: Maximum Segment Size: The largest size of data that TCP will send in a single, unfragmented IP packet. When a connection is established between a LAN client and a host in the WAN side, the LAN client and the WAN host will indicate their Maximum Segment Size during the TCP connection handshake.

MTU: Maximum Transmission Unit: The largest size packet that can be sent by the modem. If the network stack of any packet is larger than the MTU value, then the packet will be fragmented before the transmission. During the PPP negotiation, the peer of the PPP connection will indicate its MRU and will accept any value up to that size. The actual MTU of the PPP connection will be set to the smaller of the two (MTU and the peer's MRU).

NAPT: Network Address and Port Translation: An extension of NAT, NAPT maps many private internal addresses into one IP address. The outside network (WAN) can see this one IP address but it cannot see the individual device IP addresses translated by the NAPT.

NAT: Network Address Translation: The translation of an IP address of one network to a different IP address known by another network. This gives an outside (WAN) network the ability to distinguish a device on the inside (LAN) network, as the inside network has a private set of IP address assigned by the DHCP server not known to the outside network.

PAP: Password Authentication Protocol: An authentication protocol in which authorization is done through a user name and password.

PDU: Protocol Data Unit: A frame of data transmitted through the data link layer 2.

Ping: Packet Internet Groper: A utility used to determine whether a particular device is online or connected to a network by sending test packets and waiting for a response.

PPP: Point-to-Point Protocol: A method of transporting and encapsulating IP packets between the user PC and the ISP. PPP is full duplex protocol that is transmitted through a serial interface.

Proxy: A device that closes a straight connection from an outside network (WAN) to an inside network (LAN). All transmissions must go through the proxy to get into or out of the LAN. This makes the internal addresses of the devices in the LAN private.

PVC: Permanent Virtual Circuit: A software defined logical connection in a network; A Virtual Circuit that is permanently available to the user.

RIP: Routing Information Protocol: A management protocol that ensures that all hosts in a particular network share the same information about routing paths. In a RIP, a host computer will send its entire routing table to another host computer every X seconds, where X is the supply interval. The receiving host computer will in turn repeat the same process by sending the same information to another host computer. The process is repeated until all host computers in a given network share the same routing knowledge.

RIPv1: RIP Version 1: One of the first dynamic routing protocols introduced used in the internet, RIPv1 was developed to distribute network reach ability information for what is now considered simple topologies.

RIPv2: RIP Version 2: Shares the same basic concepts and algorithms as RIPv1 with added features such as subnet masks, authentication, external route tags, next hop addresses, and multicasting in addition to broadcasting.

Router Mode: Router Mode is used when there is more than one PC connected to the LAN-side Ethernet and/or USB port. This enables the ADSL WAN access to be shared with multiple nodes on the LAN. Network Address Translation (NAT) is supported so that one WAN-side IP address can be shared among multiple LAN-side devices. DHCP is used to serve each LAN-side device and IP address.

SNAP: SubNetwork Attachment Point.

SNMP: Simple Network Management Protocol: Used to govern network management and monitor devices on the network. SNMP is formally described in RFC 1157.

SNR: Signal-to-Noise Ratio: Measured in decibels, SNR is a calculated ratio of signal strength to background noise. The higher this ratio, the better the signal quality.

Subnet Mask: Short for SubNetwork Mask, subnet mask is a technique used by the IP protocol to filter messages into a particular network segment, called a subnet. The subnet mask consists of a binary pattern that is stored in the client computer, server, or router. This pattern is compared with the incoming IP address to determine whether to accept or reject the packet.

TCP: Transfer Control Protocol: Works together with Internet Protocol for sending data between computers over the Internet. TCP keeps track of the packets, making sure that they are routed efficiently.

TFTP: Trivial File Transfer Protocol: A simple version of FTP protocol that has no password authentication or directory structure capability.

Trellis Code: An advanced method of FEC (Forward Error Correction). When enabled, it makes for better error checking at the cost of slower packet transmission. Setting Trellis Code to Disabled will cause increased packet transmission with decreased error correction.

TTL: Time To Live: A value in an IP packet that indicates whether or not the packet has been propagating through the network too long and should be discarded.

UBR: Unspecified Bit Rate: A transfer mode that is usually used in file transfers, email, etc. UBR can vary depending on the data type.

USB: Universal Serial Bus: A standard interface between a computer and a peripheral (printer, external drives, digital cameras, scanners, network interface devices, modems, etc.) that allows a transfer rate of 12Mbps.

UDP: User Datagram Protocol: A protocol that is used instead of TCP when reliable delivery is not required. Unlike TCP, UDP does not require an acknowledgement (handshake) from the receiving end. UDP sends packets in one-way transmissions.

VBR-nrt: Variable Bit Rate – non real time: With VBR-nrt, cell transfer is variable upon certain criteria.

VC: Virtual Circuit: A virtual circuit is a circuit in a network that appears to be a physically discrete path, but is actually a managed collection of circuit resources that allocates specific circuits as needed to satisfy traffic requirements.

VCI: Virtual Channel Identifier: A virtual channel identified by a unique numerical tag that is defined by a 16-bit field in the ATM cell header. The purpose of the virtual channel is to identify where the cell should travel.

VC-Mux: Virtual Circuit based Multiplexing: In VC Based Multiplexing, the interconnect protocol of the carried network is identified implicitly by the VC (Virtual Circuit) connecting the two ATM stations (each protocol must be carried over a separate VC).

VPI: Virtual Path Identifier: Virtual path for cell routing indicated by an eight bit field in the ATM cell header.

WAN: Wide Area Network: A WAN covers a large geographical area. A WAN is consisted of LANs and the Internet is consisted of WANs.

WPA: Wi-Fi Protected Access (WPA) is a specification of standards-based, interoperable security enhancements that increase the level of data protection and access control for existing and future wireless LAN systems.