DrayTek

Vigor2710e/ne

ADSL2/2+ Router

Your reliable networking solutions partner

User's Guide

V1.0

Vigor2710e/ne Series ADSL2/2+ Router

User's Guide

Version: 1.0

Date: 01/12/2009

Copyright Information

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Safety Instructions and Approval

Safety Instructions

- Read the installation guide thoroughly before you set up the router.
- The router is a complicated electronic unit that may be repaired only be authorized and qualified personnel. Do not try to open or repair the router yourself.
- Do not place the router in a damp or humid place, e.g. a bathroom.
- The router should be used in a sheltered area, within a temperature range of +5 to +40 Celsius.
- Do not expose the router to direct sunlight or other heat sources. The housing and electronic components may be damaged by direct sunlight or heat sources.
- Do not deploy the cable for LAN connection outdoor to prevent electronic shock hazards.
- Keep the package out of reach of children.
- When you want to dispose of the router, please follow local regulations on conservation of the environment.

Warranty

We warrant to the original end user (purchaser) that the router will be free from any defects in workmanship or materials for a period of two (2) years from the date of purchase from the dealer. Please keep your purchase receipt in a safe place as it serves as proof of date of purchase. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, we will, at our discretion, repair or replace the defective products or components, without charge for either parts or labor, to whatever extent we deem necessary tore-store the product to proper operating condition. Any replacement will consist of a new or re-manufactured functionally equivalent product of equal value, and will be offered solely at our discretion. This warranty will not apply if the product is modified, misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions. The warranty does not cover the bundled or licensed software of other vendors. Defects which do not significantly affect the usability of the product will not be covered by the warranty. We reserve the right to revise the manual and online documentation and to make changes from time to time in the contents hereof without obligation to notify any person of such revision or changes.

Be a Registered Owner

Web registration is preferred. You can register your Vigor router via http://www.draytek.com.

Firmware & Tools Updates

Due to the continuous evolution of DrayTek technology, all routers will be regularly upgraded. Please consult the DrayTek web site for more information on newest firmware, tools and documents.

http://www.draytek.com

European Community Declarations

Manufacturer: DrayTek Corp.
Address: No. 26, Fu Shing Road, HuKou Township, HsinChu Industrial Park, Hsin-Chu, Taiwan 303
Product: Vigor2710e/ne Series Router

DrayTek Corp. declares that Vigor2710e/ne Series of routers are in compliance with the following essential requirements and other relevant provisions of R&TTE Directive 1999/5/EEC.

The product conforms to the requirements of Electro-Magnetic Compatibility (EMC) Directive 2004/108/EC by complying with the requirements set forth in EN55022/Class B and EN55024/Class B.

The product conforms to the requirements of Low Voltage (LVD) Directive 2006/95/EC by complying with the requirements set forth in EN60950-1.

Regulatory Information

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device may accept any interference received, including interference that may cause undesired operation.

Please visit http://www.draytek.com/user/AboutRegulatory.php

This product is designed for DSL, POTS and 2.4GHz WLAN network throughout the EC region and Switzerland with restrictions in France. Please see the user manual for the applicable networks on your product.

Table of Contents

1 Preface

Vigor2710e series is an ADSL router. It integrates IP layer QoS, NAT session/bandwidth management to help users control works well with large bandwidth.

The object-based design used in SPI (Stateful Packet Inspection) firewall allows users to set firewall policy with ease. By the way, DoS/DDoS prevention strengthens the security outside and control inside.

Object-based firewall is flexible and allows your network be safe. Vigor2710e series provides two-level management to simplify the configuration of network connection. The user operation allows user accessing into WEB interface via simple configuration. However, if users want to have advanced configurations, they can access into WEB interface through administration operation.

1.1 Web Configuration Buttons Explanation

Several main buttons appeared on the web pages are defined as the following:

Save and apply current settings.

Cancel current settings and recover to the previous saved settings.

Clear all the selections and parameters settings, including selection from drop-down list. All the values must be reset with factory default settings.

Add new settings for specified item.

Edit the settings for the selected item.

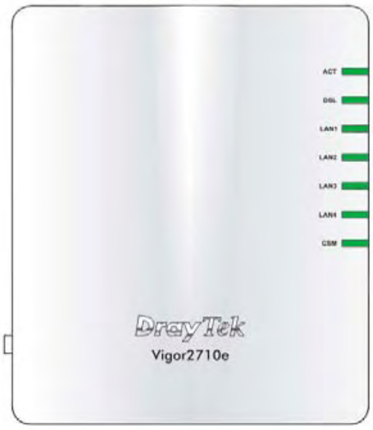
Delete the selected item with the corresponding settings.

Note: For the other buttons shown on the web pages, please refer to Chapter 4 for detailed explanation.

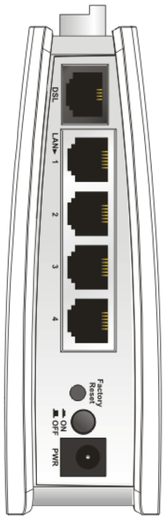
1.2 LED Indicators and Connectors

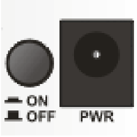
Before you use the Vigor router, please get acquainted with the LED indicators and connectors first.

1.2.1 For Vigor2710e

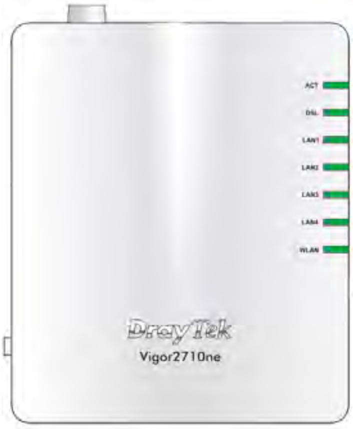


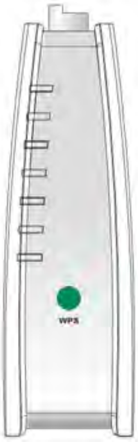
LED	Status	Explanation
ACT (Activity)	Blinking	The router is powered on and running normally.
	Off	The router is powered off.
DSL	On	The router is ready to access Internet through DSL link.
	Blinking	Slowly: The modem is ready. Quickly: The connection is training.
LAN 1/2/3/4	On	The port is connected.
	Off	The port is disconnected.
	Blinking	The data is transmitting.
CSM	On	The profile(s) of URL/Web Content Filter application can be enabled from **Firewall >>URL Content Filter**.

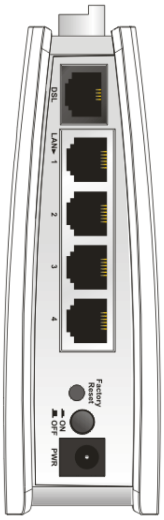


Interface	Description
DSL	Connecter for accessing the Internet through ADSL2/2+.
LAN (1-4)	Connecters for local networked devices.
	Restore the default settings. Usage: Turn on the router. Press the button and keep for more than 10 seconds. Then the router will restart with the factory default configuration.
	ON/OFF: Power switch. PWR: Connecter for a power adapter.

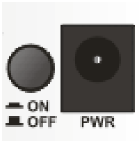
1.2.2 For Vigor2710ne







LED	Status	Explanation
ACT (Activity)	Blinking	The router is powered on and running normally.
	Off	The router is powered off.
DSL	On	The router is ready to access Internet through DSL link.
	Blinking	Slowly: The modem is ready. Quickly: The connection is training.
LAN 1/2/3/4	On	The port is connected.
	Off	The port is disconnected.
	Blinking	The data is transmitting.
WLAN	On	Wireless access point is ready.
	Blinking	It will blink while wireless traffic goes through.
WPS	On	The WPS is on.
	Off	The WPS is off.
	Blinking	Waiting for wireless client sending requests for connection about two minutes.
WPS Button	On	Press this button for 2 seconds to wait for client device making network connection through WPS. When the LED lights up, the WPS will be on.
	Off	The WPS is off.
	Blinking	Waiting for wireless client sending requests for connection about 2 minutes.

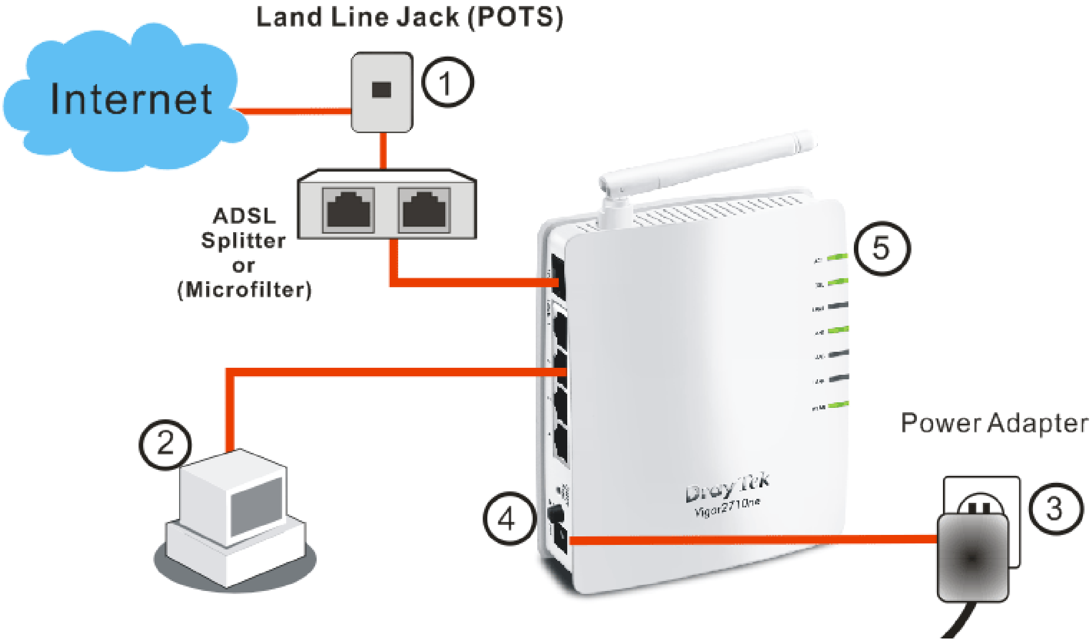
Interface	Description
WLAN	Press the button once to enable (WLAN LED on) or disable (WLAN LED off) wireless connection.
DSL	Connecter for accessing the Internet through ADSL2/2+.
LAN (1-4)	Connecters for local networked devices.
Factory Reset	Restore the default settings. Usage: Turn on the router. Press the button and keep for more than 10 seconds. Then the router will restart with the factory default configuration.
 ON OFF PWR	ON/OFF: Power switch. PWR: Connecter for a power adapter.

1.3 Hardware Installation

Before starting to configure the router, you have to connect your devices correctly.

1. Connect the ADSL interface to the external ADSL splitter with an ADSL line cable for all models.
2. Connect one end of an Ethernet cable (RJ-45) to one of the **LAN** ports of the router and the other end of the cable (RJ-45) into the Ethernet port on your computer.
3. Connect one end of the power adapter to the router's power port on the rear panel, and the other side into a wall outlet.
4. Power on the device by pressing down the power switch on the rear panel.
5. The system starts to initiate. After completing the system test, the **ACT** LED will light up and start blinking.

Here, we take ***Annex A*** model as an example for describing hardware installation.



2 Configuring Basic Settings

For using the router properly, it is necessary for you to change the password of web configuration for security and adjust primary basic settings.

2.1 Two-Level Management

This chapter explains how to setup a password for an administrator/user and how to adjust basic/advanced settings for accessing Internet successfully.

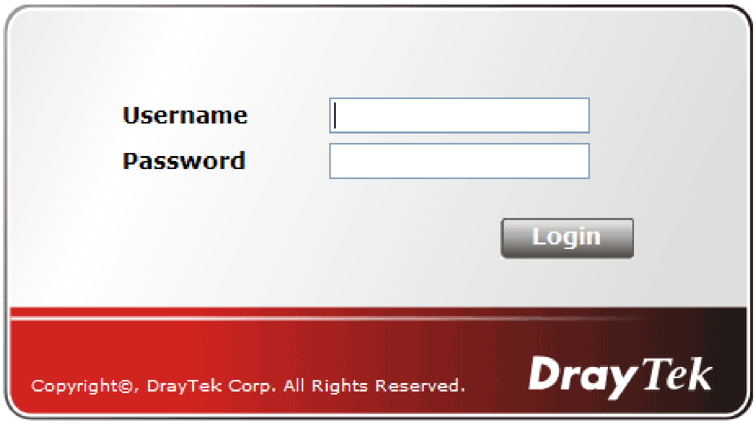
For user mode operation, do not type any word on the window and click **Login** for the simple web pages for configuration. Yet, for admin mode operation, please type "admin/admin" on Username/Password and click **Login** for full configuration.

2.2 Accessing Web Page

1. Make sure your PC connects to the router correctly.

Notice: You may either simply set up your computer to get IP dynamically from the router or set up the IP address of the computer to be the same subnet as **the default IP address of Vigor router 192.168.1.1**. For the detailed information, please refer to the later section - Trouble Shooting of the guide.

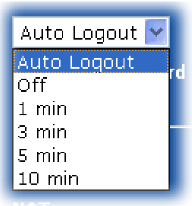
2. Open a web browser on your PC and type **http://192.168.1.1.** The following window will be open to ask for username and password.



3. For user's operation, do not type any word on the window and click **Login** for the simple web pages for configuration. Yet, for administrator's operation, please type "admin/admin" on Username/Password and click **Login** for full configuration.

Notice: If you fail to access to the web configuration, please go to "Trouble Shooting" for detecting and solving your problem.

4. The web page can be logged out according to the chosen condition. The default setting is **Auto Logout**, which means the web configuration system will logout after 5 minutes without any operation. Change the setting for your necessity.



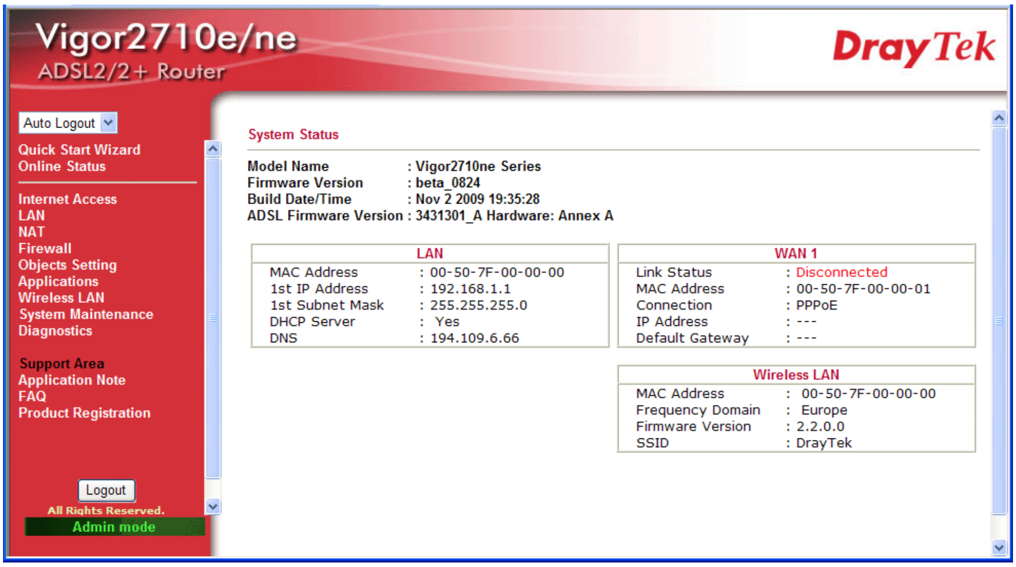
2.3 Changing Password

No matter user mode operation or admin mode operation, please change the password for the original security of the router.

1. Open a web browser on your PC and type **http://192.168.1.1.** A pop-up window will open to ask for username and password.

2. Please type "admin/admin" on Username/Password for administration operation. Otherwise, do not type any word (both username and password are Null for user operation) on the window and click **Login** on the window.

3. Now, the **Main Screen** will appear.



System Status

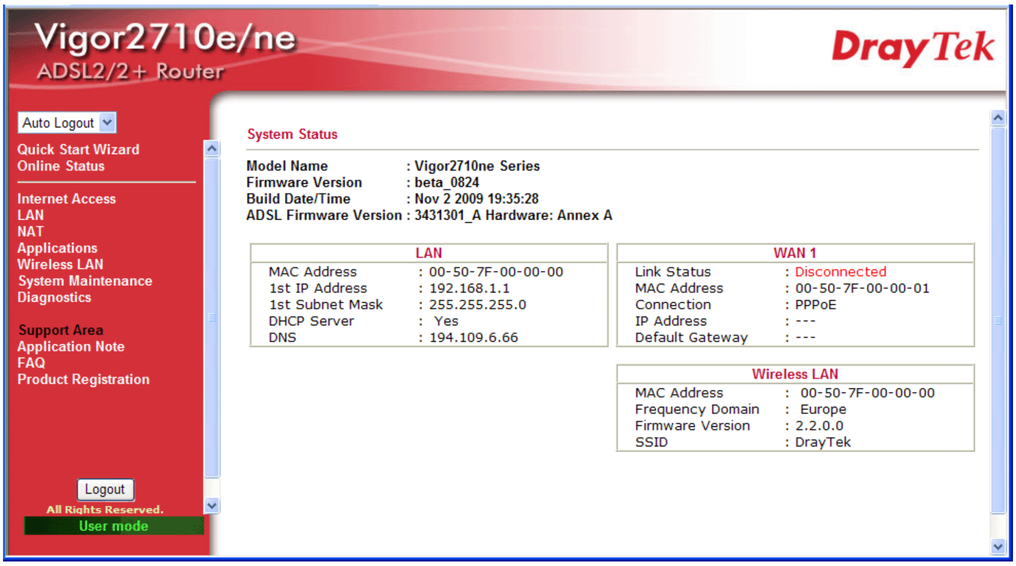
Model Name : Vigor2710ne Series
Firmware Version : beta_0824
Build Date/Time : Nov 2 2009 19:35:28
ADSL Firmware Version : 3431301_A Hardware: Annex A

LAN
MAC Address : 00-50-7F-00-00-00
1st IP Address : 192.168.1.1
1st Subnet Mask : 255.255.255.0
DHCP Server : Yes
DNS : 194.109.6.66

WAN 1
Link Status : Disconnected
MAC Address : 00-50-7F-00-00-01
Connection : PPPoE
IP Address : ---
Default Gateway : ---

Wireless LAN
MAC Address : 00-50-7F-00-00-00
Frequency Domain : Europe
Firmware Version : 2.2.0.0
SSID : DrayTek

Main screen for admin mode operation (full configuration)



System Status

Model Name : Vigor2710ne Series
Firmware Version : beta_0824
Build Date/Time : Nov 2 2009 19:35:28
ADSL Firmware Version : 3431301_A Hardware: Annex A

LAN	
MAC Address	: 00-50-7F-00-00-00
1st IP Address	: 192.168.1.1
1st Subnet Mask	: 255.255.255.0
DHCP Server	: Yes
DNS	: 194.109.6.66

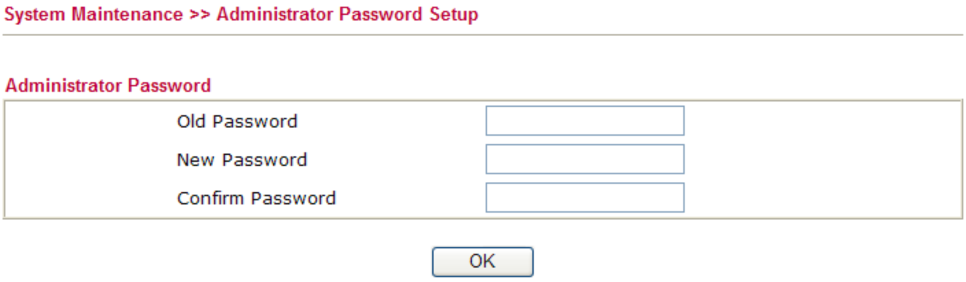
WAN 1	
Link Status	: Disconnected
MAC Address	: 00-50-7F-00-00-01
Connection	: PPPoE
IP Address	: ---
Default Gateway	: ---

Wireless LAN	
MAC Address	: 00-50-7F-00-00-00
Frequency Domain	: Europe
Firmware Version	: 2.2.0.0
SSID	: DrayTek

Main screen for user mode operation (simple configuration)

Note: The home page will change slightly in accordance with the type of the router you have.

4. Go to **System Maintenance** page and choose **Administrator Password/User Password**.

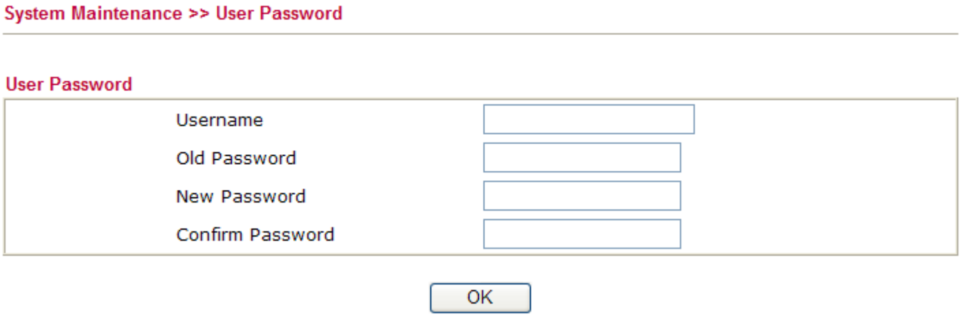


System Maintenance >> Administrator Password Setup

Administrator Password

Old Password
New Password
Confirm Password

or



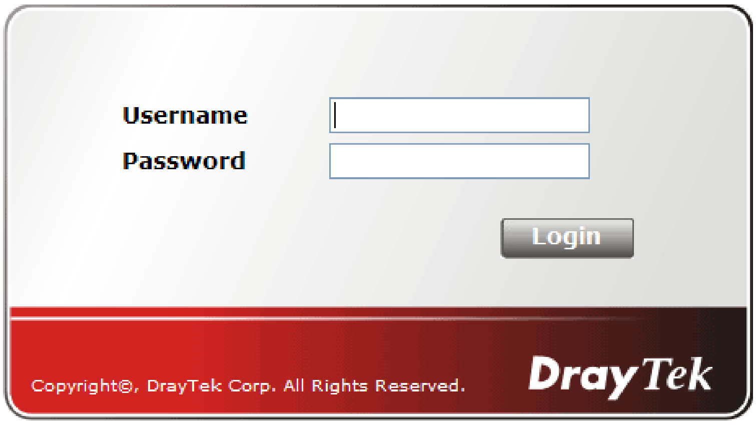
System Maintenance >> User Password

User Password

Username
Old Password
New Password
Confirm Password

5. Enter the login password (the default is blank) on the field of **Old Password**. Type the new password in **New Password** and **Confirm Password** fields. Then click **OK** to continue.

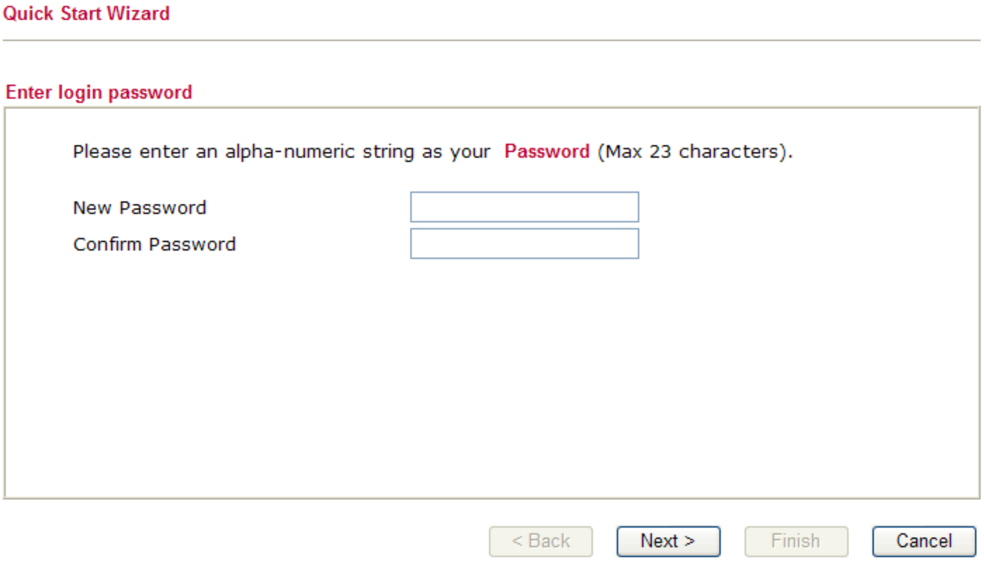
6. Now, the password has been changed. Next time, use the new password to access the Web Configurator for this router.



2.4 Quick Start Wizard

Notice: Quick Start Wizard for user operation is the same as for administrator's operation.

If your router can be under an environment with high speed NAT, the configuration provide here can help you to deploy and use the router quickly. The first screen of **Quick Start Wizard** is entering login password. After typing the password, please click **Next**.



Quick Start Wizard

Enter login password

Please enter an alpha-numeric string as your Password (Max 23 characters).

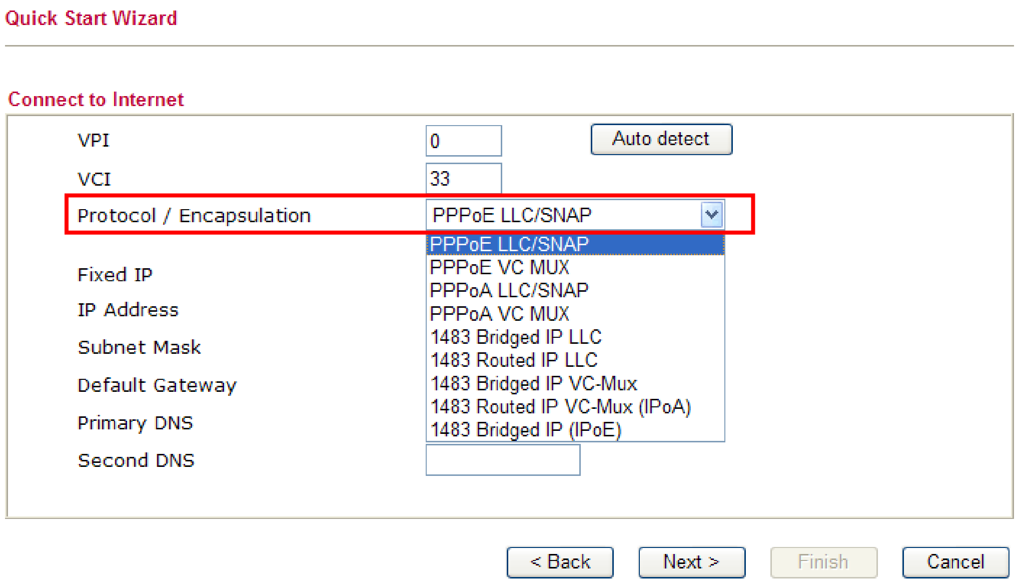
New Password

Confirm Password

In the **Quick Start Wizard**, you can configure the router to access the Internet with different protocol/modes such as **PPPoE**, **PPPoA, Bridged IP,** or **Routed IP**. The router supports the

2.4.1 Adjusting Protocol/Encapsulation

In the **Quick Start Wizard**, you can configure the router to access the Internet with different protocol/modes such as **PPPoE**, **PPPoA, Bridged IP,** or **Routed IP**. The router supports the ADSL WAN interface for Internet access.



Quick Start Wizard

Connect to Internet

VPI: 0

VCI: 33

Protocol / Encapsulation: PPPoE LLC/SNAP

Fixed IP

IP Address

Subnet Mask

Default Gateway

Primary DNS

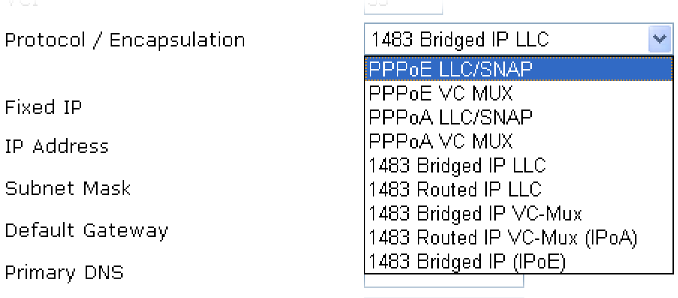
Second DNS

Now, you have to select an appropriate WAN connection type for connecting to the Internet through this router according to the settings that your ISP provided.

VPI Stands for **Virtual Path Identifier**. It is an 8-bit header inside each ATM cell that indicates where the cell should be routed. The ATM, is a method of sending data in small packets of fixed sizes. It is used for transferring data to client computers.

VCI Stands for **Virtual Channel Identifier.** It is a 16-bit field inside ATM cell's header that indicates the cell's next destination as it travels through the network. A virtual channel is a logical connection between two end devices on the network.

Protocol/Encapsulation Select an IP mode for this WAN interface. There are several available modes for Internet access such as **PPPoE**, **PPPoA, Bridged IP** and **Routed IP**.



Protocol / Encapsulation: 1483 Bridged IP LLC

Fixed IP

IP Address

Subnet Mask

Default Gateway

Primary DNS

Fixed IP Click **Yes** to specify a fixed IP for the router. Otherwise, click **No (Dynamic IP)** to allow the router choosing a dynamic IP. If you choose **No**, the following IP Address, Subnet Mask and Default Gateway will not be changed.

IP Address Assign an IP address for the protocol that you select.

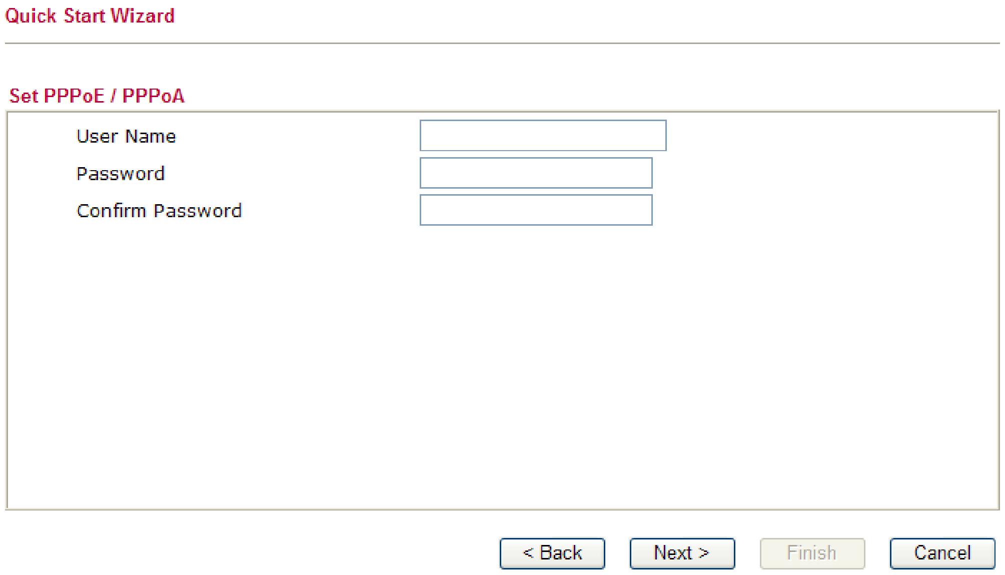
Subnet Mask	Assign a subnet mask value for the protocol of **Routed IP** and **Bridged IP**.
Default Gateway	Assign an IP address to the gateway for the protocol of **Routed IP** and **Bridged IP**.
Primary DNS	Assign an IP address to the primary DNS.
Second DNS	Assign an IP address to the secondary DNS.

2.4.2 PPPoE/PPPoA

PPPoE stands for **Point-to-Point Protocol over Ethernet**. It relies on two widely accepted standards: PPP and Ethernet. It connects users through an Ethernet to the Internet with a common broadband medium, such as a single DSL line, wireless device or cable modem. All the users over the Ethernet can share a common connection.

PPPoE is used for most of DSL modem users. All local users can share one PPPoE connection for accessing the Internet. Your service provider will provide you information about user name, password, and authentication mode.

If your ISP provides you the **PPPoE** connection, please select **PPPoE** for this router. The following page will be shown:



Quick Start Wizard

Set PPPoE / PPPoA

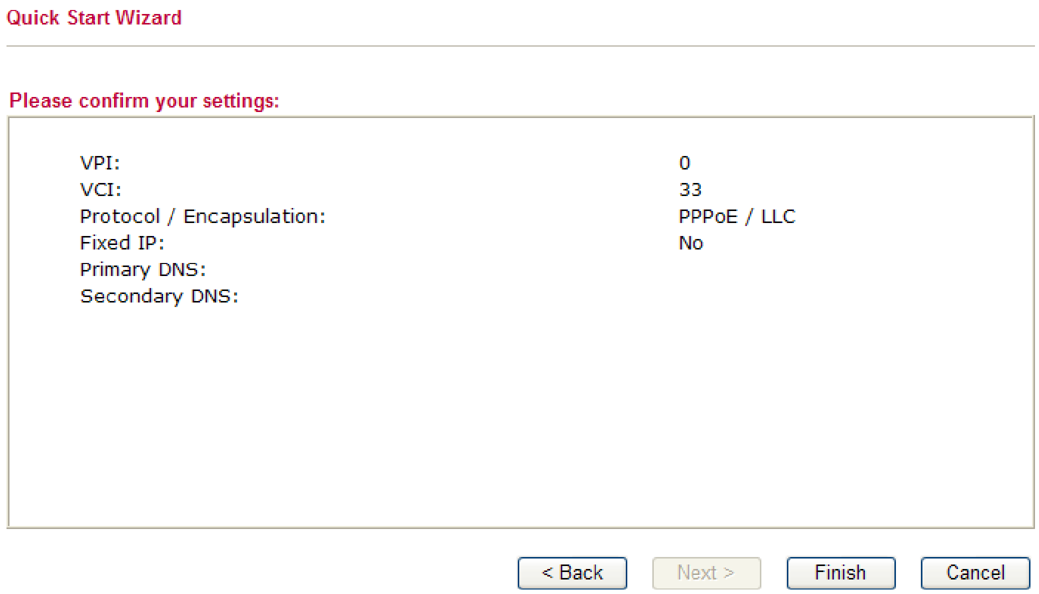
User Name

Password

Confirm Password

User Name	Assign a specific valid user name provided by the ISP.
Password	Assign a valid password provided by the ISP.
Confirm Password	Retype the password.

Click **Next** for viewing summary of such connection.



Quick Start Wizard

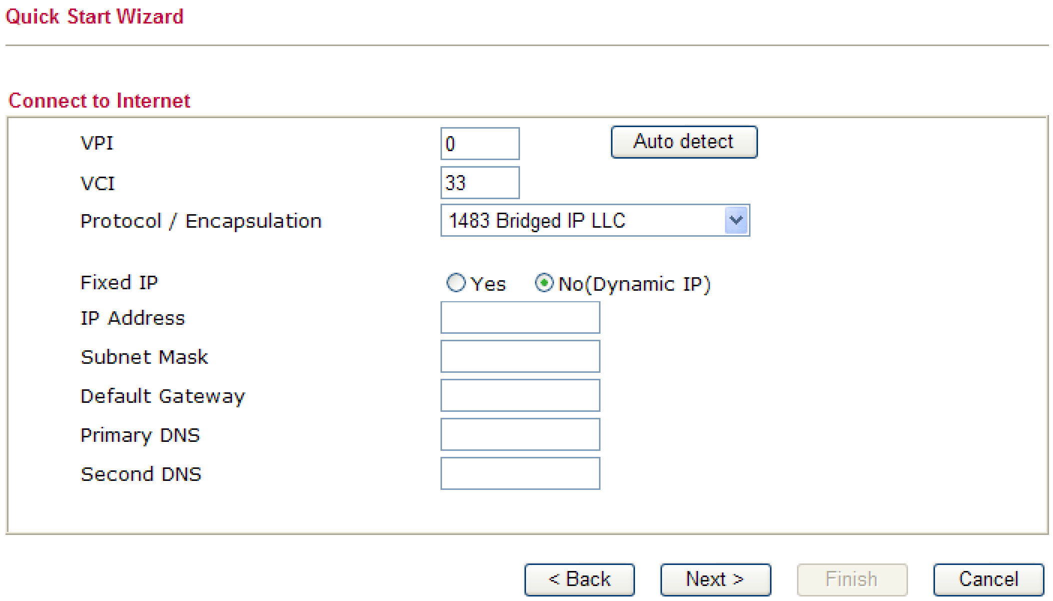
Please confirm your settings:

VPI:	0
VCI:	33
Protocol / Encapsulation:	PPPoE / LLC
Fixed IP:	No
Primary DNS:	
Secondary DNS:	

Click **Finish.** Then, the system status of this protocol will be shown.

2.4.3 1483 Bridged IP

Click **1483 Bridged IP** as the protocol. Type in all the information that your ISP provides for this protocol.

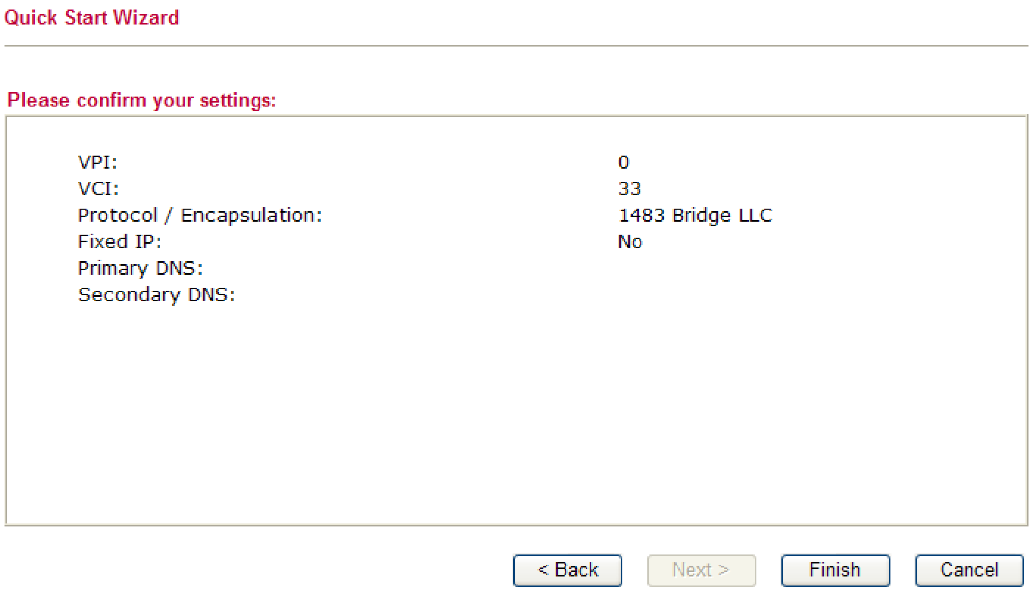


Quick Start Wizard

Connect to Internet

VPI	0
VCI	33
Protocol / Encapsulation	1483 Bridged IP LLC
Fixed IP	○ Yes ● No(Dynamic IP)
IP Address	
Subnet Mask	
Default Gateway	
Primary DNS	
Second DNS	

Click **Next** for viewing summary of such connection.



Quick Start Wizard

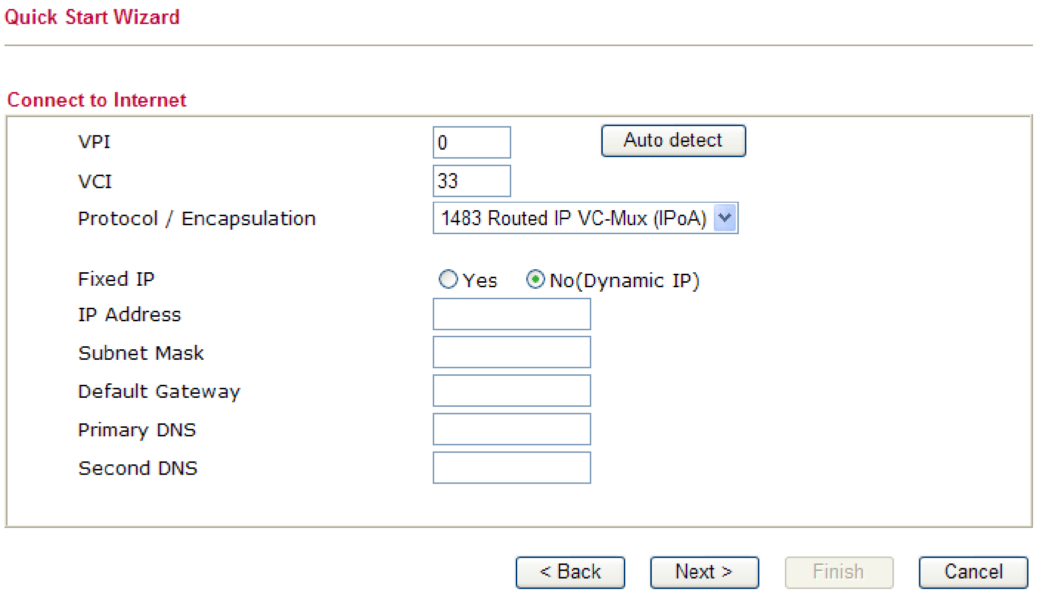
Please confirm your settings:

VPI:	0
VCI:	33
Protocol / Encapsulation:	1483 Bridge LLC
Fixed IP:	No
Primary DNS:	
Secondary DNS:	

Click **Finish.** Then, the system status of this protocol will be shown.

2.4.4 1483 Routed IP

Click **1483 Routed IP** as the protocol. Type in all the information that your ISP provides for this protocol.

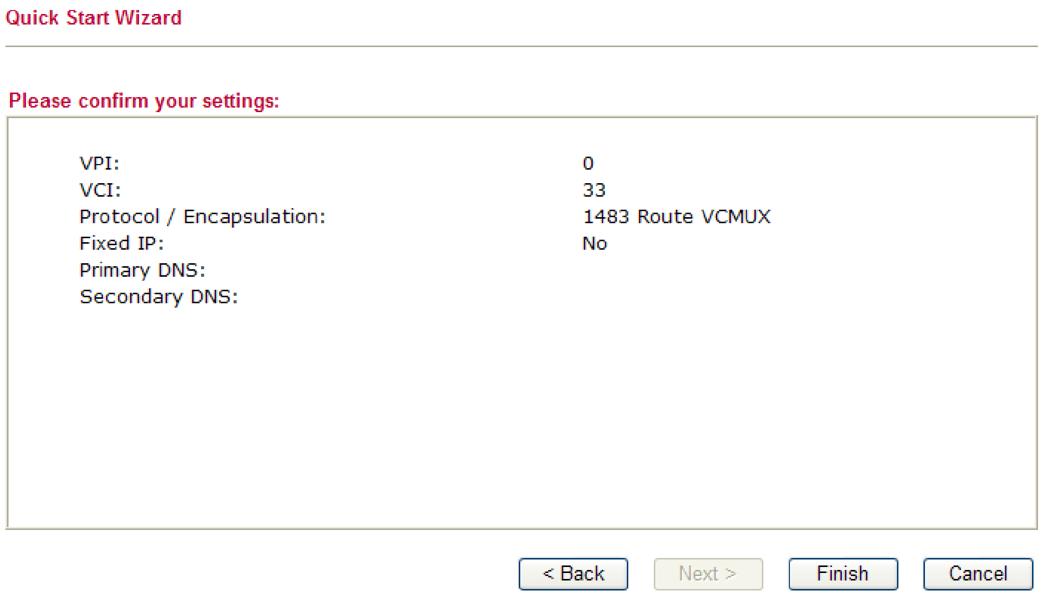


Quick Start Wizard

Connect to Internet

VPI	0
VCI	33
Protocol / Encapsulation	1483 Routed IP VC-Mux (IPoA)
Fixed IP	○ Yes ● No(Dynamic IP)
IP Address	
Subnet Mask	
Default Gateway	
Primary DNS	
Second DNS	

After finishing the settings in this page, click **Next** to see the following page.



Quick Start Wizard

Please confirm your settings:

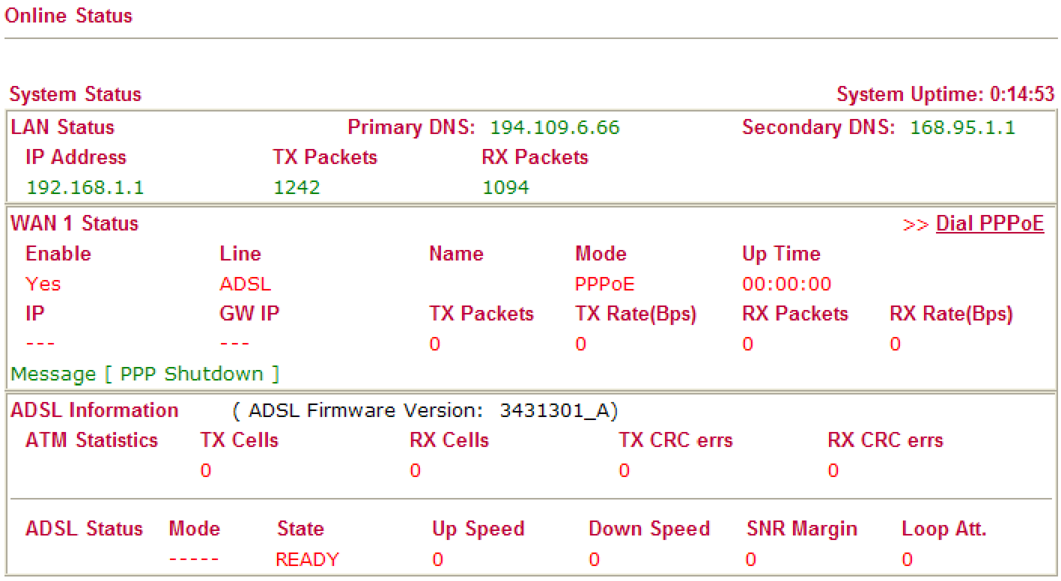
VPI:	0
VCI:	33
Protocol / Encapsulation:	1483 Route VCMUX
Fixed IP:	No
Primary DNS:	
Secondary DNS:	

Click **Finish.** Then, the system status of this protocol will be shown.

2.5 Online Status

The online status shows the system status, WAN status, ADSL Information and other status related to this router within one page. If you select **PPPoE/PPPoA** as the protocol, you will find out a link of **Dial PPPoE** or **Drop PPPoE** in the Online Status web page.

Online status for PPPoE



Online Status

System Status — System Uptime: 0:14:53

LAN Status — Primary DNS: 194.109.6.66 — Secondary DNS: 168.95.1.1

IP Address	TX Packets	RX Packets
192.168.1.1	1242	1094

WAN 1 Status — >> Dial PPPoE

Enable	Line	Name	Mode	Up Time	
Yes	ADSL		PPPoE	00:00:00	
IP	GW IP	TX Packets	TX Rate(Bps)	RX Packets	RX Rate(Bps)
---	---	0	0	0	0

Message [PPP Shutdown]

ADSL Information (ADSL Firmware Version: 3431301_A)

ATM Statistics	TX Cells	RX Cells	TX CRC errs	RX CRC errs
	0	0	0	0

ADSL Status	Mode	State	Up Speed	Down Speed	SNR Margin	Loop Att.
	-----	READY	0	0	0	0

Detailed explanation is shown below:

Primary DNS	Displays the IP address of the primary DNS.
Secondary DNS	Displays the IP address of the secondary DNS.
LAN Status	
IP Address	Displays the IP address of the LAN interface.

TX Packets Displays the total transmitted packets at the LAN interface.

RX Packets Displays the total number of received packets at the LAN interface.

WAN1 Status

Line Displays the physical connection (Ethernet) of this interface.

Name Displays the name set in WAN1/WAN web page.

Mode Displays the type of WAN connection (e.g., PPPoE).

Up Time Displays the total uptime of the interface.

IP Displays the IP address of the WAN interface.

GW IP Displays the IP address of the default gateway.

TX Packets Displays the total transmitted packets at the WAN interface.

TX Rate Displays the speed of transmitted octets at the WAN interface.

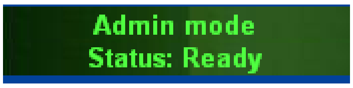
RX Packets Displays the total number of received packets at the WAN interface.

RX Rate Displays the speed of received octets at the WAN interface.

> **Note:** The words in green mean that the WAN connection of that interface is ready for accessing Internet; the words in red mean that the WAN connection of that interface is not ready for accessing Internet.

2.6 Saving Configuration

Each time you click **OK** on the web page for saving the configuration, you can find messages showing the system interaction with you.



Admin mode
Status: Ready

Ready indicates the system is ready for you to input settings.

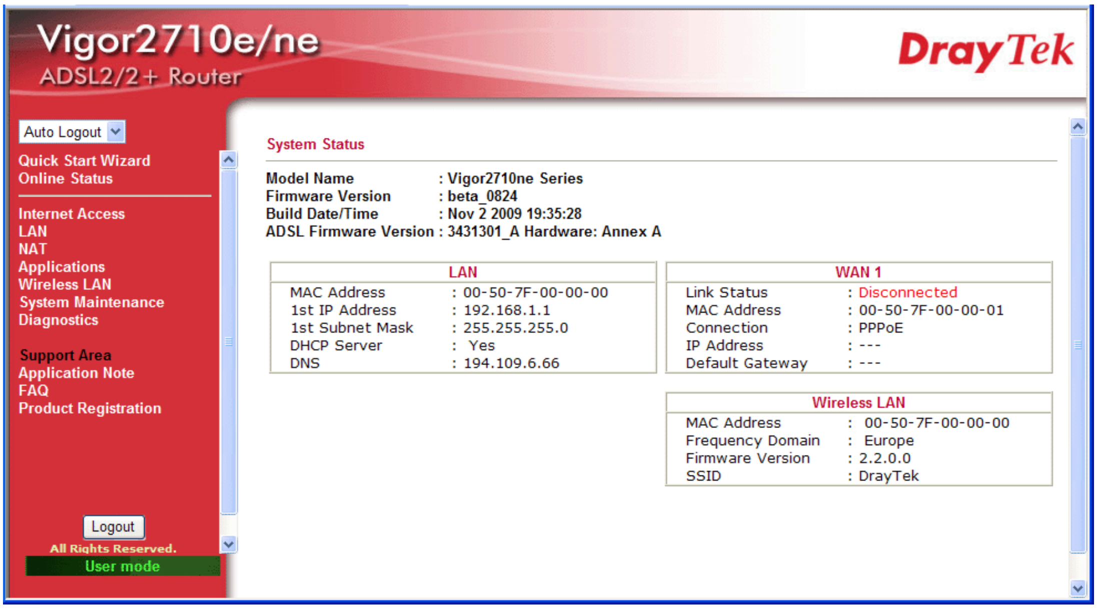
Settings Saved means your settings are saved once you click **Finish** or **OK** button.

3 User Mode Operation

This chapter will guide users to execute simple configuration through user mode operation.

1. Open a web browser on your PC and type **http://192.168.1.1.** The window will ask for typing username and password.
2. **Do not** type any word (both username and password are Null for user operation) on the window and click **Login** on the window.

Now, the **Main Screen** will appear. Be aware that "User mode" will be displayed on the bottom left side.



System Status

Model Name	: Vigor2710ne Series
Firmware Version	: beta_0824
Build Date/Time	: Nov 2 2009 19:35:28
ADSL Firmware Version	: 3431301_A Hardware: Annex A

LAN	
MAC Address	: 00-50-7F-00-00-00
1st IP Address	: 192.168.1.1
1st Subnet Mask	: 255.255.255.0
DHCP Server	: Yes
DNS	: 194.109.6.66

WAN 1	
Link Status	: Disconnected
MAC Address	: 00-50-7F-00-00-01
Connection	: PPPoE
IP Address	: ---
Default Gateway	: ---

Wireless LAN	
MAC Address	: 00-50-7F-00-00-00
Frequency Domain	: Europe
Firmware Version	: 2.2.0.0
SSID	: DrayTek

3.1 Internet Access

Quick Start Wizard offers user an easy method to quick setup the connection mode for the router. Moreover, if you want to adjust more settings for different WAN modes, please go to **WAN** group and click the **Internet Access** link.

3.1.1 Basics of Internet Protocol (IP) Network

IP means Internet Protocol. Every device in an IP-based Network including routers, print server, and host PCs, needs an IP address to identify its location on the network. To avoid address conflicts, IP addresses are publicly registered with the Network Information Centre (NIC). Having a unique IP address is mandatory for those devices participated in the public network but not in the private TCP/IP local area networks (LANs), such as host PCs under the management of a router since they do not need to be accessed by the public. Hence, the NIC has reserved certain addresses that will never be registered publicly. These are known as ***private*** IP addresses, and are listed in the following ranges:

From 10.0.0.0 to 10.255.255.255
From 172.16.0.0 to 172.31.255.255
From 192.168.0.0 to 192.168.255.255

What are Public IP Address and Private IP Address

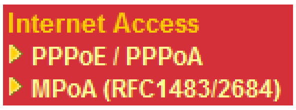
As the router plays a role to manage and further protect its LAN, it interconnects groups of host PCs. Each of them has a private IP address assigned by the built-in DHCP server of the Vigor router. The router itself will also use the default **private IP** address: 192.168.1.1 to communicate with the local hosts. Meanwhile, Vigor router will communicate with other network devices through a **public IP** address. When the data flow passing through, the Network Address Translation (NAT) function of the router will dedicate to translate public/private addresses, and the packets will be delivered to the correct host PC in the local area network. Thus, all the host PCs can share a common Internet connection.

Get Your Public IP Address from ISP

In ADSL deployment, the PPP (Point to Point)-style authentication and authorization is required for bridging customer premises equipment (CPE). Point to Point Protocol over Ethernet (PPPoE) connects a network of hosts via an access device to a remote access concentrator or aggregation concentrator. This implementation provides users with significant ease of use. Meanwhile it provides access control, billing, and type of service according to user requirement.

When a router begins to connect to your ISP, a serial of discovery process will occur to ask for a connection. Then a session will be created. Your user ID and password is authenticated via **PAP** or **CHAP** with **RADIUS** authentication system. And your IP address, DNS server, and other related information will usually be assigned by your ISP.

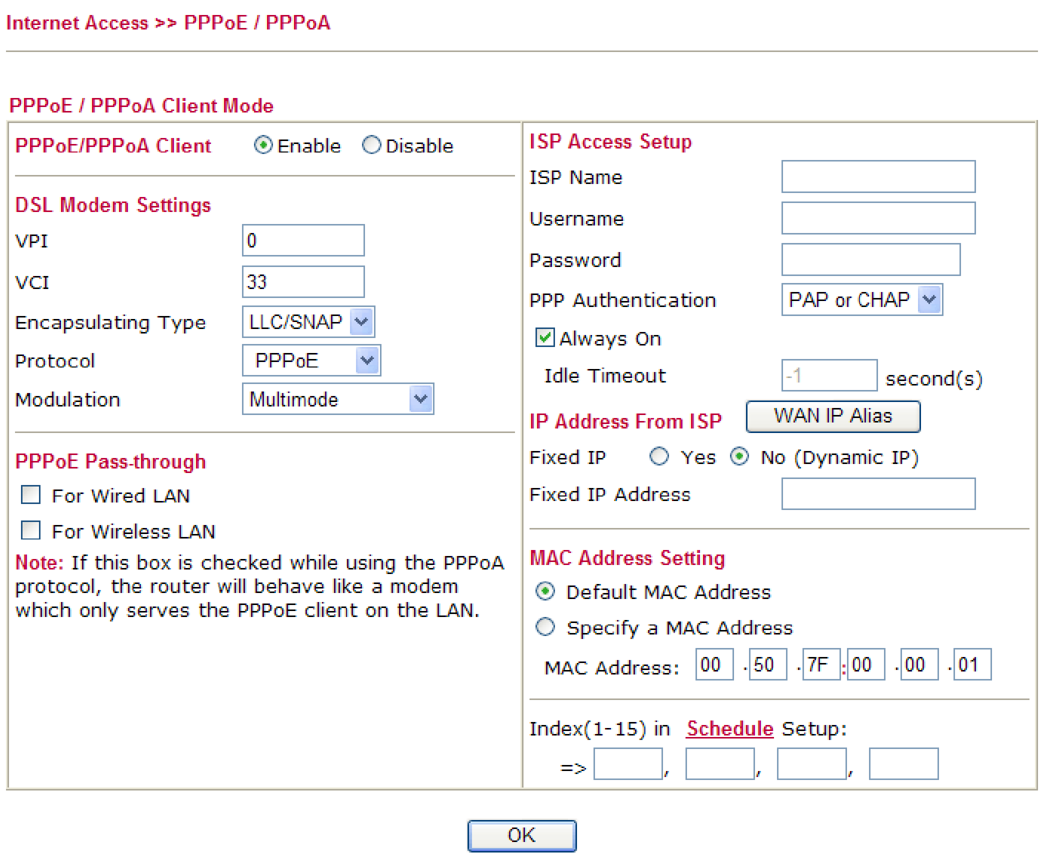
Below shows the menu items for Internet Access.



3.1.2 PPPoE/PPPoA

PPPoA, included in RFC1483, can be operated in either Logical Link Control-Subnetwork Access Protocol or VC-Mux mode. As a CPE device, Vigor router encapsulates the PPP session based for transport across the ADSL loop and your ISP's Digital Subscriber Line Access Multiplexer (SDLAM).

To choose PPPoE or PPPoA as the accessing protocol of the internet, please select **PPPoE/PPPoA** from the **Internet Access** menu. The following web page will be shown.



Internet Access >> PPPoE / PPPoA

PPPoE / PPPoA Client Mode

PPPoE/PPPoA Client ● Enable ○ Disable

DSL Modem Settings

VPI: 0

VCI: 33

Encapsulating Type: LLC/SNAP

Protocol: PPPoE

Modulation: Multimode

PPPoE Pass-through

□ For Wired LAN

□ For Wireless LAN

Note: If this box is checked while using the PPPoA protocol, the router will behave like a modem which only serves the PPPoE client on the LAN.

ISP Access Setup

ISP Name:

Username:

Password:

PPP Authentication: PAP or CHAP

☑ Always On

Idle Timeout: -1 second(s)

IP Address From ISP

Fixed IP ○ Yes ● No (Dynamic IP)

Fixed IP Address:

MAC Address Setting

● Default MAC Address

○ Specify a MAC Address

MAC Address: 00 . 50 . 7F : 00 . 00 . 01

Index(1-15) in Schedule Setup:

=> , , ,

Enable/Disable

Click **Enable** for activating this function. If you click **Disable**, this function will be closed and all the settings that you adjusted in this page will be invalid.

DSL Modem Settings

Set up the DSL parameters required by your ISP. These are vital for building DSL connection to your ISP.

Multi-PVC channel - The selections displayed here are determined by the page of **Internet Access** – **Multi PVCs**. **Select M-PVCs Channel** means no selection will be chosen.

VPI - Type in the value provided by ISP.

VCI - Type in the value provided by ISP.

Encapsulating Type - Drop down the list to choose the type provided by ISP.

Protocol - Drop down the list to choose the one provided by ISP. If you have already used **Quick Start Wizard** to set the protocol, then it is not necessary for you to change any settings in this group.

Modulation – Drop down the list to choose a proper modulation for the router.

PPPoE Pass-through

The router offers PPPoE dial-up connection. Besides, you also can establish the PPPoE connection directly from local clients to your ISP via the Vigor router. When PPPoA protocol is selected, the PPPoE package transmitted by PC will be transformed into PPPoA package and sent to WAN server. Thus, the PC can access Internet through such direction.

For Wired LAN – If you check this box, PCs on the same network can use another set of PPPoE session (different with the Host PC) to access into Internet.

For Wireless LAN – If you check this box, PCs on the same wireless network can use another set of PPPoE session (different with the Host PC) to access into Internet.

ISP Access Setup

Enter your allocated username, password and authentication parameters according to the information provided by your ISP. If you want to connect to Internet all the time, you can check **Always On**.

Username – Type in the username provided by ISP in this field.

Password – Type in the password provided by ISP in this field.

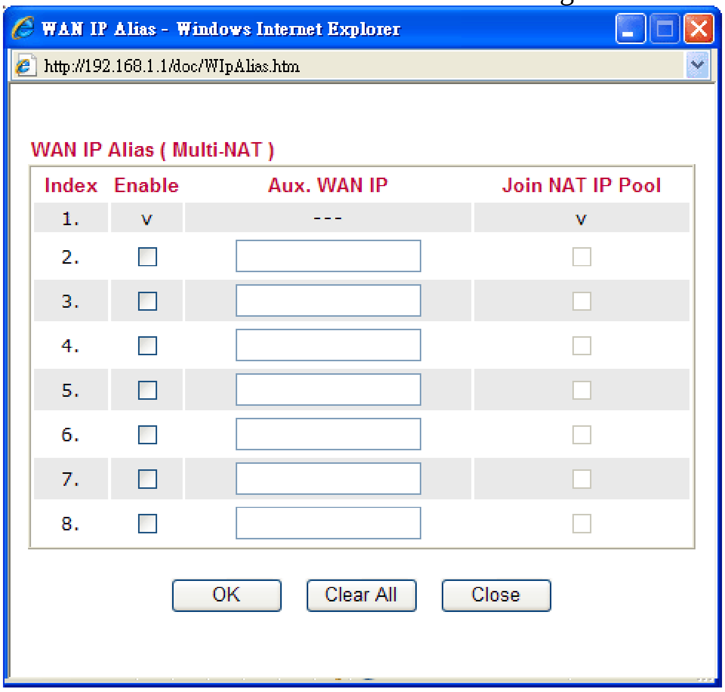
PPP Authentication – Select **PAP only** or **PAP or CHAP** for PPP.

Idle Timeout – Set the timeout for breaking down the Internet after passing through the time without any action. This setting is active only when the **Active on demand** option for Active Mode is selected in **WAN>> General Setup** page.

IP Address From ISP

Usually ISP dynamically assigns IP address to you each time you connect to it and request. In some case, your ISP provides service to always assign you the same IP address whenever you request. In this case, you can fill in this IP address in the Fixed IP field. Please contact your ISP before you want to use this function.

WAN IP Alias - If you have multiple public IP addresses and would like to utilize them on the WAN interface, please use WAN IP Alias. You can set up to 8 public IP addresses other than the current one you are using. Notice that this setting is available for WAN1 only. Type the additional WAN IP address and check the Enable box. Then click OK to exit the dialog.


WAN IP Alias - Windows Internet Explorer
http://192.168.1.1/doc/WIpAlias.htm

WAN IP Alias (Multi-NAT)

Index	Enable	Aux. WAN IP	Join NAT IP Pool
1.	v	---	v
2.	□		□
3.	□		□
4.	□		□
5.	□		□
6.	□		□
7.	□		□
8.	□		□

Fixed IP – Click **Yes** to use this function and type in a fixed IP address in the box of **Fixed IP Address**.

Default MAC Address – You can use **Default MAC Address** or specify another MAC address by typing on the boxes of MAC Address for the router.

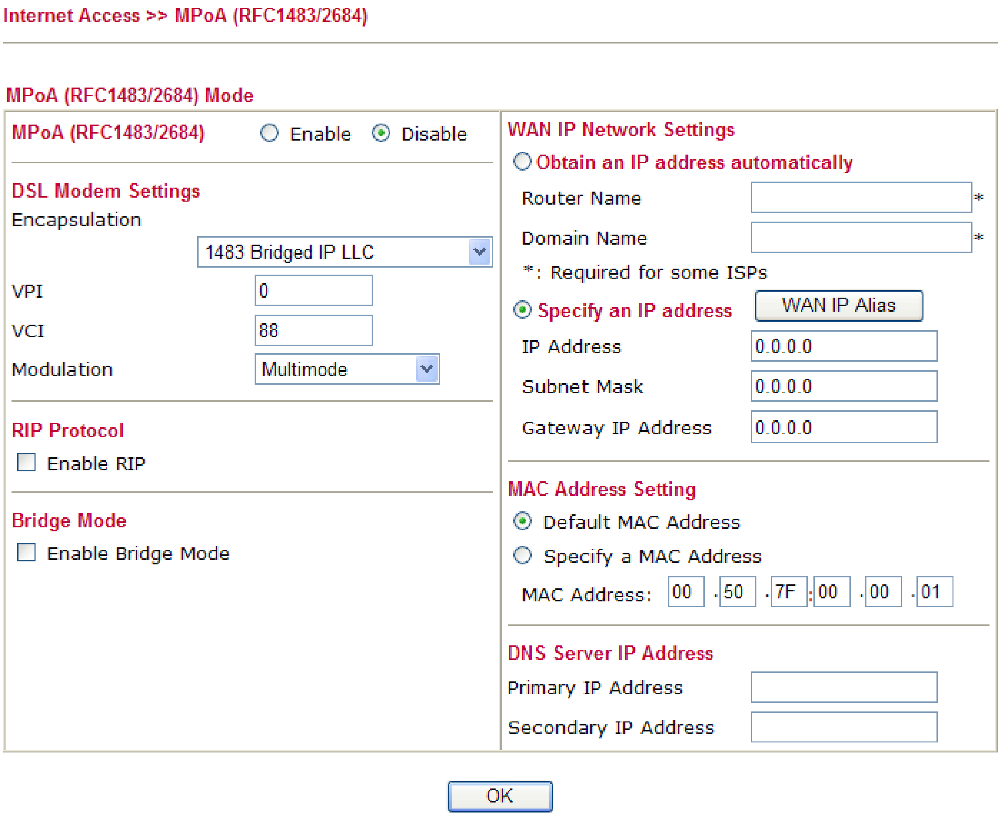
Specify a MAC Address – Type the MAC address for the router manually.

After finishing all the settings here, please click **OK** to activate them.

3.1.3 MPoA

MPoA is a specification that enables ATM services to be integrated with existing LANs, which use either Ethernet, or TCP/IP protocols. The goal of MPoA is to allow different LANs to send packets to each other via an ATM backbone.

To use **MPoA** as the accessing protocol of the Internet, select **MPoA** mode. The following web page will appear.



Internet Access >> MPoA (RFC1483/2684)

MPoA (RFC1483/2684) Mode

MPoA (RFC1483/2684) ○ Enable ● Disable

DSL Modem Settings

Encapsulation: 1483 Bridged IP LLC

VPI: 0

VCI: 88

Modulation: Multimode

RIP Protocol

□ Enable RIP

Bridge Mode

□ Enable Bridge Mode

WAN IP Network Settings

○ Obtain an IP address automatically

Router Name: *

Domain Name: *

*: Required for some ISPs

● Specify an IP address

IP Address: 0.0.0.0

Subnet Mask: 0.0.0.0

Gateway IP Address: 0.0.0.0

MAC Address Setting

● Default MAC Address

○ Specify a MAC Address

MAC Address: 00 . 50 . 7F : 00 . 00 . 01

DNS Server IP Address

Primary IP Address

Secondary IP Address

MPoA (RFC1483/2684) Click **Enable** for activating this function. If you click **Disable**, this function will be closed and all the settings that you adjusted in this page will be invalid.

DSL Modem Settings Set up the DSL parameters required by your ISP. These are vital for building DSL connection to your ISP.
Multi-PVC channel - The selections displayed here are determined by the page of **Internet Access** – **Multi PVCs**. **Select M-PVCs Channel** means no selection will be chosen.
Encapsulating Type - Drop down the list to choose the type provided by ISP.
VPI - Type in the value provided by ISP.
VCI - Type in the value provided by ISP.
Modulation – Drop down the list to choose a proper modulation for the router.

RIP Protocol Routing Information Protocol is abbreviated as RIP（RFC1058）specifying how routers exchange routing tables information. Click **Enable RIP** for activating this function.

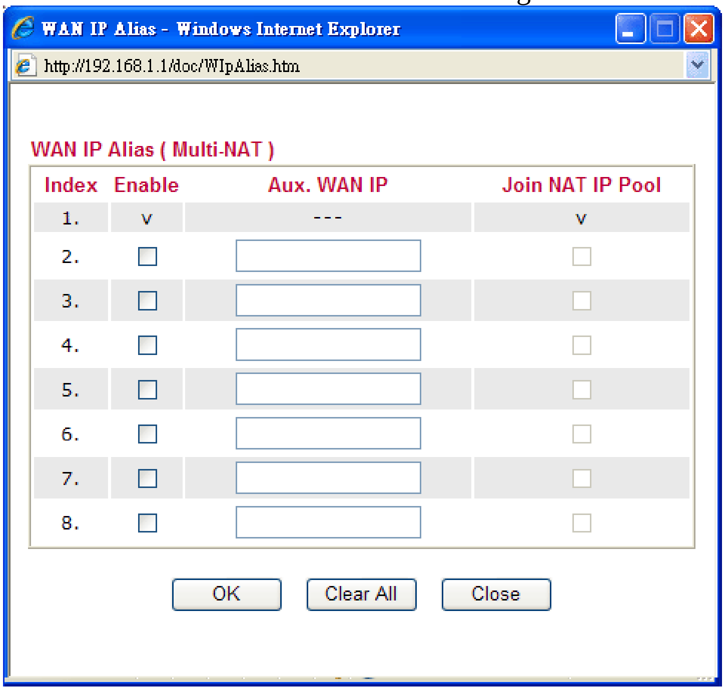
Bridge Mode If you choose **Bridged IP** as the protocol, you can check this box to invoke the function. The router will work as a bridge modem.

WAN IP Network This group allows you to obtain an IP address automatically and

Settings

allows you type in IP address manually.

Obtain an IP address automatically – Click this button to obtain the IP address automatically.
Router Name – Type in the router name provided by ISP.
Domain Name – Type in the domain name that you have assigned.
Specify an IP address – Click this radio button to specify some data.
WAN IP Alias - If you have multiple public IP addresses and would like to utilize them on the WAN interface, please use WAN IP Alias. You can set up to 8 public IP addresses other than the current one you are using. Notice that this setting is available for WAN1 only. Type the additional WAN IP address and check the Enable box. Then click OK to exit the dialog.



WAN IP Alias - Windows Internet Explorer
http://192.168.1.1/doc/WIpAlias.htm

WAN IP Alias (Multi-NAT)

Index	Enable	Aux. WAN IP	Join NAT IP Pool
1.	v	---	v
2.	□		□
3.	□		□
4.	□		□
5.	□		□
6.	□		□
7.	□		□
8.	□		□

IP Address – Type in the private IP address.
Subnet Mask – Type in the subnet mask.
Gateway IP Address – Type in gateway IP address.
Default MAC Address Type in MAC address for the router. You can use **Default MAC Address** or specify another MAC address for your necessity.
MAC Address – Type in the MAC address for the router manually.

DNS Server IP Address

Type in the primary IP address for the router. If necessary, type in secondary IP address for necessity in the future.

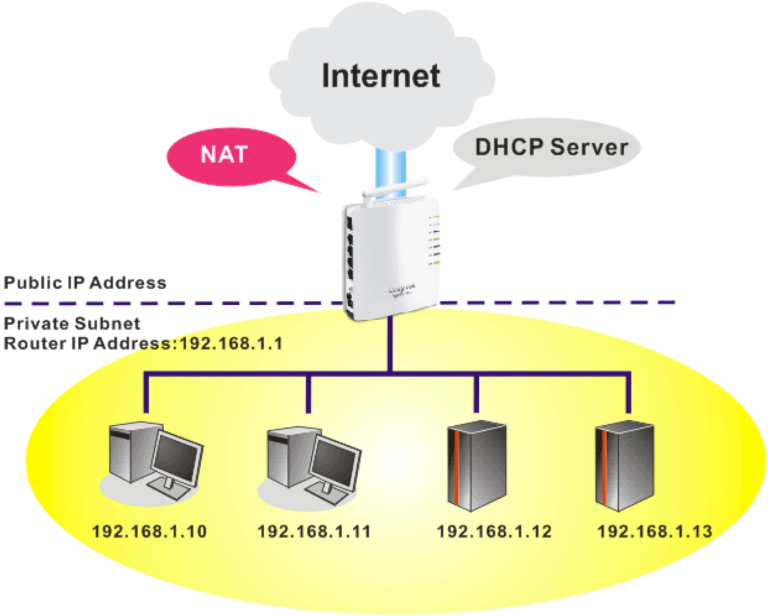
3.2 LAN

Local Area Network (LAN) is a group of subnets regulated and ruled by router. The design of network structure is related to what type of public IP addresses coming from your ISP.

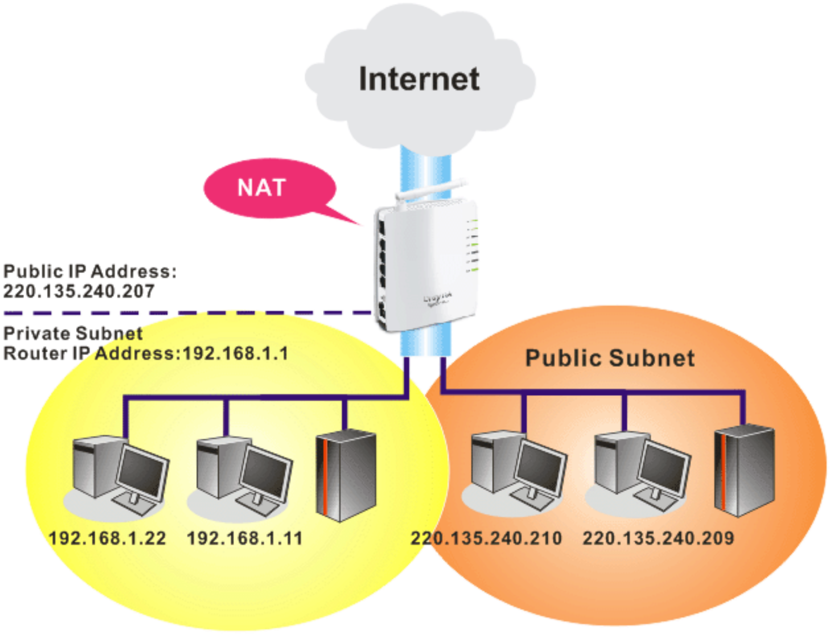
LAN
▸ General Setup

3.2.1 Basics of LAN

The most generic function of Vigor router is NAT. It creates a private subnet of your own. As mentioned previously, the router will talk to other public hosts on the Internet by using public IP address and talking to local hosts by using its private IP address. What NAT does is to translate the packets from public IP address to private IP address to forward the right packets to the right host and vice versa. Besides, Vigor router has a built-in DHCP server that assigns private IP address to each local host. See the following diagram for a briefly understanding.



In some special case, you may have a public IP subnet from your ISP such as 220.135.240.0/24. This means that you can set up a public subnet or call second subnet that each host is equipped with a public IP address. As a part of the public subnet, the Vigor router will serve for IP routing to help hosts in the public subnet to communicate with other public hosts or servers outside. Therefore, the router should be set as the gateway for public hosts.



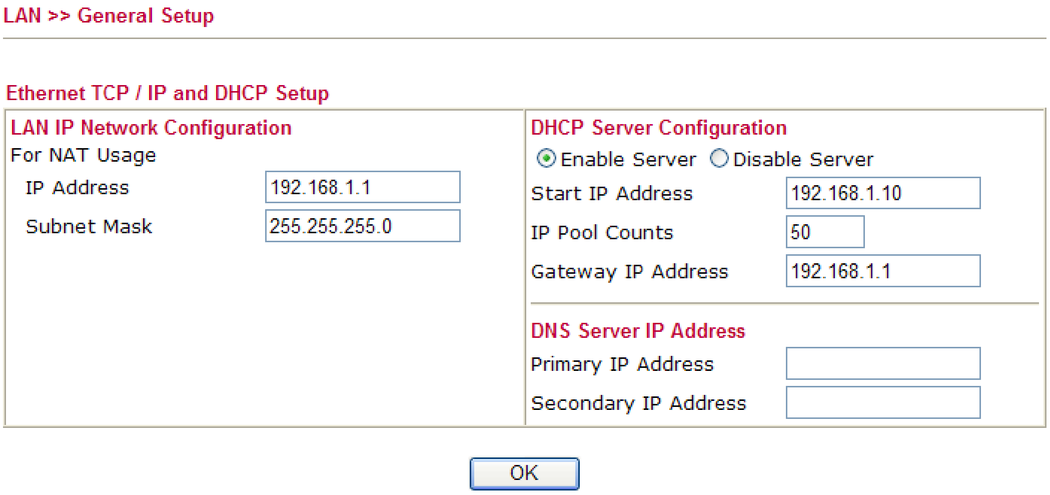
What is Routing Information Protocol (RIP)

Vigor router will exchange routing information with neighboring routers using the RIP to accomplish IP routing. This allows users to change the information of the router such as IP address and the routers will automatically inform for each other.

3.2.2 General Setup

This page provides you the general settings for LAN.

Click **LAN** to open the LAN settings page and choose **General Setup**.



LAN >> General Setup

Ethernet TCP / IP and DHCP Setup

LAN IP Network Configuration
For NAT Usage

IP Address	192.168.1.1
Subnet Mask	255.255.255.0

DHCP Server Configuration
● Enable Server ○ Disable Server

Start IP Address	192.168.1.10
IP Pool Counts	50
Gateway IP Address	192.168.1.1

DNS Server IP Address

Primary IP Address	
Secondary IP Address	

IP Address Type in private IP address for connecting to a local private network (Default: 192.168.1.1).

Subnet Mask Type in an address code that determines the size of the network. (Default: 255.255.255.0/ 24)

DHCP Server Configuration DHCP stands for Dynamic Host Configuration Protocol. The router by factory default acts a DHCP server for your network so it automatically dispatch related IP settings to any local user configured as a DHCP client. It is highly recommended that you leave the router enabled as a DHCP server if you do not have a DHCP server for your network.

If you want to use another DHCP server in the network other than the Vigor Router’s, you can let Relay Agent help you to redirect the DHCP request to the specified location.

Enable Server - Let the router assign IP address to every host in the LAN.

Disable Server – Let you manually assign IP address to every host in the LAN.

Start IP Address - Enter a value of the IP address pool for the DHCP server to start with when issuing IP addresses. If the 1st IP address of your router is 192.168.1.1, the starting IP address must be 192.168.1.2 or greater, but smaller than 192.168.1.254.

IP Pool Counts - Enter the maximum number of PCs that you want the DHCP server to assign IP addresses to. The default is 50 and the maximum is 253.

Gateway IP Address - Enter a value of the gateway IP address for the DHCP server. The value is usually as same as the 1st IP address of the router, which means the router is the default gateway.

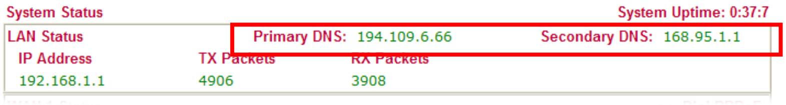
DNS Server Configuration

DNS stands for Domain Name System. Every Internet host must have a unique IP address, also they may have a human-friendly, easy to remember name such as www.yahoo.com. The DNS server converts the user-friendly name into its equivalent IP address.

Primary IP Address -You must specify a DNS server IP address here because your ISP should provide you with usually more than one DNS Server. If your ISP does not provide it, the router will automatically apply default DNS Server IP address: 194.109.6.66 to this field.

Secondary IP Address - You can specify secondary DNS server IP address here because your ISP often provides you more than one DNS Server. If your ISP does not provide it, the router will automatically apply default secondary DNS Server IP address: 194.98.0.1 to this field.

The default DNS Server IP address can be found via Online Status:



System Status System Uptime: 0:37:7

LAN Status Primary DNS: 194.109.6.66 Secondary DNS: 168.95.1.1

IP Address	TX Packets	RX Packets
192.168.1.1	4906	3908

If both the Primary IP and Secondary IP Address fields are left empty, the router will assign its own IP address to local users as a DNS proxy server and maintain a DNS cache.

If the IP address of a domain name is already in the DNS cache, the router will resolve the domain name immediately. Otherwise, the router forwards the DNS query packet to the external DNS server by establishing a WAN (e.g. DSL/Cable) connection.

There are two common scenarios of LAN settings that stated in Chapter 4. For the configuration examples, please refer to that chapter to get more information for your necessity.

3.3 NAT

Usually, the router serves as an NAT (Network Address Translation) router. NAT is a mechanism that one or more private IP addresses can be mapped into a single public one. Public IP address is usually assigned by your ISP, for which you may get charged. Private IP addresses are recognized only among internal hosts.

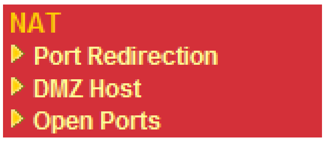
When the outgoing packets destined to some public server on the Internet reach the NAT router, the router will change its source address into the public IP address of the router, select the available public port, and then forward it. At the same time, the router shall list an entry in a table to memorize this address/port-mapping relationship. When the public server response, the incoming traffic, of course, is destined to the router's public IP address and the router will do the inversion based on its table. Therefore, the internal host can communicate with external host smoothly.

The benefit of the NAT includes:

- **Save cost on applying public IP address and apply efficient usage of IP address.** NAT allows the internal IP addresses of local hosts to be translated into one public IP address, thus you can have only one IP address on behalf of the entire internal hosts.
- **Enhance security of the internal network by obscuring the IP address.** There are many attacks aiming victims based on the IP address. Since the attacker cannot be aware of any private IP addresses, the NAT function can protect the internal network.

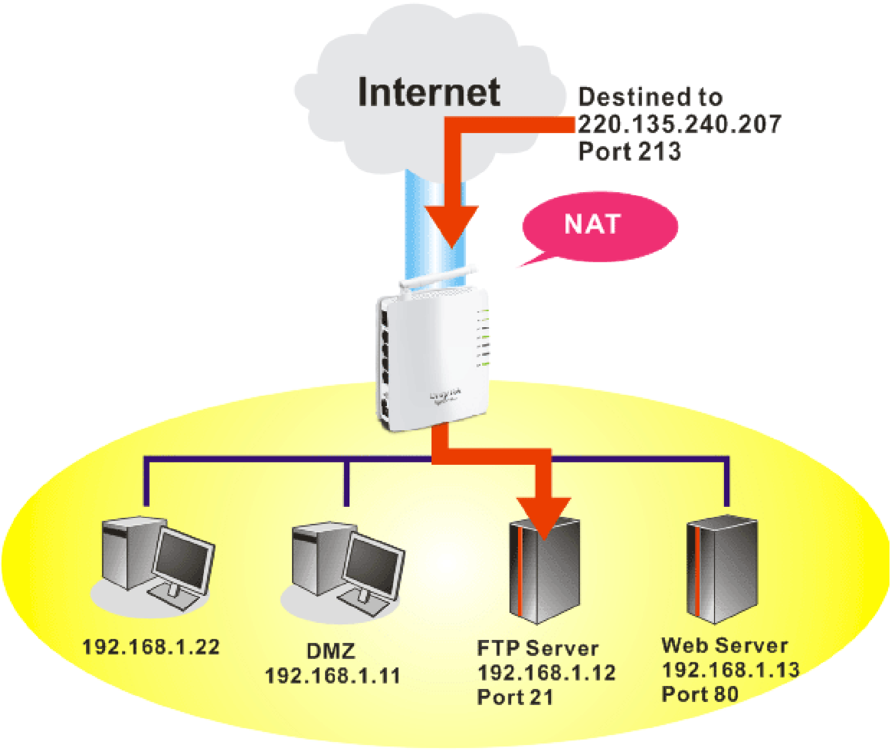
On NAT page, you will see the private IP address defined in RFC-1918. Usually we use the 192.168.1.0/24 subnet for the router. As stated before, the NAT facility can map one or more IP addresses and/or service ports into different specified services. In other words, the NAT function can be achieved by using port mapping methods.

Below shows the menu items for NAT.



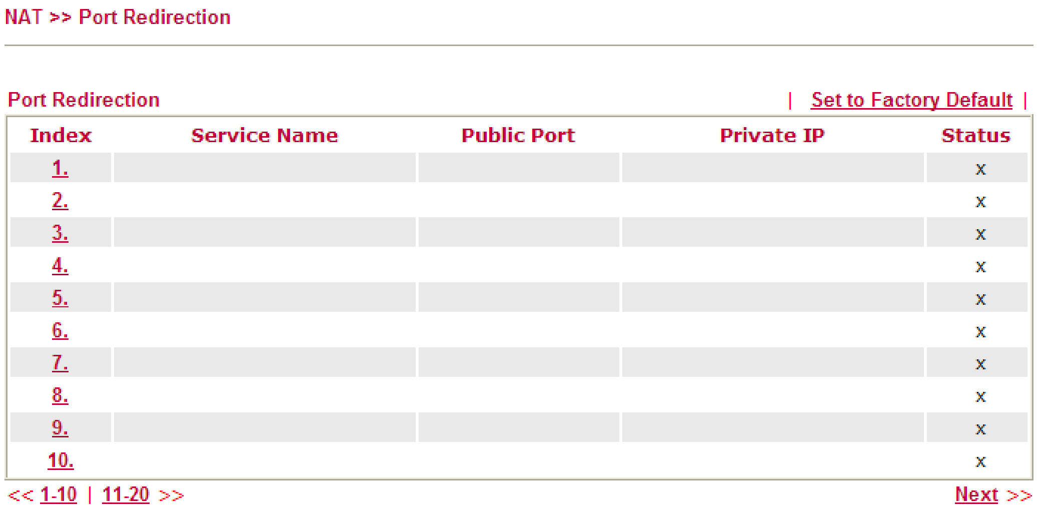
3.3.1 Port Redirection

Port Redirection is usually set up for server related service inside the local network (LAN), such as web servers, FTP servers, E-mail servers etc. Most of the case, you need a public IP address for each server and this public IP address/domain name are recognized by all users. Since the server is actually located inside the LAN, the network well protected by NAT of the router, and identified by its private IP address/port, the goal of Port Redirection function is to forward all access request with public IP address from external users to the mapping private IP address/port of the server.



The port redirection can only apply to incoming traffic.

To use this function, please go to **NAT** page and choose **Port Redirection** web page. The **Port Redirection Table** provides 20 port-mapping entries for the internal hosts.



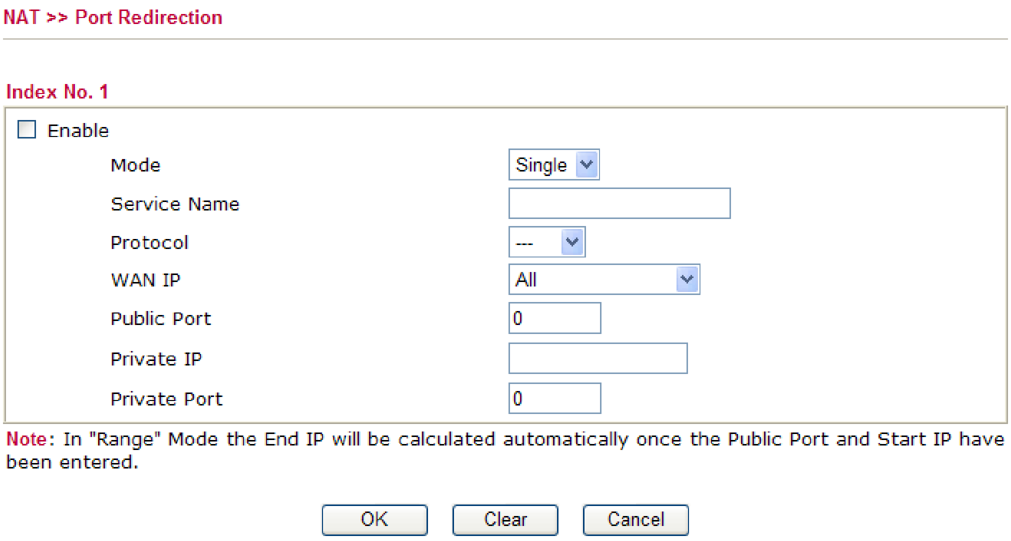
NAT >> Port Redirection

Port Redirection | Set to Factory Default |

Index	Service Name	Public Port	Private IP	Status
1.				x
2.				x
3.				x
4.				x
5.				x
6.				x
7.				x
8.				x
9.				x
10.				x

<< 1-10 | 11-20 >> Next >>

Press any number under Index to access into next page for configuring port redirection.



NAT >> Port Redirection

Index No. 1

☐ Enable

Mode	Single
Service Name	
Protocol	---
WAN IP	All
Public Port	0
Private IP	
Private Port	0

Note: In "Range" Mode the End IP will be calculated automatically once the Public Port and Start IP have been entered.

Enable Check this box to enable such port redirection setting.

Mode Two options (Single and Range) are provided here for you to choose. To set a range for the specific service, select **Range**. In Range mode, if the public port (start port and end port) and the starting IP of private IP had been entered, the system will calculate and display the ending IP of private IP automatically.

Service Name Enter the description of the specific network service.

Protocol Select the transport layer protocol (TCP or UDP).

WAN IP Select the WAN IP used for port redirection. There are eight WAN IP alias that can be selected and used for port redirection. The default setting is **All** which means all the incoming data from any port will be redirected to specified range of IP address and port.

Public Port Specify which port can be redirected to the specified **Private IP and Port** of the internal host. If you choose **Range** as the port redirection mode, you will see two boxes on this field. Simply type the required number on the first box. The second one will be assigned automatically later.

Private IP Specify the private IP address of the internal host providing the service. If you choose **Range** as the port redirection mode, you will see two boxes on this field. Type a complete IP address in the first box (as the starting point) and the fourth digits in the second box (as the end point).

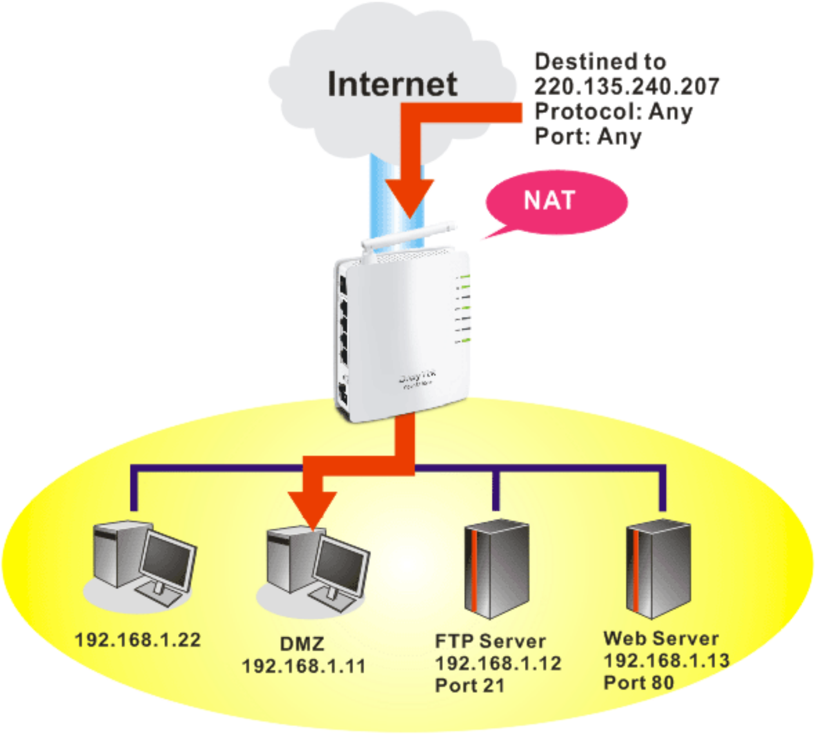
Private Port Specify the private port number of the service offered by the internal host.

Active Check this box to activate the port-mapping entry you have defined.

Note that the router has its own built-in services (servers) such as Telnet, HTTP and FTP etc. Since the common port numbers of these services (servers) are all the same, you may need to reset the router in order to avoid confliction.

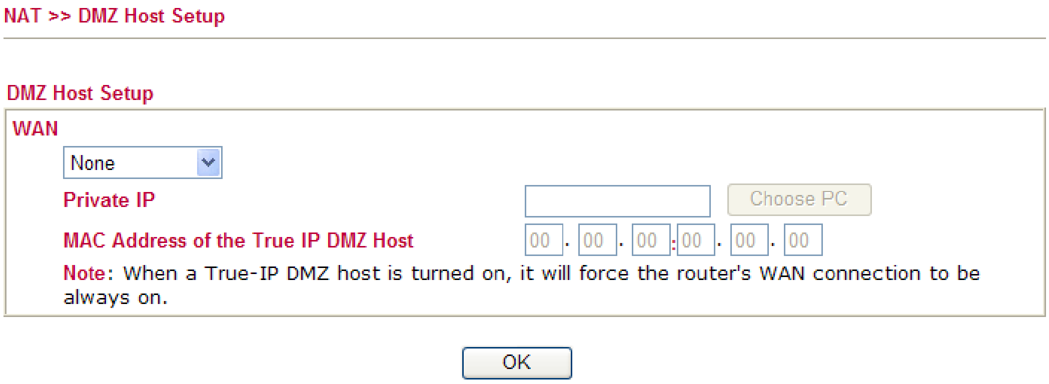
3.3.2 DMZ Host

As mentioned above, **Port Redirection** can redirect incoming TCP/UDP or other traffic on particular ports to the specific private IP address/port of host in the LAN. However, other IP protocols, for example Protocols 50 (ESP) and 51 (AH), do not travel on a fixed port. Vigor router provides a facility **DMZ Host** that maps ALL unsolicited data on any protocol to a single host in the LAN. Regular web surfing and other such Internet activities from other clients will continue to work without inappropriate interruption. **DMZ Host** allows a defined internal user to be totally exposed to the Internet, which usually helps some special applications such as Netmeeting or Internet Games etc.



The inherent security properties of NAT are somewhat bypassed if you set up DMZ host. We suggest you to add additional filter rules or a secondary firewall.

Click **DMZ Host** to open the following page:



NAT >> DMZ Host Setup

DMZ Host Setup

WAN

None

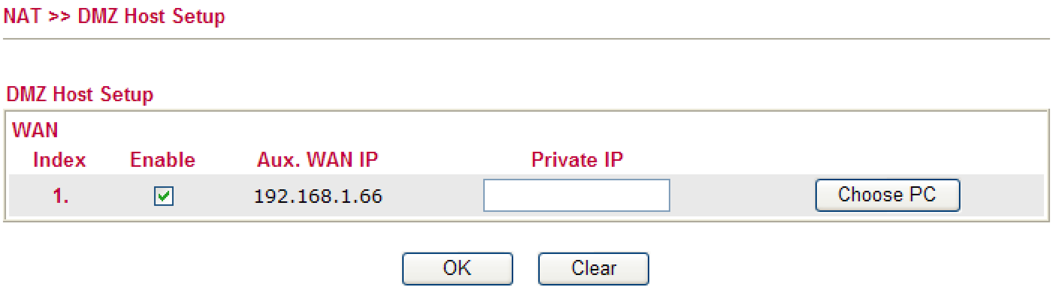
Private IP [ ] Choose PC

MAC Address of the True IP DMZ Host 00 . 00 . 00 : 00 . 00 . 00

Note: When a True-IP DMZ host is turned on, it will force the router's WAN connection to be always on.

OK

If you previously have set up **WAN Alias** for **PPPoE/PPPoA** or **MPoA** mode**,** you will find them in **Aux. WAN IP** for your selection.



NAT >> DMZ Host Setup

DMZ Host Setup

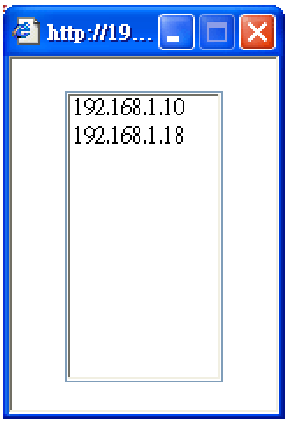
WAN

Index	Enable	Aux. WAN IP	Private IP	
1.	☑	192.168.1.66		Choose PC

Enable Check to enable the DMZ Host function.

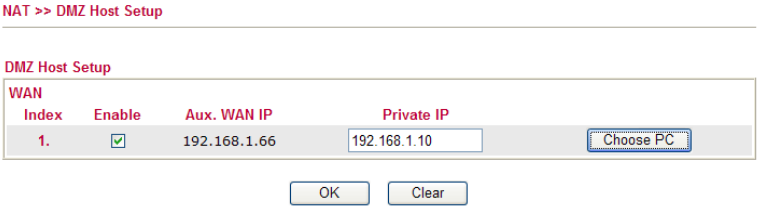
Private IP Enter the private IP address of the DMZ host, or click Choose PC to select one.

Choose PC Click this button and then a window will automatically pop up, as depicted below. The window consists of a list of private IP addresses of all hosts in your LAN network. Select one private IP address in the list to be the DMZ host.



192.168.1.10
192.168.1.18

When you have selected one private IP from the above dialog, the IP address will be shown on the following screen. Click **OK** to save the setting.



NAT >> DMZ Host Setup

DMZ Host Setup

WAN

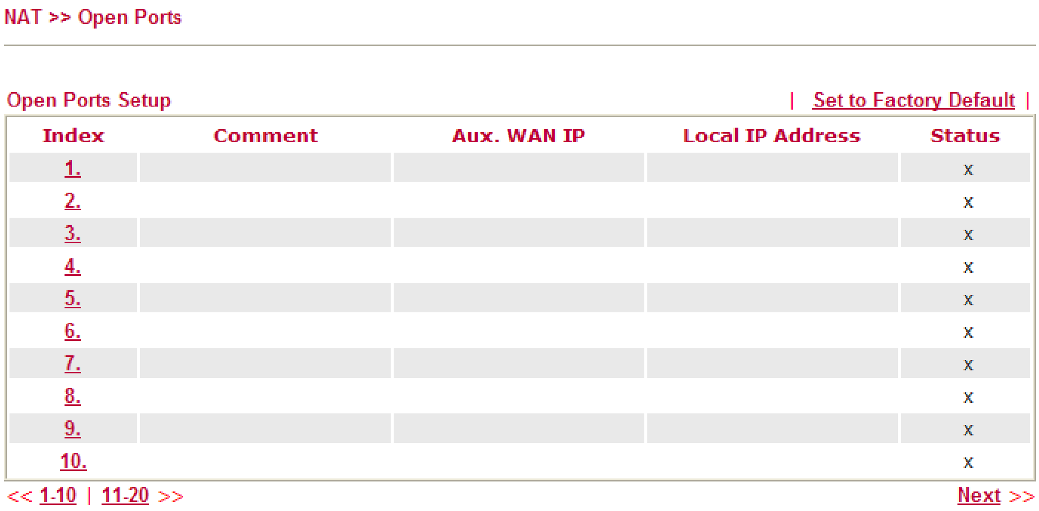
Index	Enable	Aux. WAN IP	Private IP	
1.	☑	192.168.1.66	192.168.1.10	Choose PC

3.3.3 Open Ports

Open Ports allows you to open a range of ports for the traffic of special applications.

Common application of Open Ports includes P2P application (e.g., BT, KaZaA, Gnutella, WinMX, eMule and others), Internet Camera etc. Ensure that you keep the application involved up-to-date to avoid falling victim to any security exploits.

Click **Open Ports** to open the following page:



NAT >> Open Ports

Open Ports Setup | Set to Factory Default |

Index	Comment	Aux. WAN IP	Local IP Address	Status
1.				x
2.				x
3.				x
4.				x
5.				x
6.				x
7.				x
8.				x
9.				x
10.				x

<< 1-10 | 11-20 >> Next >>

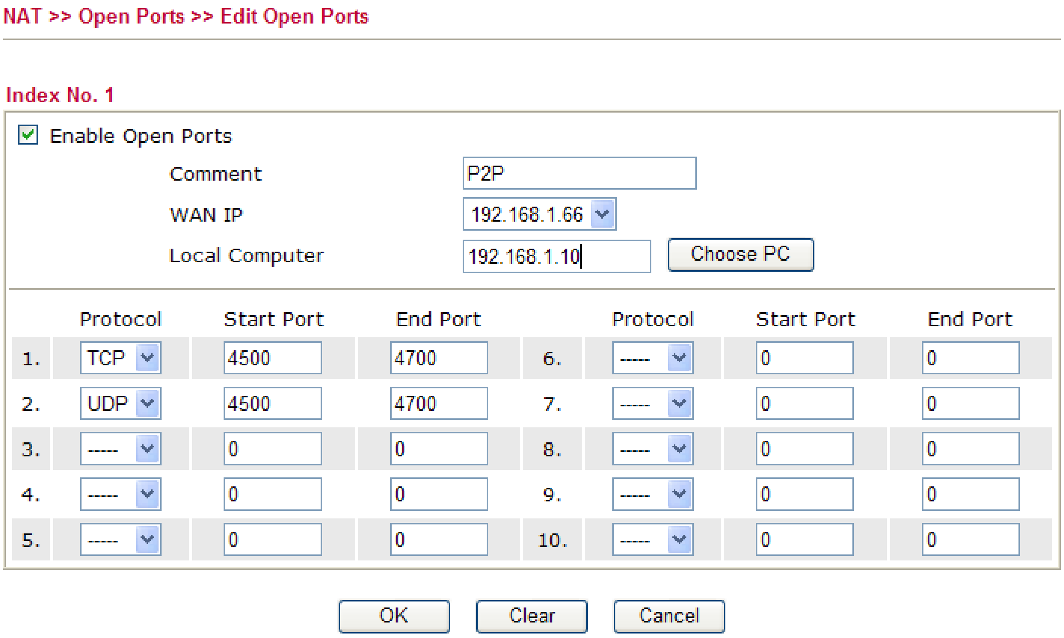
Index Indicate the relative number for the particular entry that you want to offer service in a local host. You should click the appropriate index number to edit or clear the corresponding entry.

Comment Specify the name for the defined network service.

Local IP Address Display the private IP address of the local host offering the service.

Status Display the state for the corresponding entry. X or V is to represent the **Inactive** or **Active** state.

To add or edit port settings, click one index number on the page. The index entry setup page will pop up. In each index entry, you can specify **10** port ranges for diverse services.



NAT >> Open Ports >> Edit Open Ports

Index No. 1

☑ Enable Open Ports

Comment	P2P
WAN IP	192.168.1.66
Local Computer	192.168.1.10

	Protocol	Start Port	End Port		Protocol	Start Port	End Port
1.	TCP	4500	4700	6.	-----	0	0
2.	UDP	4500	4700	7.	-----	0	0
3.	-----	0	0	8.	-----	0	0
4.	-----	0	0	9.	-----	0	0
5.	-----	0	0	10.	-----	0	0

Enable Open Ports Check to enable this entry.

Comment Make a name for the defined network application/service.

WAN Interface Specify the WAN interface that will be used for this entry.

Local Computer Enter the private IP address of the local host or click **Choose PC** to select one.

Choose PC Click this button and, subsequently, a window having a list of private IP addresses of local hosts will automatically pop up. Select the appropriate IP address of the local host in the list.

Protocol Specify the transport layer protocol. It could be **TCP**, **UDP**, or ----- (none) for selection.

Start Port Specify the starting port number of the service offered by the local host.

End Port Specify the ending port number of the service offered by the local host.

3.4 Applications

Below shows the menu items for Applications.

3.4.1 Dynamic DNS

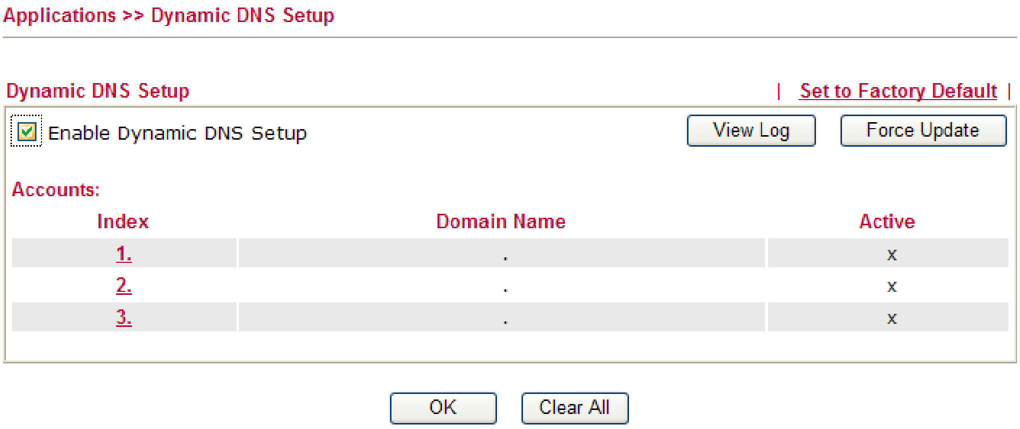
The ISP often provides you with a dynamic IP address when you connect to the Internet via your ISP. It means that the public IP address assigned to your router changes each time you access the Internet. The Dynamic DNS feature lets you assign a domain name to a dynamic WAN IP address. It allows the router to update its online WAN IP address mappings on the specified Dynamic DNS server. Once the router is online, you will be able to use the registered domain name to access the router or internal virtual servers from the Internet. It is particularly helpful if you host a web server, FTP server, or other server behind the router.

Before you use the Dynamic DNS feature, you have to apply for free DDNS service to the DDNS service providers. The router provides up to three accounts from three different DDNS service providers. Basically, Vigor routers are compatible with the DDNS services supplied by most popular DDNS service providers such as **www.dyndns.org, www.no-ip.com, www.dtdns.com, www.changeip.com, www.dynamic- nameserver.com.** You should visit their websites to register your own domain name for the router.

Enable the Function and Add a Dynamic DNS Account

1. Assume you have a registered domain name from the DDNS provider, say *hostname.dyndns.org*, and an account with username: *test* and password: *test*.

2. In the DDNS setup menu, check **Enable Dynamic DNS Setup**.



Applications >> Dynamic DNS Setup

Dynamic DNS Setup | Set to Factory Default |

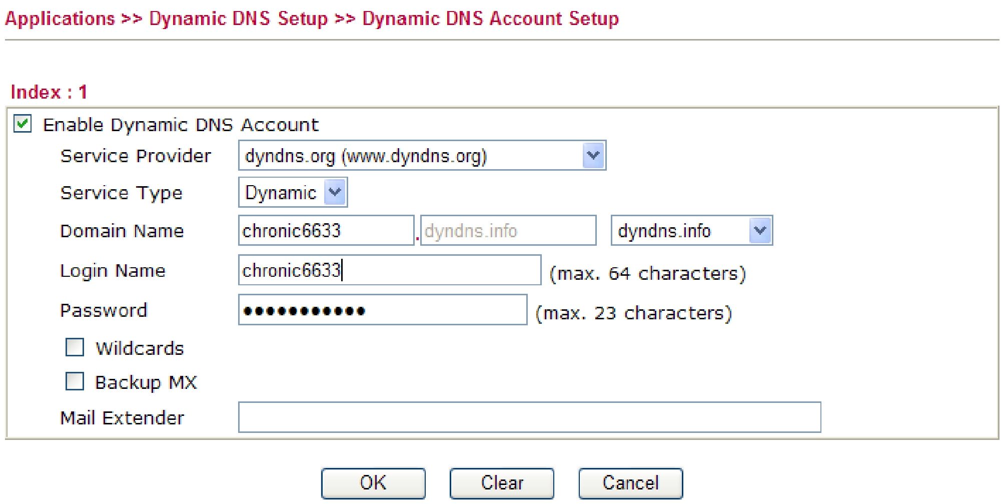
☑ Enable Dynamic DNS Setup

Accounts:

Index	Domain Name	Active
1.	.	x
2.	.	x
3.	.	x

Set to Factory Default	Clear all profiles and recover to factory settings.
Enable Dynamic DNS Setup	Check this box to enable DDNS function.
Index	Click the number below Index to access into the setting page of DDNS setup to set account(s).
Domain Name	Display the domain name that you set on the setting page of DDNS setup.
Active	Display if this account is active or inactive.
View Log	Display DDNS log status.
Force Update	Force the router updates its information to DDNS server.

3. Select Index number 1 to add an account for the router. Check **Enable Dynamic DNS Account**, and choose correct Service Provider: dyndns.org, type the registered hostname: *hostname* and domain name suffix: dyndns.org in the **Domain Name** block. The following two blocks should be typed your account Login Name: *test* and Password: *test*.



Applications >> Dynamic DNS Setup >> Dynamic DNS Account Setup

Index : 1

☑ Enable Dynamic DNS Account

Service Provider: dyndns.org (www.dyndns.org)

Service Type: Dynamic

Domain Name: chronic6633 . dyndns.info dyndns.info

Login Name: chronic6633 (max. 64 characters)

Password: ●●●●●●●●●●● (max. 23 characters)

□ Wildcards

□ Backup MX

Mail Extender:

Enable Dynamic DNS Account Check this box to enable the current account. If you did check the box, you will see a check mark appeared on the Active column of the previous web page in step 2).

Service Provider Select the service provider for the DDNS account.

Service Type Select a service type (Dynamic, Custom or Static). If you choose Custom, you can modify the domain that is chosen in the Domain Name field.

Domain Name Type in one domain name that you applied previously. Use the drop down list to choose the desired domain.

Login Name Type in the login name that you set for applying domain.

Password Type in the password that you set for applying domain.

4. Click **OK** button to activate the settings. You will see your setting has been saved.

The Wildcard and Backup MX features are not supported for all Dynamic DNS providers. You could get more detailed information from their websites.

Disable the Function and Clear all Dynamic DNS Accounts

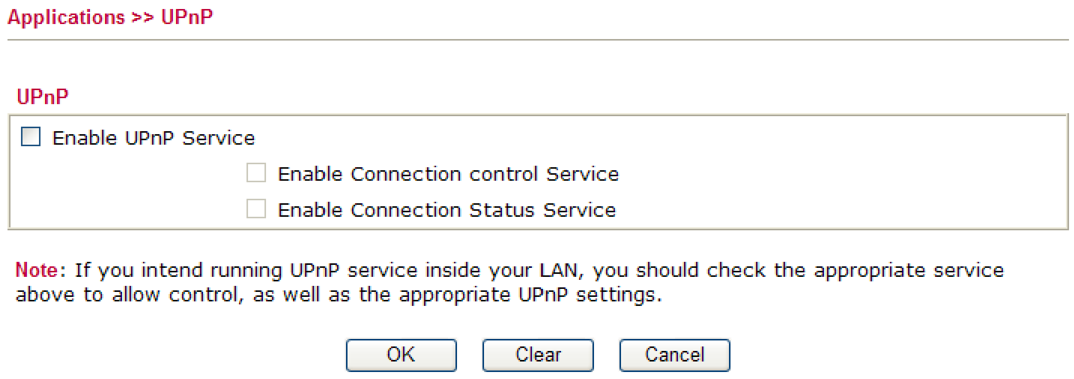
In the DDNS setup menu, uncheck **Enable Dynamic DNS Setup**, and push **Clear All** button to disable the function and clear all accounts from the router.

Delete a Dynamic DNS Account

In the DDNS setup menu, click the **Index** number you want to delete and then push **Clear All** button to delete the account.

3.4.2 UPnP

The **UPnP** (Universal Plug and Play) protocol is supported to bring to network connected devices the ease of installation and configuration which is already available for directly connected PC peripherals with the existing Windows 'Plug and Play' system. For NAT routers, the major feature of UPnP on the router is “NAT Traversal”. This enables applications inside the firewall to automatically open the ports that they need to pass through a router. It is more reliable than requiring a router to work out by itself which ports need to be opened. Further, the user does not have to manually set up port mappings or a DMZ. **UPnP is available on Windows XP** and the router provide the associated support for MSN Messenger to allow full use of the voice, video and messaging features.



Applications >> UPnP

UPnP

□ Enable UPnP Service

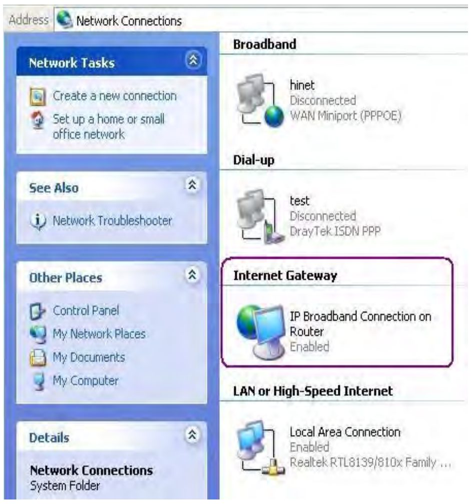
□ Enable Connection control Service

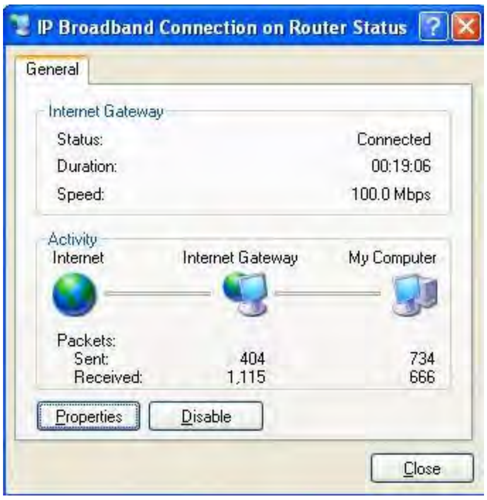
□ Enable Connection Status Service

Note: If you intend running UPnP service inside your LAN, you should check the appropriate service above to allow control, as well as the appropriate UPnP settings.

Enable UPNP Service Accordingly, you can enable either the **Connection Control Service** or **Connection Status Service**.

After setting **Enable UPNP Service** setting, an icon of **IP Broadband Connection on Router** on Windows XP/Network Connections will appear. The connection status and control status will be able to be activated. The NAT Traversal of UPnP enables the multimedia features of your applications to operate. This has to manually set up port mappings or use other similar methods. The screenshots below show examples of this facility.





IP Broadband Connection on Router Status

General

Internet Gateway

Status: Connected

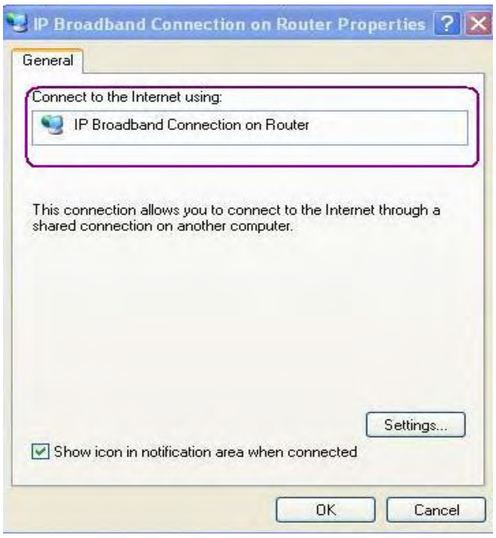
Duration: 00:19:06

Speed: 100.0 Mbps

Activity

	Internet Gateway	My Computer
Packets:		
Sent:	404	734
Received:	1,115	666

The UPnP facility on the router enables UPnP aware applications such as MSN Messenger to discover what are behind a NAT router. The application will also learn the external IP address and configure port mappings on the router. Subsequently, such a facility forwards packets from the external ports of the router to the internal ports used by the application.

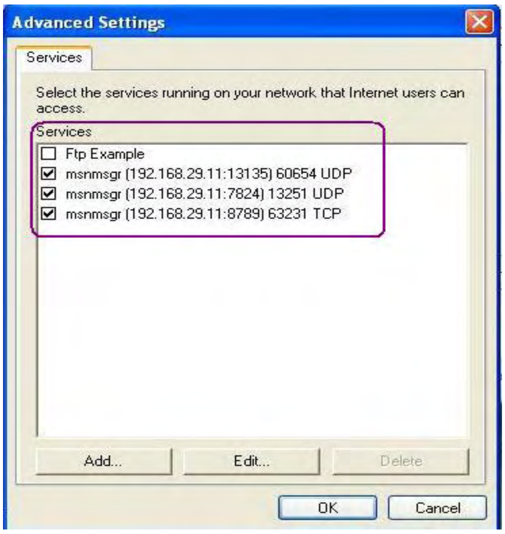


Connect to the Internet using:

IP Broadband Connection on Router

This connection allows you to connect to the Internet through a shared connection on another computer.

☑ Show icon in notification area when connected



Select the services running on your network that Internet users can access.

Services

□ Ftp Example
☑ msnmsgr (192.168.29.11:13135) 60654 UDP
☑ msnmsgr (192.168.29.11:7824) 13251 UDP
☑ msnmsgr (192.168.29.11:8789) 63231 TCP

The reminder as regards concern about Firewall and UPnP

Can't work with Firewall Software

Enabling firewall applications on your PC may cause the UPnP function not working properly. This is because these applications will block the accessing ability of some network ports.

Security Considerations

Activating the UPnP function on your network may incur some security threats. You should consider carefully these risks before activating the UPnP function.

- Some Microsoft operating systems have found out the UPnP weaknesses and hence you need to ensure that you have applied the latest service packs and patches.
- Non-privileged users can control some router functions, including removing and adding port mappings.

The UPnP function dynamically adds port mappings on behalf of some UPnP-aware applications. When the applications terminate abnormally, these mappings may not be removed.

3.5 Wireless LAN

This function is used for “ne” models.

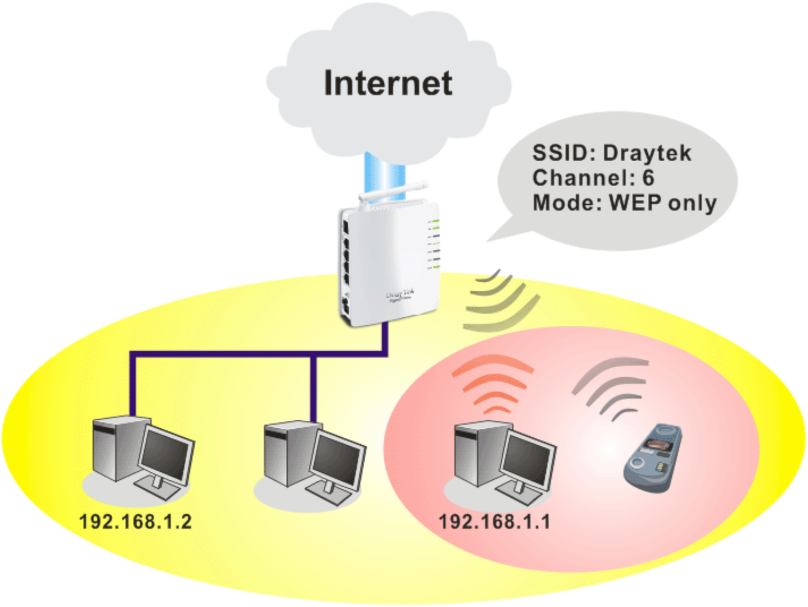
3.5.1 Basic Concepts

Over recent years, the market for wireless communications has enjoyed tremendous growth. Wireless technology now reaches or is capable of reaching virtually every location on the surface of the earth. Hundreds of millions of people exchange information every day via wireless communication products. The Vigor “ne” model, a.k.a. Vigor wireless router, is designed for maximum flexibility and efficiency of a small office/home. Any authorized staff can bring a built-in WLAN client PDA or notebook into a meeting room for conference without laying a clot of LAN cable or drilling holes everywhere. Wireless LAN enables high mobility so WLAN users can simultaneously access all LAN facilities just like on a wired LAN as well as Internet access.

The Vigor wireless routers are equipped with a wireless LAN interface compliant with the standard IEEE 802.11n protocol. To boost its performance further, the Vigor Router is also loaded with advanced wireless technology to lift up data rate up to 150 Mbps*. Hence, you can finally smoothly enjoy stream music and video.

> **Note**: * The actual data throughput will vary according to the network conditions and environmental factors, including volume of network traffic, network overhead and building materials.

In an Infrastructure Mode of wireless network, Vigor wireless router plays a role as an Access Point (AP) connecting to lots of wireless clients or Stations (STA). All the STAs will share the same Internet connection via Vigor wireless router. The **General Settings** will set up the information of this wireless network, including its SSID as identification, located channel etc.



Security Overview

Real-time Hardware Encryption: Vigor Router is equipped with a hardware AES encryption engine so it can apply the highest protection to your data without influencing user experience.

Complete Security Standard Selection: To ensure the security and privacy of your wireless communication, we provide several prevailing standards on market.

WEP (Wired Equivalent Privacy) is a legacy method to encrypt each frame transmitted via radio using either a 64-bit or 128-bit key. Usually access point will preset a set of four keys and it will communicate with each station using only one out of the four keys.

WPA (Wi-Fi Protected Access), the most dominating security mechanism in industry, is separated into two categories: WPA-personal or called WPA Pre-Share Key (WPA/PSK), and WPA-Enterprise or called WPA/802.1x.

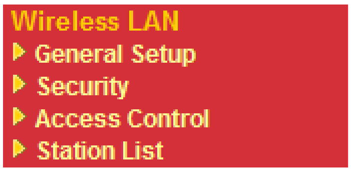
In WPA-Personal, a pre-defined key is used for encryption during data transmission. WPA applies Temporal Key Integrity Protocol (TKIP) for data encryption while WPA2 applies AES. The WPA-Enterprise combines not only encryption but also authentication.

Since WEP has been proved vulnerable, you may consider using WPA for the most secure connection. You should select the appropriate security mechanism according to your needs. No matter which security suite you select, they all will enhance the over-the-air data protection and /or privacy on your wireless network. The Vigor wireless router is very flexible and can support multiple secure connections with both WEP and WPA at the same time.

Separate the Wireless and the Wired LAN- WLAN Isolation enables you to isolate your wireless LAN from wired LAN for either quarantine or limit access reasons. To isolate means neither of the parties can access each other. To elaborate an example for business use, you may set up a wireless LAN for visitors only so they can connect to Internet without hassle of the confidential information leakage. For a more flexible deployment, you may add filters of MAC addresses to isolate users' access from wired LAN.

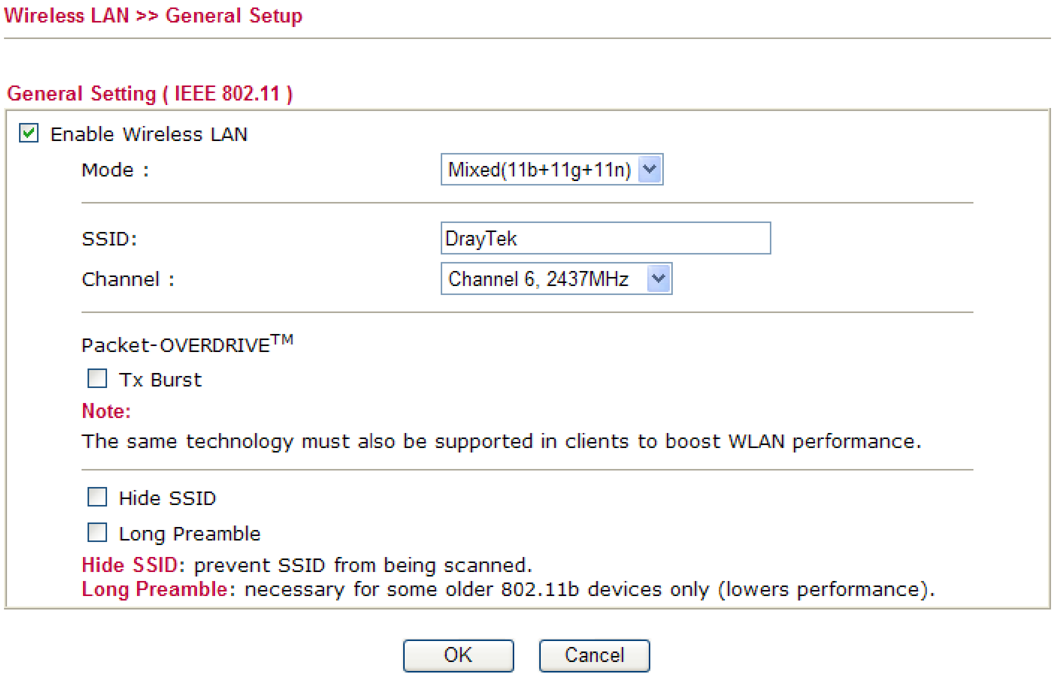
Manage Wireless Stations - Station List will display all the station in your wireless network and the status of their connection.

Below shows the menu items for Wireless LAN.



3.5.2 General Setup

By clicking the **General Settings**, a new web page will appear so that you could configure the SSID and the wireless channel. Please refer to the following figure for more information.



Wireless LAN >> General Setup

General Setting (IEEE 802.11)

☑ Enable Wireless LAN

Mode : Mixed(11b+11g+11n)

SSID: DrayTek

Channel : Channel 6, 2437MHz

Packet-OVERDRIVE™

□ Tx Burst

Note:

The same technology must also be supported in clients to boost WLAN performance.

□ Hide SSID

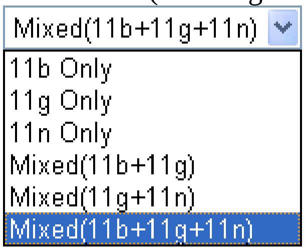
□ Long Preamble

Hide SSID: prevent SSID from being scanned.

Long Preamble: necessary for some older 802.11b devices only (lowers performance).

Enable Wireless LAN Check the box to enable wireless function.

Mode At present, the router can connect to Mixed (11b+11g), 11g Only, 11b Only, Mixed (11g+11n), 11n Only and Mixed (11b+11g+11n) stations simultaneously. Simply choose Mix (11b+11g+11n) mode.

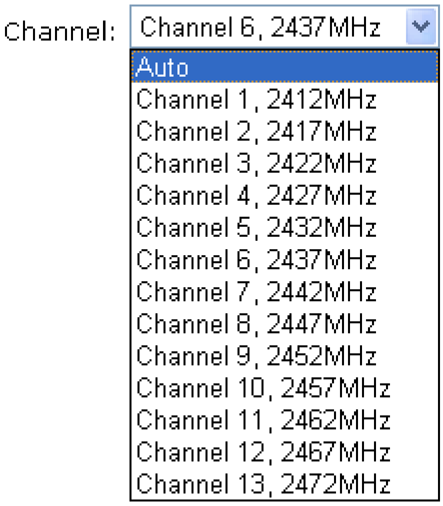


SSID

Means the identification of the wireless LAN. SSID can be any text numbers or various special characters. The default SSID is "DrayTek". We suggest you to change it.

Channel

Means the channel of frequency of the wireless LAN. The default channel is 6. You may switch channel if the selected channel is under serious interference. If you have no idea of choosing the frequency, please select Auto to let system determine for you.

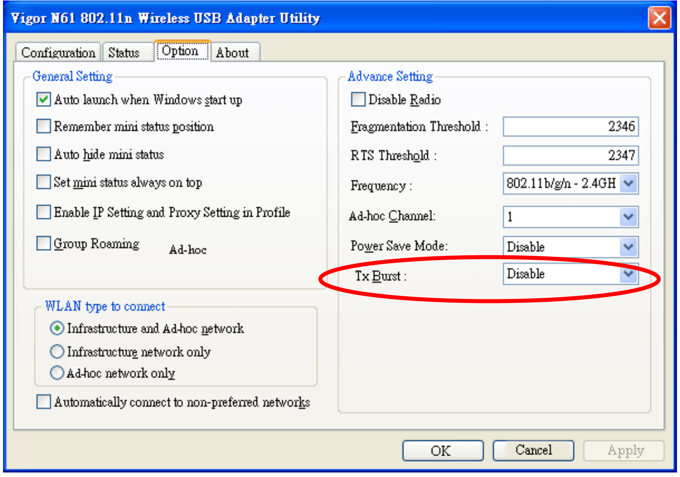


Channel: Channel 6, 2437MHz

Packet-OVERDRIVE

This feature can enhance the performance in data transmission about 40%* more (by checking **Tx Burst**). It is active only when both sides of Access Point and Station (in wireless client) invoke this function at the same time. That is, the wireless client must support this feature and invoke the function, too.

Note: Vigor N61 wireless adapter supports this function. Therefore, you can use and install it into your PC for matching with Packet-OVERDRIVE (refer to the following picture of Vigor N61 wireless utility window, choose **Enable** for **TxBURST** on the tab of **Option**).



Vigor N61 802.11n Wireless USB Adapter Utility

Configuration | Status | Option | About

General Setting

☑ Auto launch when Windows start up
□ Remember mini status position
□ Auto hide mini status
□ Set mini status always on top
□ Enable IP Setting and Proxy Setting in Profile
□ Group Roaming Ad-hoc

WLAN type to connect
● Infrastructure and Ad-hoc network
○ Infrastructure network only
○ Ad-hoc network only

□ Automatically connect to non-preferred networks

Advance Setting

□ Disable Radio
Fragmentation Threshold : 2346
RTS Threshold : 2347
Frequency : 802.11b/g/n - 2.4GH
Ad-hoc Channel: 1
Power Save Mode: Disable
Tx Burst : Disable

Hide SSID

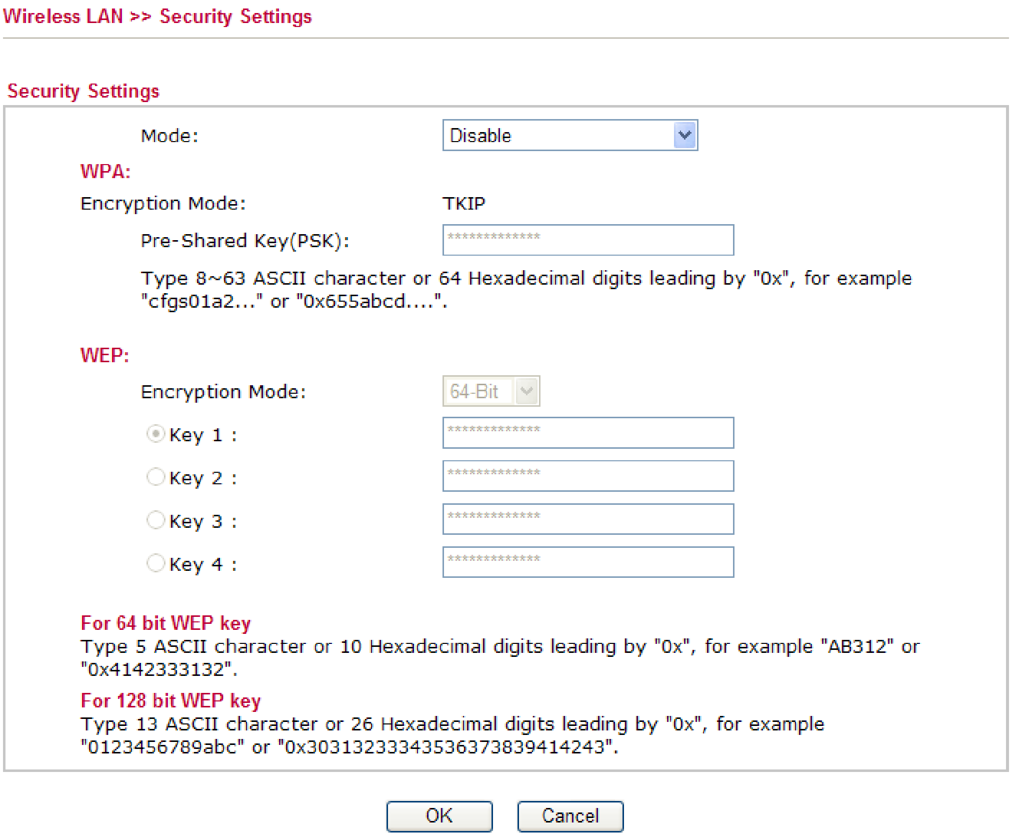
Check it to prevent from wireless sniffing and make it harder for unauthorized clients or STAs to join your wireless LAN. Depending on the wireless utility, the user may only see the information except SSID or just cannot see any thing about Vigor wireless router while site surveying. The system allows you to set four sets of SSID for different usage. In default, the first set of SSID will be enabled. You can hide it for your necessity.

Long Preamble

This option is to define the length of the sync field in an 802.11 packet. Most modern wireless network uses short preamble with 56 bit sync filed instead of long preamble with 128 bit sync field. However, some original 11b wireless network devices only support long preamble. Check it to use **Long Preamble** if needed to communicate with this kind of devices.

3.5.3 Security

By clicking the **Security Settings**, a new web page will appear so that you could configure the settings of WEP and WPA.



Wireless LAN >> Security Settings

Security Settings

Mode: Disable

WPA:

Encryption Mode: TKIP

Pre-Shared Key(PSK): *************

Type 8~63 ASCII character or 64 Hexadecimal digits leading by "0x", for example "cfgs01a2..." or "0x655abcd....".

WEP:

Encryption Mode: 64-Bit

● Key 1 : *************

○ Key 2 : *************

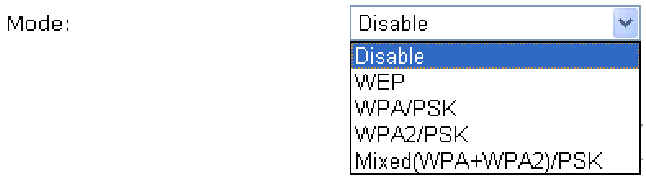
○ Key 3 : *************

○ Key 4 : *************

For 64 bit WEP key
Type 5 ASCII character or 10 Hexadecimal digits leading by "0x", for example "AB312" or "0x4142333132".

For 128 bit WEP key
Type 13 ASCII character or 26 Hexadecimal digits leading by "0x", for example "0123456789abc" or "0x30313233343536373839414243".

Mode There are several modes provided for you to choose.



Mode: Disable

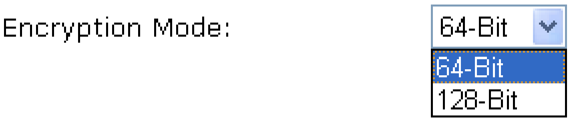
Disable - Turn off the encryption mechanism.
WEP-Accepts only WEP clients and the encryption key should be entered in WEP Key.
WPA/PSK-Accepts only WPA clients and the encryption key should be entered in PSK.
WPA2/PSK-Accepts only WPA2 clients and the encryption key should be entered in PSK.
Mixed (WPA+ WPA2)/PSK - Accepts WPA and WPA2 clients simultaneously and the encryption key should be entered in PSK.

WPA The WPA encrypts each frame transmitted from the radio using the key, which either PSK (Pre-Shared Key) entered manually in this field below or automatically negotiated via 802.1x authentication. Either **8~63** ASCII characters, such as 012345678(or 64 Hexadecimal digits leading by 0x, such as "0x321253abcde...").
Type - Select from Mixed (WPA+WPA2) or WPA2 only.
Pre-Shared Key (PSK) - Either **8~63** ASCII characters,

such as 012345678..(or 64 Hexadecimal digits leading by 0x, such as "0x321253abcde...").

WEP

64-Bit - For 64 bits WEP key, either **5** ASCII characters, such as 12345 (or 10 hexadecimal digitals leading by 0x, such as 0x4142434445.)
128-Bit - For 128 bits WEP key, either **13** ASCII characters, such as ABCDEFGHIJKLM (or 26 hexadecimal digits leading by 0x, such as 0x4142434445464748494A4B4C4D).

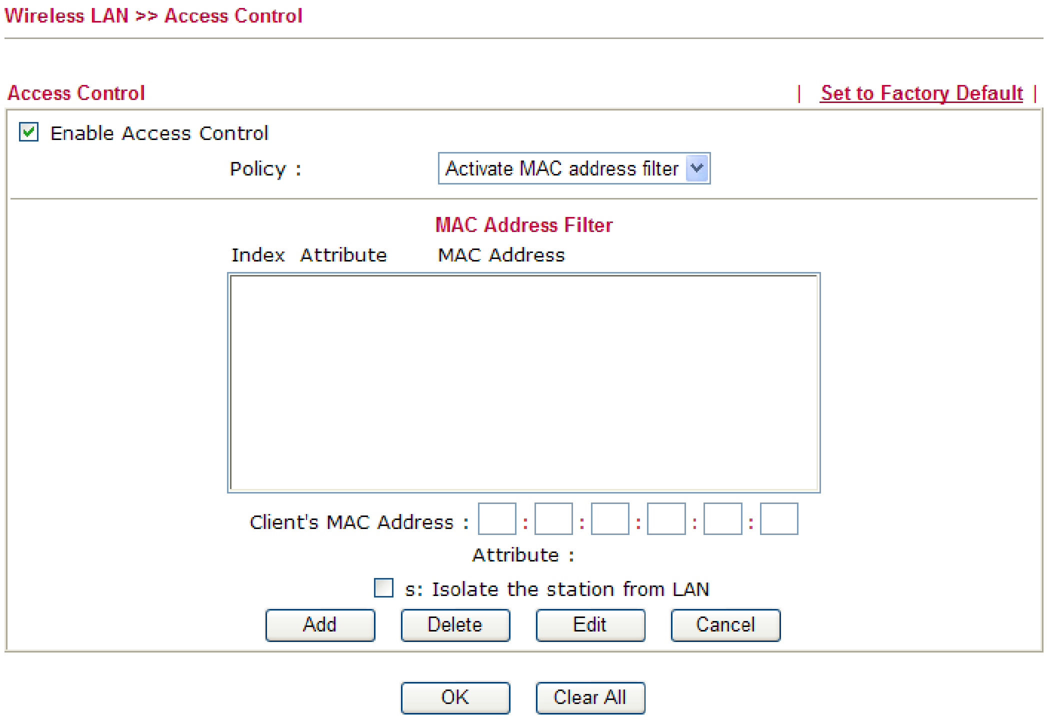


Encryption Mode: 64-Bit

All wireless devices must support the same WEP encryption bit size and have the same key. **Four keys** can be entered here, but only one key can be selected at a time. The keys can be entered in ASCII or Hexadecimal. Check the key you wish to use.

3.5.4 Access Control

For additional security of wireless access, the **Access Control** facility allows you to restrict the network access right by controlling the wireless LAN MAC address of client. Only the valid MAC address that has been configured can access the wireless LAN interface. By clicking the **Access Control**, a new web page will appear, as depicted below, so that you could edit the clients' MAC addresses to control their access rights.



Wireless LAN >> Access Control

Access Control | Set to Factory Default |

☑ Enable Access Control

Policy : Activate MAC address filter

MAC Address Filter

Index Attribute MAC Address

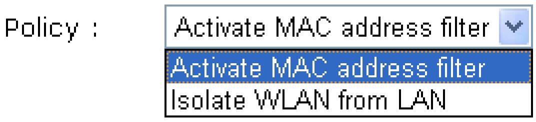
Client's MAC Address : __ : __ : __ : __ : __ : __

Attribute :

□ s: Isolate the station from LAN

Enable Access Control Select to enable the MAC Address access control feature.

Policy Select to enable any one of the following policy. Choose **Activate MAC address filter** to type in the MAC addresses for other clients in the network manually. Choose **Isolate WLAN from LAN** will separate all the WLAN stations from LAN based on the MAC Address list.



Policy : Activate MAC address filter

MAC Address Filter Display all MAC addresses that are edited before. Four buttons (Add, Remove,
Client's MAC Address - Manually enter the MAC address of wireless client.

Attribute **s -** select to isolate the wireless connection of the wireless client of the MAC address from LAN.

Add Add a new MAC address into the list.

Delete Delete the selected MAC address in the list.

Edit Edit the selected MAC address in the list.

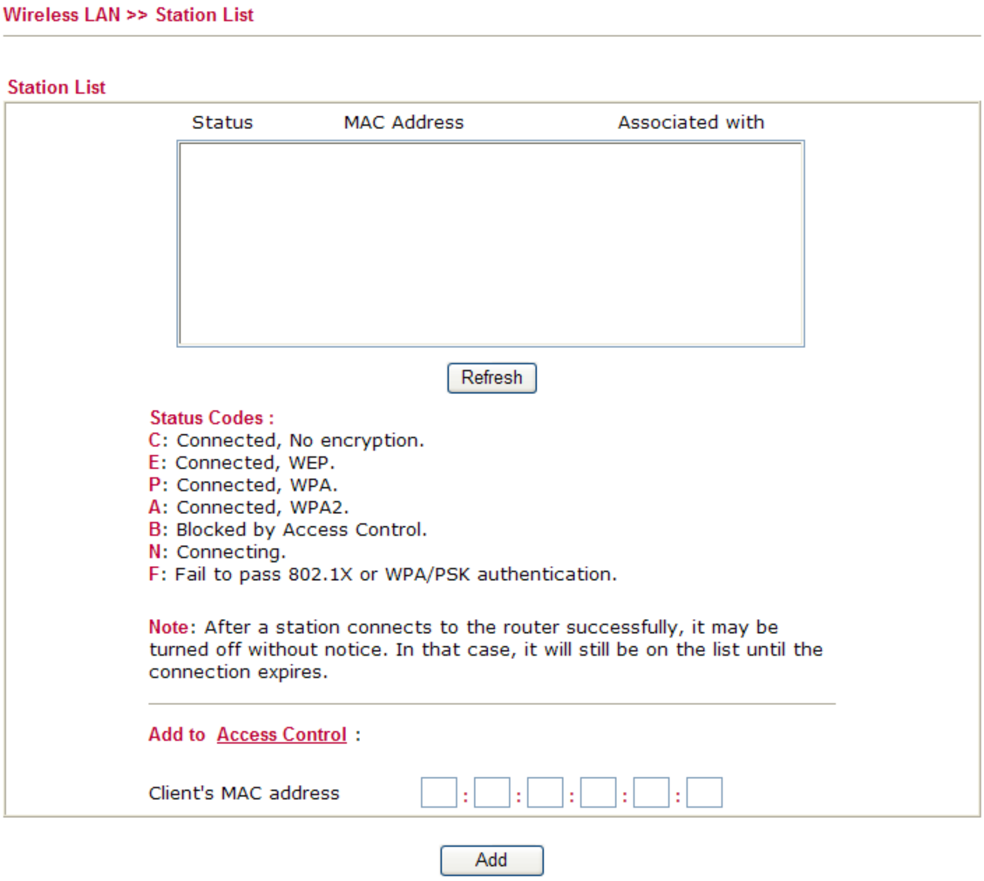
Cancel Give up the access control set up.

OK Click it to save the access control list.

Clear All Clean all entries in the MAC address list.

3.5.5 Station List

Station List provides the knowledge of connecting wireless clients now along with its status code. There is a code summary below for explanation. For convenient **Access Control**, you can select a WLAN station and click **Add to Access Control** below.



Wireless LAN >> Station List

Station List

Status	MAC Address	Associated with

Status Codes :
C: Connected, No encryption.
E: Connected, WEP.
P: Connected, WPA.
A: Connected, WPA2.
B: Blocked by Access Control.
N: Connecting.
F: Fail to pass 802.1X or WPA/PSK authentication.

Note: After a station connects to the router successfully, it may be turned off without notice. In that case, it will still be on the list until the connection expires.

Add to Access Control :

Client's MAC address □ : □ : □ : □ : □ : □

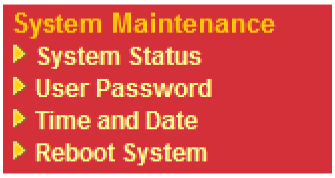
Refresh Click this button to refresh the status of station list.

Add Click this button to add current typed MAC address into **Access Contro**l.

3.6 System Maintenance

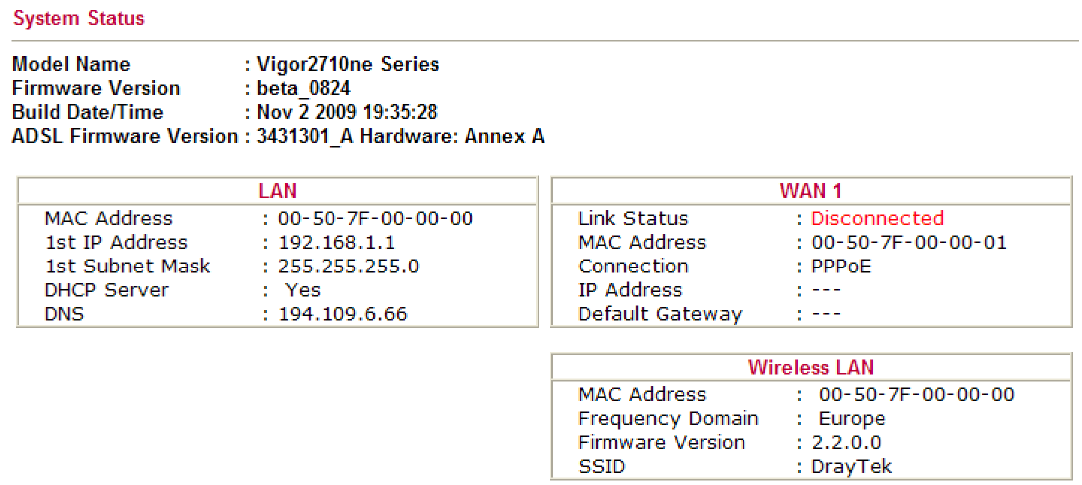
For the system setup, there are several items that you have to know the way of configuration: Status, Administrator Password, Configuration Backup, Syslog, Time setup, Reboot System, Firmware Upgrade.

Below shows the menu items for System Maintenance.



3.6.1 System Status

The **System Status** provides basic network settings of Vigor router (web page will change according to the route you have). It includes LAN and WAN interface information. Also, you could get the current running firmware version or firmware related information from this presentation.



System Status

Model Name : Vigor2710ne Series
Firmware Version : beta_0824
Build Date/Time : Nov 2 2009 19:35:28
ADSL Firmware Version : 3431301_A Hardware: Annex A

LAN	
MAC Address	: 00-50-7F-00-00-00
1st IP Address	: 192.168.1.1
1st Subnet Mask	: 255.255.255.0
DHCP Server	: Yes
DNS	: 194.109.6.66

WAN 1	
Link Status	: Disconnected
MAC Address	: 00-50-7F-00-00-01
Connection	: PPPoE
IP Address	: ---
Default Gateway	: ---

Wireless LAN	
MAC Address	: 00-50-7F-00-00-00
Frequency Domain	: Europe
Firmware Version	: 2.2.0.0
SSID	: DrayTek

Model Name Display the model name of the router.

Firmware Version Display the firmware version of the router.

Build Date/Time Display the date and time of the current firmware build.

ADSL Firmware Version Display the ADSL firmware version.

LAN-------

MAC Address Display the MAC address of the LAN Interface.

1st IP Address Display the IP address of the LAN interface.

1st Subnet Mask Display the subnet mask address of the LAN interface.

DHCP Server Display the current status of DHCP server of the LAN interface.

DNS Display the assigned IP address of the primary DNS.

WAN-------

Link Status Display current connection status.

MAC Address Display the MAC address of the WAN Interface.

Connection Display the connection type.

IP Address Display the IP address of the WAN interface.

Default Gateway Display the assigned IP address of the default gateway.

Wireless LAN-------

MAC Address Display the MAC address of the wireless LAN.

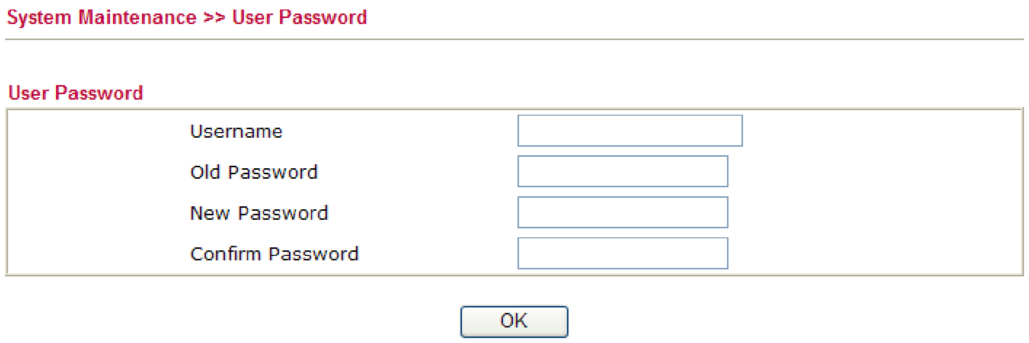
Frequency Domain It can be Europe (13 usable channels), USA (11 usable channels) etc. The available channels supported by the wireless products in different countries are various.

Firmware Version It indicates information about equipped WLAN miniPCi card. This also helps to provide availability of some features that are bound with some WLAN miniPCi.

SSID Display the SSID of the router.

3.6.2 User Password

This page allows you to set new password for user operation.



System Maintenance >> User Password

User Password

Username	
Old Password	
New Password	
Confirm Password	

Old Password Type in the old password. The factory default setting for password is blank.

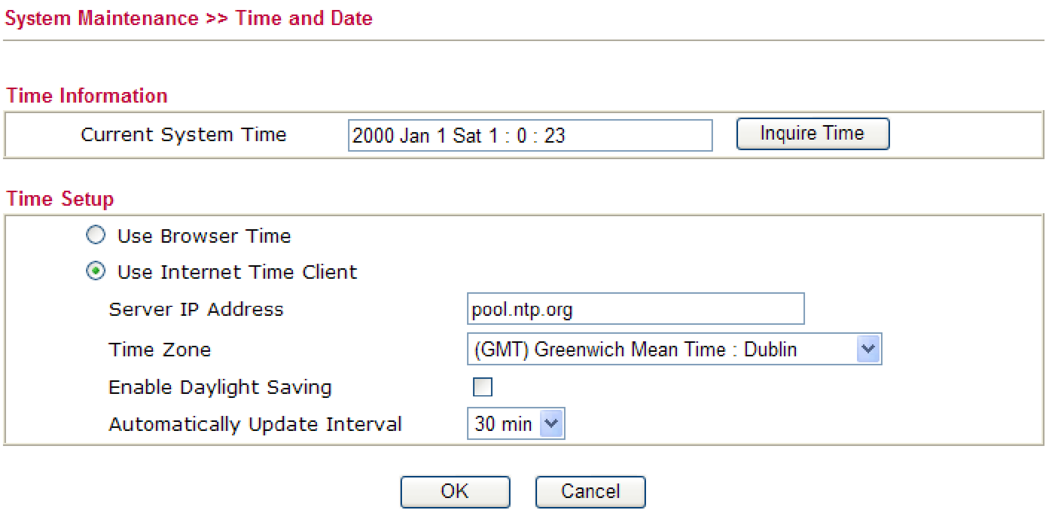
New Password Type in new password in this filed.

Confirm Password Type in the new password again.

When you click OK, the login window will appear. Please use the new password to access into the web configurator again.

3.6.3 Time and Date

It allows you to specify where the time of the router should be inquired from.



System Maintenance >> Time and Date

Time Information

Current System Time: 2000 Jan 1 Sat 1 : 0 : 23

Time Setup

○ Use Browser Time

● Use Internet Time Client

Server IP Address: pool.ntp.org

Time Zone: (GMT) Greenwich Mean Time : Dublin

Enable Daylight Saving: □

Automatically Update Interval: 30 min

Current System Time Click **Inquire Time** to get the current time.

Use Browser Time Select this option to use the browser time from the remote administrator PC host as router's system time.

Use Internet Time Select to inquire time information from Time Server on the Internet using assigned protocol.

Server IP Address Type the IP address of the time server.

Time Zone Select the time zone where the router is located.

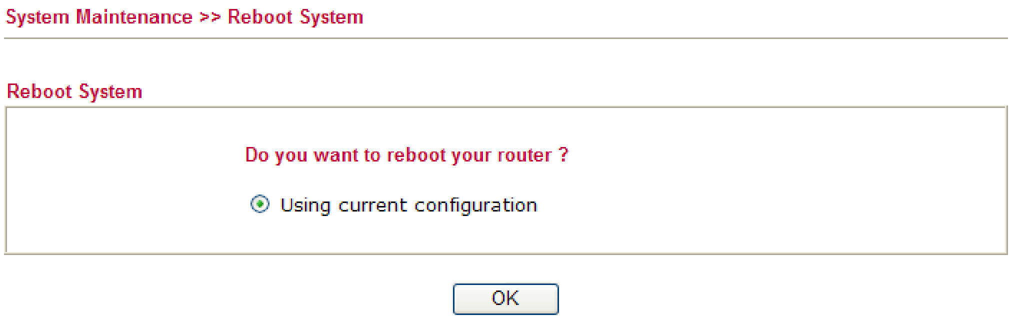
Enable Daylight Saving Check the box to activate daylight saving function. Such feature is useful for some areas.

Automatically Update Interval Select a time interval for updating from the NTP server.

Click **OK** to save these settings.

3.6.4 Reboot System

The Web Configurator may be used to restart your router for using current configuration. Click **Reboot System** from **System Maintenance** to open the following page.



System Maintenance >> Reboot System

Reboot System

Do you want to reboot your router ?

● Using current configuration

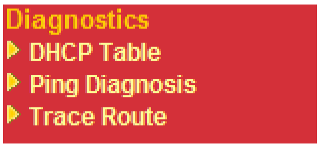
Click **OK**. The router will take 5 seconds to reboot the system.

Note: When the system pops up Reboot System web page after you configure web settings, please click **OK** to reboot your router for ensuring normal operation and preventing unexpected errors of the router in the future.

3.7 Diagnostics

Diagnostic Tools provide a useful way to **view** or **diagnose** the status of your Vigor router.

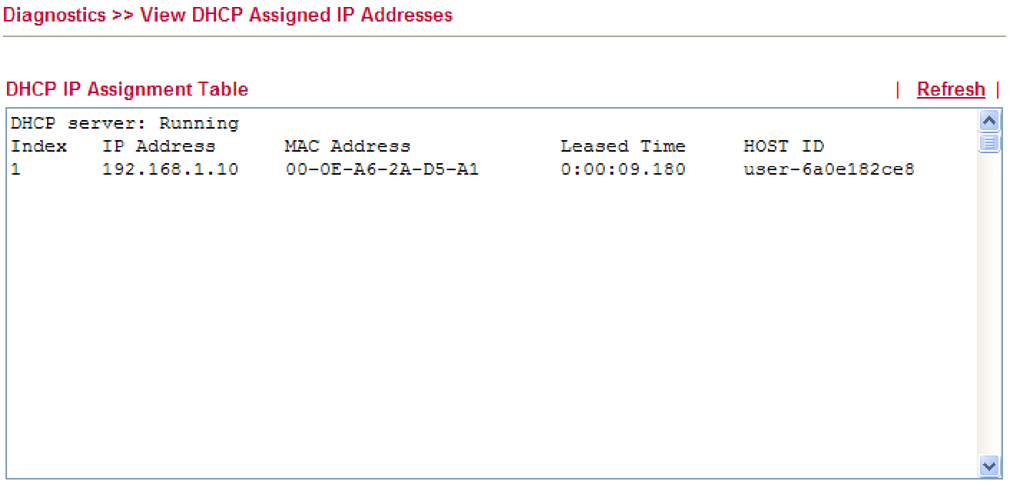
Below shows the menu items for Diagnostics.



3.7.1 DHCP Table

The facility provides information on IP address assignments. This information is helpful in diagnosing network problems, such as IP address conflicts, etc.

Click **Diagnostics** and click **DHCP Table** to open the web page.



Diagnostics >> View DHCP Assigned IP Addresses

DHCP IP Assignment Table | Refresh |

```
DHCP server: Running
Index    IP Address      MAC Address            Leased Time     HOST ID
1        192.168.1.10    00-0E-A6-2A-D5-A1      0:00:09.180     user-6a0e182ce8
```

Index It displays the connection item number.

IP Address It displays the IP address assigned by this router for specified PC.

MAC Address It displays the MAC address for the specified PC that DHCP assigned IP address for it.

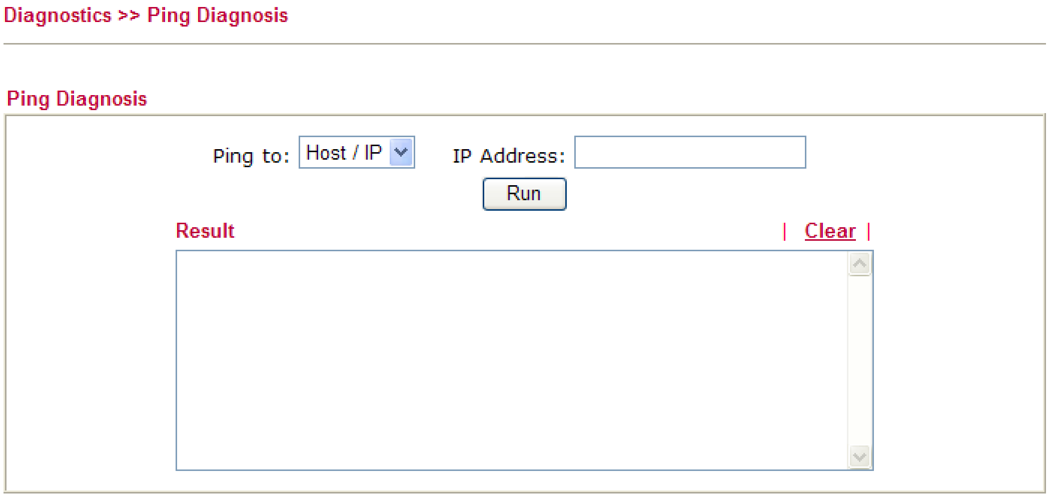
Leased Time It displays the leased time of the specified PC.

HOST ID It displays the host ID name of the specified PC.

Refresh Click it to reload the page.

3.7.2 Ping Diagnosis

Click **Diagnostics** and click **Ping Diagnosis** to pen the web page.



Ping to Use the drop down list to choose the destination that you want to ping.

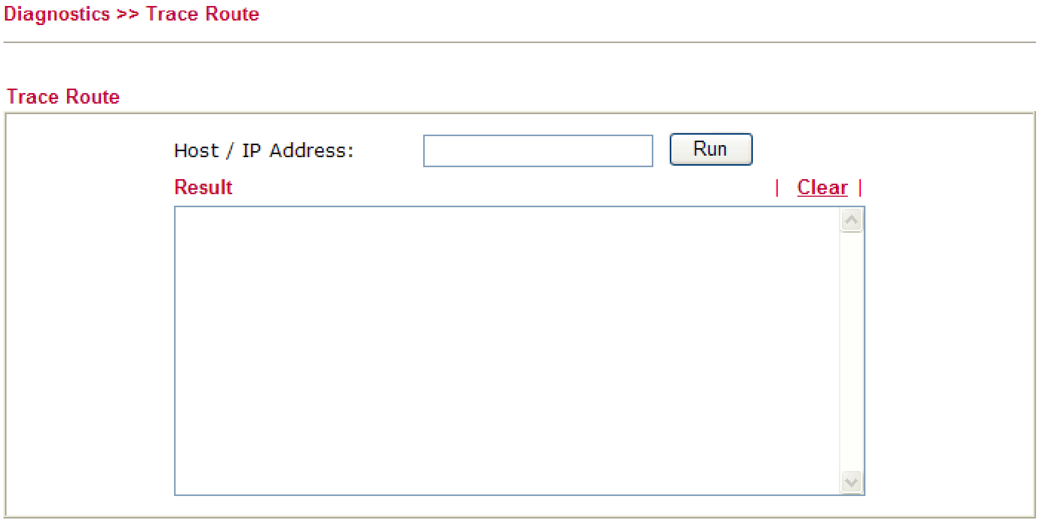
IP Address Type in the IP address of the Host/IP that you want to ping.

Run Click this button to start the ping work. The result will be displayed on the screen.

Clear Click this link to remove the result on the window.

3.7.3 Trace Route

Click **Diagnostics** and click **Trace Route** to open the web page. This page allows you to trace the routes from router to the host. Simply type the IP address of the host in the box and click **Run**. The result of route trace will be shown on the screen.



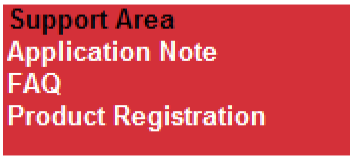
Host/IP Address It indicates the IP address of the host.

Run Click this button to start route tracing work.

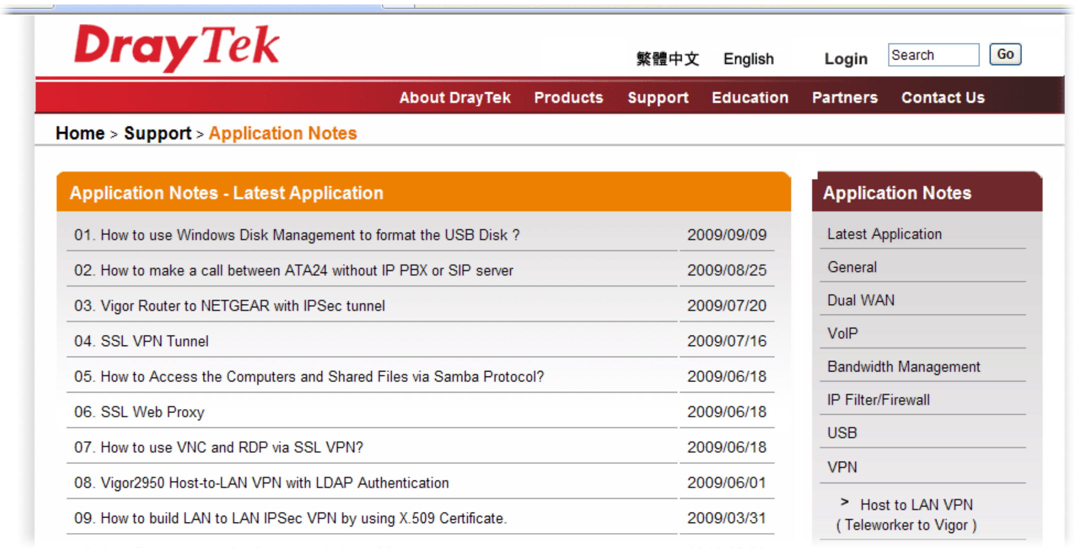
Clear Click this link to remove the result on the window.

3.8 Support Area

When you click the menu item under **Support Area**, you will be guided to visit www.draytek.com and open the corresponding pages directly.

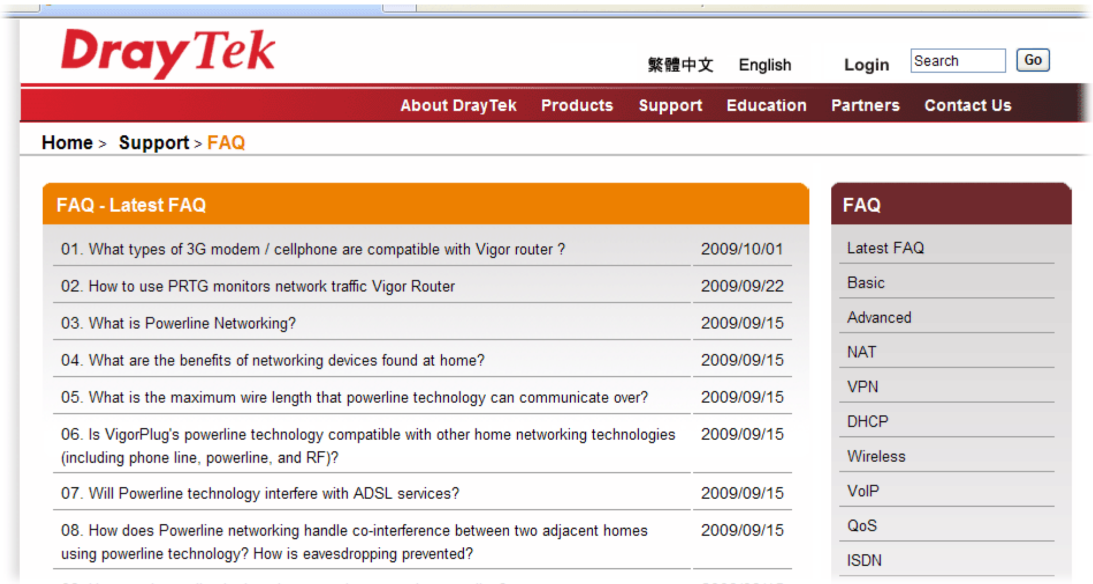


Click **Support Area>>Application Note**, the following web page will be displayed.



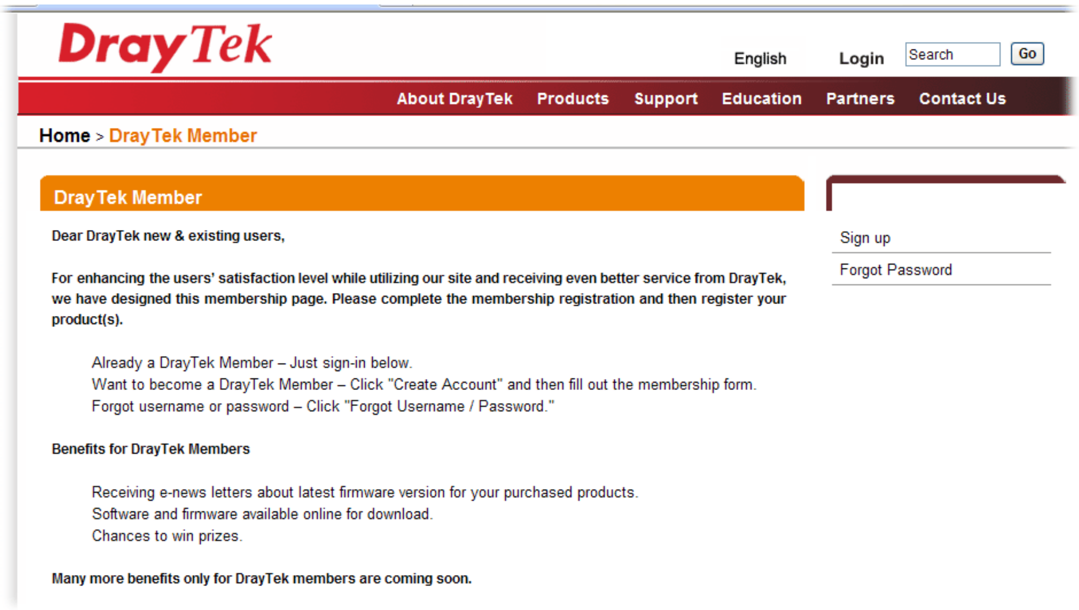
Application Notes - Latest Application	
01. How to use Windows Disk Management to format the USB Disk ?	2009/09/09
02. How to make a call between ATA24 without IP PBX or SIP server	2009/08/25
03. Vigor Router to NETGEAR with IPSec tunnel	2009/07/20
04. SSL VPN Tunnel	2009/07/16
05. How to Access the Computers and Shared Files via Samba Protocol?	2009/06/18
06. SSL Web Proxy	2009/06/18
07. How to use VNC and RDP via SSL VPN?	2009/06/18
08. Vigor2950 Host-to-LAN VPN with LDAP Authentication	2009/06/01
09. How to build LAN to LAN IPSec VPN by using X.509 Certificate.	2009/03/31

Click **Support Area>>FAQ**, the following web page will be displayed.



FAQ - Latest FAQ	
01. What types of 3G modem / cellphone are compatible with Vigor router ?	2009/10/01
02. How to use PRTG monitors network traffic Vigor Router	2009/09/22
03. What is Powerline Networking?	2009/09/15
04. What are the benefits of networking devices found at home?	2009/09/15
05. What is the maximum wire length that powerline technology can communicate over?	2009/09/15
06. Is VigorPlug's powerline technology compatible with other home networking technologies (including phone line, powerline, and RF)?	2009/09/15
07. Will Powerline technology interfere with ADSL services?	2009/09/15
08. How does Powerline networking handle co-interference between two adjacent homes using powerline technology? How is eavesdropping prevented?	2009/09/15

Click **Support Area>>Product Registration**, the following web page will be displayed.



DrayTek Member

Dear DrayTek new & existing users,

For enhancing the users' satisfaction level while utilizing our site and receiving even better service from DrayTek, we have designed this membership page. Please complete the membership registration and then register your product(s).

Already a DrayTek Member – Just sign-in below.
Want to become a DrayTek Member – Click "Create Account" and then fill out the membership form.
Forgot username or password – Click "Forgot Username / Password."

Benefits for DrayTek Members

Receiving e-news letters about latest firmware version for your purchased products.
Software and firmware available online for download.
Chances to win prizes.

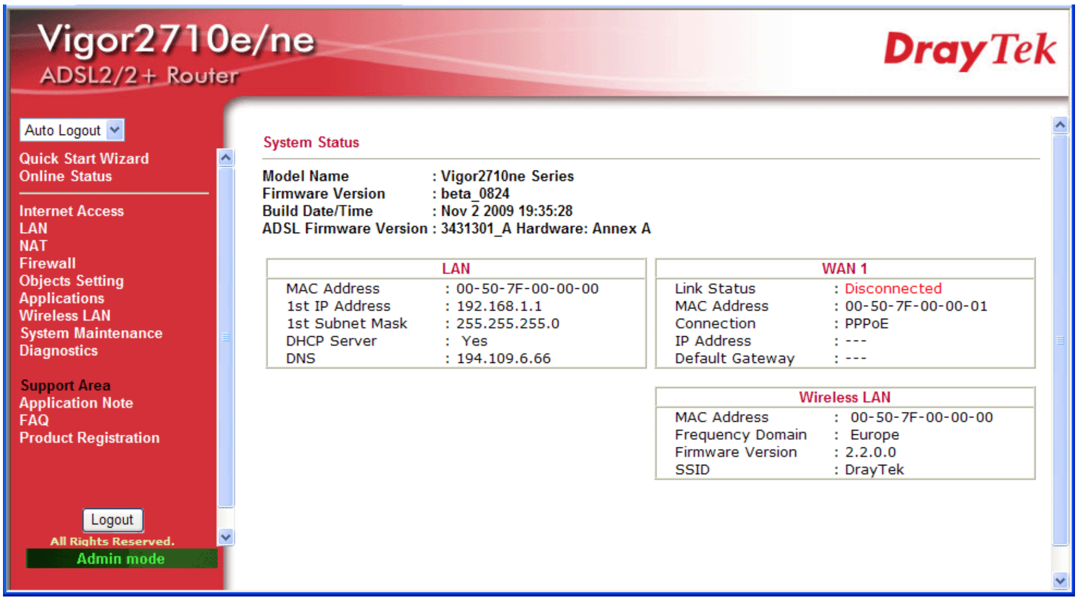
Many more benefits only for DrayTek members are coming soon.

4 Admin Mode Operation

This chapter will guide users to execute advanced (full) configuration through admin mode operation.

1. Open a web browser on your PC and type **http://192.168.1.1.** The window will ask for typing username and password.
2. Please type “admin/admin” on Username/Password for administration operation.

Now, the **Main Screen** will appear. Be aware that “Admin mode” will be displayed on the bottom left side.



System Status

Model Name : Vigor2710ne Series
Firmware Version : beta_0824
Build Date/Time : Nov 2 2009 19:35:28
ADSL Firmware Version : 3431301_A Hardware: Annex A

LAN	
MAC Address	: 00-50-7F-00-00-00
1st IP Address	: 192.168.1.1
1st Subnet Mask	: 255.255.255.0
DHCP Server	: Yes
DNS	: 194.109.6.66

WAN 1	
Link Status	: Disconnected
MAC Address	: 00-50-7F-00-00-01
Connection	: PPPoE
IP Address	: ---
Default Gateway	: ---

Wireless LAN	
MAC Address	: 00-50-7F-00-00-00
Frequency Domain	: Europe
Firmware Version	: 2.2.0.0
SSID	: DrayTek

4.1 Internet Access

Quick Start Wizard offers user an easy method to quick setup the connection mode for the router. Moreover, if you want to adjust more settings for different WAN modes, please go to **WAN** group and click the **Internet Access** link.

4.1.1 Basics of Internet Protocol (IP) Network

IP means Internet Protocol. Every device in an IP-based Network including routers, print server, and host PCs, needs an IP address to identify its location on the network. To avoid address conflicts, IP addresses are publicly registered with the Network Information Centre (NIC). Having a unique IP address is mandatory for those devices participated in the public network but not in the private TCP/IP local area networks (LANs), such as host PCs under the management of a router since they do not need to be accessed by the public. Hence, the NIC has reserved certain addresses that will never be registered publicly. These are known as ***private*** IP addresses, and are listed in the following ranges:

From 10.0.0.0 to 10.255.255.255
From 172.16.0.0 to 172.31.255.255
From 192.168.0.0 to 192.168.255.255

What are Public IP Address and Private IP Address

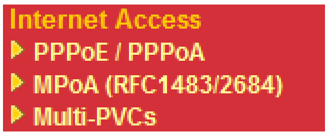
As the router plays a role to manage and further protect its LAN, it interconnects groups of host PCs. Each of them has a private IP address assigned by the built-in DHCP server of the Vigor router. The router itself will also use the default **private IP** address: 192.168.1.1 to communicate with the local hosts. Meanwhile, Vigor router will communicate with other network devices through a **public IP** address. When the data flow passing through, the Network Address Translation (NAT) function of the router will dedicate to translate public/private addresses, and the packets will be delivered to the correct host PC in the local area network. Thus, all the host PCs can share a common Internet connection.

Get Your Public IP Address from ISP

In ADSL deployment, the PPP (Point to Point)-style authentication and authorization is required for bridging customer premises equipment (CPE). Point to Point Protocol over Ethernet (PPPoE) connects a network of hosts via an access device to a remote access concentrator or aggregation concentrator. This implementation provides users with significant ease of use. Meanwhile it provides access control, billing, and type of service according to user requirement.

When a router begins to connect to your ISP, a serial of discovery process will occur to ask for a connection. Then a session will be created. Your user ID and password is authenticated via **PAP** or **CHAP** with **RADIUS** authentication system. And your IP address, DNS server, and other related information will usually be assigned by your ISP.

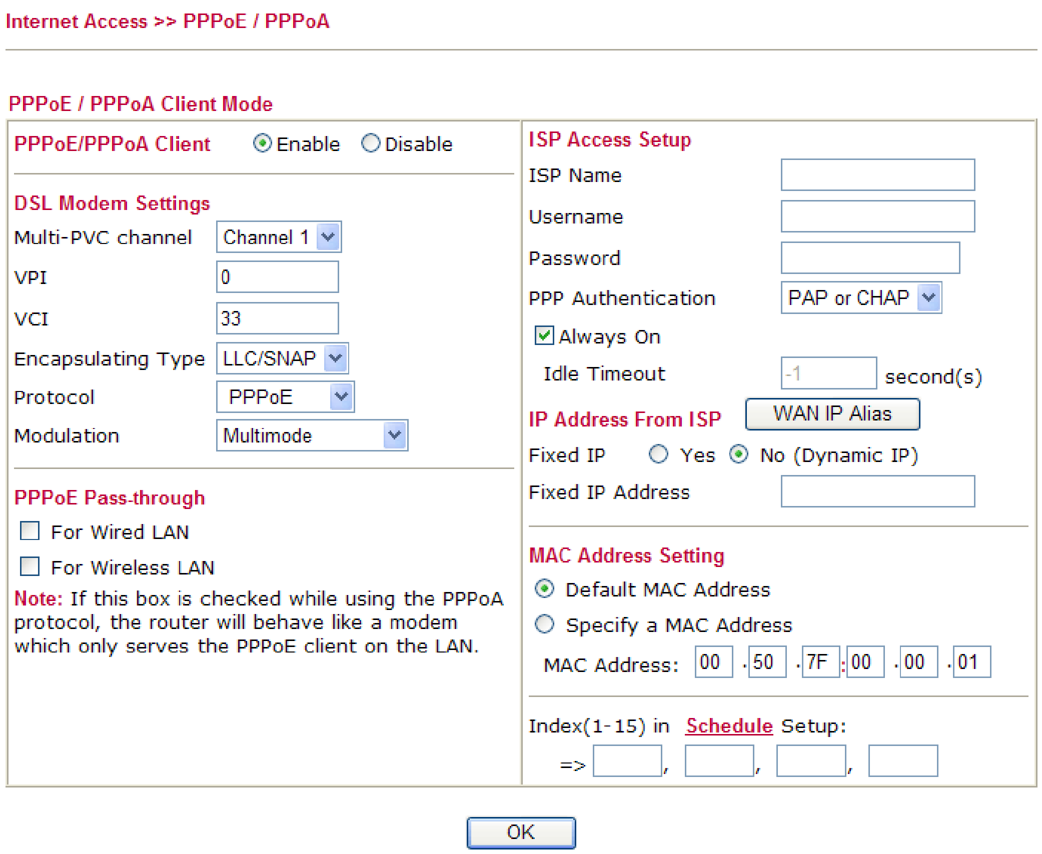
Below shows the menu items for Internet Access.



4.1.2 PPPoE/PPPoA

PPPoA, included in RFC1483, can be operated in either Logical Link Control-Subnetwork Access Protocol or VC-Mux mode. As a CPE device, Vigor router encapsulates the PPP session based for transport across the ADSL loop and your ISP's Digital Subscriber Line Access Multiplexer (SDLAM).

To choose PPPoE or PPPoA as the accessing protocol of the internet, please select **PPPoE/PPPoA** from the **Internet Access** menu. The following web page will be shown.



Internet Access >> PPPoE / PPPoA

PPPoE / PPPoA Client Mode

PPPoE/PPPoA Client ● Enable ○ Disable

DSL Modem Settings

Multi-PVC channel: Channel 1

VPI: 0

VCI: 33

Encapsulating Type: LLC/SNAP

Protocol: PPPoE

Modulation: Multimode

PPPoE Pass-through

□ For Wired LAN

□ For Wireless LAN

Note: If this box is checked while using the PPPoA protocol, the router will behave like a modem which only serves the PPPoE client on the LAN.

ISP Access Setup

ISP Name:

Username:

Password:

PPP Authentication: PAP or CHAP

☑ Always On

Idle Timeout: -1 second(s)

IP Address From ISP [WAN IP Alias]

Fixed IP ○ Yes ● No (Dynamic IP)

Fixed IP Address:

MAC Address Setting

● Default MAC Address

○ Specify a MAC Address

MAC Address: 00 . 50 . 7F : 00 . 00 . 01

Index(1-15) in Schedule Setup:

=> , , ,

Enable/Disable Click **Enable** for activating this function. If you click **Disable**, this function will be closed and all the settings that you adjusted in this page will be invalid.

DSL Modem Settings Set up the DSL parameters required by your ISP. These are vital for building DSL connection to your ISP.

Multi-PVC channel - The selections displayed here are determined by the page of **Internet Access** – **Multi PVCs**. **Select M-PVCs Channel** means no selection will be chosen.

VPI - Type in the value provided by ISP.

VCI - Type in the value provided by ISP.

Encapsulating Type - Drop down the list to choose the type provided by ISP.

Protocol - Drop down the list to choose the one provided by ISP. If you have already used **Quick Start Wizard** to set the protocol, then it is not necessary for you to change any settings in this group.

Modulation – Drop down the list to choose a proper modulation for the router.

PPPoE Pass-through The router offers PPPoE dial-up connection. Besides, you also can establish the PPPoE connection directly from local clients to your ISP via the Vigor router. When PPPoA protocol is selected, the PPPoE package transmitted by PC will be transformed into PPPoA package and sent to WAN server. Thus, the PC can access Internet through such direction.

For Wired LAN – If you check this box, PCs on the same network can use another set of PPPoE session (different with the Host PC) to access into Internet.

For Wireless LAN – If you check this box, PCs on the same wireless network can use another set of PPPoE session (different with the Host PC) to access into Internet.

ISP Access Setup

Enter your allocated username, password and authentication parameters according to the information provided by your ISP. If you want to connect to Internet all the time, you can check **Always On**.

Username – Type in the username provided by ISP in this field.

Password – Type in the password provided by ISP in this field.

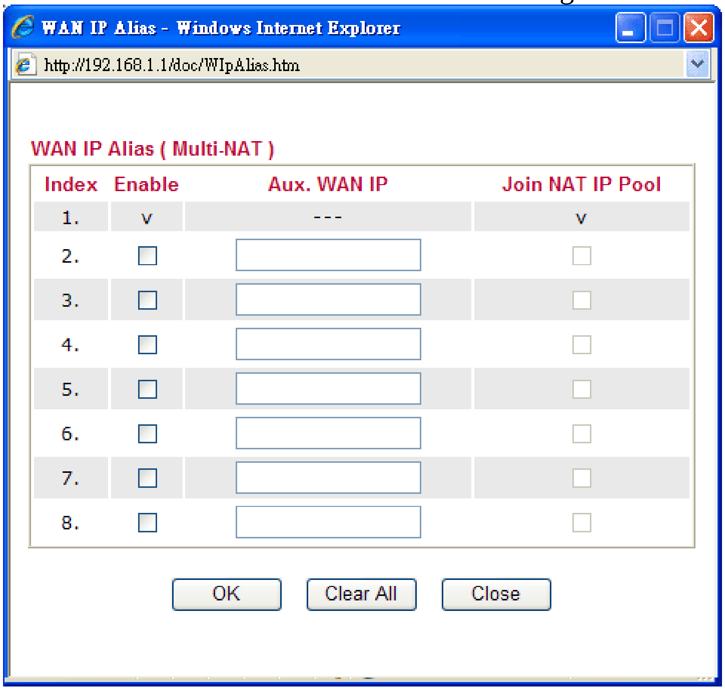
PPP Authentication – Select **PAP only** or **PAP or CHAP** for PPP.

Idle Timeout – Set the timeout for breaking down the Internet after passing through the time without any action. This setting is active only when the **Active on demand** option for Active Mode is selected in **WAN>> General Setup** page.

IP Address From ISP

Usually ISP dynamically assigns IP address to you each time you connect to it and request. In some case, your ISP provides service to always assign you the same IP address whenever you request. In this case, you can fill in this IP address in the Fixed IP field. Please contact your ISP before you want to use this function.

WAN IP Alias - If you have multiple public IP addresses and would like to utilize them on the WAN interface, please use WAN IP Alias. You can set up to 8 public IP addresses other than the current one you are using. Notice that this setting is available for WAN1 only. Type the additional WAN IP address and check the Enable box. Then click OK to exit the dialog.


WAN IP Alias - Windows Internet Explorer
http://192.168.1.1/doc/WIpAlias.htm
OK
Clear All
Close

WAN IP Alias (Multi-NAT)

Index	Enable	Aux. WAN IP	Join NAT IP Pool
1.	v	---	v
2.	☐		☐
3.	☐		☐
4.	☐		☐
5.	☐		☐
6.	☐		☐
7.	☐		☐
8.	☐		☐

Fixed IP – Click **Yes** to use this function and type in a fixed IP address in the box of **Fixed IP Address**.

Default MAC Address – You can use **Default MAC Address** or specify another MAC address by typing on the boxes of MAC Address for the router.

Specify a MAC Address – Type the MAC address for the router manually.

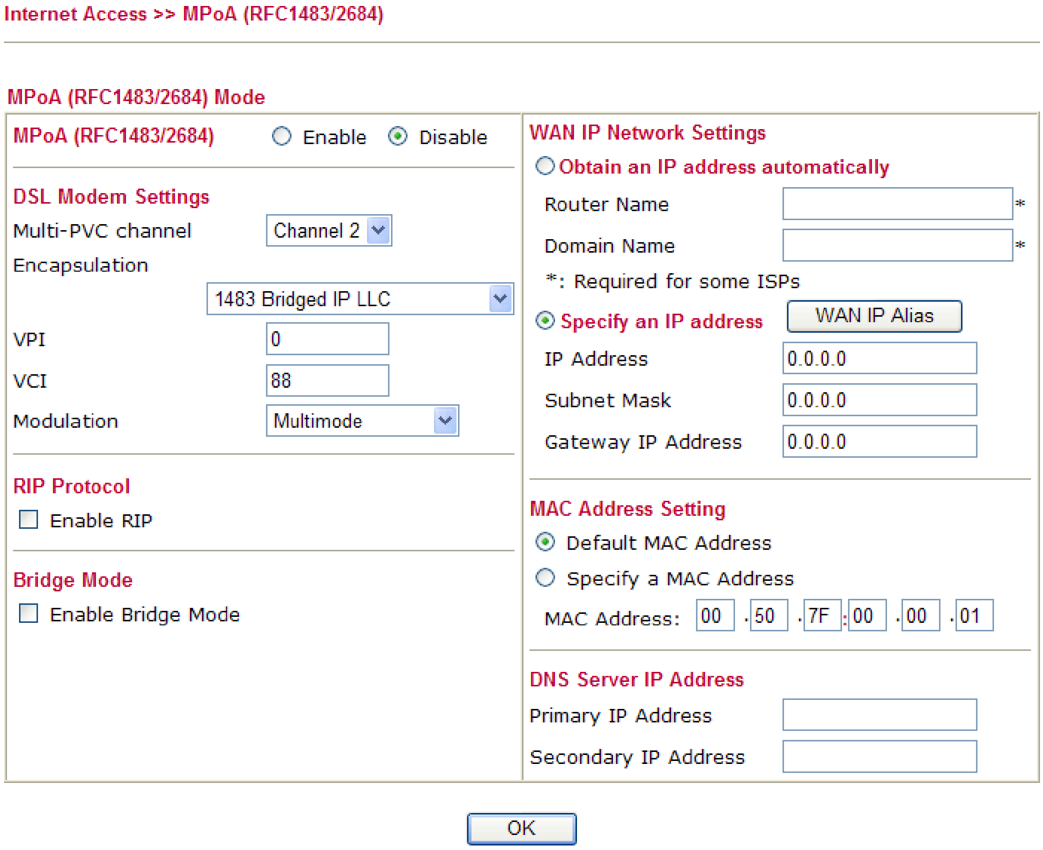
Index (1-15) in Schedule Setup - You can type in four sets of time schedule for your request. All the schedules can be set previously in **Applications – Schedule** web page and you can use the number that you have set in that web page.

After finishing all the settings here, please click **OK** to activate them.

4.1.3 MPoA

MPoA is a specification that enables ATM services to be integrated with existing LANs, which use either Ethernet, token-ring or TCP/IP protocols. The goal of MPoA is to allow different LANs to send packets to each other via an ATM backbone.

To use **MPoA** as the accessing protocol of the Internet, select **MPoA** mode. The following web page will appear.



Internet Access >> MPoA (RFC1483/2684)

MPoA (RFC1483/2684) Mode

MPoA (RFC1483/2684) ○ Enable ● Disable

DSL Modem Settings
Multi-PVC channel: Channel 2
Encapsulation: 1483 Bridged IP LLC
VPI: 0
VCI: 88
Modulation: Multimode

RIP Protocol
□ Enable RIP

Bridge Mode
□ Enable Bridge Mode

WAN IP Network Settings
○ Obtain an IP address automatically
Router Name: *
Domain Name: *
*: Required for some ISPs
● Specify an IP address [WAN IP Alias]
IP Address: 0.0.0.0
Subnet Mask: 0.0.0.0
Gateway IP Address: 0.0.0.0

MAC Address Setting
● Default MAC Address
○ Specify a MAC Address
MAC Address: 00 . 50 . 7F : 00 . 00 . 01

DNS Server IP Address
Primary IP Address:
Secondary IP Address:

MPoA (RFC1483/2684) Click **Enable** for activating this function. If you click **Disable**, this function will be closed and all the settings that you adjusted in this page will be invalid.

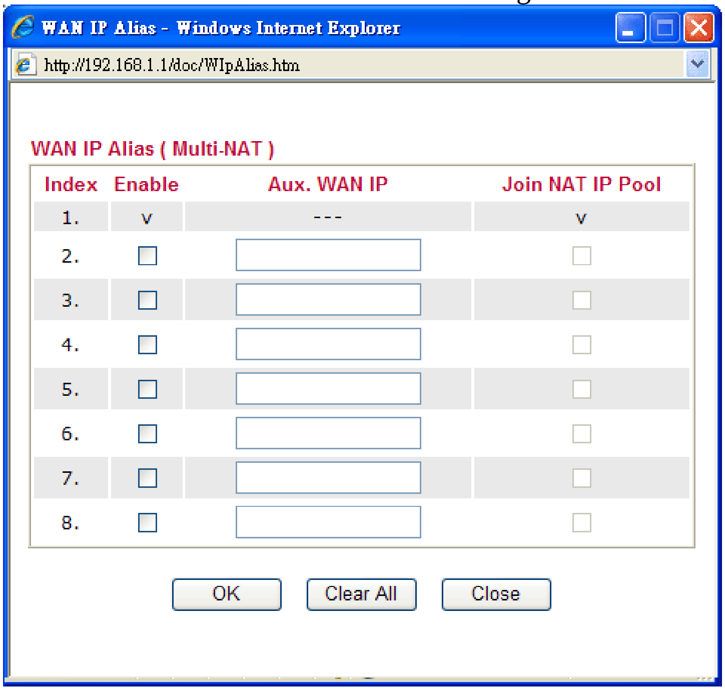
DSL Modem Settings Set up the DSL parameters required by your ISP. These are vital for building DSL connection to your ISP.
Multi-PVC channel - The selections displayed here are determined by the page of **Internet Access** – **Multi PVCs**. **Select M-PVCs Channel** means no selection will be chosen.
Encapsulating Type - Drop down the list to choose the type provided by ISP.
VPI - Type in the value provided by ISP.
VCI - Type in the value provided by ISP.
Modulation – Drop down the list to choose a proper modulation for the router.

RIP Protocol Routing Information Protocol is abbreviated as RIP（RFC1058）specifying how routers exchange routing tables information. Click **Enable RIP** for activating this function.

Bridge Mode If you choose **Bridged IP** as the protocol, you can check this box to invoke the function. The router will work as a bridge modem.

WAN IP Network Settings This group allows you to obtain an IP address automatically and allows you type in IP address manually.

Obtain an IP address automatically – Click this button to obtain the IP address automatically.
Router Name – Type in the router name provided by ISP.
Domain Name – Type in the domain name that you have assigned.
Specify an IP address – Click this radio button to specify some data.
WAN IP Alias - If you have multiple public IP addresses and would like to utilize them on the WAN interface, please use WAN IP Alias. You can set up to 8 public IP addresses other than the current one you are using. Notice that this setting is available for WAN1 only. Type the additional WAN IP address and check the Enable box. Then click OK to exit the dialog.


WAN IP Alias - Windows Internet Explorer
http://192.168.1.1/doc/WIpAlias.htm
OK
Clear All
Close

WAN IP Alias (Multi-NAT)

Index	Enable	Aux. WAN IP	Join NAT IP Pool
1.	v	---	v
2.	□		□
3.	□		□
4.	□		□
5.	□		□
6.	□		□
7.	□		□
8.	□		□

IP Address – Type in the private IP address.
Subnet Mask – Type in the subnet mask.
Gateway IP Address – Type in gateway IP address.
Default MAC Address Type in MAC address for the router. You can use **Default MAC Address** or specify another MAC address for your necessity.
MAC Address – Type in the MAC address for the router manually.

DNS Server IP Address Type in the primary IP address for the router. If necessary, type in secondary IP address for necessity in the future.

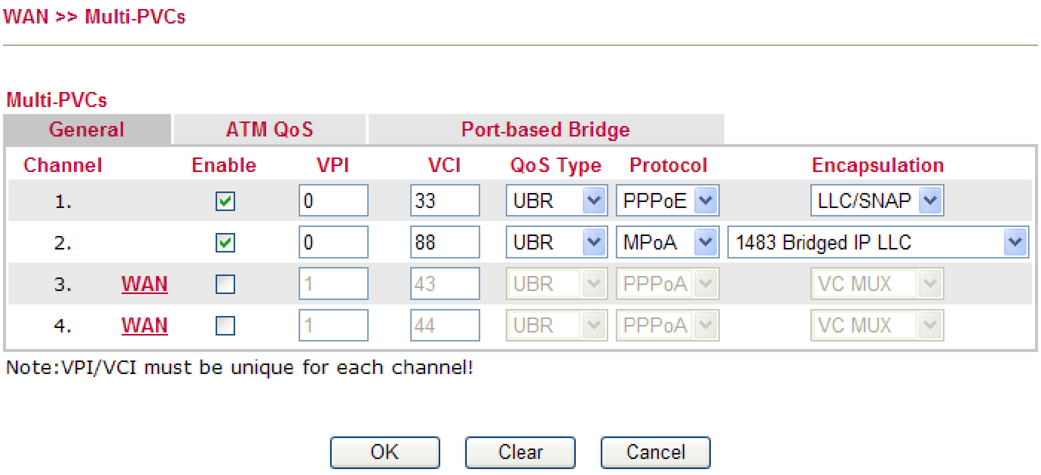
After finishing all the settings here, please click **OK** to activate them.

4.1.4 Multi-PVCs

This router allows you to create multi-PVCs for different data transferring for using. Simply go to **Internet Access** and select **Multi-PVC Setup** page.

General

The system allows you to set up to four channels which are ready for choosing as the first PVC line that will be used as multi-PVCs.



WAN >> Multi-PVCs

Multi-PVCs

Channel		Enable	VPI	VCI	QoS Type	Protocol	Encapsulation
1.		☑	0	33	UBR	PPPoE	LLC/SNAP
2.		☑	0	88	UBR	MPoA	1483 Bridged IP LLC
3.	WAN	☐	1	43	UBR	PPPoA	VC MUX
4.	WAN	☐	1	44	UBR	PPPoA	VC MUX

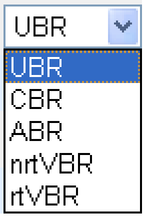
Note:VPI/VCI must be unique for each channel!

Enable Check this box to enable that channel. The channels that you enabled here will be shown in the **Multi-PVC channel** drop down list on the web page of **Internet Access**. Though you can enable eight channels in this page, yet only one channel can be chosen on the web page of **Internet Access**.

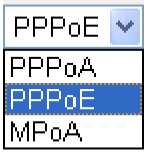
VPI Type in the value provided by your ISP.

VCI Type in the value provided by your ISP.

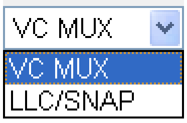
QoS Type Select a proper QoS type for the channel.

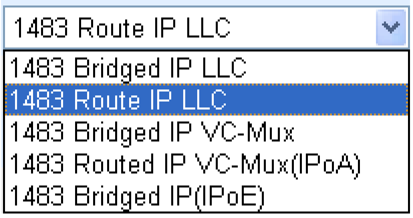


Protocol Select a proper protocol for this channel.

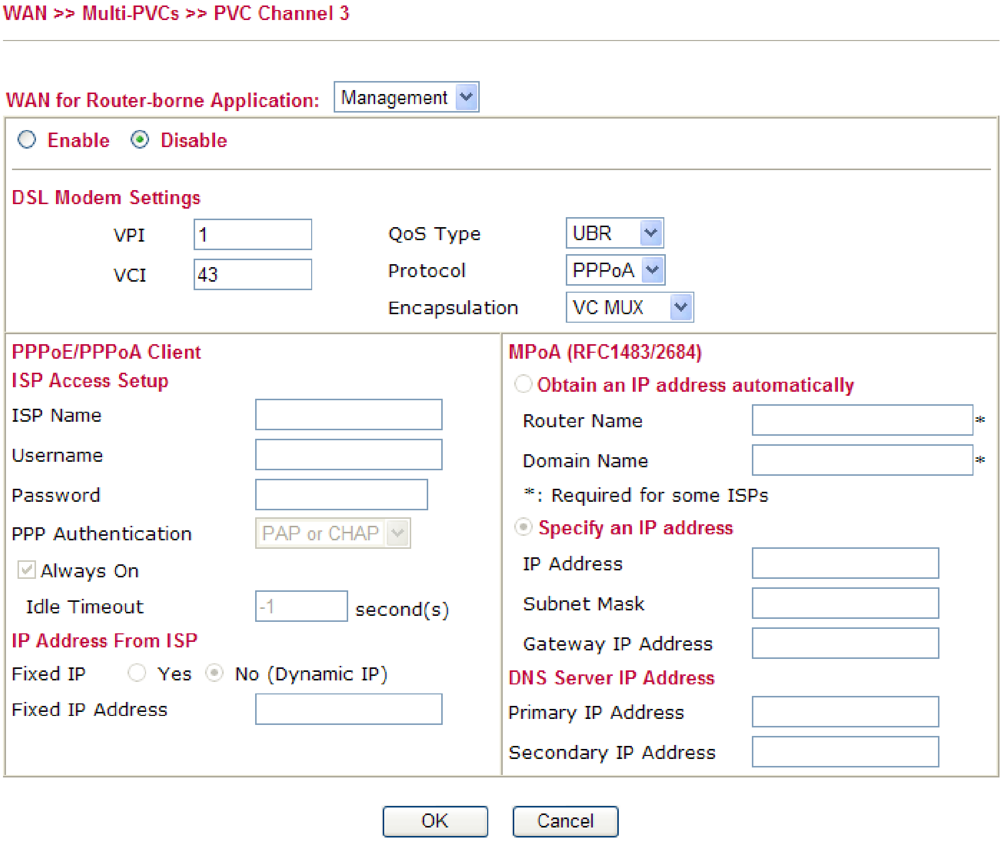


Encapsulation Choose a proper type for this channel. The types will be different according to the protocol setting that you choose.





WAN link for Channel 3, 4, 5 are provided for router-borne application such as TR069 and VoIP. The settings must be applied and obtained from your ISP. For your special request, please contact with your ISP and then click WAN link of Channel 3, 4 or 5 to configure your router.



WAN >> Multi-PVCs >> PVC Channel 3

WAN for Router-borne Application: Management

○ Enable ● Disable

DSL Modem Settings

VPI: 1
VCI: 43
QoS Type: UBR
Protocol: PPPoA
Encapsulation: VC MUX

PPPoE/PPPoA Client

ISP Access Setup

ISP Name:
Username:
Password:
PPP Authentication: PAP or CHAP
☑ Always On
Idle Timeout: -1 second(s)

IP Address From ISP

Fixed IP ○ Yes ● No (Dynamic IP)
Fixed IP Address:

MPoA (RFC1483/2684)

○ Obtain an IP address automatically
Router Name: *
Domain Name: *
*: Required for some ISPs
● Specify an IP address
IP Address:
Subnet Mask:
Gateway IP Address:

DNS Server IP Address

Primary IP Address:
Secondary IP Address:

WAN for Router-borne Application

Choose the router service for channel 3, 4 or 5.

Management - It can be specified for general management (Web configuration/telnet/TR069). If you choose Management, the configuration for this PVC will be effective for Web configuration/telnet/TR069.
VoIP - It can be specified for VoIP only. If you choose VoIP, the configuration for this PVC will be effective for VoIP data transmitting and receiving.

Enable/Disable

Click **Enable** for activating this function. If you click **Disable**, this function will be closed and all the settings that you adjusted in this page will be invalid.

DSL Modem Settings

Set up the DSL parameters required by your ISP. These are vital for building DSL connection to your ISP.
VPI - Type in the value provided by ISP.
VCI - Type in the value provided by ISP.
QoS Type -Select a proper QoS type for the channel.
Protocol - Select a proper protocol for this channel. There are three options, PPPoE, PPPoA and MPoA for you to select. The following settings will be changed according to the protocol selected here.
Encapsulating Type - Drop down the list to choose the type provided by ISP.

ISP Access Setup

Enter your allocated username, password and authentication parameters according to the information provided by your ISP. If you want to connect to Internet all the time, you can check **Always On**.
ISP Name - Type in the name of ISP.
Username – Type in the username provided by ISP in this field.
Password – Type in the password provided by ISP in this field.
PPP Authentication – Select **PAP only** or **PAP or CHAP** for PPP.
Idle Timeout – Set the timeout for breaking down the Internet after passing through the time without any action. This setting is active only when the **Always On** option is note selected.

IP Address from ISP

Fixed IP - Click **Yes** to use this function and type in a fixed IP address in the box of **Fixed IP Address**.
Fixed IP Address -Type a fixed IP address.

Obtain an IP address automatically

Click this button to obtain the IP address automatically.
Router Name – Type in the router name provided by ISP.
Domain Name – Type in the domain name that you have assigned.

Specify an IP address

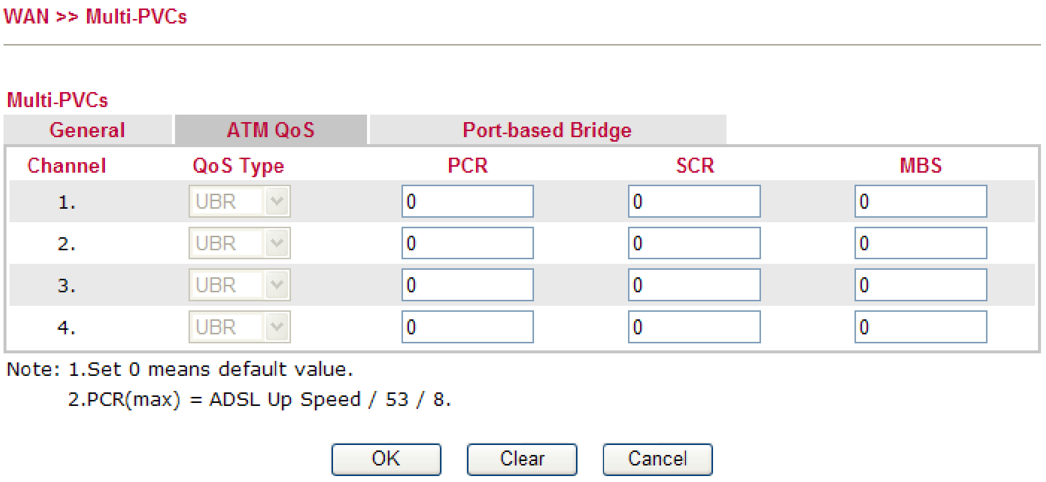
Click this radio button to specify some data.
IP Address – Type in the private IP address.
Subnet Mask – Type in the subnet mask.
Gateway IP Address – Type in gateway IP address.

DNS Server IP Address

Type in the primary IP address for the router. If necessary, type in secondary IP address for necessity in the future.

ATM QoS

Such configuration is applied to upstream packets. Such information will be provided by ISP. Please contact with your ISP for detailed information.



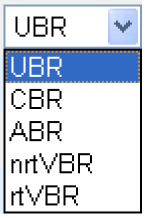
WAN >> Multi-PVCs

Multi-PVCs

Channel	QoS Type	PCR	SCR	MBS
1.	UBR	0	0	0
2.	UBR	0	0	0
3.	UBR	0	0	0
4.	UBR	0	0	0

Note: 1.Set 0 means default value.
2.PCR(max) = ADSL Up Speed / 53 / 8.

QoS Type Select a proper QoS type for the channel according to the information that your ISP provides.



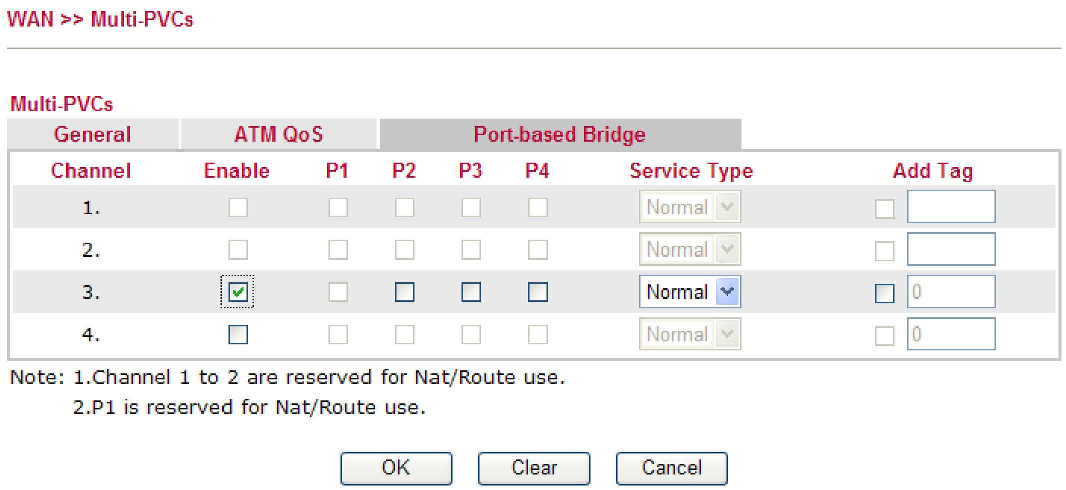
PCR It represents Peak Cell Rate. The default setting is “0”.

SCR It represents Sustainable Cell Rate. The value of SCR must be smaller than PCR.

MBS It represents Maximum Burst Size. The range of the value is 10 to 50.

Port-based Bridge

General page lets you set the first PVC. As to set the second PVC line, please click the **Port-based Bridge** tab to open Bridge configuration page.



WAN >> Multi-PVCs

Multi-PVCs

General | ATM QoS | Port-based Bridge

Channel	Enable	P1	P2	P3	P4	Service Type	Add Tag	
1.	☐	☐	☐	☐	☐	Normal	☐	
2.	☐	☐	☐	☐	☐	Normal	☐	
3.	☑	☐	☐	☐	☐	Normal	☐	0
4.	☐	☐	☐	☐	☐	Normal	☐	0

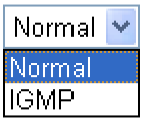
Note: 1.Channel 1 to 2 are reserved for Nat/Route use.
2.P1 is reserved for Nat/Route use.

OK | Clear | Cancel

Enable Check this box to enable that channel. Only channel 3 to 8 can be set in this page, for channel 1 to 2 are reserved for NAT using.

P1 to P4 It means the LAN port 1 to 4. Check the box to designate the LAN port for channel 3 to 8.

Service Type Normally, service type is used for the service of video stream (e.g., IPTV). It can divide the packets from remote control and from video stream into different PVC. In general, the protocol used by remote control is IGMP.



Normal – It means that the PVC can accept all packets except IGMP.
IGMP – It means that the PVC can accept packets of IGMP only.

Add Tag To identify the usage of PVC, check this box to invoke this setting. And type the number for VLAN ID (number).

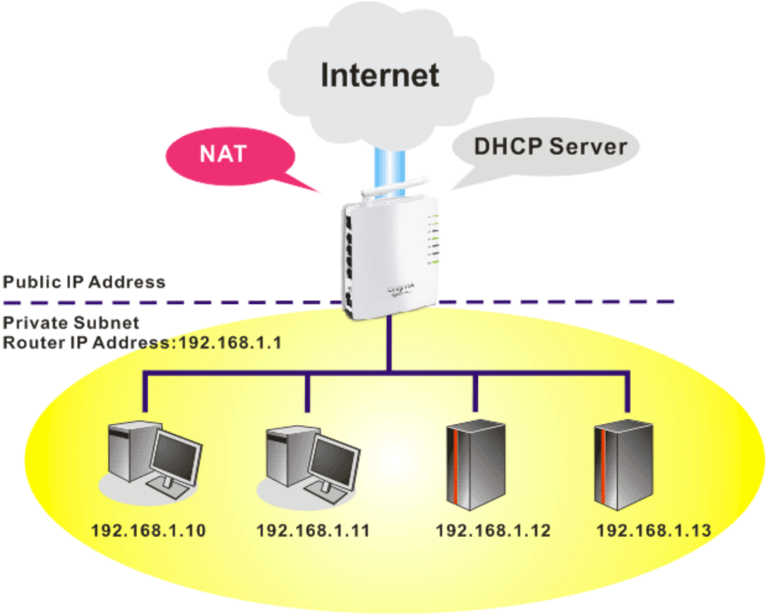
Click **Clear** to remove all the configurations in this page if you do not satisfy it. When you finish the configuration, please click **OK** to save and exit this page. Or click **Cancel** to abort the configuration and exit this page.

4.2 LAN

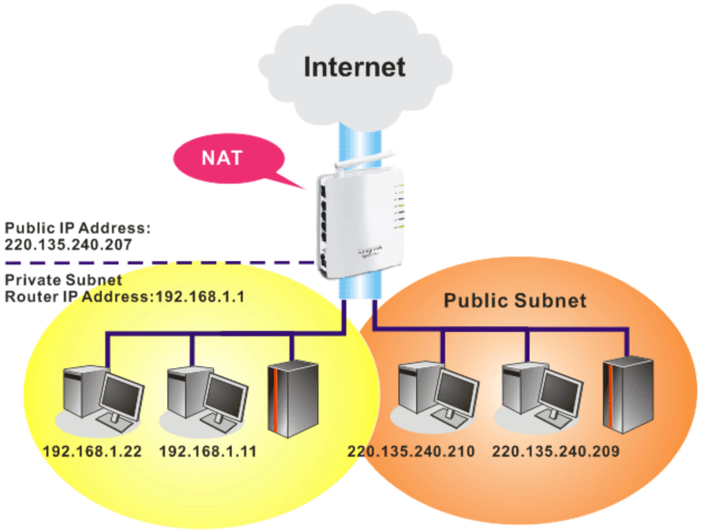
Local Area Network (LAN) is a group of subnets regulated and ruled by router. The design of network structure is related to what type of public IP addresses coming from your ISP.

4.2.1 Basics of LAN

The most generic function of Vigor router is NAT. It creates a private subnet of your own. As mentioned previously, the router will talk to other public hosts on the Internet by using public IP address and talking to local hosts by using its private IP address. What NAT does is to translate the packets from public IP address to private IP address to forward the right packets to the right host and vice versa. Besides, Vigor router has a built-in DHCP server that assigns private IP address to each local host. See the following diagram for a briefly understanding.



In some special case, you may have a public IP subnet from your ISP such as 220.135.240.0/24. This means that you can set up a public subnet or call second subnet that each host is equipped with a public IP address. As a part of the public subnet, the Vigor router will serve for IP routing to help hosts in the public subnet to communicate with other public hosts or servers outside. Therefore, the router should be set as the gateway for public hosts.



What is Routing Information Protocol (RIP)

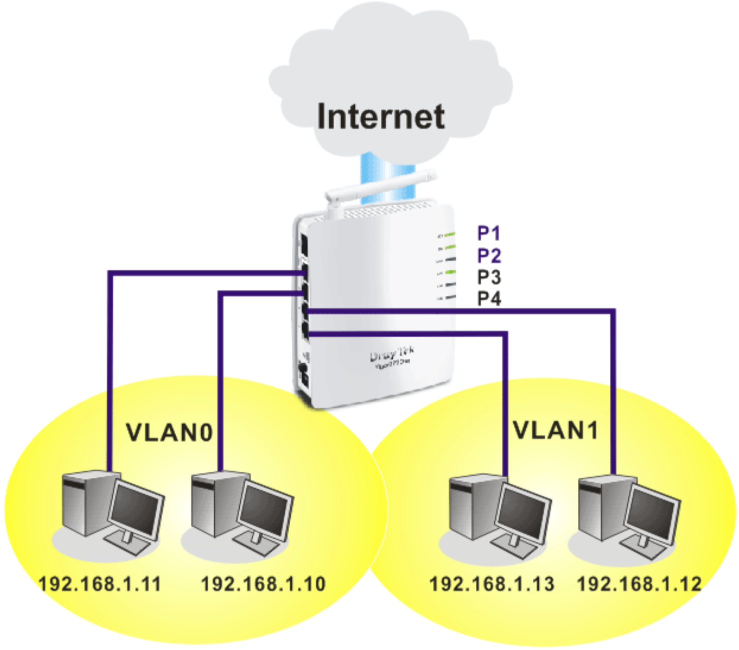
Vigor router will exchange routing information with neighboring routers using the RIP to accomplish IP routing. This allows users to change the information of the router such as IP address and the routers will automatically inform for each other.

What is Static Route

When you have several subnets in your LAN, sometimes a more effective and quicker way for connection is the **Static routes** function rather than other method. You may simply set rules to forward data from one specified subnet to another specified subnet without the presence of RIP.

What are Virtual LANs

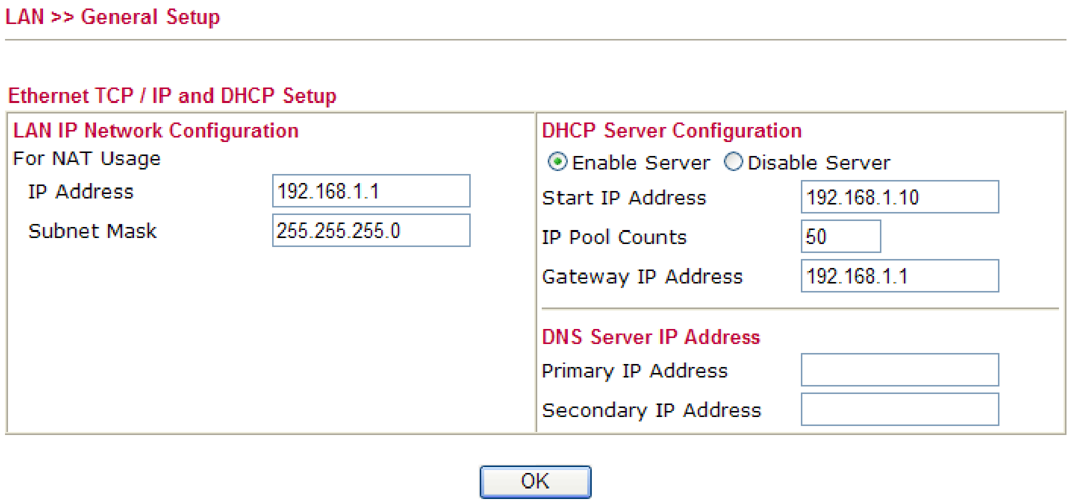
You can group local hosts by physical ports and create up to 4 virtual LANs. To manage the communication between different groups, please set up rules in Virtual LAN (VLAN) function and the rate of each.



4.2.2 General Setup

This page provides you the general settings for LAN.

Click **LAN** to open the LAN settings page and choose **General Setup**.



LAN >> General Setup

Ethernet TCP / IP and DHCP Setup

LAN IP Network Configuration	DHCP Server Configuration
For NAT Usage	● Enable Server ○ Disable Server
IP Address: 192.168.1.1	Start IP Address: 192.168.1.10
Subnet Mask: 255.255.255.0	IP Pool Counts: 50
	Gateway IP Address: 192.168.1.1
	DNS Server IP Address
	Primary IP Address:
	Secondary IP Address:

IP Address

Type in private IP address for connecting to a local private network (Default: 192.168.1.1).

Subnet Mask

Type in an address code that determines the size of the network. (Default: 255.255.255.0/ 24)

DHCP Server Configuration

DHCP stands for Dynamic Host Configuration Protocol. The router by factory default acts a DHCP server for your network so it automatically dispatch related IP settings to any local user configured as a DHCP client. It is highly recommended that you leave the router enabled as a DHCP server if you do not have a DHCP server for your network.

If you want to use another DHCP server in the network other than the Vigor Router's, you can let Relay Agent help you to redirect the DHCP request to the specified location.
Enable Server - Let the router assign IP address to every host in the LAN.
Disable Server – Let you manually assign IP address to every host in the LAN.
Start IP Address - Enter a value of the IP address pool for the DHCP server to start with when issuing IP addresses. If the 1st IP address of your router is 192.168.1.1, the starting IP address must be 192.168.1.2 or greater, but smaller than 192.168.1.254.
IP Pool Counts - Enter the maximum number of PCs that you want the DHCP server to assign IP addresses to. The default is 50 and the maximum is 253.
Gateway IP Address - Enter a value of the gateway IP address for the DHCP server. The value is usually as same as the 1st IP address of the router, which means the router is the default gateway.

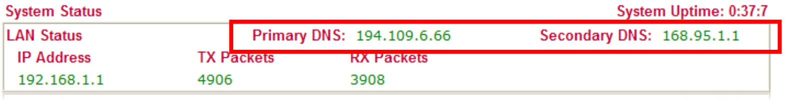
DNS Server Configuration

DNS stands for Domain Name System. Every Internet host must have a unique IP address, also they may have a human-friendly, easy to remember name such as www.yahoo.com. The DNS server converts the user-friendly name into its equivalent IP address.

Primary IP Address -You must specify a DNS server IP address here because your ISP should provide you with usually more than one DNS Server. If your ISP does not provide it, the router will automatically apply default DNS Server IP address: 194.109.6.66 to this field.

Secondary IP Address - You can specify secondary DNS server IP address here because your ISP often provides you more than one DNS Server. If your ISP does not provide it, the router will automatically apply default secondary DNS Server IP address: 194.98.0.1 to this field.

The default DNS Server IP address can be found via Online Status:



System Status System Uptime: 0:37:7

LAN Status Primary DNS: 194.109.6.66 Secondary DNS: 168.95.1.1

IP Address	TX Packets	RX Packets
192.168.1.1	4906	3908

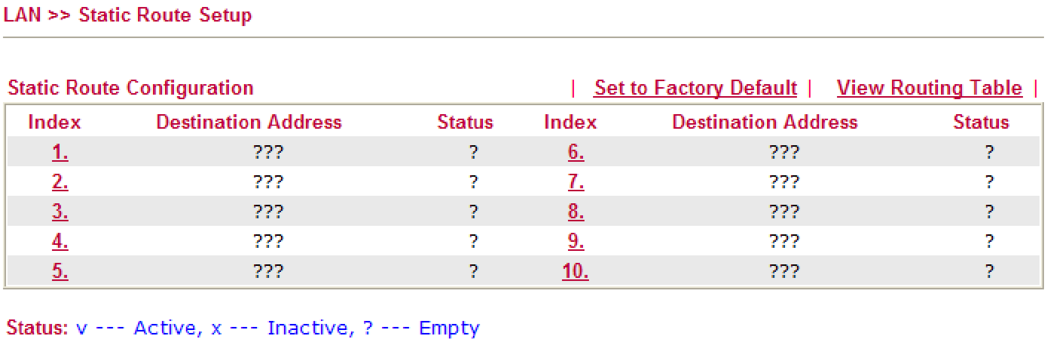
If both the Primary IP and Secondary IP Address fields are left empty, the router will assign its own IP address to local users as a DNS proxy server and maintain a DNS cache.

If the IP address of a domain name is already in the DNS cache, the router will resolve the domain name immediately. Otherwise, the router forwards the DNS query packet to the external DNS server by establishing a WAN (e.g. DSL/Cable) connection.

There are two common scenarios of LAN settings that stated in Chapter 4. For the configuration examples, please refer to that chapter to get more information for your necessity.

4.2.3 Static Route

Go to **LAN** to open setting page and choose **Static Route**.



LAN >> Static Route Setup

Static Route Configuration | Set to Factory Default | View Routing Table |

Index	Destination Address	Status	Index	Destination Address	Status
1.	???	?	6.	???	?
2.	???	?	7.	???	?
3.	???	?	8.	???	?
4.	???	?	9.	???	?
5.	???	?	10.	???	?

Status: v --- Active, x --- Inactive, ? --- Empty

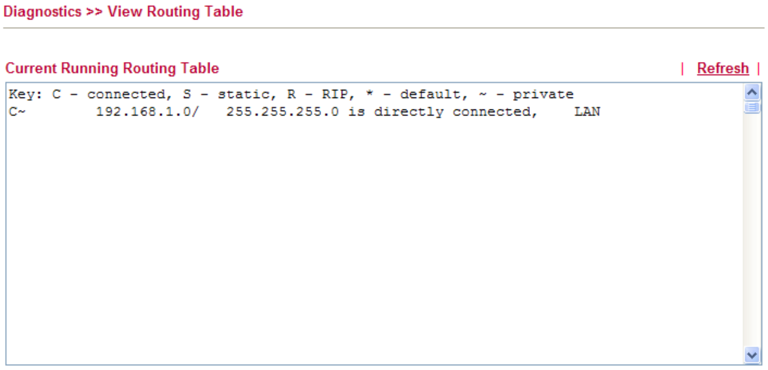
Index The number (1 to 10) under Index allows you to open next page to set up static route.

Destination Address Displays the destination address of the static route.

Status Displays the status of the static route.

Set to Factory Default Clear all profiles.

Viewing Routing Table Displays the routing table for your reference.



Diagnostics >> View Routing Table
Current Running Routing Table
| Refresh |

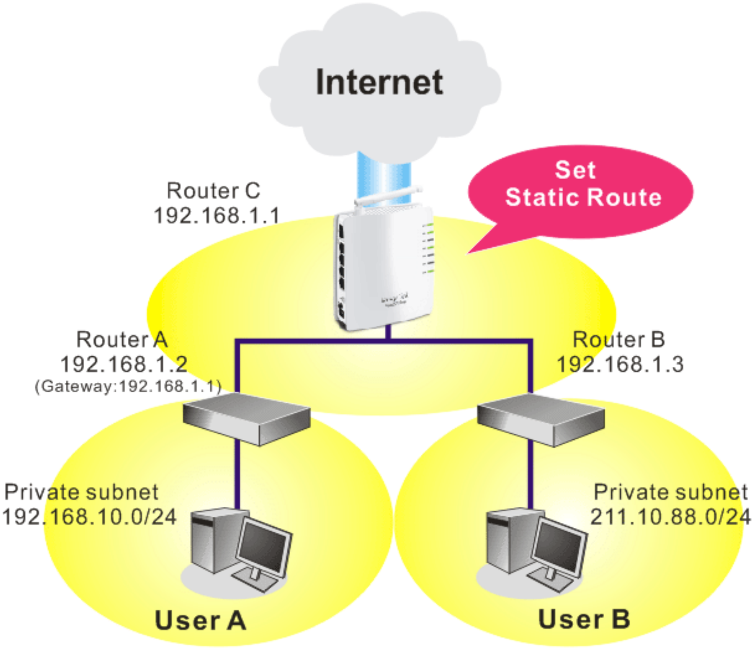
```
Key: C - connected, S - static, R - RIP, * - default, ~ - private
C~        192.168.1.0/   255.255.255.0 is directly connected,    LAN
```

Add Static Routes to Private and Public Networks

Here is an example of setting Static Route in Main Router so that user A and B locating in different subnet can talk to each other via the router. Assuming the Internet access has been configured and the router works properly:

- use the Main Router to surf the Internet.
- create a private subnet 192.168.10.0 using an internal Router A (192.168.1.2)
- create a public subnet 211.100.88.0 via an internal Router B (192.168.1.3).
- have set Main Router 192.168.1.1 as the default gateway for the Router A 192.168.1.2.

Before setting Static Route, user A cannot talk to user B for Router A can only forward recognized packets to its default gateway Main Router.

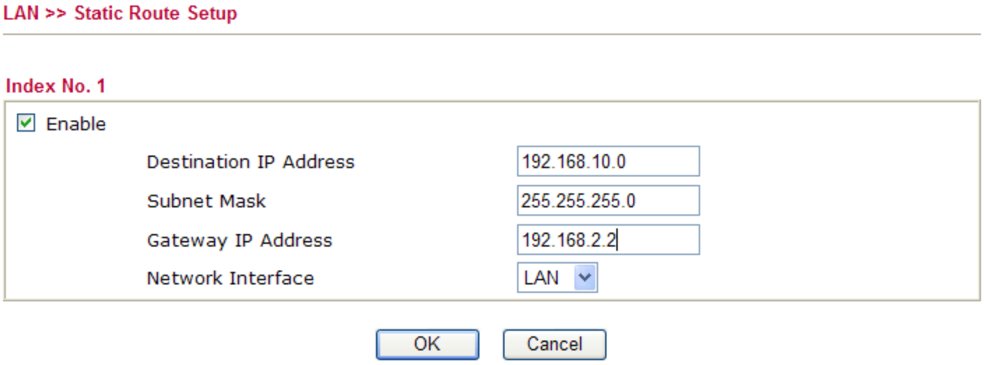


1. Go to **LAN** page and click **General Setup**, select 1st Subnet as the **RIP Protocol Control.** Then click the **OK** button.

> **Note:** There are two reasons that we have to apply RIP Protocol Control on 1st Subnet. The first is that the LAN interface can exchange RIP packets with the neighboring routers via the 1st subnet (192.168.1.0/24). The second is that those

hosts on the internal private subnets (ex. 192.168.10.0/24) can access the Internet via the router, and continuously exchange of IP routing information with different subnets.

2. Click the **LAN - Static Route** and click on the **Index Number 1.** Check the **Enable** box. Please add a static route as shown below, which regulates all packets destined to 192.168.10.0 will be forwarded to 192.168.1.2. Click **OK**.



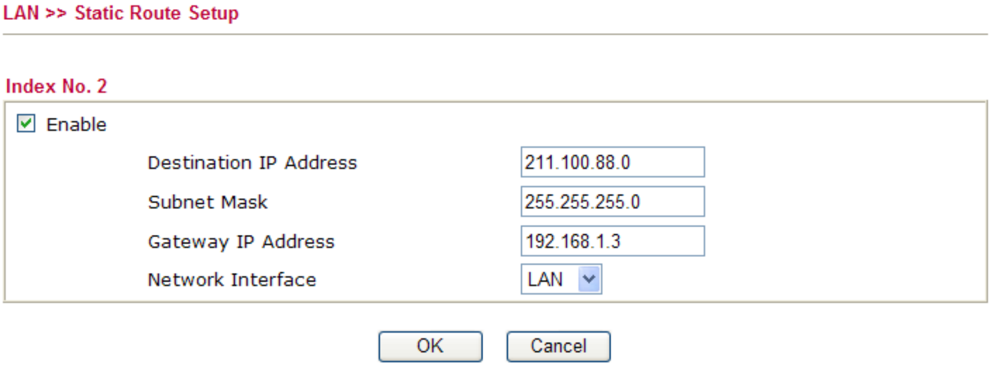
LAN >> Static Route Setup

Index No. 1

☑ Enable

Destination IP Address	192.168.10.0
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.2.2
Network Interface	LAN

3. Return to **Static Route Setup** page. Click on another **Index Number** to add another static route as show below, which regulates all packets destined to 211.100.88.0 will be forwarded to 192.168.1.3.



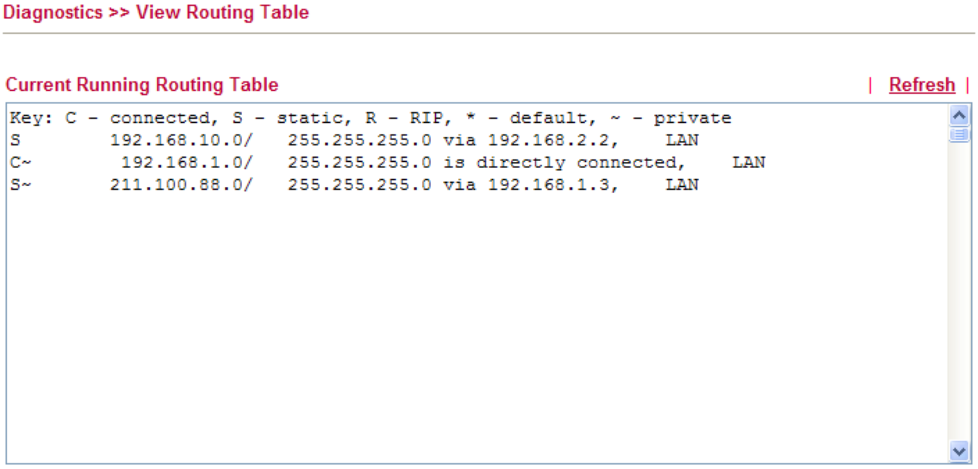
LAN >> Static Route Setup

Index No. 2

☑ Enable

Destination IP Address	211.100.88.0
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.1.3
Network Interface	LAN

4. Go to **Diagnostics** and choose **Routing Table** to verify current routing table.



Diagnostics >> View Routing Table

Current Running Routing Table

```
Key: C - connected, S - static, R - RIP, * - default, ~ - private
S         192.168.10.0/    255.255.255.0 via 192.168.2.2,     LAN
C~         192.168.1.0/    255.255.255.0 is directly connected,     LAN
S~        211.100.88.0/    255.255.255.0 via 192.168.1.3,     LAN
```

4.3 NAT

Usually, the router serves as an NAT (Network Address Translation) router. NAT is a mechanism that one or more private IP addresses can be mapped into a single public one. Public IP address is usually assigned by your ISP, for which you may get charged. Private IP addresses are recognized only among internal hosts.

When the outgoing packets destined to some public server on the Internet reach the NAT router, the router will change its source address into the public IP address of the router, select the available public port, and then forward it. At the same time, the router shall list an entry in a table to memorize this address/port-mapping relationship. When the public server response, the incoming traffic, of course, is destined to the router's public IP address and the router will do the inversion based on its table. Therefore, the internal host can communicate with external host smoothly.

The benefit of the NAT includes:

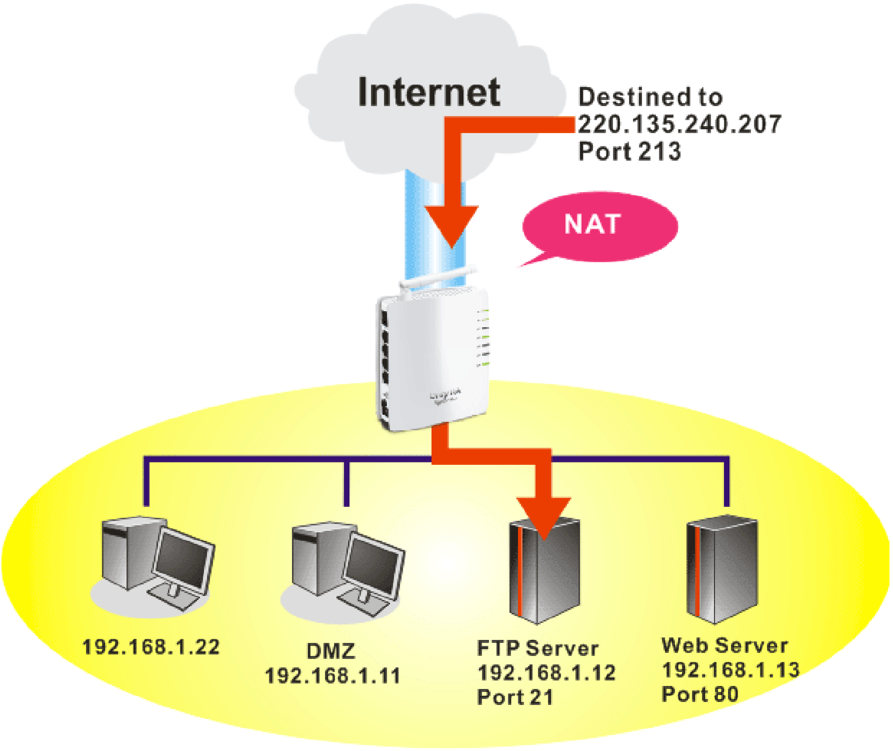
- **Save cost on applying public IP address and apply efficient usage of IP address.** NAT allows the internal IP addresses of local hosts to be translated into one public IP address, thus you can have only one IP address on behalf of the entire internal hosts.
- **Enhance security of the internal network by obscuring the IP address.** There are many attacks aiming victims based on the IP address. Since the attacker cannot be aware of any private IP addresses, the NAT function can protect the internal network.

On NAT page, you will see the private IP address defined in RFC-1918. Usually we use the 192.168.1.0/24 subnet for the router. As stated before, the NAT facility can map one or more IP addresses and/or service ports into different specified services. In other words, the NAT function can be achieved by using port mapping methods.

Below shows the menu items for NAT.

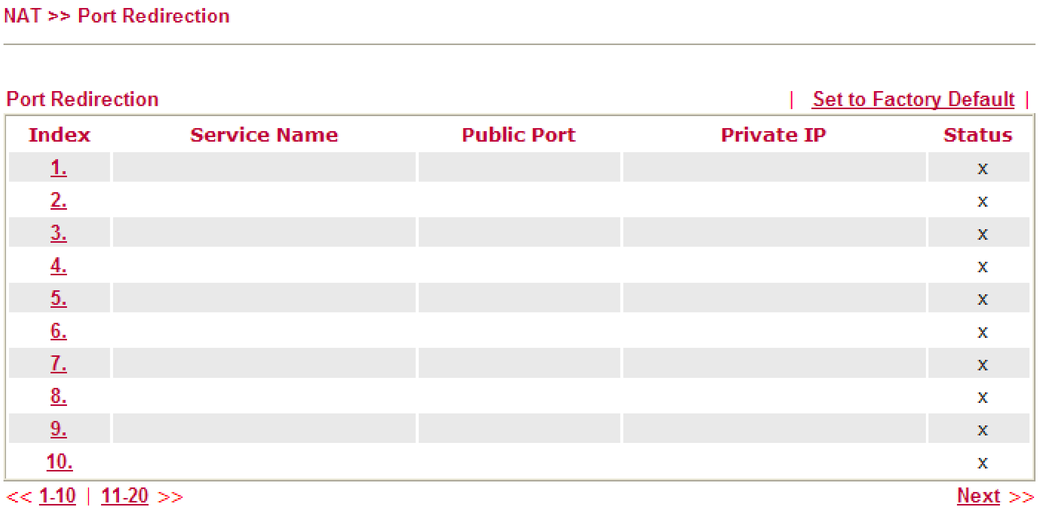
4.3.1 Port Redirection

Port Redirection is usually set up for server related service inside the local network (LAN), such as web servers, FTP servers, E-mail servers etc. Most of the case, you need a public IP address for each server and this public IP address/domain name are recognized by all users. Since the server is actually located inside the LAN, the network well protected by NAT of the router, and identified by its private IP address/port, the goal of Port Redirection function is to forward all access request with public IP address from external users to the mapping private IP address/port of the server.



The port redirection can only apply to incoming traffic.

To use this function, please go to **NAT** page and choose **Port Redirection** web page. The **Port Redirection Table** provides 20 port-mapping entries for the internal hosts.

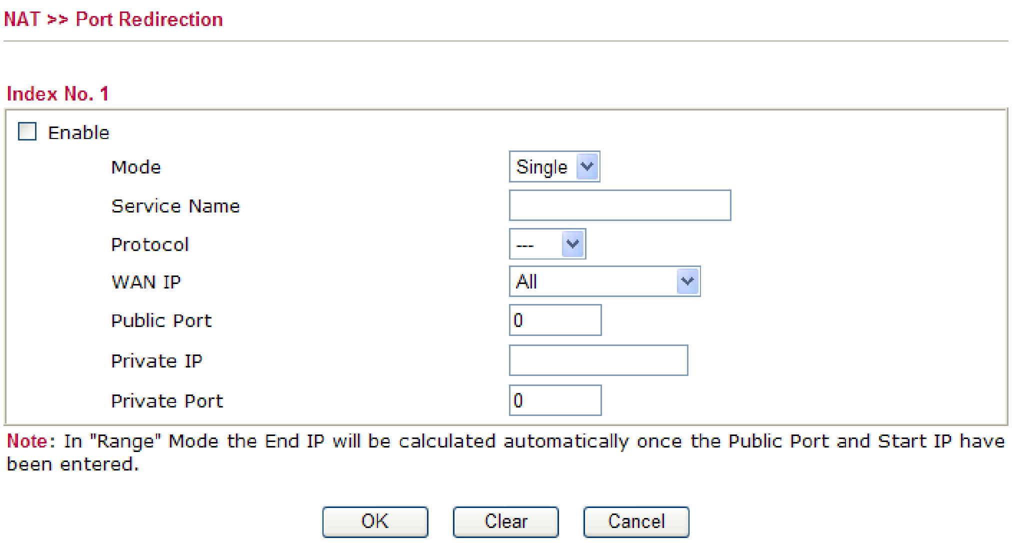

NAT >> Port Redirection

Port Redirection | Set to Factory Default |

Index	Service Name	Public Port	Private IP	Status
1.				x
2.				x
3.				x
4.				x
5.				x
6.				x
7.				x
8.				x
9.				x
10.				x

<< 1-10 | 11-20 >> Next >>

Press any number under Index to access into next page for configuring port redirection.



NAT >> Port Redirection

Index No. 1

□ Enable

Mode	Single
Service Name	
Protocol	---
WAN IP	All
Public Port	0
Private IP	
Private Port	0

Note: In "Range" Mode the End IP will be calculated automatically once the Public Port and Start IP have been entered.

Enable Check this box to enable such port redirection setting.

Mode Two options (Single and Range) are provided here for you to choose. To set a range for the specific service, select **Range**. In Range mode, if the public port (start port and end port) and the starting IP of private IP had been entered, the system will calculate and display the ending IP of private IP automatically.

Service Name Enter the description of the specific network service.

Protocol Select the transport layer protocol (TCP or UDP).

WAN IP Select the WAN IP used for port redirection. There are eight WAN IP alias that can be selected and used for port redirection. The default setting is **All** which means all the incoming data from any port will be redirected to specified range of IP address and port.

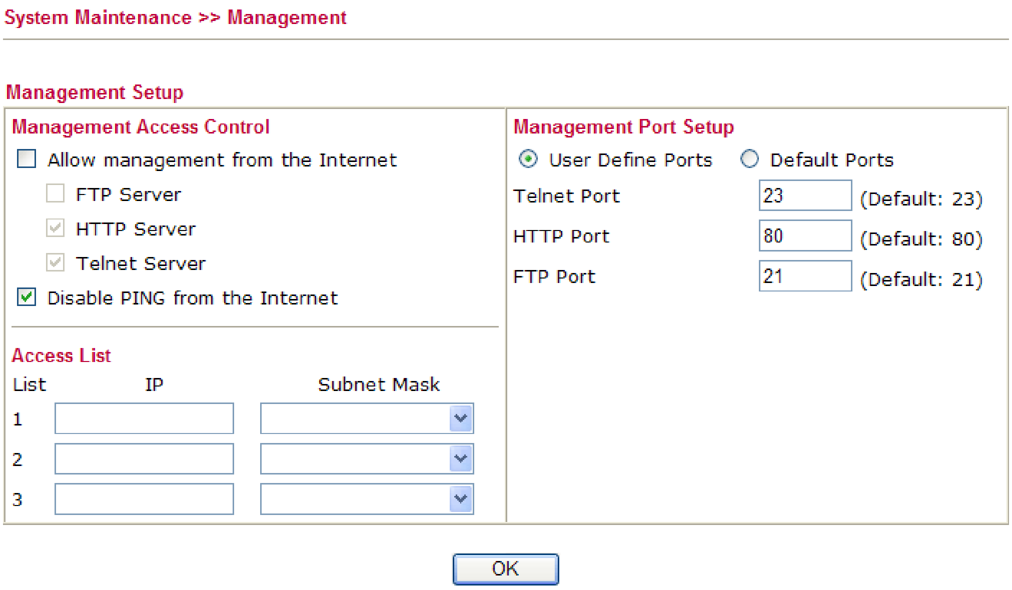
Public Port Specify which port can be redirected to the specified **Private IP and Port** of the internal host. If you choose **Range** as the port redirection mode, you will see two boxes on this field. Simply type the required number on the first box. The second one will be assigned automatically later.

Private IP Specify the private IP address of the internal host providing the service. If you choose **Range** as the port redirection mode, you will see two boxes on this field. Type a complete IP address in the first box (as the starting point) and the fourth digits in the second box (as the end point).

Private Port Specify the private port number of the service offered by the internal host.

Note that the router has its own built-in services (servers) such as Telnet, HTTP and FTP etc. Since the common port numbers of these services (servers) are all the same, you may need to reset the router in order to avoid confliction.

For example, the built-in web configurator in the router is with default port 80, which may conflict with the web server in the local network, http://192.168.1.13:80. Therefore, you need to **change the router's http port to any one other than the default port 80** to avoid conflict, such as 8080. This can be set in the **System Maintenance** >>**Management**. You then will access the admin screen of by suffixing the IP address with 8080, e.g., http://192.168.1.1:8080 instead of port 80.



System Maintenance >> Management

Management Setup

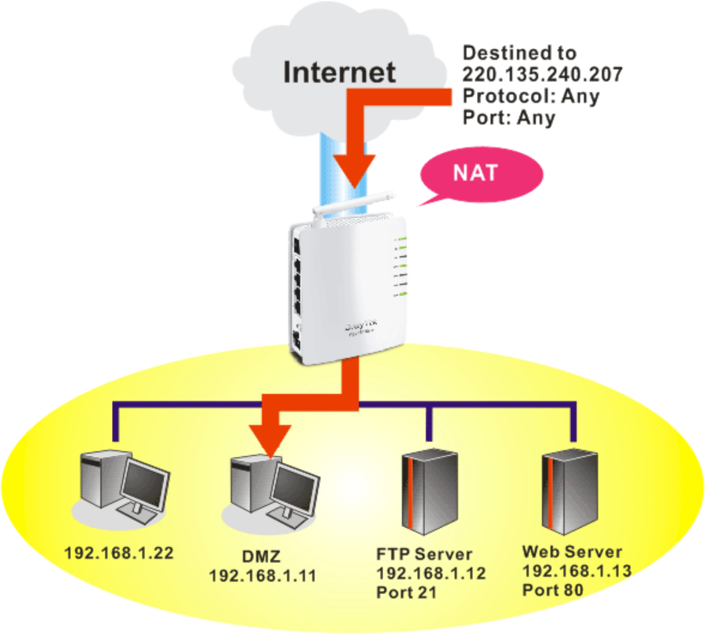
Management Access Control	Management Port Setup
□ Allow management from the Internet	● User Define Ports ○ Default Ports
□ FTP Server	Telnet Port 23 (Default: 23)
☑ HTTP Server	HTTP Port 80 (Default: 80)
☑ Telnet Server	FTP Port 21 (Default: 21)
☑ Disable PING from the Internet	

Access List

List	IP	Subnet Mask
1		
2		
3		

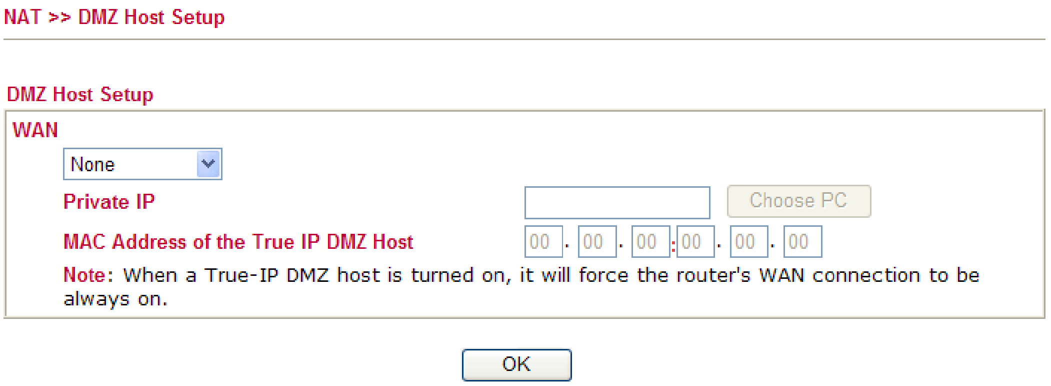
4.3.2 DMZ Host

As mentioned above, **Port Redirection** can redirect incoming TCP/UDP or other traffic on particular ports to the specific private IP address/port of host in the LAN. However, other IP protocols, for example Protocols 50 (ESP) and 51 (AH), do not travel on a fixed port. Vigor router provides a facility **DMZ Host** that maps ALL unsolicited data on any protocol to a single host in the LAN. Regular web surfing and other such Internet activities from other clients will continue to work without inappropriate interruption. **DMZ Host** allows a defined internal user to be totally exposed to the Internet, which usually helps some special applications such as Netmeeting or Internet Games etc.



> The inherent security properties of NAT are somewhat bypassed if you set up DMZ host. We suggest you to add additional filter rules or a secondary firewall.

Click **DMZ Host** to open the following page:



NAT >> DMZ Host Setup

DMZ Host Setup

WAN

None

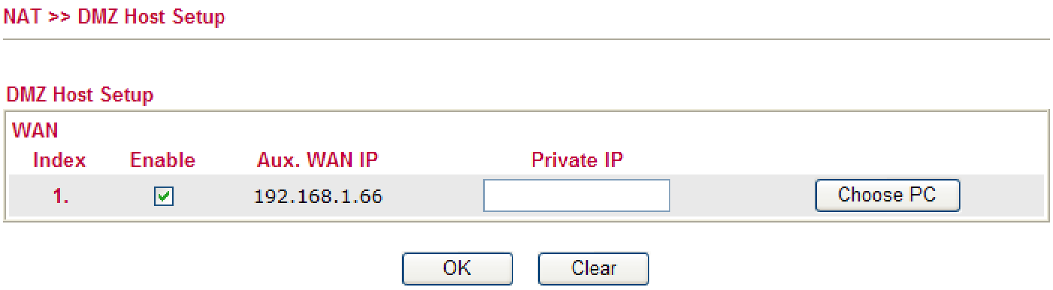
Private IP [ ] Choose PC

MAC Address of the True IP DMZ Host 00 . 00 . 00 : 00 . 00 . 00

Note: When a True-IP DMZ host is turned on, it will force the router's WAN connection to be always on.

OK

If you previously have set up **WAN Alias** for **PPPoE/PPPoA** or **MPoA** mode**,** you will find them in **Aux. WAN IP** for your selection.



NAT >> DMZ Host Setup

DMZ Host Setup

WAN

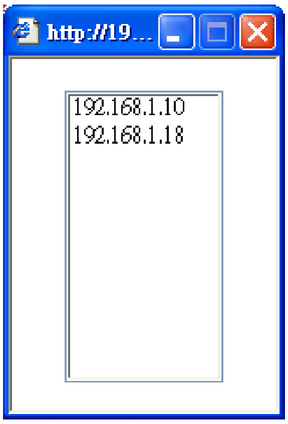
Index	Enable	Aux. WAN IP	Private IP	
1.	☑	192.168.1.66		Choose PC

OK Clear

Enable Check to enable the DMZ Host function.

Private IP Enter the private IP address of the DMZ host, or click Choose PC to select one.

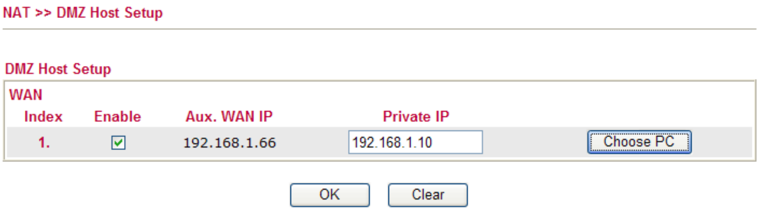
Choose PC Click this button and then a window will automatically pop up, as depicted below. The window consists of a list of private IP addresses of all hosts in your LAN network. Select one private IP address in the list to be the DMZ host.



http://19...

192.168.1.10
192.168.1.18

When you have selected one private IP from the above dialog, the IP address will be shown on the following screen. Click **OK** to save the setting.



NAT >> DMZ Host Setup

DMZ Host Setup

WAN

Index	Enable	Aux. WAN IP	Private IP	
1.	☑	192.168.1.66	192.168.1.10	Choose PC

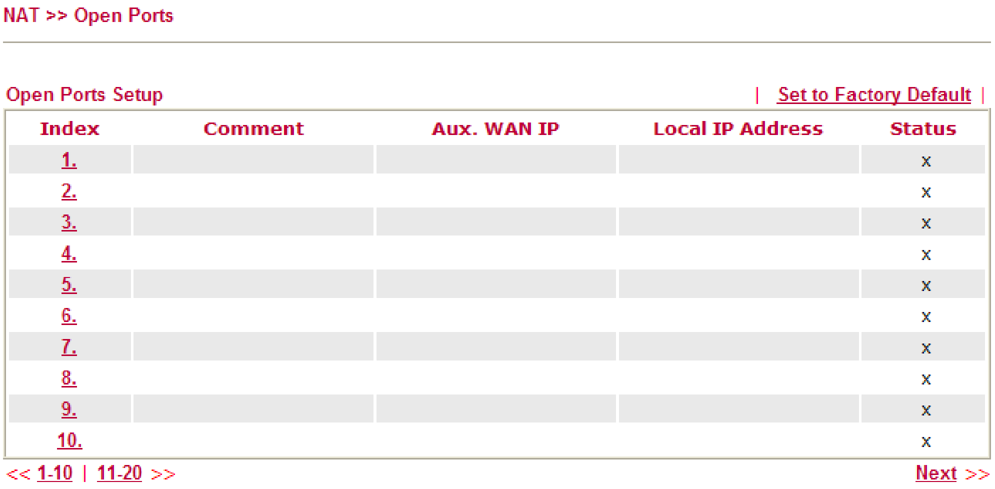
OK Clear

4.3.3 Open Ports

Open Ports allows you to open a range of ports for the traffic of special applications.

Common application of Open Ports includes P2P application (e.g., BT, KaZaA, Gnutella, WinMX, eMule and others), Internet Camera etc. Ensure that you keep the application involved up-to-date to avoid falling victim to any security exploits.

Click **Open Ports** to open the following page:



NAT >> Open Ports

Open Ports Setup | Set to Factory Default |

Index	Comment	Aux. WAN IP	Local IP Address	Status
1.				x
2.				x
3.				x
4.				x
5.				x
6.				x
7.				x
8.				x
9.				x
10.				x

<< 1-10 | 11-20 >> Next >>

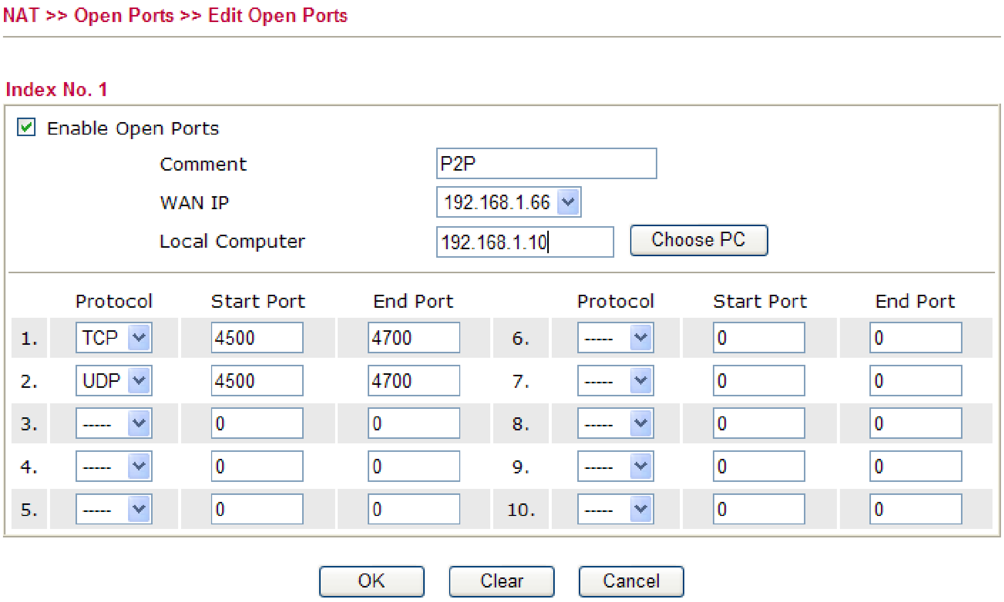
Index Indicate the relative number for the particular entry that you want to offer service in a local host. You should click the appropriate index number to edit or clear the corresponding entry.

Comment Specify the name for the defined network service.

Local IP Address Display the private IP address of the local host offering the service.

Status Display the state for the corresponding entry. X or V is to represent the **Inactive** or **Active** state.

To add or edit port settings, click one index number on the page. The index entry setup page will pop up. In each index entry, you can specify **10** port ranges for diverse services.



NAT >> Open Ports >> Edit Open Ports

Index No. 1

☑ Enable Open Ports

Comment: P2P

WAN IP: 192.168.1.66

Local Computer: 192.168.1.10

	Protocol	Start Port	End Port		Protocol	Start Port	End Port
1.	TCP	4500	4700	6.	-----	0	0
2.	UDP	4500	4700	7.	-----	0	0
3.	-----	0	0	8.	-----	0	0
4.	-----	0	0	9.	-----	0	0
5.	-----	0	0	10.	-----	0	0

Enable Open Ports Check to enable this entry.

Comment Make a name for the defined network application/service.

WAN Interface Specify the WAN interface that will be used for this entry.

Local Computer Enter the private IP address of the local host or click **Choose PC** to select one.

Choose PC Click this button and, subsequently, a window having a list of private IP addresses of local hosts will automatically pop up. Select the appropriate IP address of the local host in the list.

Protocol Specify the transport layer protocol. It could be **TCP**, **UDP**, or ----- (none) for selection.

Start Port Specify the starting port number of the service offered by the local host.

End Port Specify the ending port number of the service offered by the local host.

4.4 Firewall

4.4.1 Basics for Firewall

While the broadband users demand more bandwidth for multimedia, interactive applications, or distance learning, security has been always the most concerned. The firewall of the Vigor router helps to protect your local network against attack from unauthorized outsiders. It also restricts users in the local network from accessing the Internet. Furthermore, it can filter out specific packets that trigger the router to build an unwanted outgoing connection.

Firewall Facilities

The users on the LAN are provided with secured protection by the following firewall facilities:

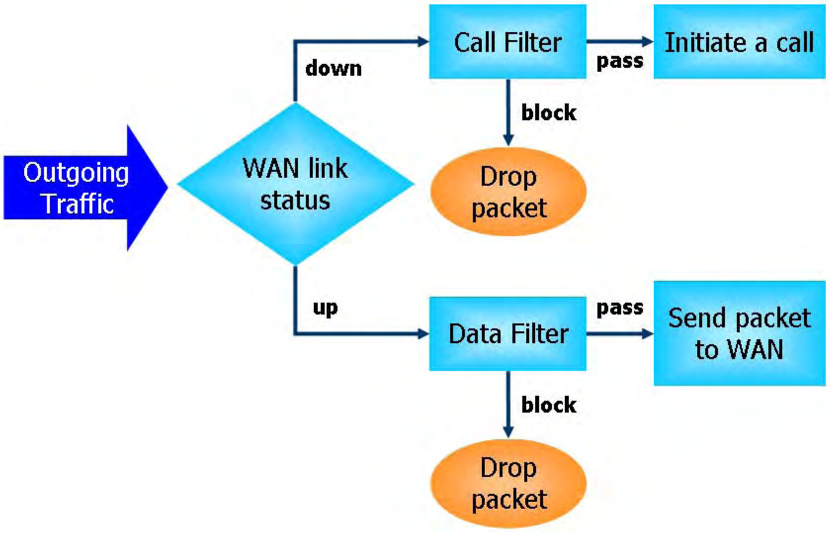
- User-configurable IP filter (Call Filter/ Data Filter).
- Stateful Packet Inspection (SPI): tracks packets and denies unsolicited incoming data
- Selectable Denial of Service (DoS) /Distributed DoS (DDoS) attacks protection

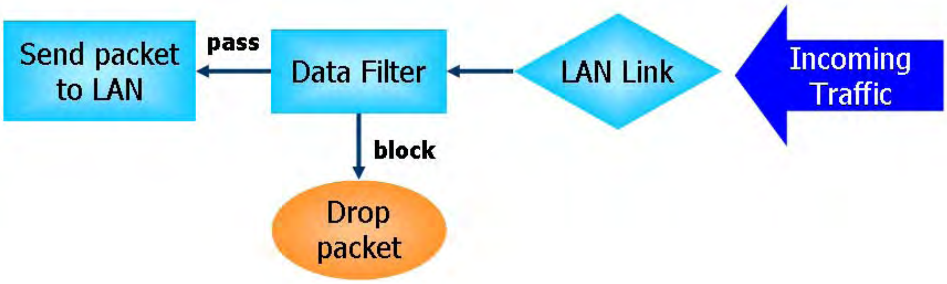
IP Filters

Depending on whether there is an existing Internet connection, or in other words "the WAN link status is up or down", the IP filter architecture categorizes traffic into two: **Call Filter** and **Data Filter**.

- **Call Filter -** When there is no existing Internet connection, **Call Filter** is applied to all traffic, all of which should be outgoing. It will check packets according to the filter rules. If legal, the packet will pass. Then the router shall **"initiate a call"** to build the Internet connection and send the packet to Internet.
- **Data Filter -** When there is an existing Internet connection, **Data Filter** is applied to incoming and outgoing traffic. It will check packets according to the filter rules. If legal, the packet will pass the router.

The following illustrations are flow charts explaining how router will treat incoming traffic and outgoing traffic respectively.





Stateful Packet Inspection (SPI)

Stateful inspection is a firewall architecture that works at the network layer. Unlike legacy static packet filtering, which examines a packet based on the information in its header, stateful inspection builds up a state machine to track each connection traversing all interfaces of the firewall and makes sure they are valid. The stateful firewall of Vigor router not just examine the header information also monitor the state of the connection.

Denial of Service (DoS) Defense

The **DoS Defense** functionality helps you to detect and mitigate the DoS attack. The attacks are usually categorized into two types, the flooding-type attacks and the vulnerability attacks. The flooding-type attacks will attempt to exhaust all your system's resource while the vulnerability attacks will try to paralyze the system by offending the vulnerabilities of the protocol or operation system.

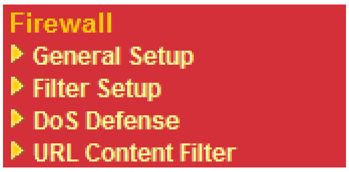
The **DoS Defense** function enables the Vigor router to inspect every incoming packet based on the attack signature database. Any malicious packet that might duplicate itself to paralyze the host in the secure LAN will be strictly blocked and a Syslog message will be sent as warning, if you set up Syslog server.

Also the Vigor router monitors the traffic. Any abnormal traffic flow violating the pre-defined parameter, such as the number of thresholds, is identified as an attack and the Vigor router will activate its defense mechanism to mitigate in a real-time manner.

The below shows the attack types that DoS/DDoS defense function can detect:

1. SYN flood attack
2. UDP flood attack
3. ICMP flood attack
4. Port Scan attack
5. IP options
6. Land attack
7. Smurf attack
8. Trace route
9. SYN fragment
10. Fraggle attack
11. TCP flag scan
12. Tear drop attack
13. Ping of Death attack
14. ICMP fragment
15. Unknown protocol

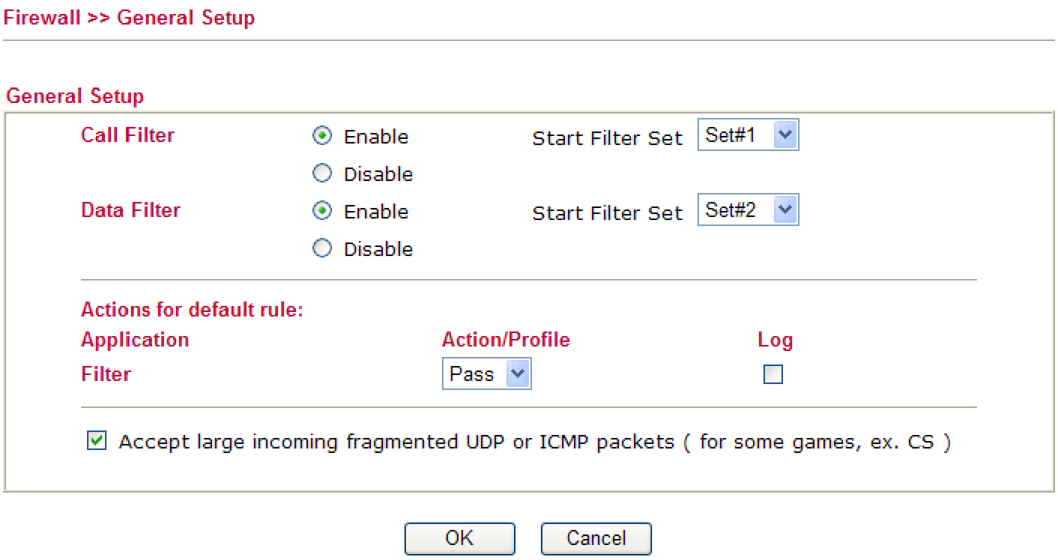
Below shows the menu items for Firewall.



4.4.2 General Setup

General Setup allows you to adjust settings of IP Filter and common options. Here you can enable or disable the **Call Filter** or **Data Filter**. Under some circumstance, your filter set can be linked to work in a serial manner. So here you assign the **Start Filter Set** only. Also you can configure the **Log** settings, and **Accept large incoming fragmented UDP or ICMP packets**.

Click **Firewall** and click **General Setup** to open the general setup page.



Firewall >> General Setup

General Setup

Call Filter ● Enable ○ Disable Start Filter Set Set#1

Data Filter ● Enable ○ Disable Start Filter Set Set#2

Actions for default rule:

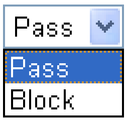
Application	Action/Profile	Log
Filter	Pass	□

☑ Accept large incoming fragmented UDP or ICMP packets (for some games, ex. CS)

Call Filter Check **Enable** to activate the Call Filter function. Assign a start filter set for the Call Filter.

Data Filter Check **Enable** to activate the Data Filter function. Assign a start filter set for the Data Filter.

Filter Select **Pass** or **Block** for the packets that do not match with the filter rules.

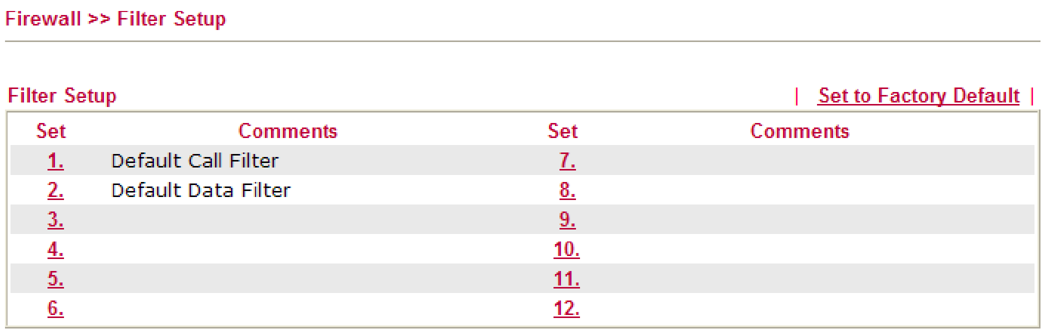


Log For troubleshooting needs you can specify the filter log and/or CSM log here by checking the box. The log will be displayed on Draytek Syslog window.

Some on-line games (for example: Half Life) will use lots of fragmented UDP packets to transfer game data. Instinctively as a secure firewall, Vigor router will reject these fragmented packets to prevent attack unless you enable "**Accept large incoming fragmented UDP or ICMP Packets**". By checking this box, you can play these kinds of on-line games. If security concern is in higher priority, you cannot enable "**Accept large incoming fragmented UDP or ICMP Packets**".

4.4.3 Filter Setup

Click **Firewall** and click **Filter Setup** to open the setup page.

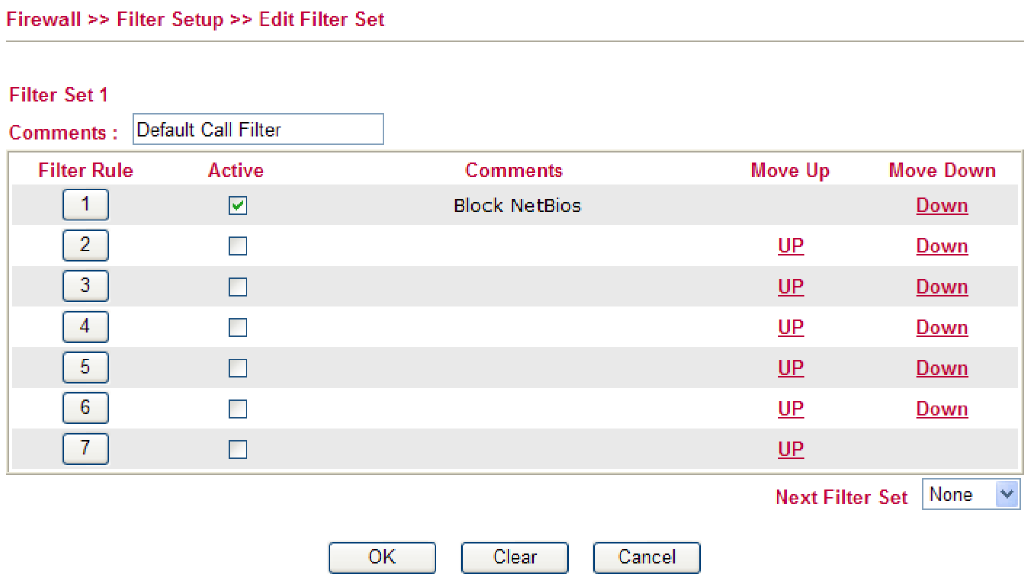


Firewall >> Filter Setup

Filter Setup | Set to Factory Default |

Set	Comments	Set	Comments
1.	Default Call Filter	7.	
2.	Default Data Filter	8.	
3.		9.	
4.		10.	
5.		11.	
6.		12.	

To edit or add a filter, click on the set number to edit the individual set. The following page will be shown. Each filter set contains up to 7 rules. Click on the rule number button to edit each rule. Check **Active** to enable the rule.



Firewall >> Filter Setup >> Edit Filter Set

Filter Set 1

Comments : Default Call Filter

Filter Rule	Active	Comments	Move Up	Move Down
1	☑	Block NetBios		Down
2	□		UP	Down
3	□		UP	Down
4	□		UP	Down
5	□		UP	Down
6	□		UP	Down
7	□		UP	

Next Filter Set: None

Filter Rule Click a button numbered (1 ~ 7) to edit the filter rule. Click the button will open Edit Filter Rule web page. For the detailed information, refer to the following page.

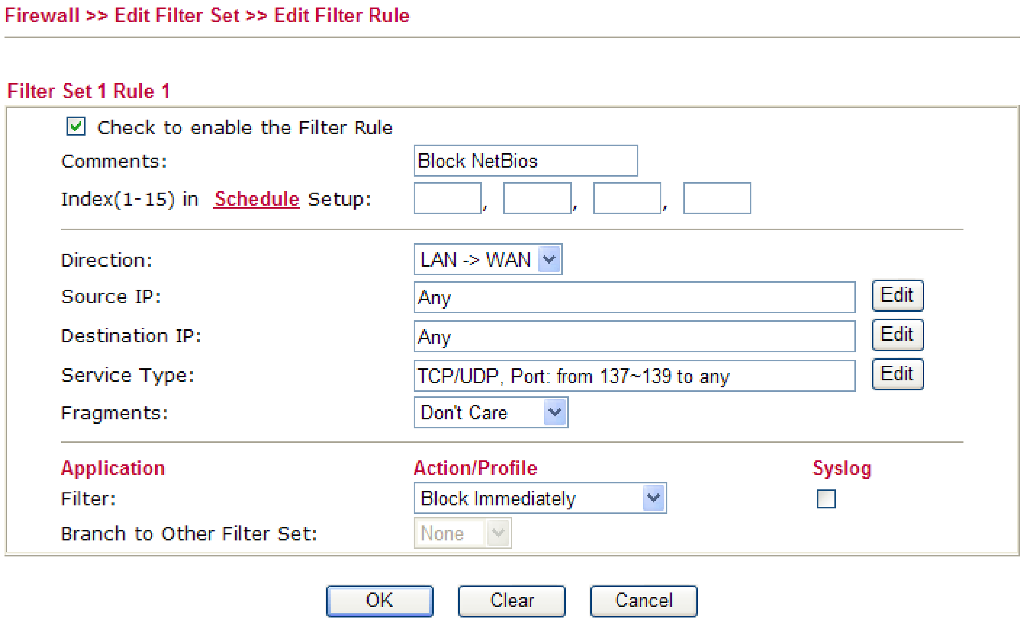
Active Enable or disable the filter rule.

Comment Enter filter set comments/description. Maximum length is 23–character long.

Move Up/Down Use **Up** or **Down** link to move the order of the filter rules.

Next Filter Set Set the link to the next filter set to be executed after the current filter run. Do not make a loop with many filter sets.

To edit **Filter Rule**, click the **Filter Rule** index button to enter the **Filter Rule** setup page.



Firewall >> Edit Filter Set >> Edit Filter Rule

Filter Set 1 Rule 1

☑ Check to enable the Filter Rule

Comments:	Block NetBios
Index(1-15) in Schedule Setup:	, , ,
Direction:	LAN -> WAN
Source IP:	Any
Destination IP:	Any
Service Type:	TCP/UDP, Port: from 137~139 to any
Fragments:	Don't Care

Application	Action/Profile	Syslog
Filter:	Block Immediately	□
Branch to Other Filter Set:	None	

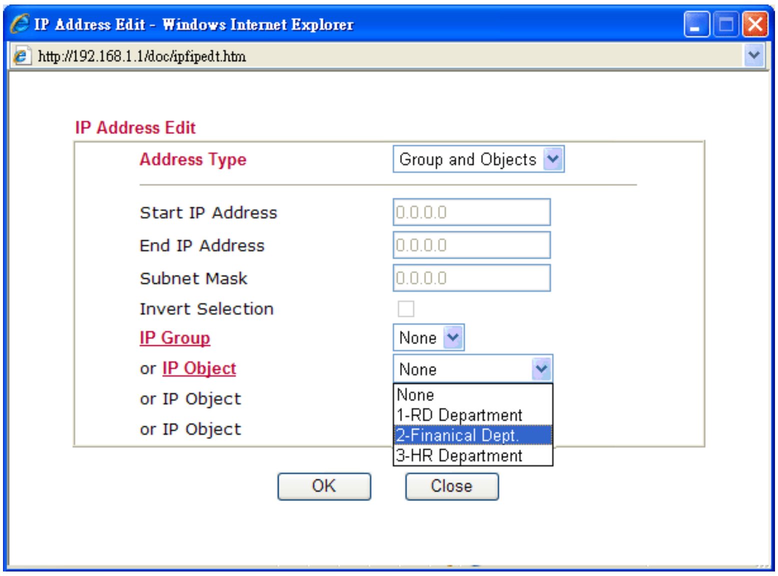
Check to enable the Filter Rule Check this box to enable the filter rule.

Comments Enter filter set comments/description. Maximum length is 14-character long.

Index(1-15) Set PCs on LAN to work at certain time interval only. You may choose up to 4 schedules out of the 15 schedules pre-defined in **Applications** >> **Schedule** setup. The default setting of this filed is blank and the function will always work.

Direction Set the direction of packet flow (LAN->WAN/WAN->LAN). It is for **Data Filter** only. For the **Call Filter**, this setting is not available since **Call Filter** is only applied to outgoing traffic.

Source/Destination IP Click **Edit** to access into the following dialog to choose the source/destination IP or IP ranges.



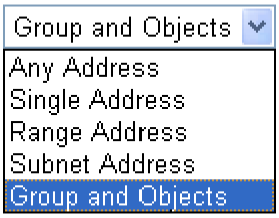
IP Address Edit - Windows Internet Explorer

http://192.168.1.1/doc/ipfipedt.htm

IP Address Edit

Address Type	Group and Objects
Start IP Address	0.0.0.0
End IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Invert Selection	□
IP Group	None
or IP Object	None
or IP Object	
or IP Object	

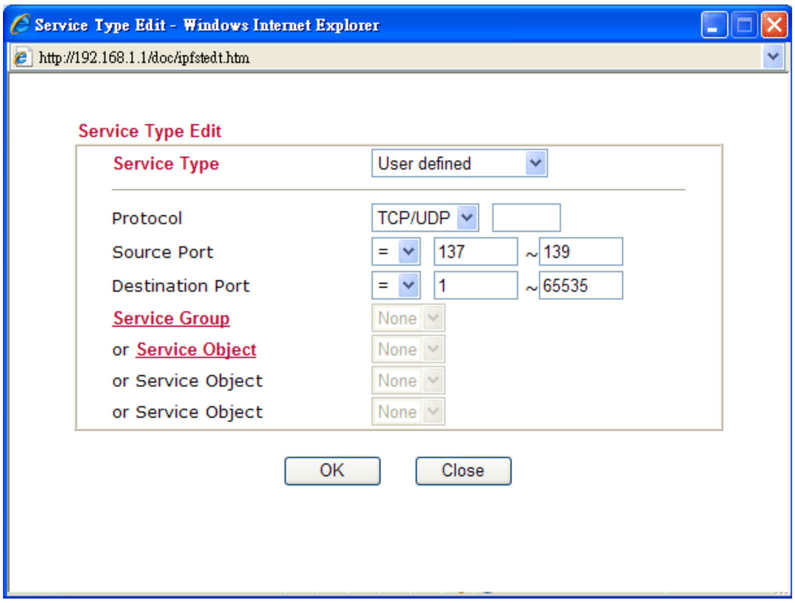
To set the IP address manually, please choose **Any Address/Single Address/Range Address/Subnet Address** as the Address Type and type them in this dialog. In addition, if you want to use the IP range from defined groups or objects, please choose **Group and Objects** as the Address Type.



From the **IP Group** drop down list, choose the one that you want to apply. Or use the **IP Object** drop down list to choose the object that you want.

Service Type

Click **Edit** to access into the following dialog to choose a suitable service type.

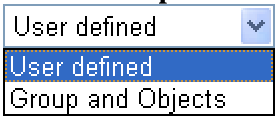

Service Type Edit - Windows Internet Explorer

http://192.168.1.1/doc/ipfstedt.htm

Service Type Edit

Service Type	User defined		
Protocol	TCP/UDP		
Source Port	=	137	~ 139
Destination Port	=	1	~ 65535
Service Group	None		
or Service Object	None		
or Service Object	None		
or Service Object	None		

To set the service type manually, please choose **User defined** as the Service Type and type them in this dialog. In addition, if you want to use the service type from defined groups or objects, please choose **Group and Objects** as the Service Type.



Protocol - Specify the protocol(s) which this filter rule will apply to.

Source/Destination Port -

(=) – when the first and last value are the same, it indicates one port; when the first and last values are different, it indicates a range for the port and available for this service type.

(!=) – when the first and last value are the same, it indicates all the ports except the port defined here; when the first and last values are different, it indicates that all the ports except the range defined here are available for this service type.

(>) – the port number greater than this value is available.

(<) – the port number less than this value is available for this

profile.
Service Group/Object - Use the drop down list to choose the one that you want.

Fragments

Specify the action for fragmented packets. And it is used for **Data Filter** only.
Don't care -No action will be taken towards fragmented packets.
Unfragmented -Apply the rule to unfragmented packets.
Fragmented - Apply the rule to fragmented packets.
Too Short - Apply the rule only to packets that are too short to contain a complete header.

Filter

Specifies the action to be taken when packets match the rule.
Block Immediately - Packets matching the rule will be dropped immediately.
Pass Immediately - Packets matching the rule will be passed immediately.
Block If No Further Match - A packet matching the rule, and that does not match further rules, will be dropped.
Pass If No Further Match - A packet matching the rule, and that does not match further rules, will be passed through.

Branch to other Filter Set

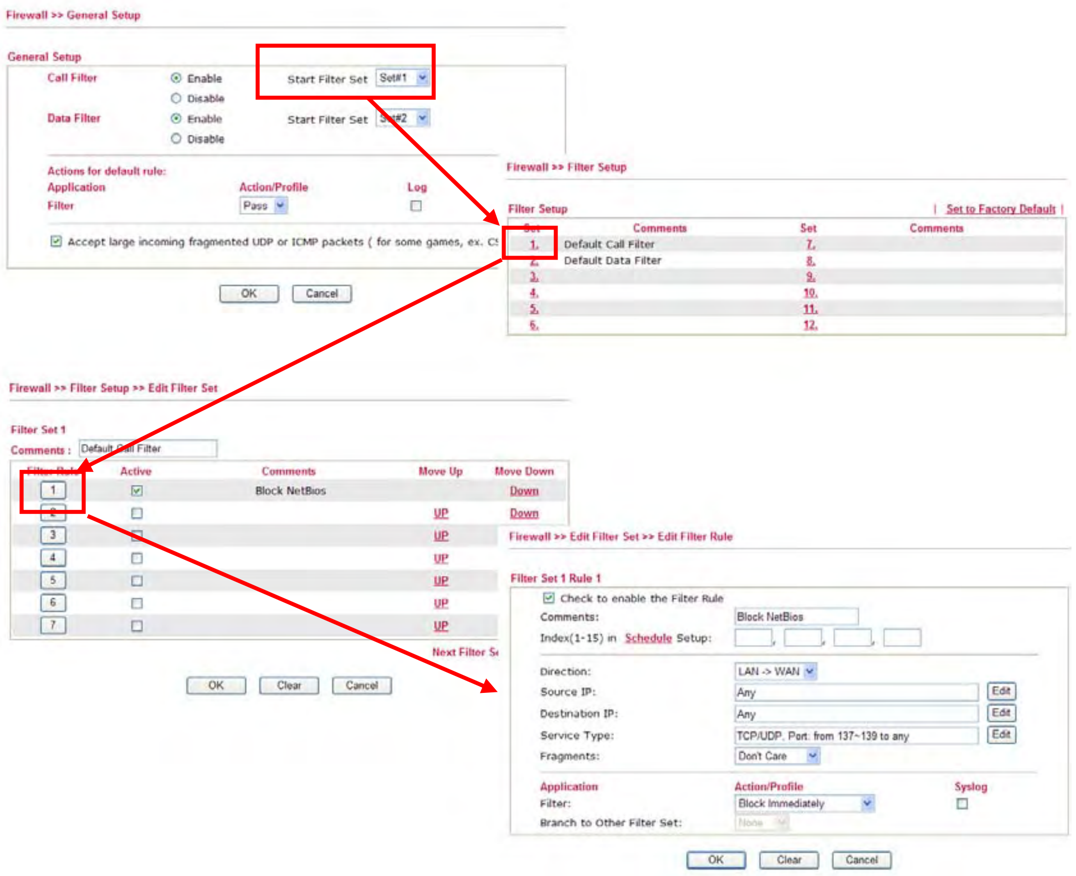
If the packet matches the filter rule, the next filter rule will branch to the specified filter set. Select next filter rule to branch from the drop-down menu. Be aware that the router will apply the specified filter rule for ever and will not return to previous filter rule any more.

SysLog

For troubleshooting needs you can specify the filter log and/or CSM log here. Check the corresponding box to enable the log function. Then, the filter log and/or CSM log will be shown on Draytek Syslog window.

Example

As stated before, all the traffic will be separated and arbitrated using on of two IP filters: call filter or data filter. You may preset 12 call filters and data filters in **Filter Setup** and even link them in a serial manner. Each filter set is composed by 7 filter rules, which can be further defined. After that, in **General Setup** you may specify one set for call filter and one set for data filter to execute first.



Firewall >> General Setup

General Setup

Call Filter ● Enable ○ Disable — Start Filter Set: Set#1

Data Filter ● Enable ○ Disable — Start Filter Set: Set#2

Actions for default rule:

Application	Action/Profile	Log
Filter	Pass	□

☑ Accept large incoming fragmented UDP or ICMP packets (for some games, ex. CS

Firewall >> Filter Setup

Filter Setup | Set to Factory Default |

Set	Comments	Set	Comments
1.	Default Call Filter	7.	
2.	Default Data Filter	8.	
3.		9.	
4.		10.	
5.		11.	
6.		12.	

Firewall >> Filter Setup >> Edit Filter Set

Filter Set 1

Comments : Default Call Filter

Filter Rule	Active	Comments	Move Up	Move Down
1	☑	Block NetBios		Down
2	□		UP	Down
3	□		UP	
4	□		UP	
5	□		UP	
6	□		UP	
7	□		UP	

Firewall >> Edit Filter Set >> Edit Filter Rule

Filter Set 1 Rule 1

☑ Check to enable the Filter Rule

Comments: Block NetBios

Index(1-15) in Schedule Setup: , , ,

Direction: LAN -> WAN

Source IP: Any

Destination IP: Any

Service Type: TCP/UDP, Port: from 137~139 to any

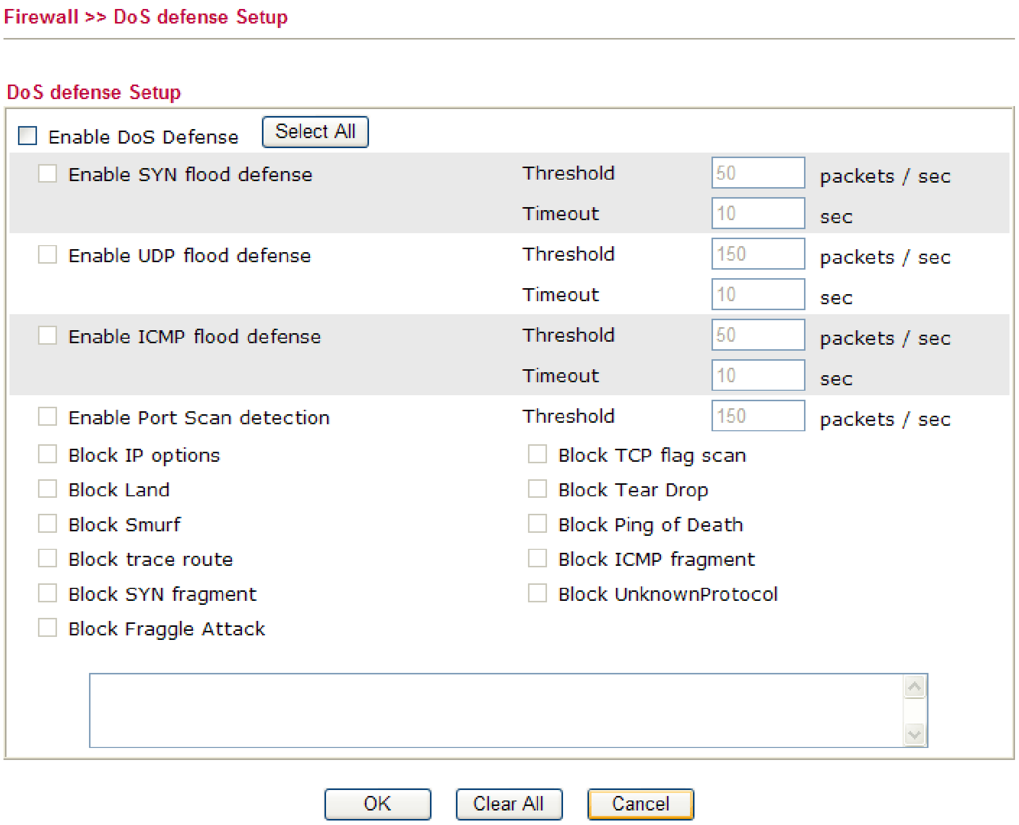
Fragments: Don't Care

Application	Action/Profile	Syslog
Filter:	Block Immediately	□
Branch to Other Filter Set:	None	

4.4.4 DoS Defense

As a sub-functionality of IP Filter/Firewall, there are 15 types of detect/defense function in the **DoS Defense** setup. The DoS Defense functionality is disabled for default.

Click **Firewall** and click **DoS Defense** to open the setup page.



Firewall >> DoS defense Setup

DoS defense Setup

□ Enable DoS Defense [Select All]			
□ Enable SYN flood defense	Threshold	50	packets / sec
	Timeout	10	sec
□ Enable UDP flood defense	Threshold	150	packets / sec
	Timeout	10	sec
□ Enable ICMP flood defense	Threshold	50	packets / sec
	Timeout	10	sec
□ Enable Port Scan detection	Threshold	150	packets / sec
□ Block IP options	□ Block TCP flag scan		
□ Block Land	□ Block Tear Drop		
□ Block Smurf	□ Block Ping of Death		
□ Block trace route	□ Block ICMP fragment		
□ Block SYN fragment	□ Block UnknownProtocol		
□ Block Fraggle Attack			

Enable Dos Defense Check the box to activate the DoS Defense Functionality.

Enable SYN flood defense Check the box to activate the SYN flood defense function. Once detecting the Threshold of the TCP SYN packets from the Internet has exceeded the defined value, the Vigor router will start to randomly discard the subsequent TCP SYN packets for a period defined in Timeout. The goal for this is prevent the TCP SYN packets' attempt to exhaust the limited-resource of Vigor router. By default, the threshold and timeout values are set to 50 packets per second and 10 seconds, respectively.

Enable UDP flood defense Check the box to activate the UDP flood defense function. Once detecting the Threshold of the UDP packets from the Internet has exceeded the defined value, the Vigor router will start to randomly discard the subsequent UDP packets for a period defined in Timeout. The default setting for threshold and timeout are 150 packets per second and 10 seconds, respectively.

Enable ICMP flood defense Check the box to activate the ICMP flood defense function. Similar to the UDP flood defense function, once if the Threshold of ICMP packets from Internet has exceeded the defined value, the router will discard the ICMP echo requests coming from the Internet. The default setting for threshold and timeout are 50 packets per second and 10 seconds, respectively.

Enable PortScan Port Scan attacks the Vigor router by sending lots of packets to

detection many ports in an attempt to find ignorant services would respond. Check the box to activate the Port Scan detection. Whenever detecting this malicious exploration behavior by monitoring the port-scanning Threshold rate, the Vigor router will send out a warning. By default, the Vigor router sets the threshold as 150 packets per second.

Block IP options Check the box to activate the Block IP options function. The Vigor router will ignore any IP packets with IP option field in the datagram header. The reason for limitation is IP option appears to be a vulnerability of the security for the LAN because it will carry significant information, such as security, TCC (closed user group) parameters, a series of Internet addresses, routing messages...etc. An eavesdropper outside might learn the details of your private networks.

Block Land Check the box to enforce the Vigor router to defense the Land attacks. The Land attack combines the SYN attack technology with IP spoofing. A Land attack occurs when an attacker sends spoofed SYN packets with the identical source and destination addresses, as well as the port number to victims.

Block Smurf Check the box to activate the Block Smurf function. The Vigor router will ignore any broadcasting ICMP echo request.

Block trace router Check the box to enforce the Vigor router not to forward any trace route packets.

Block SYN fragment Check the box to activate the Block SYN fragment function. The Vigor router will drop any packets having SYN flag and more fragment bit set.

Block Fraggle Attack Check the box to activate the Block fraggle Attack function. Any broadcast UDP packets received from the Internet is blocked. Activating the DoS/DDoS defense functionality might block some legal packets. For example, when you activate the fraggle attack defense, all broadcast UDP packets coming from the Internet are blocked. Therefore, the RIP packets from the Internet might be dropped.

Block TCP flag scan Check the box to activate the Block TCP flag scan function. Any TCP packet with anomaly flag setting is dropped. Those scanning activities include *no flag scan*, *FIN without ACK scan*, *SYN FINscan*, *Xmas scan* and *full Xmas scan*.

Block Tear Drop Check the box to activate the Block Tear Drop function. Many machines may crash when receiving ICMP datagrams (packets) that exceed the maximum length. To avoid this type of attack, the Vigor router is designed to be capable of discarding any fragmented ICMP packets with a length greater than 1024 octets.

Block Ping of Death Check the box to activate the Block Ping of Death function. This attack involves the perpetrator sending overlapping packets to the target hosts so that those target hosts will hang once they re-construct the packets. The Vigor routers will block any packets realizing this attacking activity.

Block ICMP Fragment Check the box to activate the Block ICMP fragment function. Any ICMP packets with more fragment bit set are dropped.

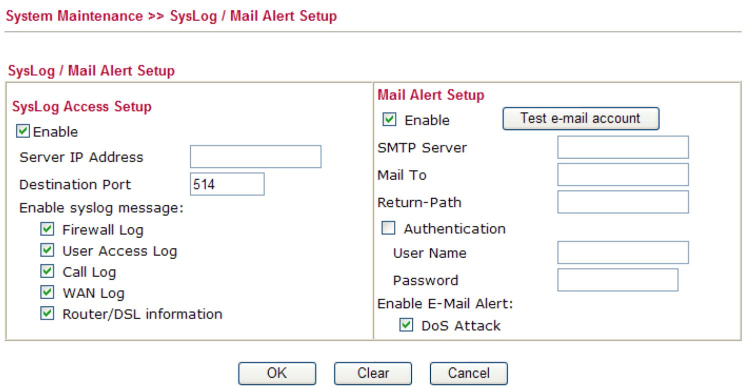
Block Unknown Protocol

Check the box to activate the Block Unknown Protocol function. Individual IP packet has a protocol field in the datagram header to indicate the protocol type running over the upper layer. However, the protocol types greater than 100 are reserved and undefined at this time. Therefore, the router should have ability to detect and reject this kind of packets.

Warning Messages

We provide Syslog function for user to retrieve message from Vigor router. The user, as a Syslog Server, shall receive the report sending from Vigor router which is a Syslog Client.

All the warning messages related to **DoS Defense** will be sent to user and user can review it through Syslog daemon. Look for the keyword **DoS** in the message, followed by a name to indicate what kind of attacks is detected.



System Maintenance >> SysLog / Mail Alert Setup

SysLog / Mail Alert Setup

SysLog Access Setup

☑ Enable

Server IP Address

Destination Port: 514

Enable syslog message:

- ☑ Firewall Log
- ☑ User Access Log
- ☑ Call Log
- ☑ WAN Log
- ☑ Router/DSL information

Mail Alert Setup

☑ Enable

SMTP Server

Mail To

Return-Path

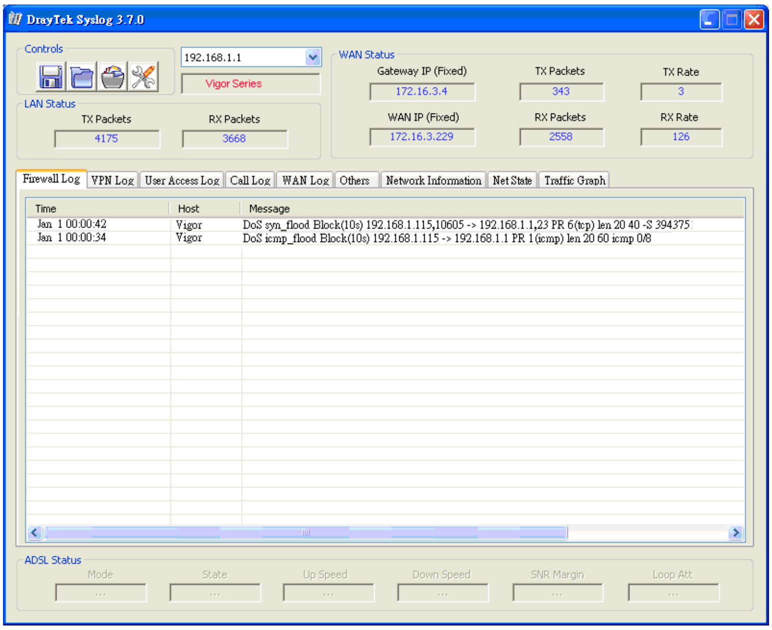
☐ Authentication

User Name

Password

Enable E-Mail Alert:

☑ DoS Attack



DrayTek Syslog 3.7.0

Controls: 192.168.1.1 — Vigor Series

LAN Status: TX Packets 4175, RX Packets 3668

WAN Status: Gateway IP (Fixed) 172.16.3.4, TX Packets 343, TX Rate 3; WAN IP (Fixed) 172.16.3.229, RX Packets 2558, RX Rate 126

```
Time              Host    Message
Jan  1 00:00:42   Vigor   DoS syn_flood Block(10s) 192.168.1.115,10605 -> 192.168.1.1,23 PR 6(tcp) len 20 40 -S 394375
Jan  1 00:00:34   Vigor   DoS icmp_flood Block(10s) 192.168.1.115 -> 192.168.1.1 PR 1(icmp) len 20 60 icmp 0/8
```

ADSL Status: Mode ..., State ..., Up Speed ..., Down Speed ..., SNR Margin ..., Loop Att ...

4.4.5 URL Content Filter

To provide an appropriate cyberspace to users, Vigor router equips with **URL Content Filter** not only to limit illegal traffic from/to the inappropriate web sites but also prohibit other web feature where malicious code may conceal.

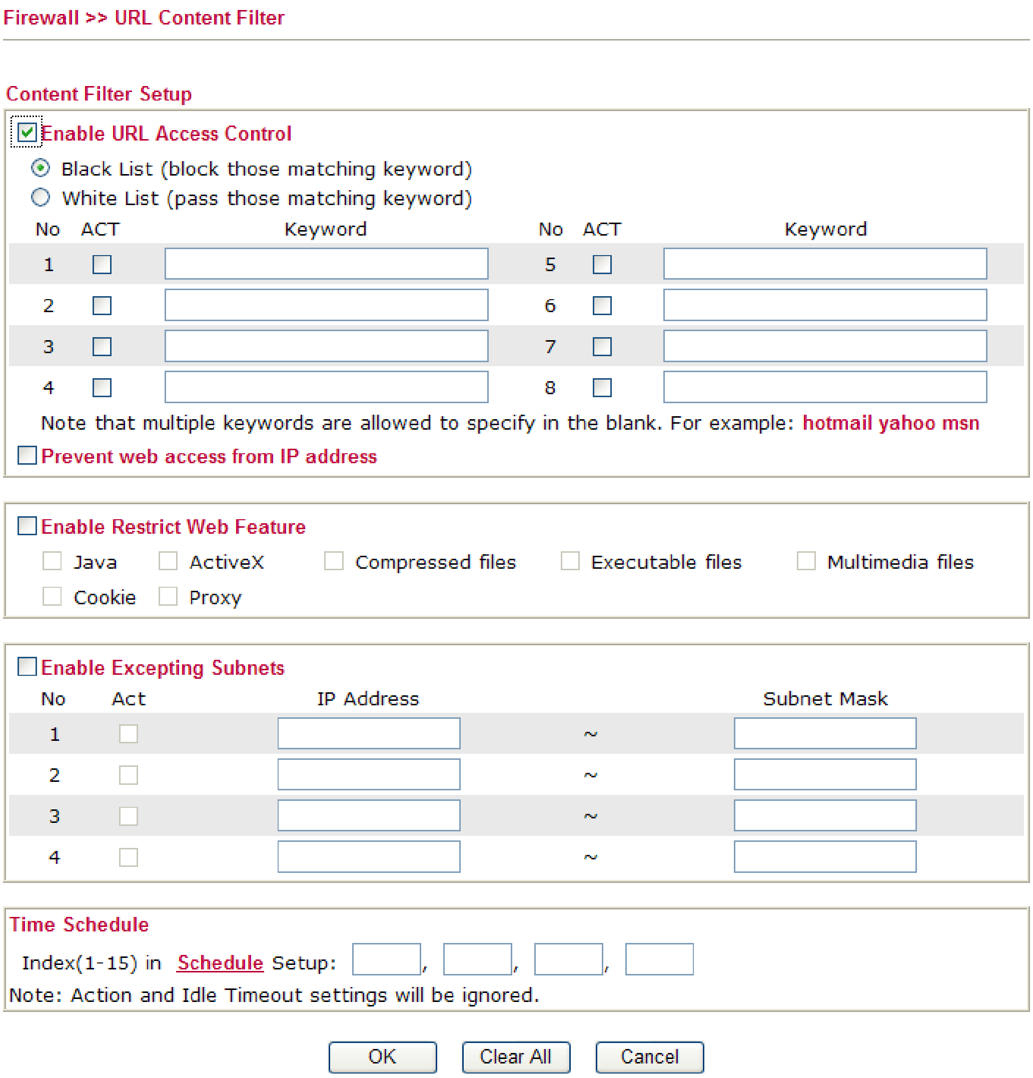
Once a user type in or click on an URL with objectionable keywords, URL keyword blocking facility will decline the HTTP request to that web page thus can limit user’s access to the website. You may imagine **URL Content Filter** as a well-trained convenience-store clerk who won’t sell adult magazines to teenagers. At office, **URL Content Filter** can also provide a job-related only environment hence to increase the employee work efficiency. How can URL Content Filter work better than traditional firewall in the field of filtering? Because it checks the URL strings or some of HTTP data hiding in the payload of TCP packets while legacy firewall inspects packets based on the fields of TCP/IP headers only.

On the other hand, Vigor router can prevent users from accidentally downloading malicious codes from web pages. It’s very common that malicious codes conceal in the executable objects, such as ActiveX, Java Applet, compressed files, and other executable files. Once downloading these types of files from websites, you may risk bringing threat to your system. For example, an ActiveX control object is usually used for providing interactive web feature. If malicious code hides inside, it may occupy user’s system.

For example, if you add key words such as “sex”, Vigor router will limit web access to web sites or web pages such as “www.sex.com”, ”www.backdoor.net/images/sex/p_386.html”. Or you may simply specify the full or partial URL such as “www.sex.com” or “sex.com”.

Also the Vigor router will discard any request that tries to retrieve the malicious code.

Click **URL Content Filter** to open the setup page.



Firewall >> URL Content Filter

Content Filter Setup

☑ Enable URL Access Control

● Black List (block those matching keyword)

○ White List (pass those matching keyword)

No	ACT	Keyword	No	ACT	Keyword
1	□		5	□	
2	□		6	□	
3	□		7	□	
4	□		8	□	

Note that multiple keywords are allowed to specify in the blank. For example: hotmail yahoo msn

□ Prevent web access from IP address

□ Enable Restrict Web Feature

□ Java □ ActiveX □ Compressed files □ Executable files □ Multimedia files

□ Cookie □ Proxy

□ Enable Excepting Subnets

No	Act	IP Address		Subnet Mask
1	□		~	
2	□		~	
3	□		~	
4	□		~	

Time Schedule

Index(1-15) in Schedule Setup: , , ,

Note: Action and Idle Timeout settings will be ignored.

Enable URL Access Control

Enable URL Access Control - Check the box to activate URL Access Control. Note that the priority for **URL Access Control** is higher than **Restrict Web Feature**. If the web content match the setting set in URL Access Control, the router will execute the action specified in this field and ignore the action specified under Restrict Web Feature.

Black List (block those matching keyword)

Click this button to restrict accessing into the corresponding webpage with the keywords listed on the box below.

White List (pass those matching keyword)

Click this button to allow accessing into the corresponding webpage with the keywords listed on the box below.

Keyword

The Vigor router provides 8 frames for users to define keywords and each frame supports multiple keywords. The keyword could be a noun, a partial noun, or a complete URL string. Multiple keywords within a frame are separated by space, comma, or semicolon. In addition, the maximal length of each frame is 32-character long. After specifying keywords, the Vigor router will decline the connection request to the website whose URL string matched to any user-defined keyword. It should be noticed that the more simplified the blocking keyword list, the more efficiently the Vigor router perform.

Prevent web access from IP address

Check the box to deny any web surfing activity using IP address, such as http://202.6.3.2. The reason for this is to prevent someone dodges the URL Access Control.

You must clear your browser cache first so that the URL content filtering facility operates properly on a web page that you visited before.

Enable Restrict Web Feature

Check the box to activate the function.

Java **-** Check the checkbox to activate the Block Java object function. The Vigor router will discard the Java objects from the Internet.

ActiveX - Check the box to activate the Block ActiveX object function. Any ActiveX object from the Internet will be refused.

Compressed file **-** Check the box to activate the Block Compressed file function to prevent someone from downloading any compressed file. The following list shows the types of compressed files that can be blocked by the Vigor router: **zip, rar, .arj, .ace, .cab, .sit**

Executable file - Check the box to reject any downloading behavior of the executable file from the Internet, e.g., **.exe, .com, .scr, .pif, .bas, .bat, .inf, .reg**

Cookie **-** Check the box to filter out the cookie transmission from inside to outside world to protect the local user's privacy.

Proxy - Check the box to reject any proxy transmission. To control efficiently the limited-bandwidth usage, it will be of great value to provide the blocking mechanism that filters out the multimedia files downloading from web pages. Accordingly, files with the following extensions will be blocked by the Vigor router: **.mov .mp3 .rm .ra .au .wmv .wav .asf .mpg .mpeg .avi .ram**

Enable Excepting Subnets

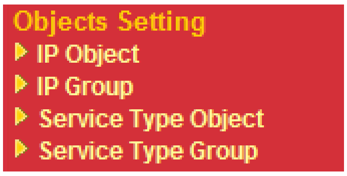
Four entries are available for users to specify some specific IP addresses or subnets so that they can be free from the *URL Access Control*. To enable an entry, click on the empty checkbox, named as **ACT**, in front of the appropriate entry.

Time Schedule

Specify what time should perform the URL content filtering facility.

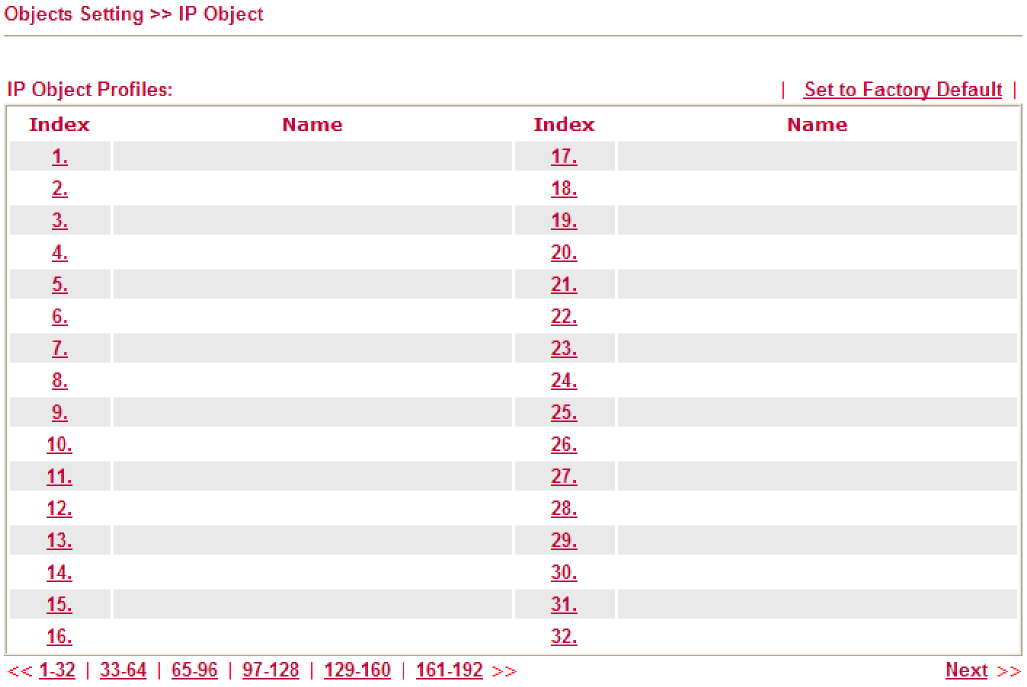
4.5 Objects Settings

For IPs in a range and service ports in a limited range usually will be applied in configuring router's settings, therefore we can define them with ***objects*** and bind them with ***groups*** for using conveniently. Later, we can select that object/group that can apply it. For example, all the IPs in the same department can be defined with an IP object (a range of IP address).



4.5.1 IP Object

You can set up to 192 sets of IP Objects with different conditions.



Objects Setting >> IP Object

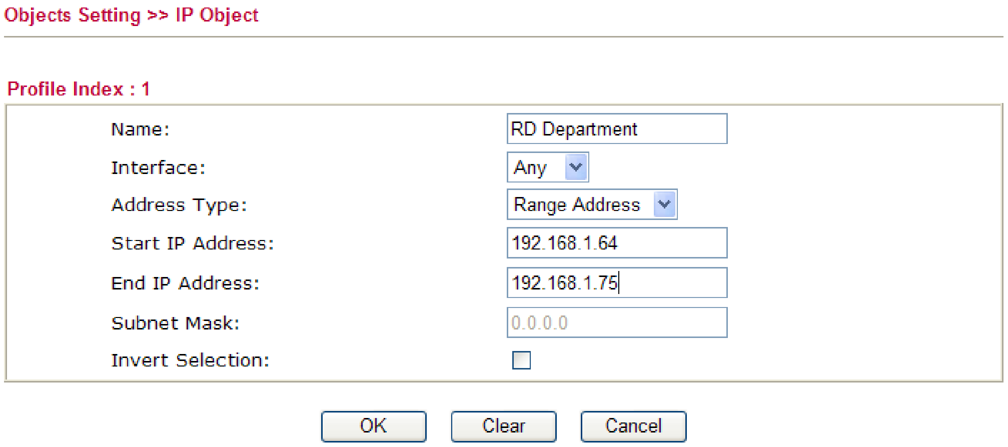
IP Object Profiles: | Set to Factory Default |

Index	Name	Index	Name
1.		17.	
2.		18.	
3.		19.	
4.		20.	
5.		21.	
6.		22.	
7.		23.	
8.		24.	
9.		25.	
10.		26.	
11.		27.	
12.		28.	
13.		29.	
14.		30.	
15.		31.	
16.		32.	

<< 1-32 | 33-64 | 65-96 | 97-128 | 129-160 | 161-192 >> Next >>

Set to Factory Default Clear all profiles.

Click the number under Index column for settings in detail.



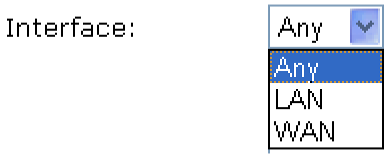
Objects Setting >> IP Object

Profile Index : 1

Name:	RD Department
Interface:	Any
Address Type:	Range Address
Start IP Address:	192.168.1.64
End IP Address:	192.168.1.75
Subnet Mask:	0.0.0.0
Invert Selection:	□

Name Type a name for this profile. Maximum 15 characters are allowed.

Interface Choose a proper interface (WAN, LAN or Any).



Interface: Any

For example, the **Direction** setting in **Edit Filter Rule** will ask you specify IP or IP range for WAN or LAN or any IP address. If you choose LAN as the **Interface** here, and choose LAN as the direction setting in **Edit Filter Rule**, then all the IP addresses specified with LAN interface will be opened for you to choose in **Edit Filter Rule** page.

Address Type Determine the address type for the IP address.
Select **Single Address** if this object contains one IP address only.
Select **Range Address** if this object contains several IPs within a range.
Select **Subnet Address** if this object contains one subnet for IP address.
Select **Any Address** if this object contains any IP address.

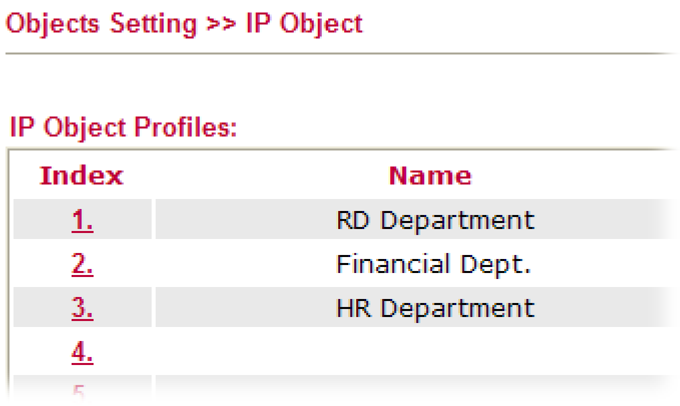
Start IP Address Type the start IP address for Single Address type.

End IP Address Type the end IP address if the Range Address type is selected.

Subnet Mask Type the subnet mask if the Subnet Address type is selected.

Invert Selection If it is checked, all the IP addresses except the ones listed above will be applied later while it is chosen.

Below is an example of IP objects settings.



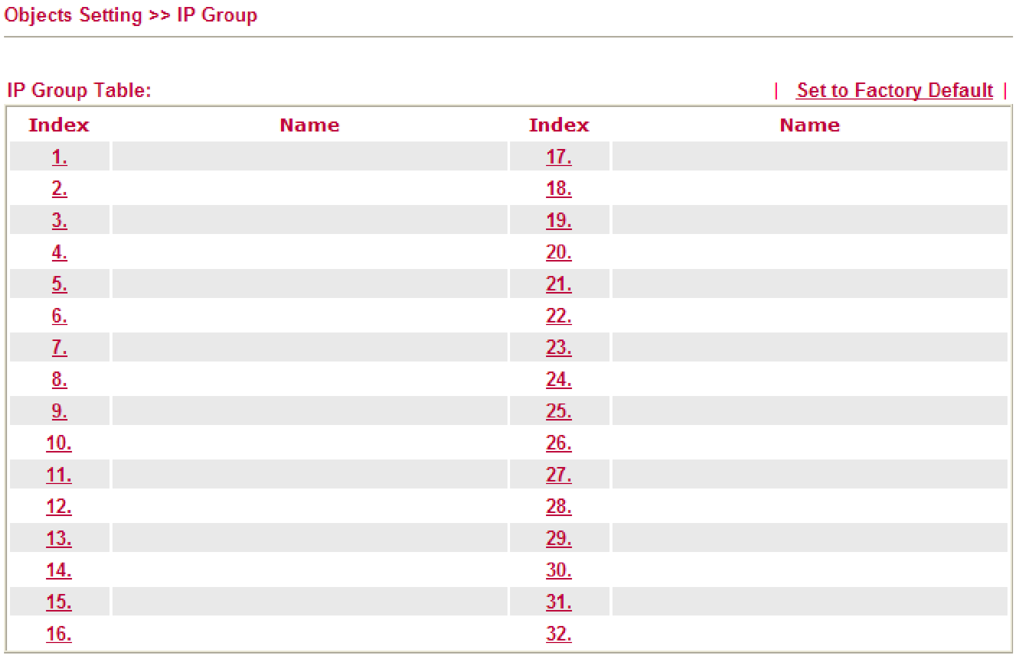
Objects Setting >> IP Object

IP Object Profiles:

Index	Name
1.	RD Department
2.	Financial Dept.
3.	HR Department
4.	
5.	

4.5.2 IP Group

This page allows you to bind several IP objects into one IP group.



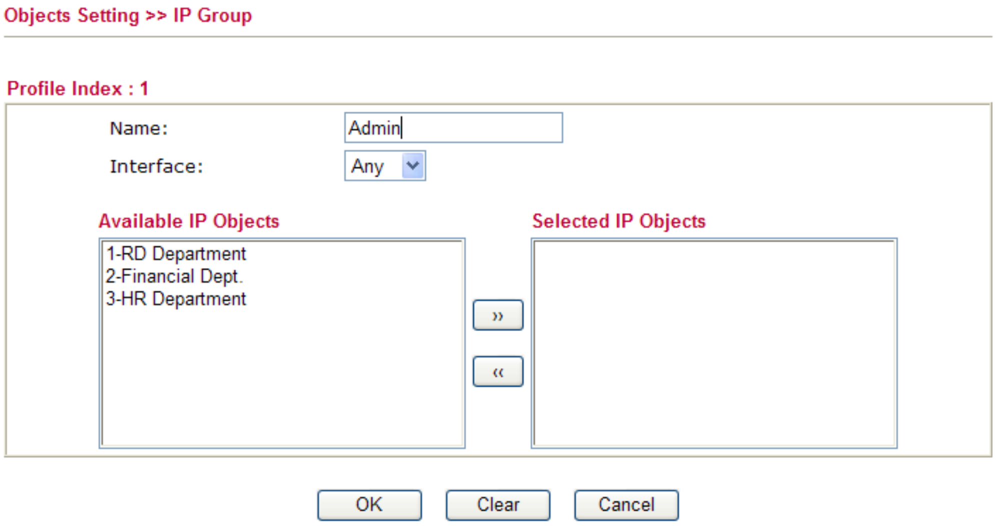
Objects Setting >> IP Group

IP Group Table: | Set to Factory Default |

Index	Name	Index	Name
1.		17.	
2.		18.	
3.		19.	
4.		20.	
5.		21.	
6.		22.	
7.		23.	
8.		24.	
9.		25.	
10.		26.	
11.		27.	
12.		28.	
13.		29.	
14.		30.	
15.		31.	
16.		32.	

Set to Factory Default Clear all profiles.

Click the number under Index column for settings in detail.



Objects Setting >> IP Group

Profile Index : 1

Name:	Admin
Interface:	Any

Available IP Objects

1-RD Department
2-Financial Dept.
3-HR Department

Selected IP Objects

Name Type a name for this profile. Maximum 15 characters are allowed.

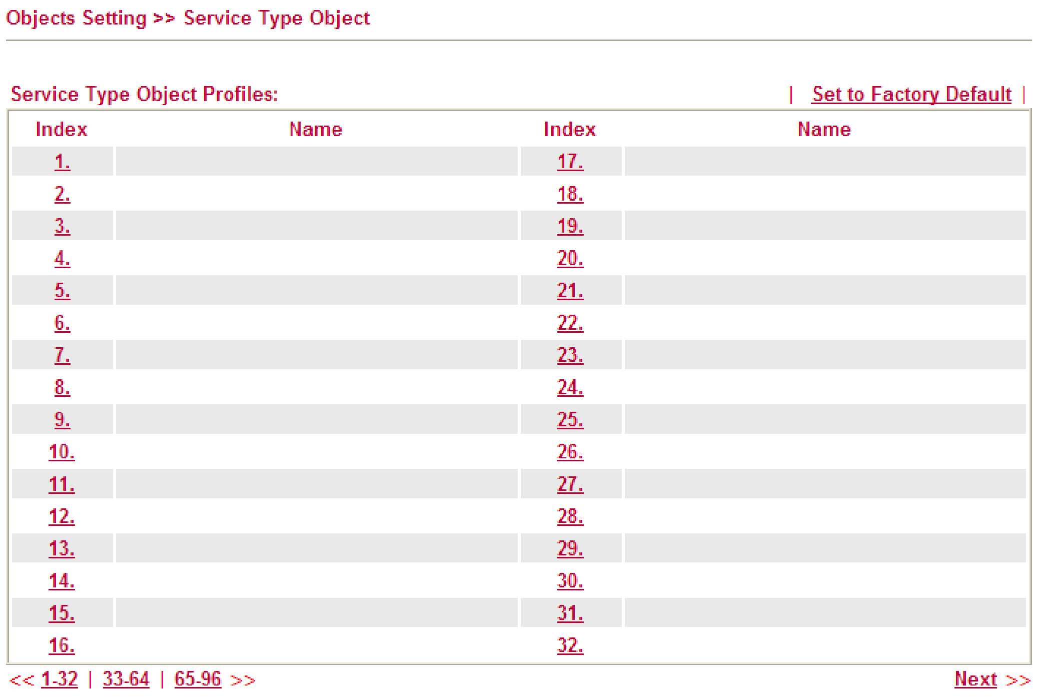
Interface Choose WAN, LAN or Any to display all the available IP objects with the specified interface.

Available IP Objects All the available IP objects with the specified interface chosen above will be shown in this box.

Selected IP Objects Click >> button to add the selected IP objects in this box.

4.5.3 Service Type Object

You can set up to 96 sets of Service Type Objects with different conditions.



Objects Setting >> Service Type Object

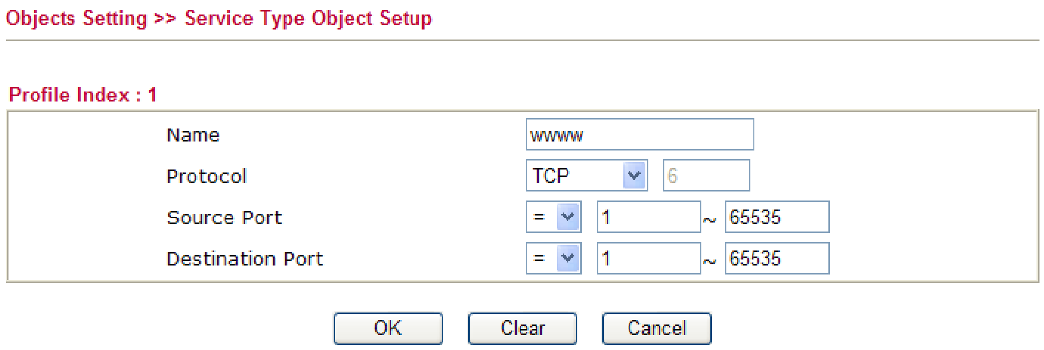
Service Type Object Profiles: | Set to Factory Default |

Index	Name	Index	Name
1.		17.	
2.		18.	
3.		19.	
4.		20.	
5.		21.	
6.		22.	
7.		23.	
8.		24.	
9.		25.	
10.		26.	
11.		27.	
12.		28.	
13.		29.	
14.		30.	
15.		31.	
16.		32.	

<< 1-32 | 33-64 | 65-96 >> Next >>

Set to Factory Default Clear all profiles.

Click the number under Index column for settings in detail.



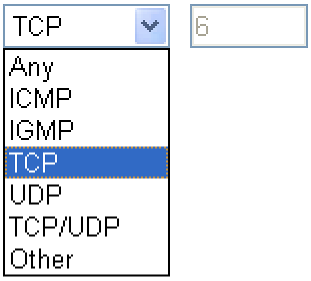
Objects Setting >> Service Type Object Setup

Profile Index : 1

Name	wwww
Protocol	TCP 6
Source Port	= 1 ~ 65535
Destination Port	= 1 ~ 65535

Name Type a name for this profile.

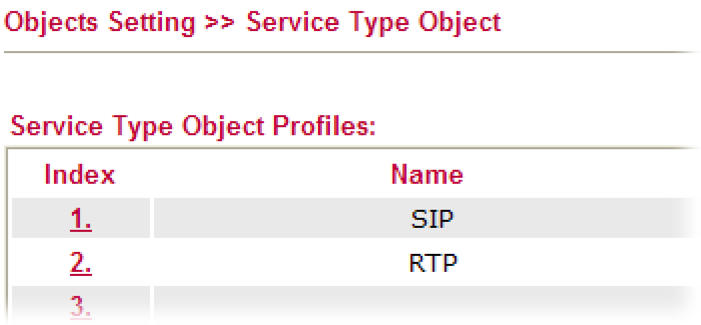
Protocol Specify the protocol(s) which this profile will apply to.



Source/Destination Port **Source Port** and the **Destination Port** column are available for TCP/UDP protocol. It can be ignored for other protocols.

The filter rule will filter out any port number.
(=) – when the first and last value are the same, it indicates one port; when the first and last values are different, it indicates a range for the port and available for this profile.
(!=) – when the first and last value are the same, it indicates all the ports except the port defined here; when the first and last values are different, it indicates that all the ports except the range defined here are available for this service type.
(>) – the port number greater than this value is available.
(<) – the port number less than this value is available for this profile.

Below is an example of service type objects settings.



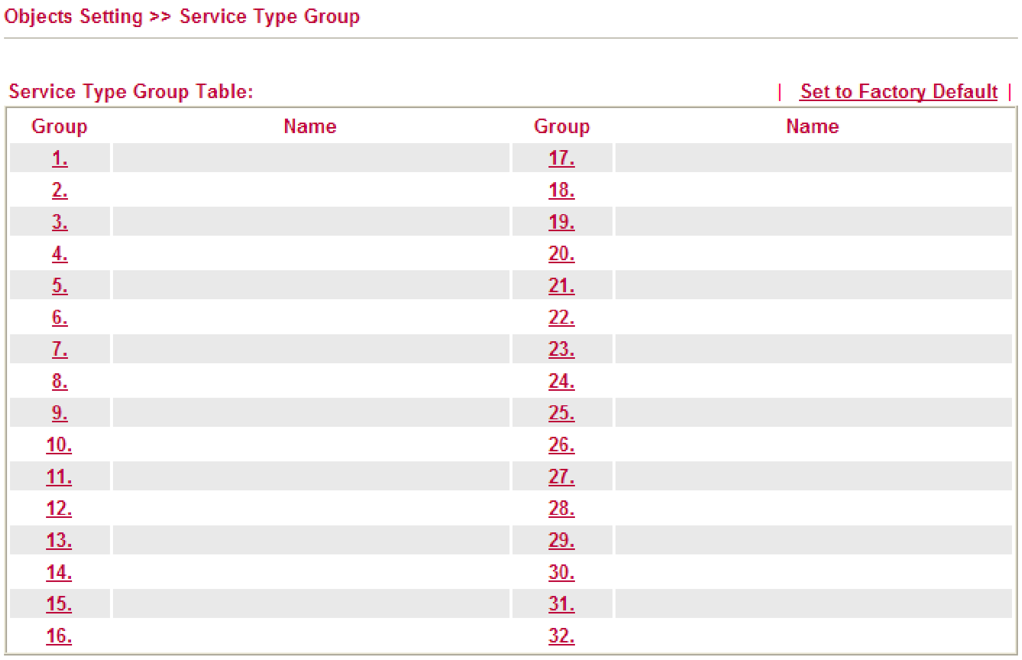
Objects Setting >> Service Type Object

Service Type Object Profiles:

Index	Name
1.	SIP
2.	RTP
3.	

4.5.4 Service Type Group

This page allows you to bind several service types into one group.



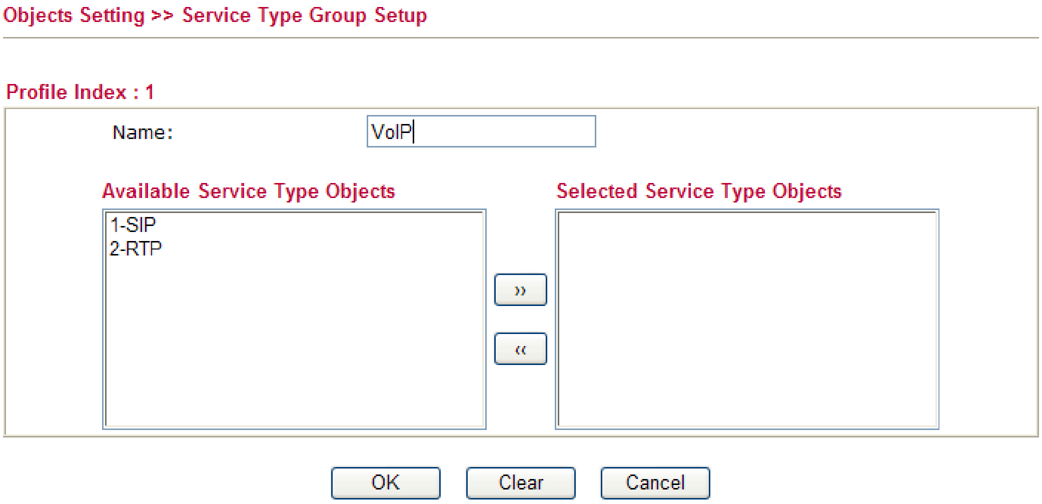
Objects Setting >> Service Type Group

Service Type Group Table: | Set to Factory Default |

Group	Name	Group	Name
1.		17.	
2.		18.	
3.		19.	
4.		20.	
5.		21.	
6.		22.	
7.		23.	
8.		24.	
9.		25.	
10.		26.	
11.		27.	
12.		28.	
13.		29.	
14.		30.	
15.		31.	
16.		32.	

Set to Factory Default Clear all profiles.

Click the number under Index column for settings in detail.



Objects Setting >> Service Type Group Setup

Profile Index : 1

Name: VoIP

Available Service Type Objects

1-SIP
2-RTP

Selected Service Type Objects

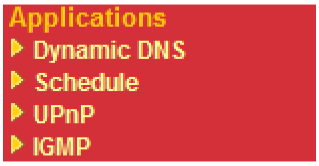
Name Type a name for this profile.

Available Service Type Objects All the available service objects that you have added on **Objects Setting>>Service Type Object** will be shown in this box.

Selected Service Type Objects Click >> button to add the selected IP objects in this box.

4.6 Applications

Below shows the menu items for Applications.



4.6.1 Dynamic DNS

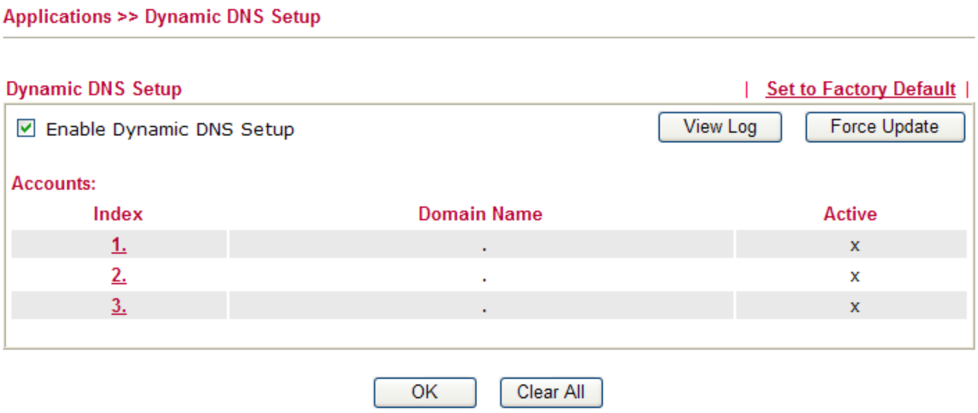
The ISP often provides you with a dynamic IP address when you connect to the Internet via your ISP. It means that the public IP address assigned to your router changes each time you access the Internet. The Dynamic DNS feature lets you assign a domain name to a dynamic WAN IP address. It allows the router to update its online WAN IP address mappings on the specified Dynamic DNS server. Once the router is online, you will be able to use the registered domain name to access the router or internal virtual servers from the Internet. It is particularly helpful if you host a web server, FTP server, or other server behind the router.

Before you use the Dynamic DNS feature, you have to apply for free DDNS service to the DDNS service providers. The router provides up to three accounts from three different DDNS service providers. Basically, Vigor routers are compatible with the DDNS services supplied by most popular DDNS service providers such as **www.dyndns.org, www.no-ip.com, www.dtdns.com, www.changeip.com, www.dynamic- nameserver.com.** You should visit their websites to register your own domain name for the router.

Enable the Function and Add a Dynamic DNS Account

1. Assume you have a registered domain name from the DDNS provider, say *hostname.dyndns.org*, and an account with username: *test* and password: *test*.

2. In the DDNS setup menu, check **Enable Dynamic DNS Setup**.



Applications >> Dynamic DNS Setup

Dynamic DNS Setup | Set to Factory Default |

☑ Enable Dynamic DNS Setup

Accounts:

Index	Domain Name	Active
1.	.	x
2.	.	x
3.	.	x

Set to Factory Default Clear all profiles and recover to factory settings.

Enable Dynamic DNS Setup Check this box to enable DDNS function.

Index Click the number below Index to access into the setting page of DDNS setup to set account(s).

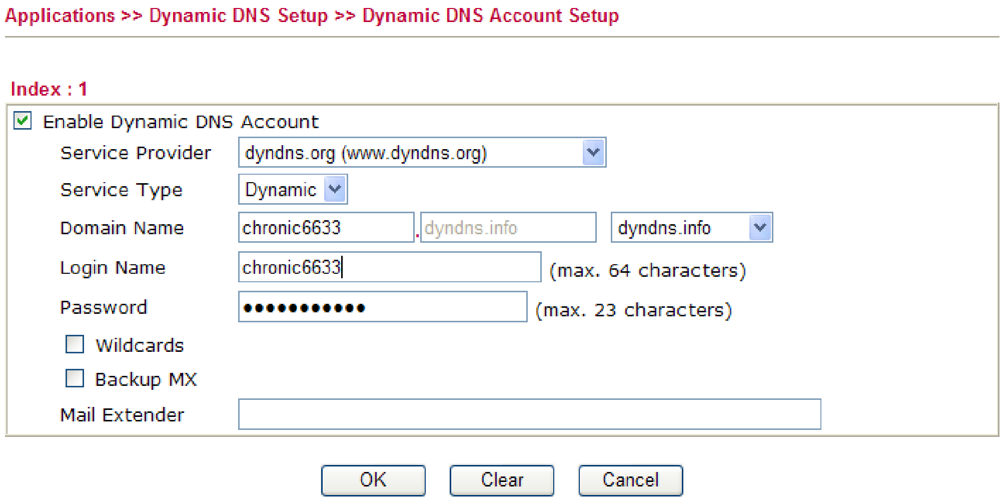
Domain Name Display the domain name that you set on the setting page of DDNS setup.

Active Display if this account is active or inactive.

View Log Display DDNS log status.

Force Update Force the router updates its information to DDNS server.

3. Select Index number 1 to add an account for the router. Check **Enable Dynamic DNS Account**, and choose correct Service Provider: dyndns.org, type the registered hostname: *hostname* and domain name suffix: dyndns.org in the **Domain Name** block. The following two blocks should be typed your account Login Name: *test* and Password: *test*.



Applications >> Dynamic DNS Setup >> Dynamic DNS Account Setup

Index : 1

☑ Enable Dynamic DNS Account

Service Provider	dyndns.org (www.dyndns.org)
Service Type	Dynamic
Domain Name	chronic6633 . dyndns.info dyndns.info
Login Name	chronic6633 (max. 64 characters)
Password	●●●●●●●●●●● (max. 23 characters)
☐ Wildcards	
☐ Backup MX	
Mail Extender	

Enable Dynamic DNS Account Check this box to enable the current account. If you did check the box, you will see a check mark appeared on the Active column of the previous web page in step 2).

Service Provider Select the service provider for the DDNS account.

Service Type Select a service type (Dynamic, Custom or Static). If you choose Custom, you can modify the domain that is chosen in the Domain Name field.

Domain Name	Type in one domain name that you applied previously. Use the drop down list to choose the desired domain.
Login Name	Type in the login name that you set for applying domain.
Password	Type in the password that you set for applying domain.

4. Click **OK** button to activate the settings. You will see your setting has been saved.

The Wildcard and Backup MX features are not supported for all Dynamic DNS providers. You could get more detailed information from their websites.

Disable the Function and Clear all Dynamic DNS Accounts

In the DDNS setup menu, uncheck **Enable Dynamic DNS Setup**, and push **Clear All** button to disable the function and clear all accounts from the router.

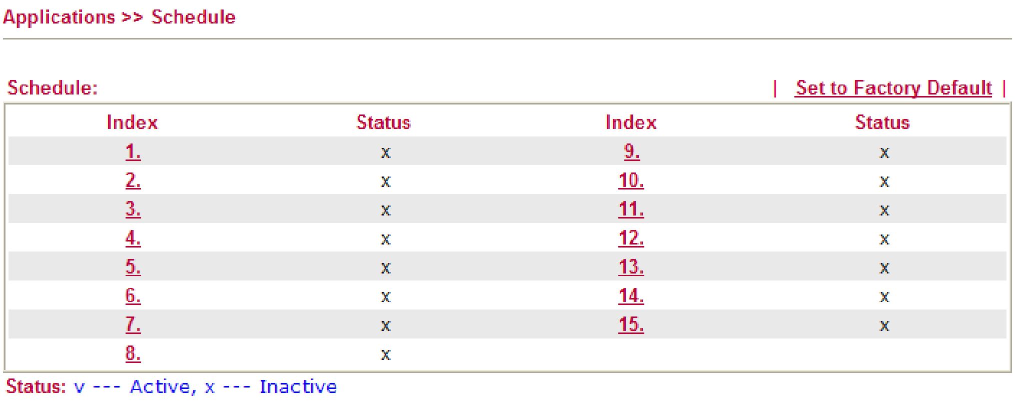
Delete a Dynamic DNS Account

In the DDNS setup menu, click the **Index** number you want to delete and then push **Clear All** button to delete the account.

4.6.2 Schedule

The Vigor router has a built-in real time clock which can update itself manually or automatically by means of Network Time Protocols (NTP). As a result, you can not only schedule the router to dialup to the Internet at a specified time, but also restrict Internet access to certain hours so that users can connect to the Internet only during certain hours, say, business hours. The schedule is also applicable to other functions.

You have to set your time before set schedule. In **System Maintenance>> Time and Date** menu, press **Inquire Time** button to set the Vigor router's clock to current time of your PC. The clock will reset once if you power down or reset the router. There is another way to set up time. You can inquiry an NTP server (a time server) on the Internet to synchronize the router's clock. This method can only be applied when the WAN connection has been built up.



Applications >> Schedule

Schedule: | Set to Factory Default |

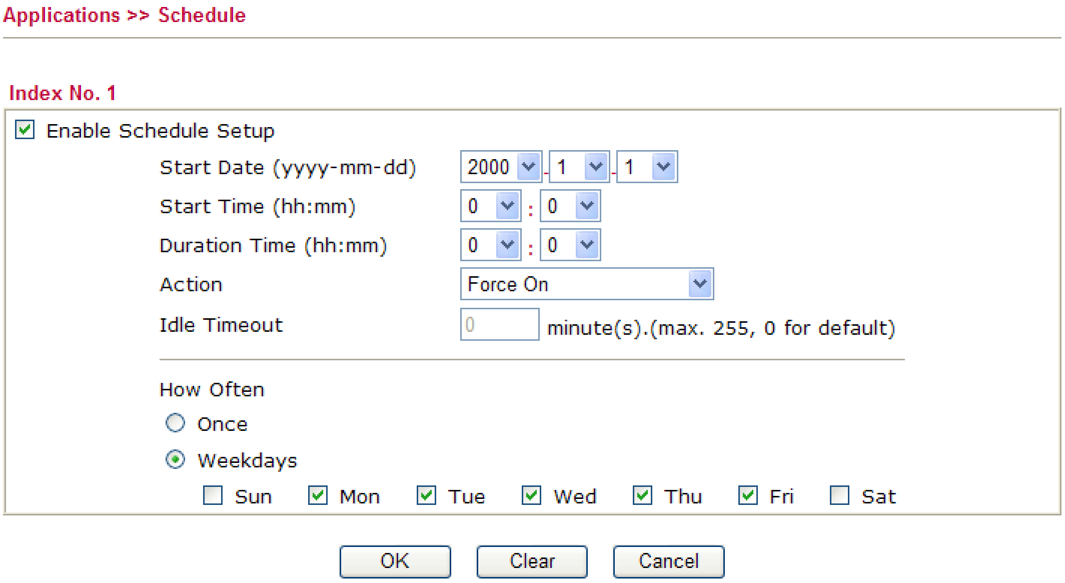
Index	Status	Index	Status
1.	x	9.	x
2.	x	10.	x
3.	x	11.	x
4.	x	12.	x
5.	x	13.	x
6.	x	14.	x
7.	x	15.	x
8.	x		

Status: v --- Active, x --- Inactive

Set to Factory Default	Clear all profiles and recover to factory settings.
Index	Click the number below Index to access into the setting page of schedule.
Status	Display if this schedule setting is active or inactive.

You can set up to 15 schedules.

To add a schedule, please click any index, say Index No. 1. The detailed settings of the call schedule with index 1 are shown below.



Applications >> Schedule

Index No. 1

☑ Enable Schedule Setup

Start Date (yyyy-mm-dd) 2000 . 1 . 1

Start Time (hh:mm) 0 : 0

Duration Time (hh:mm) 0 : 0

Action Force On

Idle Timeout 0 minute(s).(max. 255, 0 for default)

How Often

○ Once

● Weekdays

□ Sun ☑ Mon ☑ Tue ☑ Wed ☑ Thu ☑ Fri □ Sat

Enable Schedule Setup Check to enable the schedule.

Start Date (yyyy-mm-dd) Specify the starting date of the schedule.

Start Time (hh:mm) Specify the starting time of the schedule.

Duration Time (hh:mm) Specify the duration (or period) for the schedule.

Action Specify which action Call Schedule should apply during the period of the schedule.
Force On -Force the connection to be always on.
Force Down -Force the connection to be always down.
Enable Dial-On-Demand -Specify the connection to be dial-on-demand and the value of idle timeout should be specified in **Idle Timeout** field.
Disable Dial-On-Demand -Specify the connection to be up when it has traffic on the line. Once there is no traffic over idle timeout, the connection will be down and never up again during the schedule.

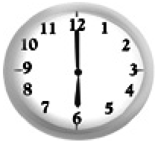
Idle Timeout Specify the duration (or period) for the schedule.
How often -Specify how often the schedule will be applied
Once -The schedule will be applied just once
Weekdays -Specify which days in one week should perform the schedule.

Example

Suppose you want to control the PPPoE Internet access connection to be always on (Force On) from 9:00 to 18:00 for whole week. Other time the Internet access connection should be disconnected (Force Down).

Office Hour:

(Force On)



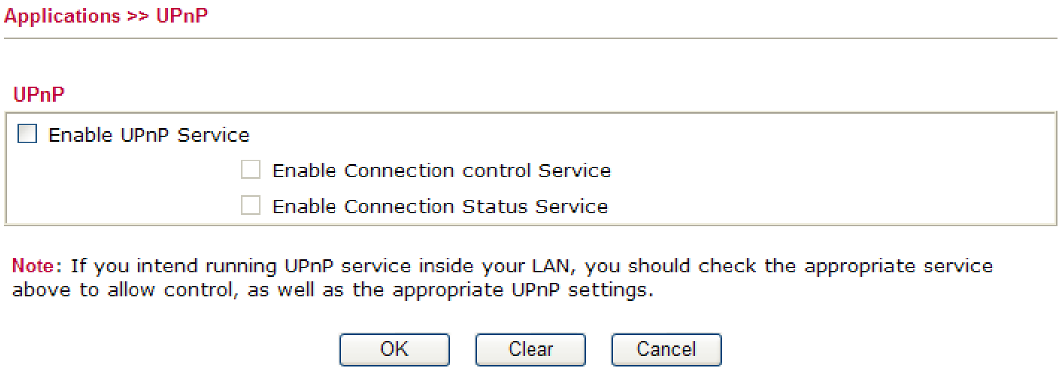
Mon - Sun **9:00 am** **to** **6:00 pm**

1. Make sure the PPPoE connection and **Time Setup** is working properly.

2. Configure the PPPoE always on from 9:00 to 18:00 for whole week.
3. Configure the **Force Down** from 18:00 to next day 9:00 for whole week.
4. Assign these two profiles to the PPPoE Internet access profile. Now, the PPPoE Internet connection will follow the schedule order to perform **Force On** or **Force Down** action according to the time plan that has been pre-defined in the schedule profiles.

4.6.3 UPnP

The **UPnP** (Universal Plug and Play) protocol is supported to bring to network connected devices the ease of installation and configuration which is already available for directly connected PC peripherals with the existing Windows 'Plug and Play' system. For NAT routers, the major feature of UPnP on the router is "NAT Traversal". This enables applications inside the firewall to automatically open the ports that they need to pass through a router. It is more reliable than requiring a router to work out by itself which ports need to be opened. Further, the user does not have to manually set up port mappings or a DMZ. **UPnP is available on Windows XP** and the router provide the associated support for MSN Messenger to allow full use of the voice, video and messaging features.



Applications >> UPnP

UPnP

□ Enable UPnP Service

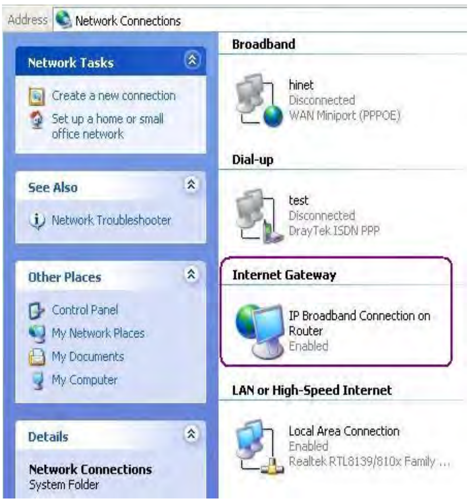
□ Enable Connection control Service

□ Enable Connection Status Service

Note: If you intend running UPnP service inside your LAN, you should check the appropriate service above to allow control, as well as the appropriate UPnP settings.

Enable UPNP Service Accordingly, you can enable either the **Connection Control Service** or **Connection Status Service**.

After setting **Enable UPNP Service** setting, an icon of **IP Broadband Connection on Router** on Windows XP/Network Connections will appear. The connection status and control status will be able to be activated. The NAT Traversal of UPnP enables the multimedia features of your applications to operate. This has to manually set up port mappings or use other similar methods. The screenshots below show examples of this facility.



Address: Network Connections

Network Tasks
- Create a new connection
- Set up a home or small office network

See Also
- Network Troubleshooter

Other Places
- Control Panel
- My Network Places
- My Documents
- My Computer

Details

Network Connections
System Folder

Broadband

hinet
Disconnected
WAN Miniport (PPPOE)

Dial-up

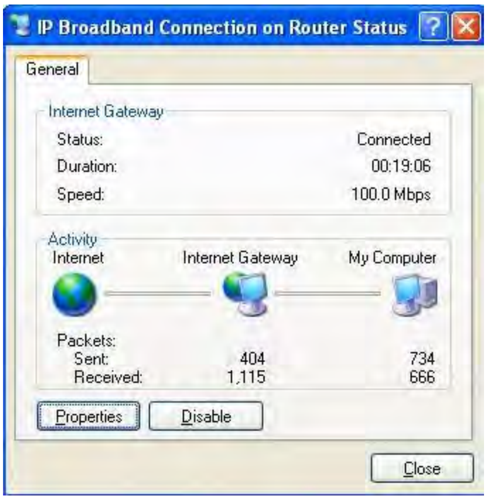
test
Disconnected
DrayTek ISDN PPP

Internet Gateway

IP Broadband Connection on Router
Enabled

LAN or High-Speed Internet

Local Area Connection
Enabled
Realtek RTL8139/810x Family ...



IP Broadband Connection on Router Status

General

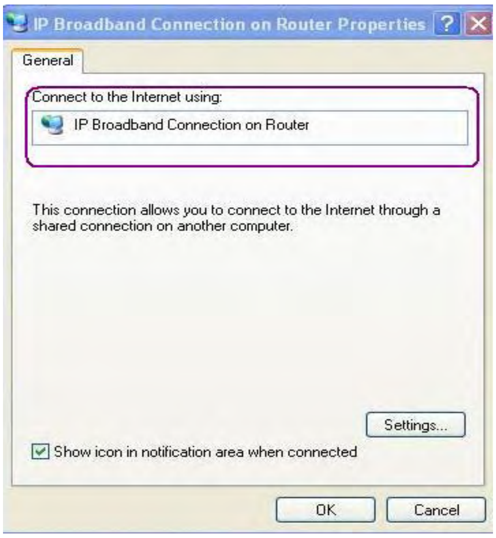
Internet Gateway

Status:	Connected
Duration:	00:19:06
Speed:	100.0 Mbps

Activity

	Internet	Internet Gateway	My Computer
Packets:			
Sent:		404	734
Received:		1,115	666

The UPnP facility on the router enables UPnP aware applications such as MSN Messenger to discover what are behind a NAT router. The application will also learn the external IP address and configure port mappings on the router. Subsequently, such a facility forwards packets from the external ports of the router to the internal ports used by the application.



IP Broadband Connection on Router Properties

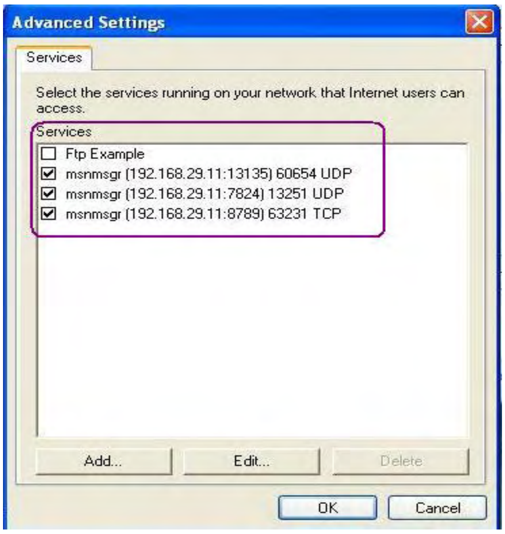
General

Connect to the Internet using:

IP Broadband Connection on Router

This connection allows you to connect to the Internet through a shared connection on another computer.

☑ Show icon in notification area when connected



Advanced Settings

Services

Select the services running on your network that Internet users can access.

Services

☐ Ftp Example
☑ msnmsgr (192.168.29.11:13135) 60654 UDP
☑ msnmsgr (192.168.29.11:7824) 13251 UDP
☑ msnmsgr (192.168.29.11:8789) 63231 TCP

The reminder as regards concern about Firewall and UPnP

Can't work with Firewall Software

Enabling firewall applications on your PC may cause the UPnP function not working properly. This is because these applications will block the accessing ability of some network ports.

Security Considerations

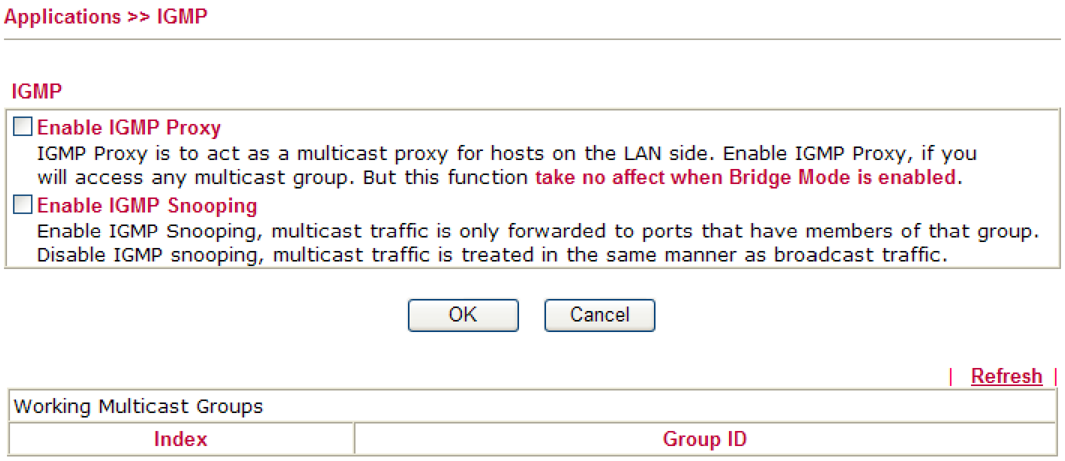
Activating the UPnP function on your network may incur some security threats. You should consider carefully these risks before activating the UPnP function.

- ➢ Some Microsoft operating systems have found out the UPnP weaknesses and hence you need to ensure that you have applied the latest service packs and patches.
- ➢ Non-privileged users can control some router functions, including removing and adding port mappings.

The UPnP function dynamically adds port mappings on behalf of some UPnP-aware applications. When the applications terminate abnormally, these mappings may not be removed.

4.6.4 IGMP

IGMP is the abbreviation of *Internet Group Management Protocol*. It is a communication protocol which is mainly used for managing the membership of Internet Protocol multicast groups.


Applications >> IGMP

IGMP

□ Enable IGMP Proxy
IGMP Proxy is to act as a multicast proxy for hosts on the LAN side. Enable IGMP Proxy, if you will access any multicast group. But this function take no affect when Bridge Mode is enabled.

□ Enable IGMP Snooping
Enable IGMP Snooping, multicast traffic is only forwarded to ports that have members of that group. Disable IGMP snooping, multicast traffic is treated in the same manner as broadcast traffic.

Working Multicast Groups

Index	Group ID

Enable IGMP Proxy Check this box to enable this function. The application of multicast will be executed through WAN port or PVC. Use the drop down list to choose the interface.

Enable IGMP Snooping Check this box to enable this function. Multicast traffic will be forwarded to ports that have members of that group. Disabling IGMP snooping will make multicast traffic treated in the same manner as broadcast traffic.

Group ID This field displays the ID port for the multicast group. The available range for IGMP starts from 224.0.0.0 to 239.255.255.254.

P1 to P4 It indicates the LAN port used for the multicast group.

Refresh Click this link to renew the working multicast group status.

If you check Enable IGMP Proxy, all the multicast groups will be listed and all the LAN ports (P1 to P4) are available for use.

4.7 Wireless LAN

This function is used for “ne” models only.

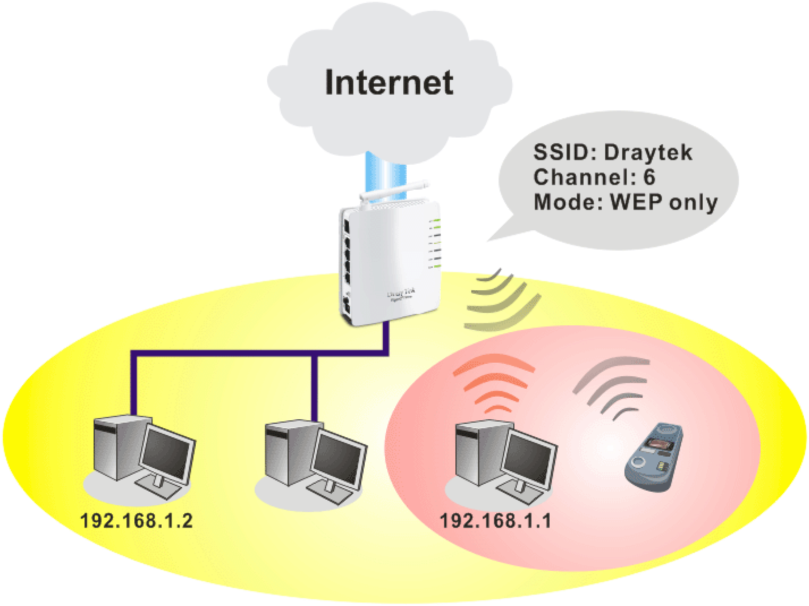
4.7.1 Basic Concepts

Over recent years, the market for wireless communications has enjoyed tremendous growth. Wireless technology now reaches or is capable of reaching virtually every location on the surface of the earth. Hundreds of millions of people exchange information every day via wireless communication products. The Vigor “ne” model, a.k.a. Vigor wireless router, is designed for maximum flexibility and efficiency of a small office/home. Any authorized staff can bring a built-in WLAN client PDA or notebook into a meeting room for conference without laying a clot of LAN cable or drilling holes everywhere. Wireless LAN enables high mobility so WLAN users can simultaneously access all LAN facilities just like on a wired LAN as well as Internet access.

The Vigor wireless routers are equipped with a wireless LAN interface compliant with the standard IEEE 802.11n protocol. To boost its performance further, the Vigor Router is also loaded with advanced wireless technology to lift up data rate up to 150 Mbps*. Hence, you can finally smoothly enjoy stream music and video.

> **Note**: * The actual data throughput will vary according to the network conditions and environmental factors, including volume of network traffic, network overhead and building materials.

In an Infrastructure Mode of wireless network, Vigor wireless router plays a role as an Access Point (AP) connecting to lots of wireless clients or Stations (STA). All the STAs will share the same Internet connection via Vigor wireless router. The **General Settings** will set up the information of this wireless network, including its SSID as identification, located channel etc.



Security Overview

Real-time Hardware Encryption: Vigor Router is equipped with a hardware AES encryption engine so it can apply the highest protection to your data without influencing user experience.

Complete Security Standard Selection: To ensure the security and privacy of your wireless communication, we provide several prevailing standards on market.

WEP (Wired Equivalent Privacy) is a legacy method to encrypt each frame transmitted via radio using either a 64-bit or 128-bit key. Usually access point will preset a set of four keys and it will communicate with each station using only one out of the four keys.

WPA (Wi-Fi Protected Access), the most dominating security mechanism in industry, is separated into two categories: WPA-personal or called WPA Pre-Share Key (WPA/PSK), and WPA-Enterprise or called WPA/802.1x.

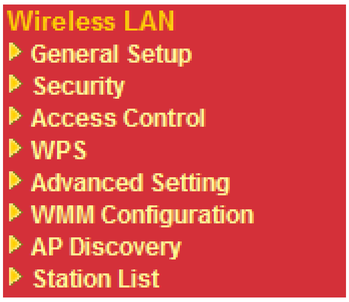
In WPA-Personal, a pre-defined key is used for encryption during data transmission. WPA applies Temporal Key Integrity Protocol (TKIP) for data encryption while WPA2 applies AES. The WPA-Enterprise combines not only encryption but also authentication.

Since WEP has been proved vulnerable, you may consider using WPA for the most secure connection. You should select the appropriate security mechanism according to your needs. No matter which security suite you select, they all will enhance the over-the-air data protection and /or privacy on your wireless network. The Vigor wireless router is very flexible and can support multiple secure connections with both WEP and WPA at the same time.

Separate the Wireless and the Wired LAN- WLAN Isolation enables you to isolate your wireless LAN from wired LAN for either quarantine or limit access reasons. To isolate means neither of the parties can access each other. To elaborate an example for business use, you may set up a wireless LAN for visitors only so they can connect to Internet without hassle of the confidential information leakage. For a more flexible deployment, you may add filters of MAC addresses to isolate users' access from wired LAN.

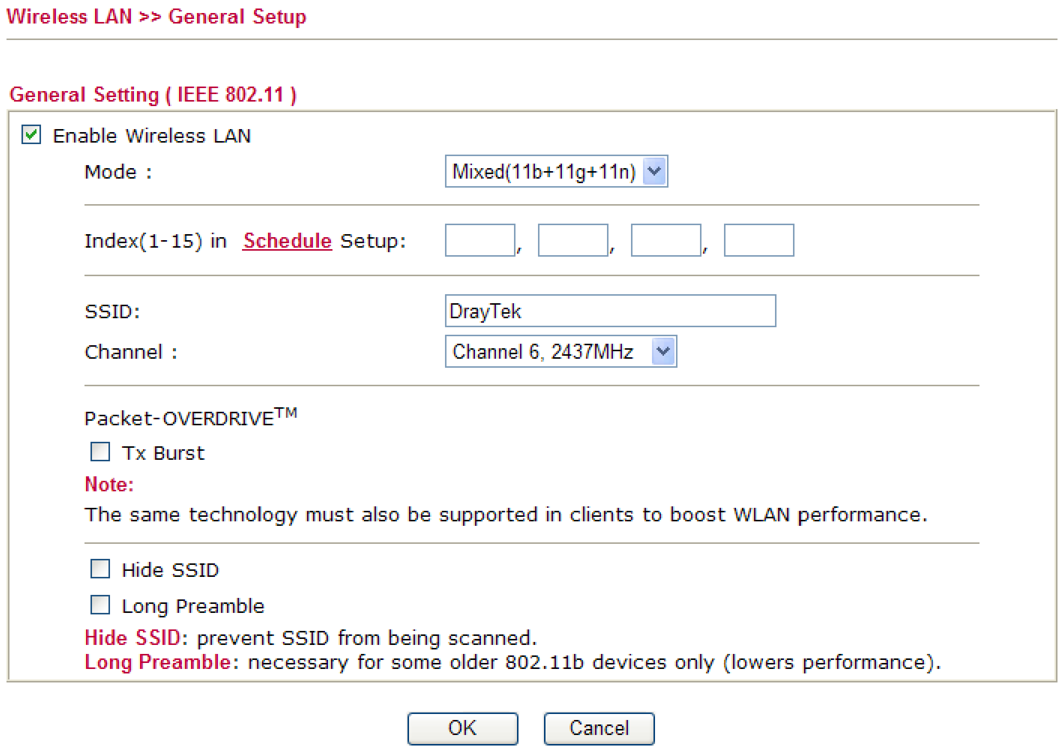
Manage Wireless Stations - Station List will display all the station in your wireless network and the status of their connection.

Below shows the menu items for Wireless LAN.



4.7.2 General Setup

By clicking the **General Settings**, a new web page will appear so that you could configure the SSID and the wireless channel. Please refer to the following figure for more information.



Wireless LAN >> General Setup

General Setting (IEEE 802.11)

☑ Enable Wireless LAN

Mode : Mixed(11b+11g+11n)

Index(1-15) in Schedule Setup: , , ,

SSID: DrayTek

Channel : Channel 6, 2437MHz

Packet-OVERDRIVE™

□ Tx Burst

Note:
The same technology must also be supported in clients to boost WLAN performance.

□ Hide SSID

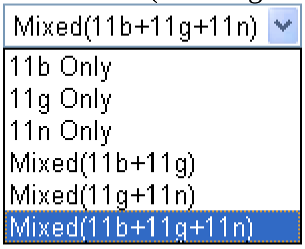
□ Long Preamble

Hide SSID: prevent SSID from being scanned.
Long Preamble: necessary for some older 802.11b devices only (lowers performance).

Enable Wireless LAN Check the box to enable wireless function.

Mode

At present, the router can connect to Mixed (11b+11g), 11g Only, 11b Only, Mixed (11g+11n), 11n Only and Mixed (11b+11g+11n) stations simultaneously. Simply choose Mix (11b+11g+11n) mode.


Mixed(11b+11g+11n)

Note: You should also set **RADIUS Server** simultaneously if 11g Only, 11b Only or 11n Only mode is selected.

Index(1-15)

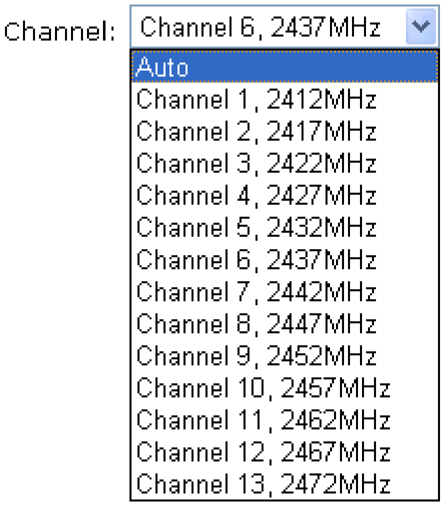
Set the wireless LAN to work at certain time interval only. You may choose up to 4 schedules out of the 15 schedules pre-defined in **Applications** >> **Schedule** setup. The default setting of this filed is blank and the function will always work.

SSID

Means the identification of the wireless LAN. SSID can be any text numbers or various special characters. The default SSID is "DrayTek. We suggest you to change it.

Channel

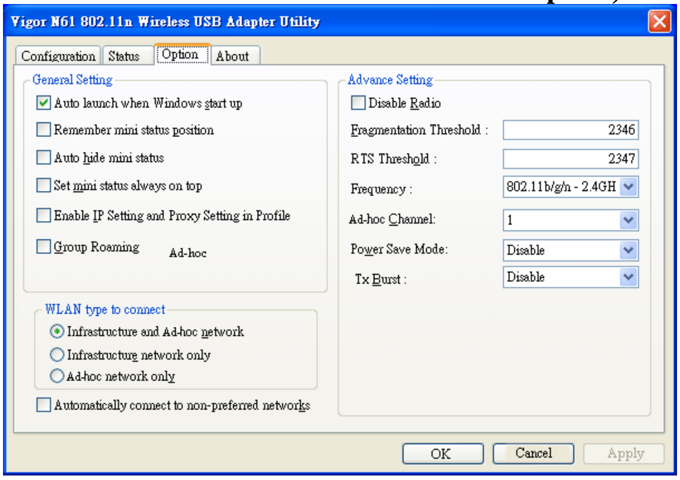
Means the channel of frequency of the wireless LAN. The default channel is 6. You may switch channel if the selected channel is under serious interference. If you have no idea of choosing the frequency, please select Auto to let system determine for you.


Channel: Channel 6, 2437MHz

Packet-OVERDRIVE

This feature can enhance the performance in data transmission about 40%* more (by checking **Tx Burs**t). It is active only when both sides of Access Point and Station (in wireless client) invoke this function at the same time. That is, the wireless client must support this feature and invoke the function, too.

Note: Vigor N61 wireless adapter supports this function. Therefore, you can use and install it into your PC for matching with Packet-OVERDRIVE (refer to the following picture of Vigor N61 wireless utility window, choose **Enable** for **TxBURST** on the tab of **Option**).



General Setting

☑ Auto launch when Windows start up

□ Remember mini status position

□ Auto hide mini status

□ Set mini status always on top

□ Enable IP Setting and Proxy Setting in Profile

□ Group Roaming Ad-hoc

WLAN type to connect

● Infrastructure and Ad-hoc network

○ Infrastructure network only

○ Ad-hoc network only

□ Automatically connect to non-preferred networks

Advance Setting

□ Disable Radio

Fragmentation Threshold : 2346

RTS Threshold : 2347

Frequency : 802.11b/g/n - 2.4GH

Ad-hoc Channel: 1

Power Save Mode: Disable

Tx Burst : Disable

Rate Control It controls the data transmission rate through wireless connection.

Upload – Check Enable and type the transmitting rate for data upload. Default value is 30,000 kbps.

Download – Type the transmitting rate for data download. Default value is 30,000 kbps.

Hide SSID

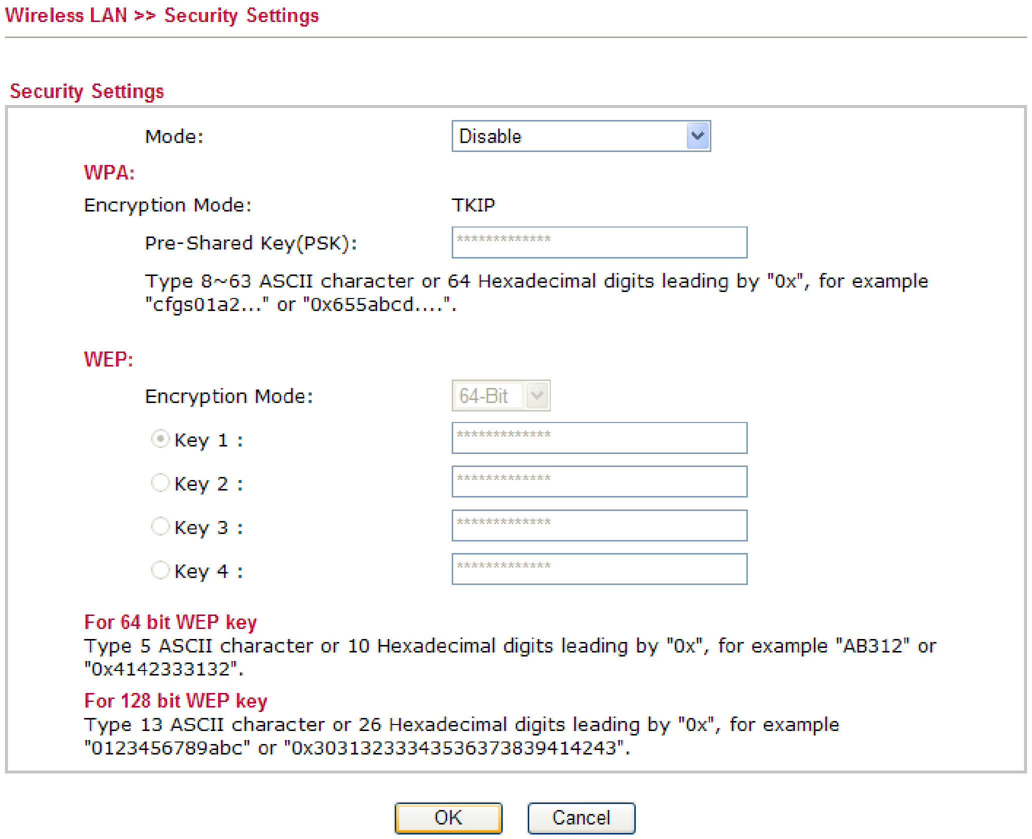
Check it to prevent from wireless sniffing and make it harder for unauthorized clients or STAs to join your wireless LAN. Depending on the wireless utility, the user may only see the information except SSID or just cannot see any thing about Vigor wireless router while site surveying. The system allows you to set four sets of SSID for different usage. In default, the first set of SSID will be enabled. You can hide it for your necessity.

Long Preamble

This option is to define the length of the sync field in an 802.11 packet. Most modern wireless network uses short preamble with 56 bit sync filed instead of long preamble with 128 bit sync field. However, some original 11b wireless network devices only support long preamble. Check it to use **Long Preamble** if needed to communicate with this kind of devices.

4.7.3 Security

By clicking the **Security Settings**, a new web page will appear so that you could configure the settings of WEP and WPA.



Wireless LAN >> Security Settings

Security Settings

Mode: Disable

WPA:

Encryption Mode: TKIP

Pre-Shared Key(PSK): *************

Type 8~63 ASCII character or 64 Hexadecimal digits leading by "0x", for example "cfgs01a2..." or "0x655abcd....".

WEP:

Encryption Mode: 64-Bit

● Key 1 : *************

○ Key 2 : *************

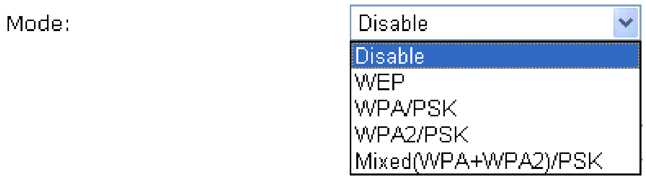
○ Key 3 : *************

○ Key 4 : *************

For 64 bit WEP key
Type 5 ASCII character or 10 Hexadecimal digits leading by "0x", for example "AB312" or "0x4142333132".

For 128 bit WEP key
Type 13 ASCII character or 26 Hexadecimal digits leading by "0x", for example "0123456789abc" or "0x30313233343536373839414243".

Mode There are several modes provided for you to choose.



Mode: Disable

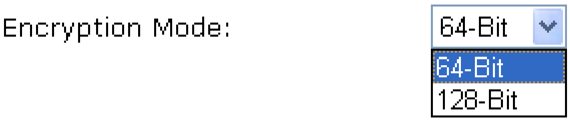
Disable - Turn off the encryption mechanism.
WEP-Accepts only WEP clients and the encryption key should be entered in WEP Key.
WPA/PSK-Accepts only WPA clients and the encryption key should be entered in PSK.
WPA2/PSK-Accepts only WPA2 clients and the encryption key should be entered in PSK.
Mixed (WPA+ WPA2)/PSK - Accepts WPA and WPA2 clients simultaneously and the encryption key should be entered in PSK.

WPA The WPA encrypts each frame transmitted from the radio using the key, which either PSK (Pre-Shared Key) entered manually in this field below or automatically negotiated via 802.1x authentication. Either **8~63** ASCII characters, such as 012345678(or 64 Hexadecimal digits leading by 0x, such as "0x321253abcde...").
Type - Select from Mixed (WPA+WPA2) or WPA2 only.
Pre-Shared Key (PSK) - Either **8~63** ASCII characters,

such as 012345678..(or 64 Hexadecimal digits leading by 0x, such as "0x321253abcde...").

WEP

64-Bit - For 64 bits WEP key, either **5** ASCII characters, such as 12345 (or 10 hexadecimal digitals leading by 0x, such as 0x4142434445.)
128-Bit - For 128 bits WEP key, either **13** ASCII characters, such as ABCDEFGHIJKLM (or 26 hexadecimal digits leading by 0x, such as 0x4142434445464748494A4B4C4D).

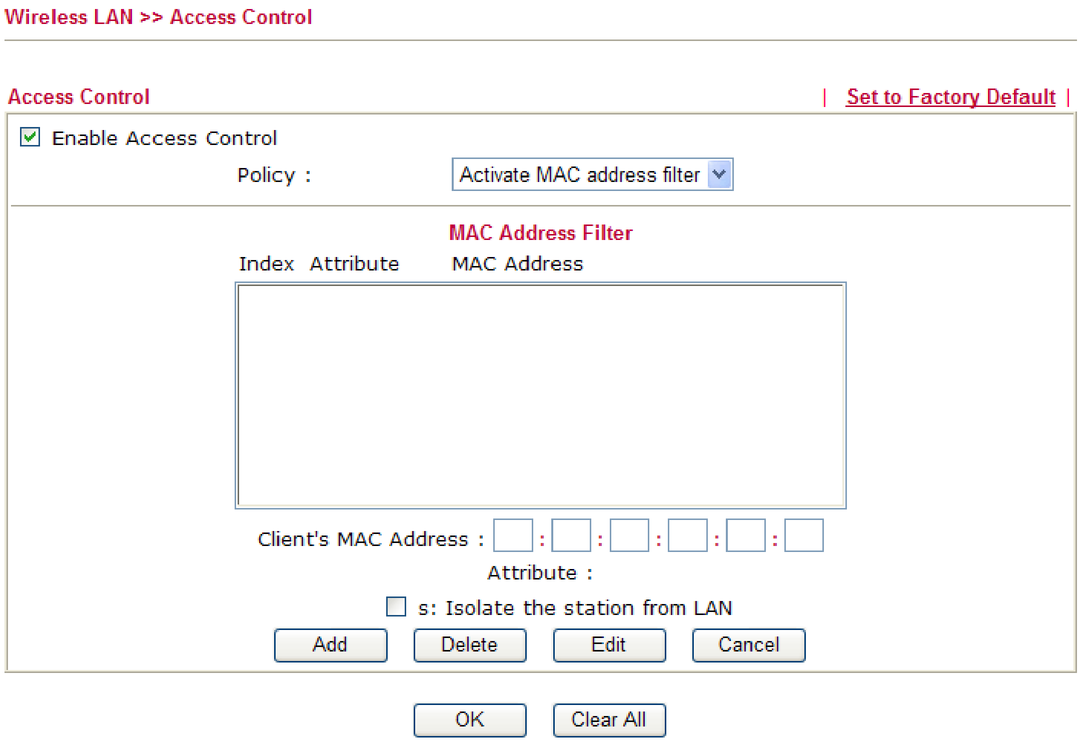


Encryption Mode: 64-Bit

All wireless devices must support the same WEP encryption bit size and have the same key. **Four keys** can be entered here, but only one key can be selected at a time. The keys can be entered in ASCII or Hexadecimal. Check the key you wish to use.

4.7.4 Access Control

For additional security of wireless access, the **Access Control** facility allows you to restrict the network access right by controlling the wireless LAN MAC address of client. Only the valid MAC address that has been configured can access the wireless LAN interface. By clicking the **Access Control**, a new web page will appear, as depicted below, so that you could edit the clients' MAC addresses to control their access rights.



Wireless LAN >> Access Control

Access Control | Set to Factory Default |

☑ Enable Access Control

Policy : Activate MAC address filter

MAC Address Filter

Index Attribute MAC Address

Client's MAC Address : __ : __ : __ : __ : __ : __

Attribute :

☐ s: Isolate the station from LAN

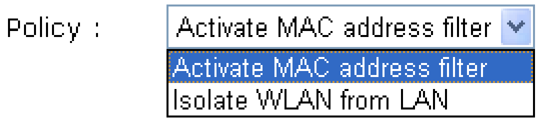
Enable Access Control

Select to enable the MAC Address filter for wireless LAN

Policy

Select to enable any one of the following policy. Choose **Activate MAC address filter** to type in the MAC addresses for other clients in the network manually.

Choose **Isolate WLAN from LAN** will separate all the WLAN stations from LAN based on the MAC Address list.



Policy : Activate MAC address filter

MAC Address Filter Display all MAC addresses that are edited before.

Client's MAC Address Manually enter the MAC address of wireless client.

Attribute **s: Isolate the station from LAN -** select to isolate the wireless connection of the wireless client of the MAC address from LAN.

Add Add a new MAC address into the list.

Delete Delete the selected MAC address in the list.

Edit Edit the selected MAC address in the list.

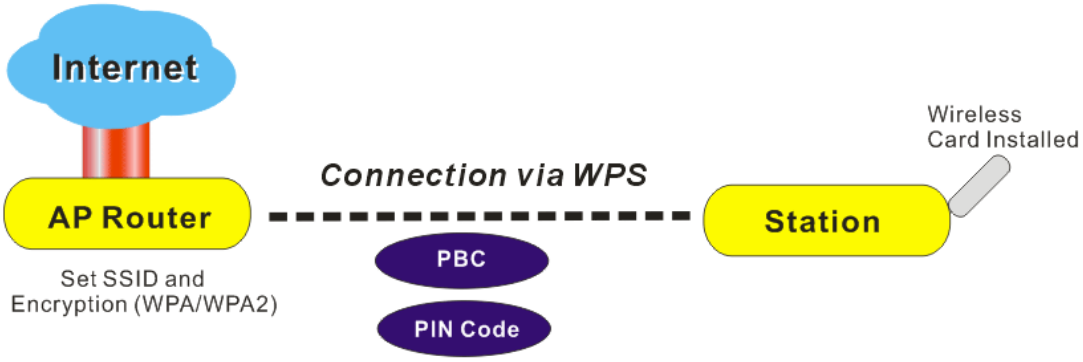
Cancel Give up the access control set up.

OK Click it to save the access control list.

Clear All Clean all entries in the MAC address list.

4.7.5 WPS

WPS (Wi-Fi Protected Setup) provides easy procedure to make network connection between wireless station and wireless access point (vigor router) with the encryption of WPA and WPA2.

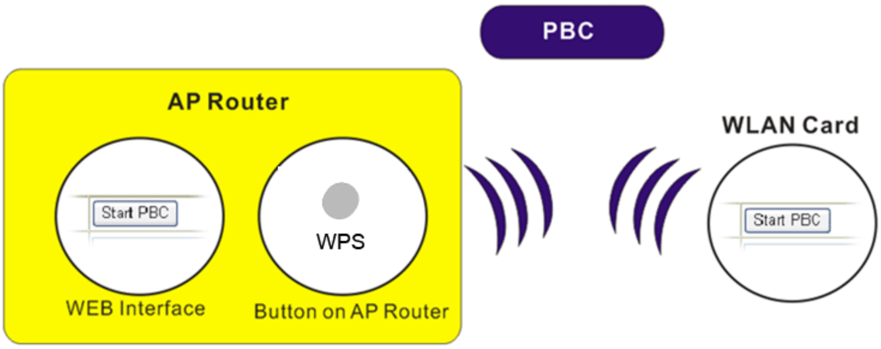


Note: Such function is available for the wireless station with WPS supported.

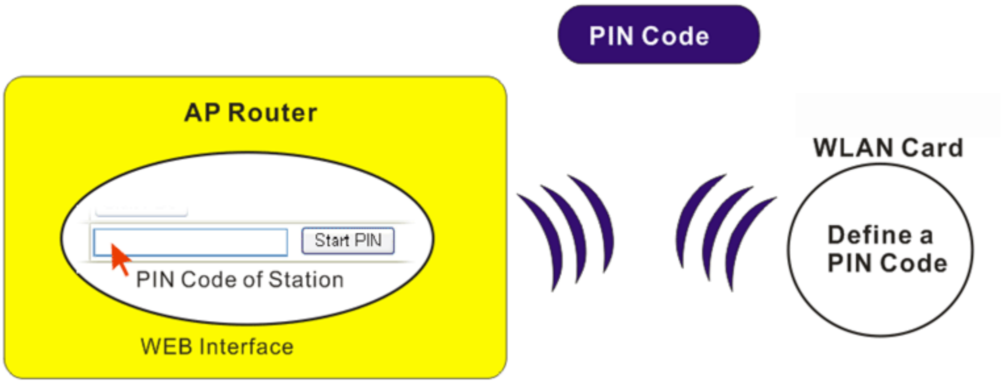
It is the simplest way to build connection between wireless network clients and vigor router. Users do not need to select any encryption mode and type any long encryption passphrase to setup a wireless client every time. He/she only needs to press a button on wireless client, and WPS will connect for client and router automatically.

There are two methods to do network connection through WPS between AP and Stations: pressing the ***Start PBC*** button or using ***PIN Code***.

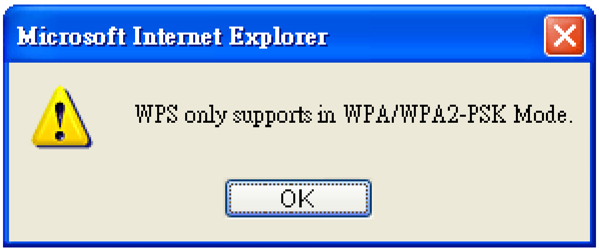
- On the side of Vigor 2710 series which served as an AP, press **WPS** button once on the front panel of the router or click **Start PBC** on web configuration interface. On the side of a station with network card installed, press **Start PBC** button of network card.



- If you want to use PIN code, you have to know the PIN code specified in wireless client. Then provide the PIN code of the wireless client you wish to connect to the vigor router.



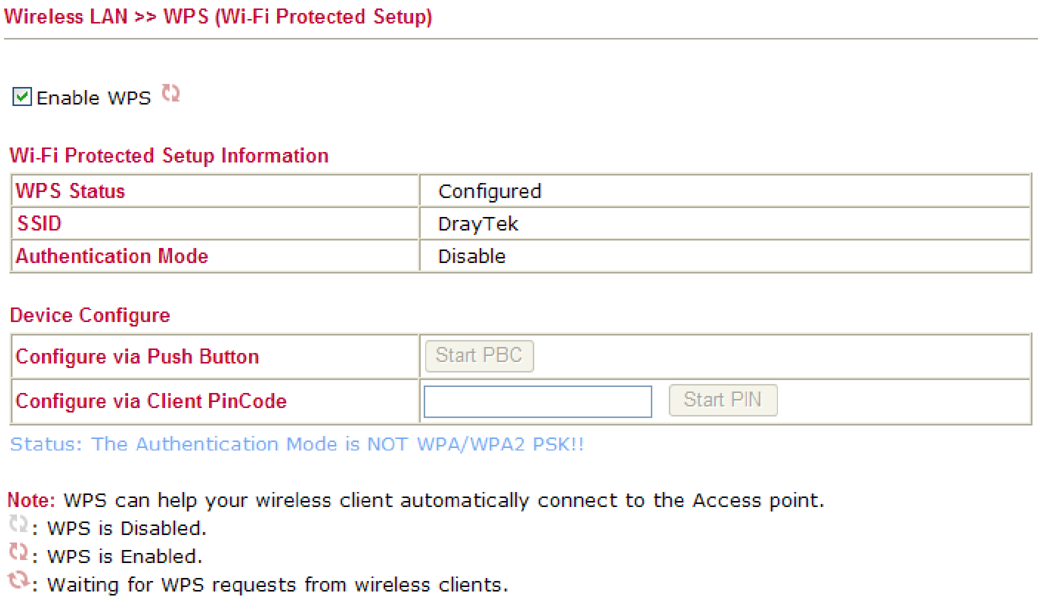
For WPS is supported in WPA-PSK or WPA2-PSK mode, if you do not choose such mode in **Wireless LAN>>Security**, you will see the following message box.


Microsoft Internet Explorer

WPS only supports in WPA/WPA2-PSK Mode.

Please click **OK** and go back **Wireless LAN>>Security** to choose WPA-PSK or WPA2-PSK mode and access WPS again.

Below shows **Wireless LAN>>WPS** web page.



Wireless LAN >> WPS (Wi-Fi Protected Setup)

☑ Enable WPS

Wi-Fi Protected Setup Information

WPS Status	Configured
SSID	DrayTek
Authentication Mode	Disable

Device Configure

Configure via Push Button	Start PBC
Configure via Client PinCode	Start PIN

Status: The Authentication Mode is NOT WPA/WPA2 PSK!!

Note: WPS can help your wireless client automatically connect to the Access point.

: WPS is Disabled.

: WPS is Enabled.

: Waiting for WPS requests from wireless clients.

Enable WPS Check this box to enable WPS setting.

WPS Status Display related system information for WPS. If the wireless security (encryption) function of the router is properly configured, you can see 'Configured' message here.

SSID Display the SSID1 of the router. WPS is supported by SSID1 only.

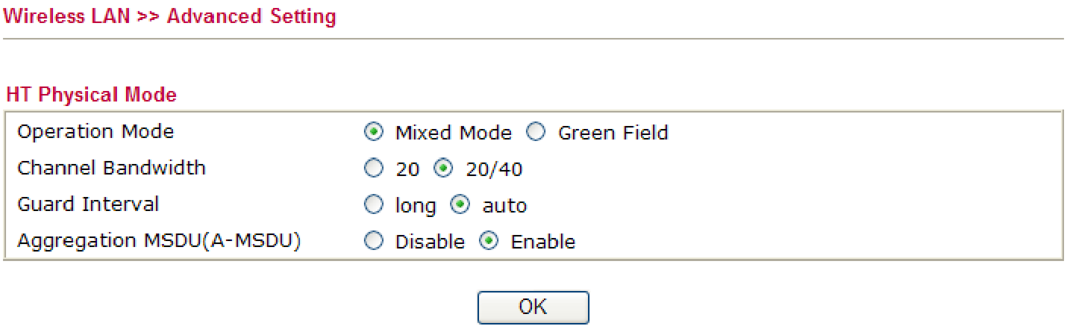
Authentication Mode Display current authentication mode of the router. Only WPA2/PSK and WPA/PSK support WPS.

Configure via Push Button Click **Start PBC** to invoke Push-Button style WPS setup procedure. The router will wait for WPS requests from wireless clients about two minutes. The WPS LED on the router will blink fast when WPS is in progress. It will return to normal condition after two minutes. (You need to setup WPS within two minutes)

Configure via Client PinCode Please input the PIN code specified in wireless client you wish to connect, and click **Start PIN** button. The WLAN LED on the router will blink fast when WPS is in progress. It will return to normal condition after two minutes. (You need to setup WPS within two minutes)

4.7.6 Advanced Setting

This page allows users to set advanced settings such as operation mode, channel bandwidth, guard interval, and aggregation MSDU for wireless data transmission.


Wireless LAN >> Advanced Setting

HT Physical Mode

Operation Mode	● Mixed Mode ○ Green Field
Channel Bandwidth	○ 20 ● 20/40
Guard Interval	○ long ● auto
Aggregation MSDU(A-MSDU)	○ Disable ● Enable

Operation Mode

Mixed Mode – the router can transmit data with the ways supported in both 802.11a/b/g and 802.11n standards. However, the entire wireless transmission will be slowed down if 802.11g or 802.11b wireless client is connected.

Green Field – to get the highest throughput, please choose such mode. Such mode can make the data transmission happening between 11n systems only. In addition, it does not have protection mechanism to avoid the conflict with neighboring devices of 802.11a/b/g.

Channel Bandwidth

20- the router will use 20Mhz for data transmission and receiving between the AP and the stations.

20/40 – the router will use 20Mhz or 40Mhz for data transmission and receiving according to the station capability. Such channel can increase the performance for data transit.

Guard Interval

It is to assure the safety of propagation delays and reflections for the sensitive digital data. If you choose **auto** as guard interval, the AP router will choose short guard interval (increasing the wireless performance) or long guard interval for data transmit based on the station capability.

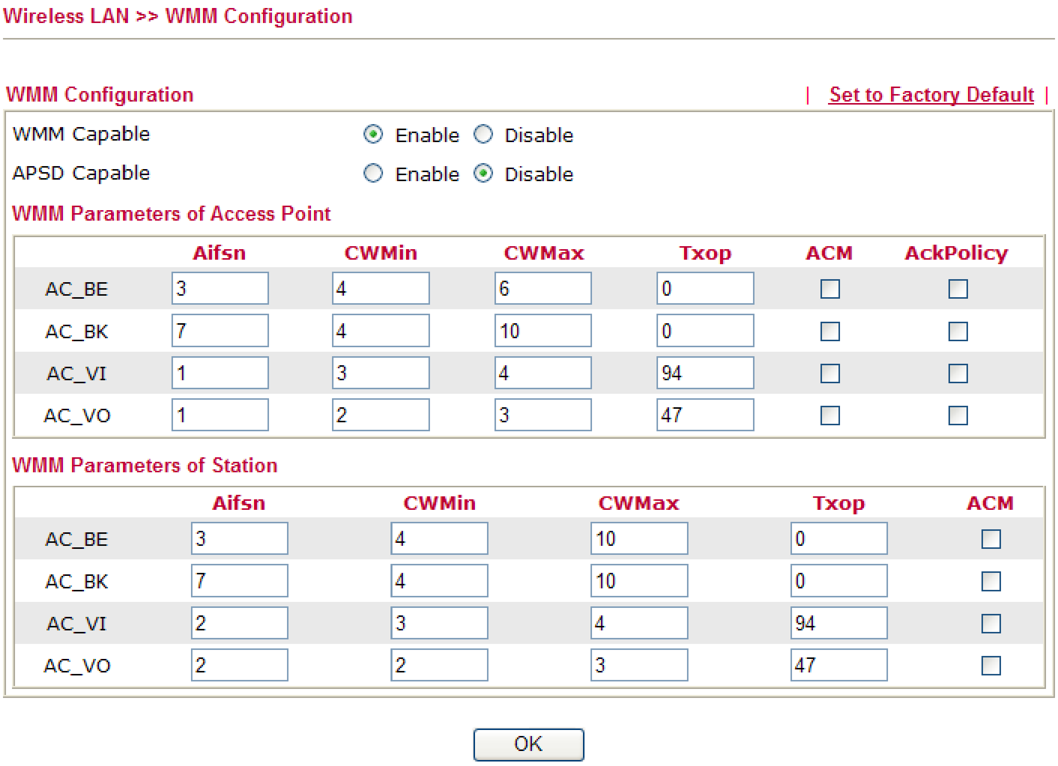
Aggregation MSDU

Aggregation MSDU can combine frames with different sizes. It is used for improving MAC layer’s performance for some brand’s clients. The default setting is **Enable.**

4.7.7 WMM Configuration

WMM is an abbreviation of Wi-Fi Multimedia. It defines the priority levels for four access categories derived from 802.1d (prioritization tabs). The categories are designed with specific types of traffic, voice, video, best effort and low priority data. There are four accessing categories - AC_BE , AC_BK, AC_VI and AC_VO for WMM.

APSD (automatic power-save delivery) is an enhancement over the power-save mechanisms supported by Wi-Fi networks. It allows devices to take more time in sleeping state and consume less power to improve the performance by minimizing transmission latency. Such function is designed for mobile and cordless phones that support VoIP mostly.



Wireless LAN >> WMM Configuration

WMM Configuration | Set to Factory Default |

WMM Capable ● Enable ○ Disable

APSD Capable ○ Enable ● Disable

WMM Parameters of Access Point

	Aifsn	CWMin	CWMax	Txop	ACM	AckPolicy
AC_BE	3	4	6	0	□	□
AC_BK	7	4	10	0	□	□
AC_VI	1	3	4	94	□	□
AC_VO	1	2	3	47	□	□

WMM Parameters of Station

	Aifsn	CWMin	CWMax	Txop	ACM
AC_BE	3	4	10	0	□
AC_BK	7	4	10	0	□
AC_VI	2	3	4	94	□
AC_VO	2	2	3	47	□

WMM Capable To apply WMM parameters for wireless data transmission, please click the **Enable** radio button.

APSD Capable The default setting is **Disable**.

Aifsn It controls how long the client waits for each data transmission. Please specify the value ranging from 1 to 15. Such parameter will influence the time delay for WMM accessing categories. For the service of voice or video image, please set small value for AC_VI and AC_VO categories. As to the service of e-mail or web browsing, please set large value for AC_BE and AC_BK categories.

CWMin/CWMax **CWMin** means contention Window-Min and **CWMax** means contention Window-Max. Please specify the value ranging from 1 to 15. Be aware that CWMax value must be greater than CWMin or equals to CWMin value. Both values will influence the time delay for WMM accessing categories. The difference between AC_VI and AC_VO categories must be smaller; however, the difference between AC_BE and AC_BK categories must be greater.

Txop It means transmission opportunity. For WMM categories of AC_VI and AC_VO that need higher priorities in data transmission, please set greater value for them to get highest transmission opportunity. Specify the value ranging from 0 to 65535.

ACM It is an abbreviation of Admission Control Mandatory. It can restrict stations from using specific category class if it is checked.

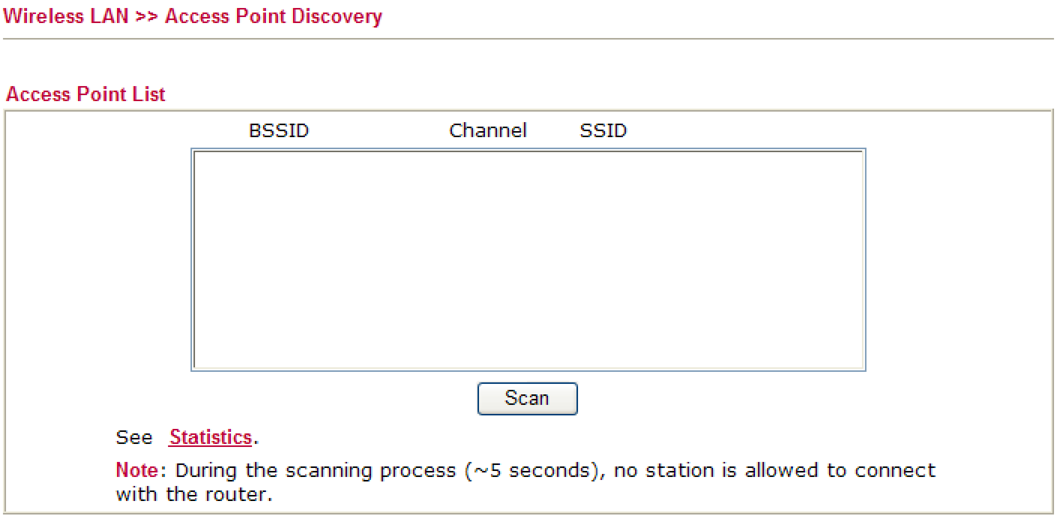
AckPolicy "Uncheck" (default value) the box means the AP router will answer the response request while transmitting WMM packets

through wireless connection. It can assure that the peer must receive the WMM packets.
"Check" the box means the AP router will not answer any response request for the transmitting packets. It will have better performance with lower reliability.

4.7.8 AP Discovery

Vigor router can scan all regulatory channels and find working APs in the neighborhood. Based on the scanning result, users will know which channel is clean for usage. Also, it can be used to facilitate finding an AP for a WDS link. Notice that during the scanning process (about 5 seconds), no client is allowed to connect to Vigor.

This page is used to scan the existence of the APs on the wireless LAN. Yet, only the AP which is in the same channel of this router can be found. Please click **Scan** to discover all the connected APs.



See Statistics.

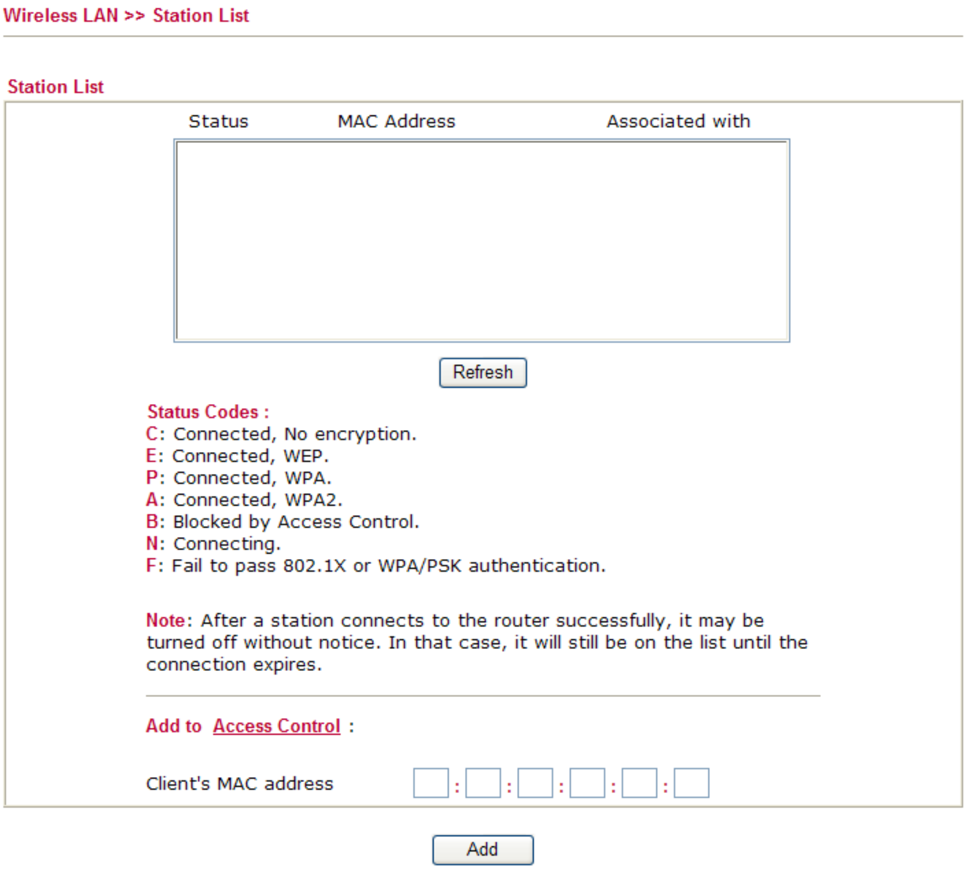
Note: During the scanning process (~5 seconds), no station is allowed to connect with the router.

Scan It is used to discover all the connected AP. The results will be shown on the box above this button.

Statistics It displays the statistics for the channels used by APs.

4.7.9 Station List

Station List provides the knowledge of connecting wireless clients now along with its status code. There is a code summary below for explanation. For convenient **Access Control**, you can select a WLAN station and click **Add to Access Control** below.



Wireless LAN >> Station List

Station List

Status MAC Address Associated with

Status Codes :
C: Connected, No encryption.
E: Connected, WEP.
P: Connected, WPA.
A: Connected, WPA2.
B: Blocked by Access Control.
N: Connecting.
F: Fail to pass 802.1X or WPA/PSK authentication.

Note: After a station connects to the router successfully, it may be turned off without notice. In that case, it will still be on the list until the connection expires.

Add to Access Control :

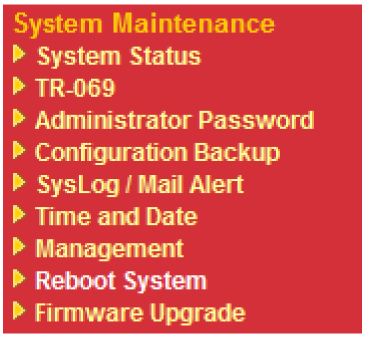
Client's MAC address □ : □ : □ : □ : □ : □

Refresh	Click this button to refresh the status of station list.
Add	Click this button to add current typed MAC address into **Access Contro**l.

4.8 System Maintenance

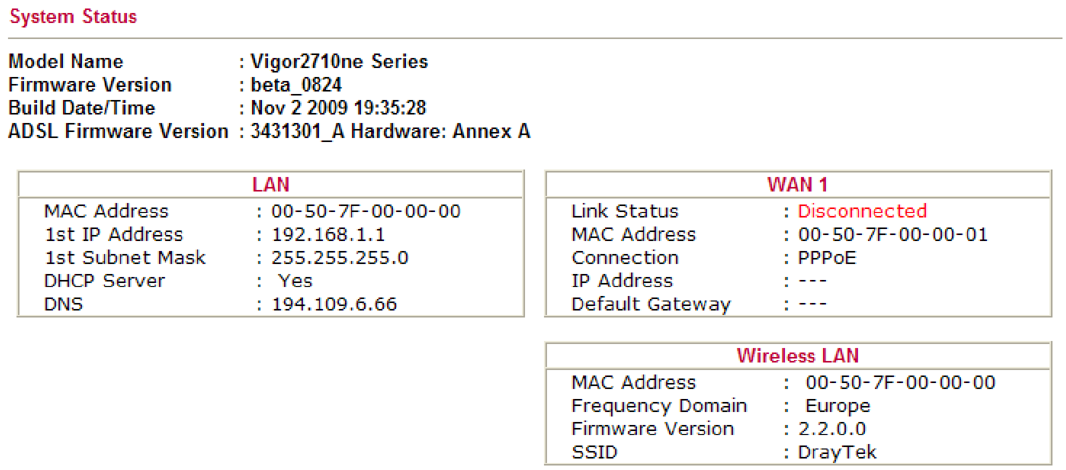
For the system setup, there are several items that you have to know the way of configuration: Status, Administrator Password, Configuration Backup, Syslog, Time setup, Reboot System, Firmware Upgrade.

Below shows the menu items for System Maintenance.



4.8.1 System Status

The **System Status** provides basic network settings of Vigor router. It includes LAN and WAN interface information. Also, you could get the current running firmware version or firmware related information from this presentation.



System Status

Model Name	: Vigor2710ne Series
Firmware Version	: beta_0824
Build Date/Time	: Nov 2 2009 19:35:28
ADSL Firmware Version	: 3431301_A Hardware: Annex A

LAN	
MAC Address	: 00-50-7F-00-00-00
1st IP Address	: 192.168.1.1
1st Subnet Mask	: 255.255.255.0
DHCP Server	: Yes
DNS	: 194.109.6.66

WAN 1	
Link Status	: Disconnected
MAC Address	: 00-50-7F-00-00-01
Connection	: PPPoE
IP Address	: ---
Default Gateway	: ---

Wireless LAN	
MAC Address	: 00-50-7F-00-00-00
Frequency Domain	: Europe
Firmware Version	: 2.2.0.0
SSID	: DrayTek

Model Name Display the model name of the router.

Firmware Version Display the firmware version of the router.

Build Date/Time Display the date and time of the current firmware build.

ADSL Firmware Version Display the ADSL firmware version.

LAN-------

MAC Address Display the MAC address of the LAN Interface.

1st IP Address Display the IP address of the LAN interface.

1st Subnet Mask Display the subnet mask address of the LAN interface.

DHCP Server Display the current status of DHCP server of the LAN interface.

DNS Display the assigned IP address of the primary DNS.

WAN-------

Link Status Display current connection status.

MAC Address Display the MAC address of the WAN Interface.

Connection Display the connection type.

IP Address Display the IP address of the WAN interface.

Default Gateway Display the assigned IP address of the default gateway.

Wireless LAN-------

MAC Address Display the MAC address of the wireless LAN.

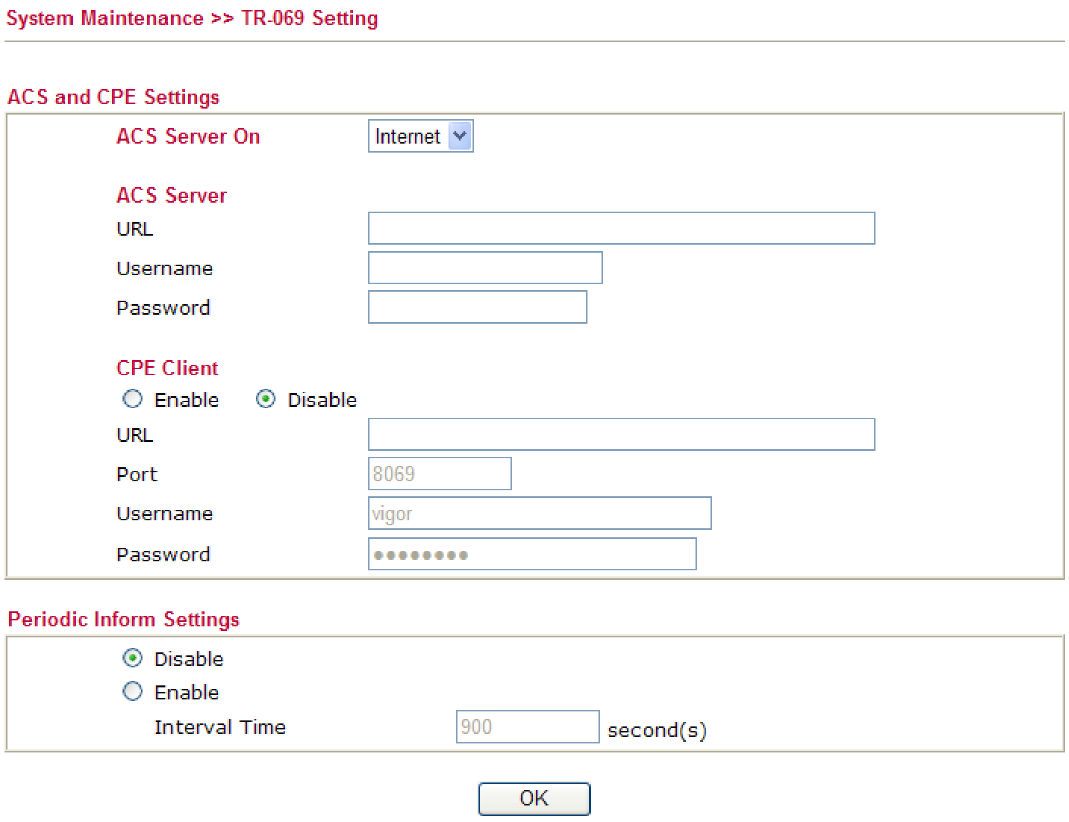
Frequency Domain It can be Europe (13 usable channels), USA (11 usable channels) etc. The available channels supported by the wireless products in different countries are various.

Firmware Version It indicates information about equipped WLAN miniPCi card. This also helps to provide availability of some features that are bound with some WLAN miniPCi.

SSID Display the SSID of the router.

4.8.2 TR-069

This device supports TR-069 standard. It is very convenient for an administrator to manage a TR-069 device through an Auto Configuration Server, e.g., VigorACS.



System Maintenance >> TR-069 Setting

ACS and CPE Settings

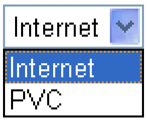
ACS Server On: Internet

ACS Server
URL:
Username:
Password:

CPE Client
○ Enable ● Disable
URL:
Port: 8069
Username: vigor
Password: ••••••••

Periodic Inform Settings
● Disable
○ Enable
Interval Time: 900 second(s)

ACS Server On Choose the interface for the router connecting to ACS server.



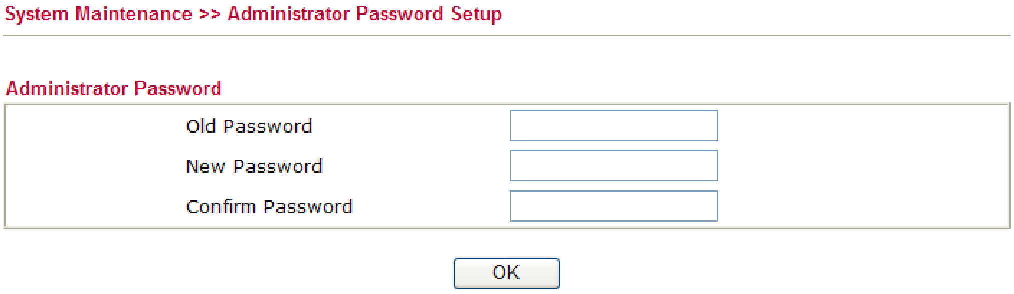
ACS Server **URL/Username/Password –** Such data must be typed according to the ACS (Auto Configuration Server) you want to link. Please refer to Auto Configuration Server user's manual for detailed information.

CPE Client It is not necessary for you to type them. Such information is useful for Auto Configuration Server.
Enable/Disable – Sometimes, port conflict might be occurred. To solve such problem, you might want to change port number for CPE. Please click Enable and change the port number.

Periodic Inform Settings The default setting is **Enable**. Please set interval time or schedule time for the router to send notification to CPE. Or click **Disable** to close the mechanism of notification.

4.8.3 Administrator Password

This page allows you to set new password.



System Maintenance >> Administrator Password Setup

Administrator Password

Old Password	
New Password	
Confirm Password	

Old Password Type in the old password. The factory default setting for password is **"admin"**.

New Password Type in new password in this filed.

Confirm Password Type in the new password again.

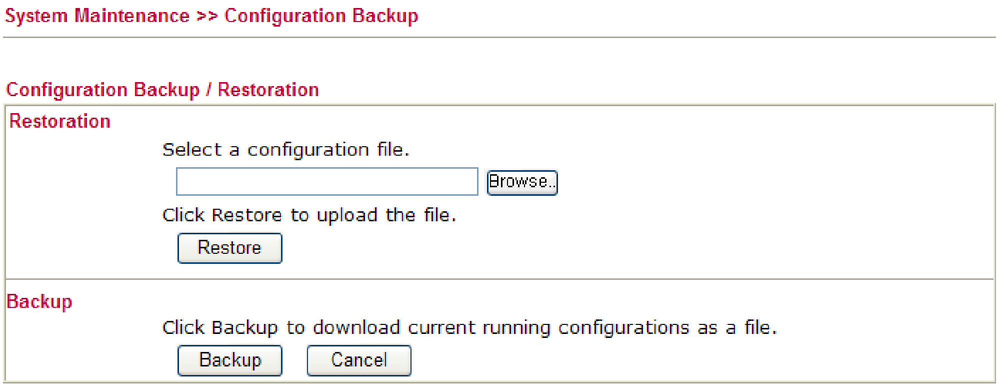
When you click OK, the login window will appear. Please use the new password to access into the web configurator again.

4.8.4 Configuration Backup

Backup the Configuration

Follow the steps below to backup your configuration.

1. Go to **System Maintenance** >> **Configuration Backup**. The following windows will be popped-up, as shown below.


System Maintenance >> Configuration Backup

Configuration Backup / Restoration

Restoration

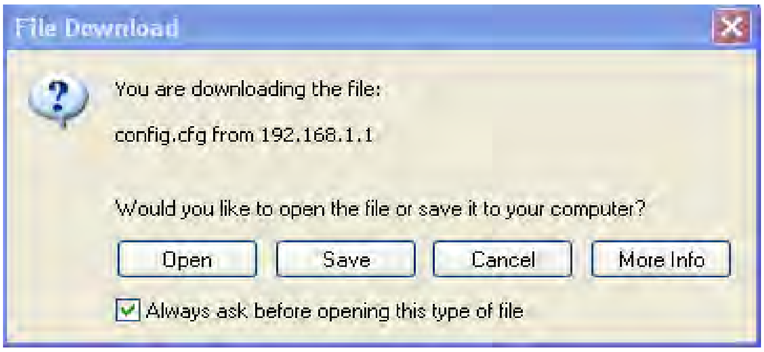
Select a configuration file.

Click Restore to upload the file.

Backup

Click Backup to download current running configurations as a file.

2. Click **Backup** button to get into the following dialog. Click **Save** button to open another dialog for saving configuration as a file.


File Download

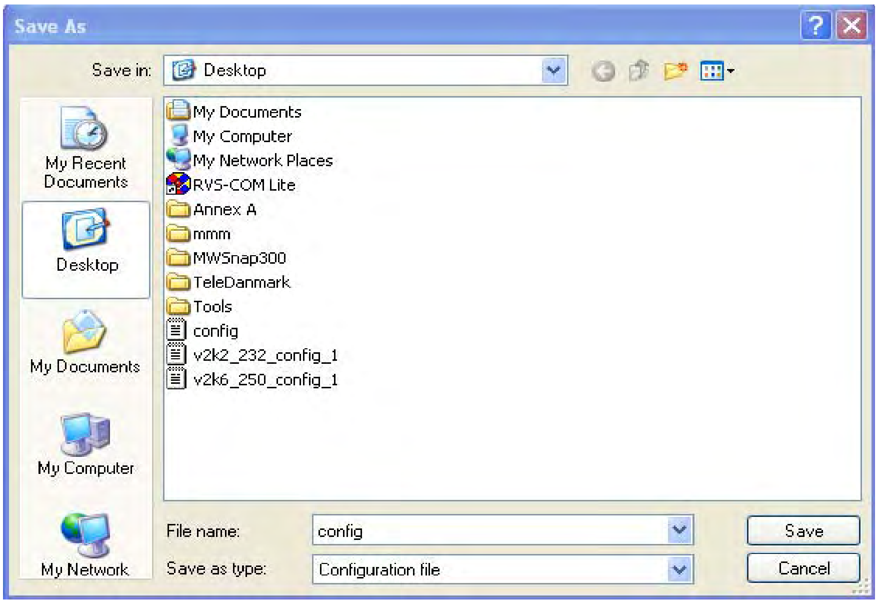
You are downloading the file:

config.cfg from 192.168.1.1

Would you like to open the file or save it to your computer?

☑ Always ask before opening this type of file

3. In **Save As** dialog, the default filename is **config.cfg**. You could give it another name by yourself.


Save As

Save in: Desktop

File name: config

Save as type: Configuration file

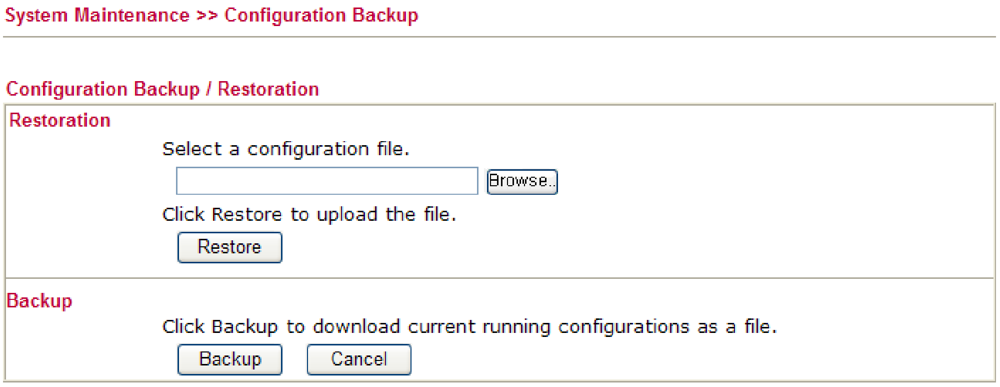
4. Click **Save** button, the configuration will download automatically to your computer as a file named **config.cfg**.

The above example is using **Windows** platform for demonstrating examples. The **Mac** or **Linux** platform will appear different windows, but the backup function is still available.

Note: Backup for Certification must be done independently. The Configuration Backup does not include information of Certificate.

Restore Configuration

1. Go to **System Maintenance** >> **Configuration Backup**. The following windows will be popped-up, as shown below.



System Maintenance >> Configuration Backup

Configuration Backup / Restoration

Restoration

Select a configuration file.

Click Restore to upload the file.

Backup

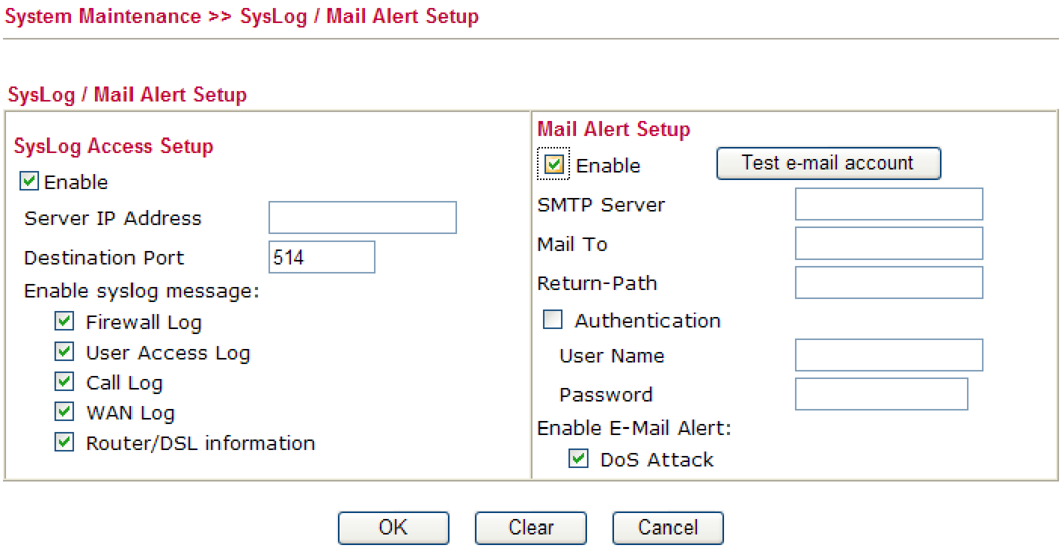
Click Backup to download current running configurations as a file.

2. Click **Browse** button to choose the correct configuration file for uploading to the router.

3. Click **Restore** button and wait for few seconds, the following picture will tell you that the restoration procedure is successful.

4.8.5 Syslog/Mail Alert

SysLog function is provided for users to monitor router. There is no bother to directly get into the Web Configurator of the router or borrow debug equipments.



System Maintenance >> SysLog / Mail Alert Setup

SysLog / Mail Alert Setup

SysLog Access Setup

☑ Enable

Server IP Address

Destination Port 514

Enable syslog message:

☑ Firewall Log

☑ User Access Log

☑ Call Log

☑ WAN Log

☑ Router/DSL information

Mail Alert Setup

☑ Enable

SMTP Server

Mail To

Return-Path

□ Authentication

User Name

Password

Enable E-Mail Alert:

☑ DoS Attack

Enable (Syslog Access…) Check “**Enable**” to activate function of syslog.

Syslog Server IP The IP address of the Syslog server.

Destination Port Assign a port for the Syslog protocol.

Enable syslog message Check the box listed on this web page to send the corresponding message of firewall, User Access, Call, WAN, Router/DSL information to Syslog.

Enable (Alert Setup…) Check “**Enable**” to activate function of mail alert.

Send a test e-mail Make a simple test for the e-mail address specified in this page. Please assign the mail address first and click this button to execute a test for verify the mail address is available or not.

SMTP Server The IP address of the SMTP server.

Mail To Assign a mail address for sending mails out.

Return-Path Assign a path for receiving the mail from outside.

Authentication Check this box to activate this function while using e-mail application.

User Name Type the user name for authentication.

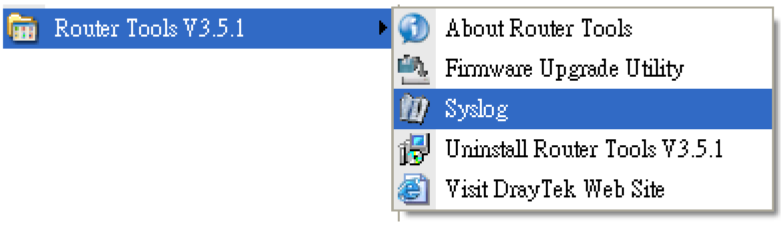
Password Type the password for authentication.

Enable E-mail Alert Check the box to send alert message to the e-mail box while the router detecting the item(s) you specify here.

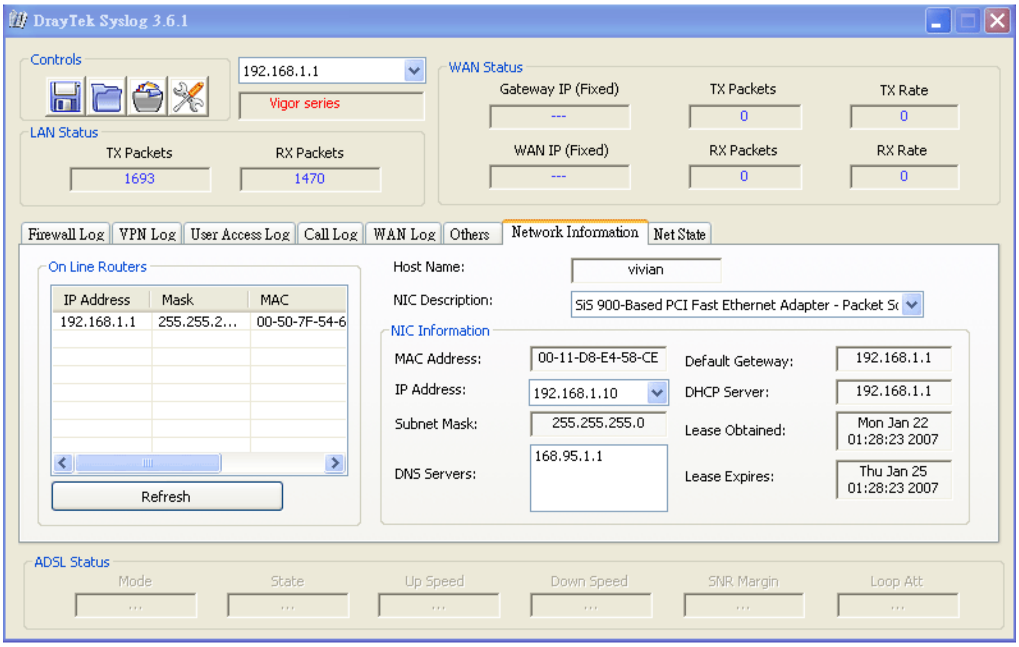
Click **OK** to save these settings.

For viewing the Syslog, please do the following:

1. Just set your monitor PC’s IP address in the field of Server IP Address
2. Install the Router Tools in the **Utility** within provided CD. After installation, click on the **Router Tools>>Syslog** from program menu.



3. From the Syslog screen, select the router you want to monitor. Be reminded that in **Network Information**, select the network adapter used to connect to the router. Otherwise, you won’t succeed in retrieving information from the router.



Controls

192.168.1.1

Vigor series

LAN Status

TX Packets	RX Packets
1693	1470

WAN Status

Gateway IP (Fixed)	TX Packets	TX Rate
---	0	0
WAN IP (Fixed)	**RX Packets**	**RX Rate**
---	0	0

On Line Routers

IP Address	Mask	MAC
192.168.1.1	255.255.2...	00-50-7F-54-6

Host Name: vivian

NIC Description: SiS 900-Based PCI Fast Ethernet Adapter - Packet Sc

NIC Information

MAC Address: 00-11-D8-E4-58-CE

IP Address: 192.168.1.10

Subnet Mask: 255.255.255.0

DNS Servers: 168.95.1.1

Default Geteway: 192.168.1.1

DHCP Server: 192.168.1.1

Lease Obtained: Mon Jan 22 01:28:23 2007

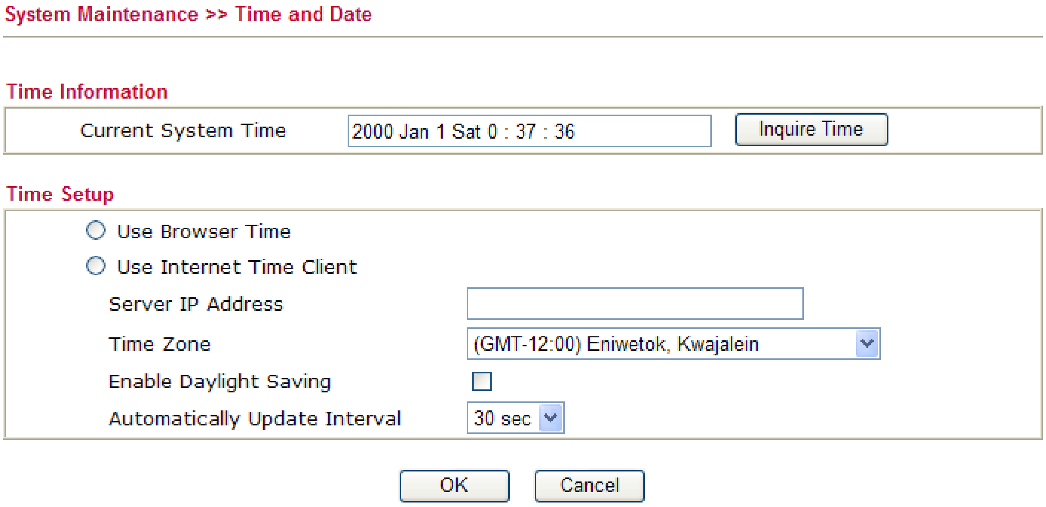
Lease Expires: Thu Jan 25 01:28:23 2007

ADSL Status

Mode	State	Up Speed	Down Speed	SNR Margin	Loop Att
...	...	...	...	...	...

4.8.6 Time and Date

It allows you to specify where the time of the router should be inquired from.



System Maintenance >> Time and Date

Time Information

Current System Time: 2000 Jan 1 Sat 0 : 37 : 36

Time Setup

○ Use Browser Time

○ Use Internet Time Client

Server IP Address

Time Zone: (GMT-12:00) Eniwetok, Kwajalein

Enable Daylight Saving □

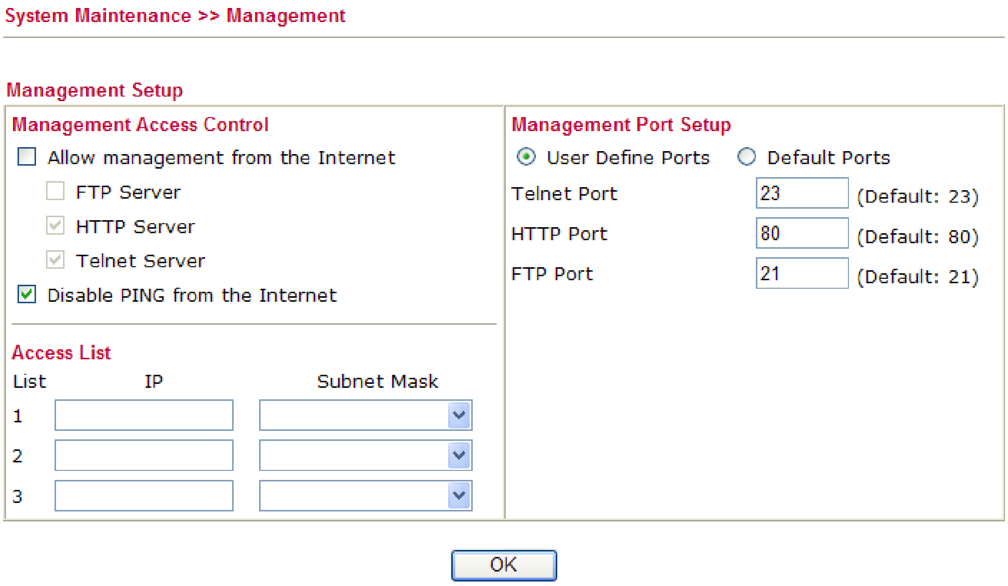
Automatically Update Interval: 30 sec

Current System Time	Click **Inquire Time** to get the current time.
Use Browser Time	Select this option to use the browser time from the remote administrator PC host as router's system time.
Use Internet Time	Select to inquire time information from Time Server on the Internet using assigned protocol.
Time Protocol	Select a time protocol.
Server IP Address	Type the IP address of the time server.
Time Zone	Select the time zone where the router is located.
Automatically Update Interval	Select a time interval for updating from the NTP server.

Click **OK** to save these settings.

4.8.7 Management

This page allows you to manage the settings for access control, access list, port setup, and SNMP setup.



System Maintenance >> Management

Management Setup

Management Access Control

□ Allow management from the Internet

□ FTP Server

☑ HTTP Server

☑ Telnet Server

☑ Disable PING from the Internet

Access List

List	IP	Subnet Mask
1		
2		
3		

Management Port Setup

● User Define Ports ○ Default Ports

Telnet Port	23	(Default: 23)
HTTP Port	80	(Default: 80)
FTP Port	21	(Default: 21)

Allow management from the Internet Enable the checkbox to allow system administrators to login from the Internet. There are several servers provided by the system to allow you managing the router from Internet. Check the box(es) to specify.

Disable PING from the Internet Check the checkbox to reject all PING packets from the Internet. For security issue, this function is enabled by default.

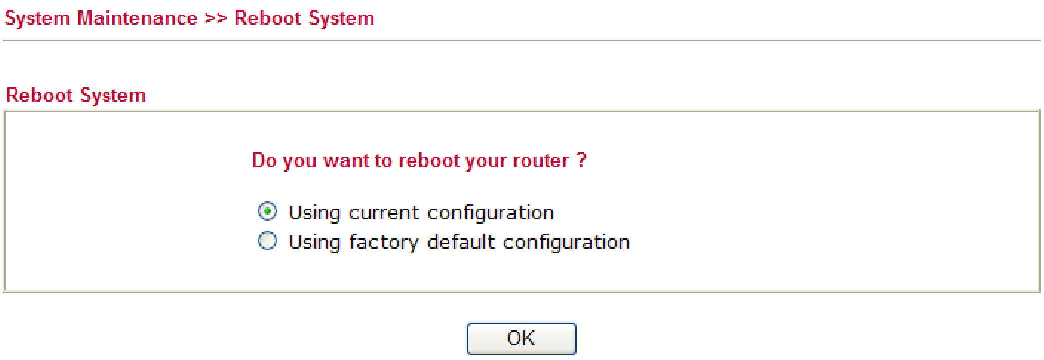
Access List You could specify that the system administrator can only login from a specific host or network defined in the list. A maximum of three IPs/subnet masks is allowed.
List IP - Indicate an IP address allowed to login to the router.
Subnet Mask - Represent a subnet mask allowed to login to the router.

Default Ports Check to use standard port numbers for the Telnet and HTTP servers.

User Defined Ports Check to specify user-defined port numbers for the Telnet, HTTP and FTP servers.

4.8.8 Reboot System

The Web Configurator may be used to restart your router. Click **Reboot System** from **System Maintenance** to open the following page.



System Maintenance >> Reboot System

Reboot System

Do you want to reboot your router ?

● Using current configuration
○ Using factory default configuration

OK

If you want to reboot the router using the current configuration, check **Using current configuration** and click **OK**. To reset the router settings to default values, check **Using factory default configuration** and click **OK**. The router will take 5 seconds to reboot the system.

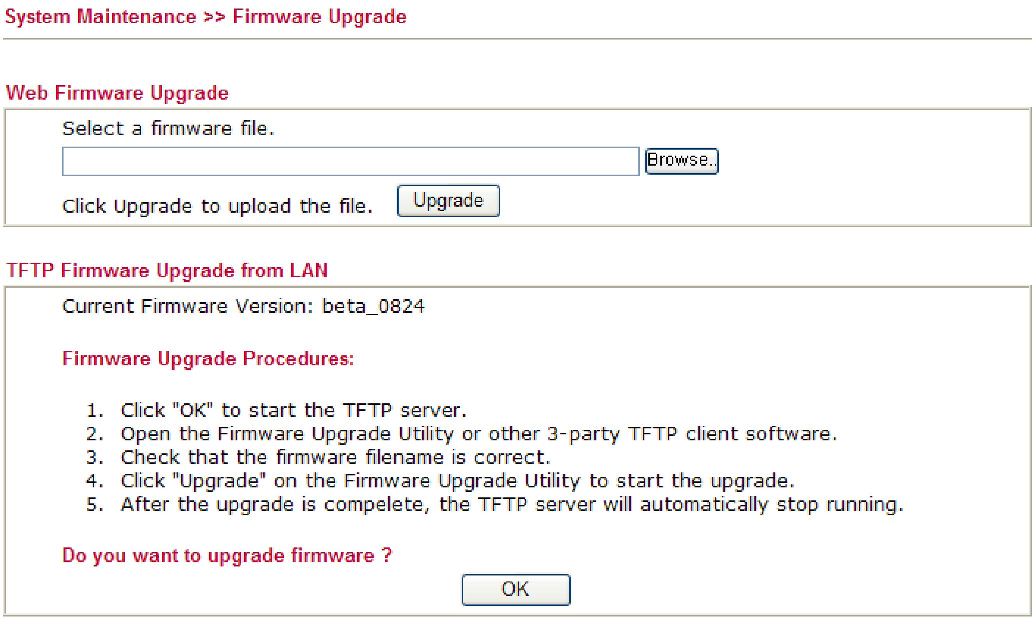
Note: When the system pops up Reboot System web page after you configure web settings, please click **OK** to reboot your router for ensuring normal operation and preventing unexpect errors of the router in the future.

4.8.9 Firmware Upgrade

Before upgrading your router firmware, you need to install the Router Tools. The **Firmware Upgrade Utility** is included in the tools. The following web page will guide you to upgrade firmware by using an example. Note that this example is running over Windows OS (Operating System).

Download the newest firmware from DrayTek's web site or FTP site. The DrayTek web site is www.draytek.com (or local DrayTek's web site) and FTP site is ftp.draytek.com.

Click **System Maintenance>> Firmware Upgrade** to launch the Firmware Upgrade Utility.



System Maintenance >> Firmware Upgrade

Web Firmware Upgrade

Select a firmware file.

Click Upgrade to upload the file.

TFTP Firmware Upgrade from LAN

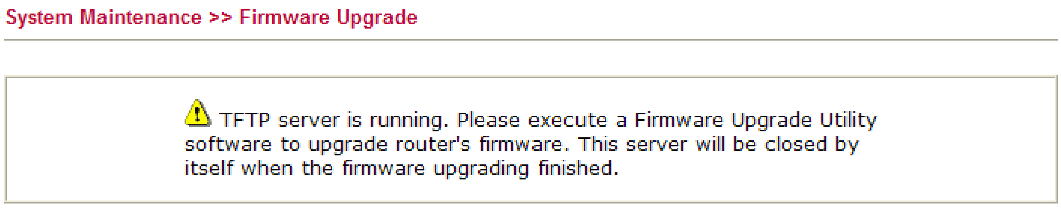
Current Firmware Version: beta_0824

Firmware Upgrade Procedures:

1. Click "OK" to start the TFTP server.
2. Open the Firmware Upgrade Utility or other 3-party TFTP client software.
3. Check that the firmware filename is correct.
4. Click "Upgrade" on the Firmware Upgrade Utility to start the upgrade.
5. After the upgrade is compelete, the TFTP server will automatically stop running.

Do you want to upgrade firmware ?

Click **OK**. The following screen will appear. Please execute the firmware upgrade utility first.



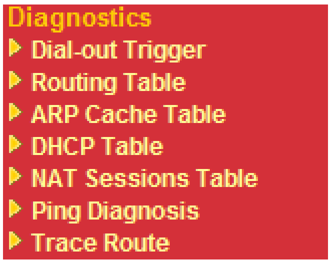
System Maintenance >> Firmware Upgrade

⚠ TFTP server is running. Please execute a Firmware Upgrade Utility software to upgrade router's firmware. This server will be closed by itself when the firmware upgrading finished.

4.9 Diagnostics

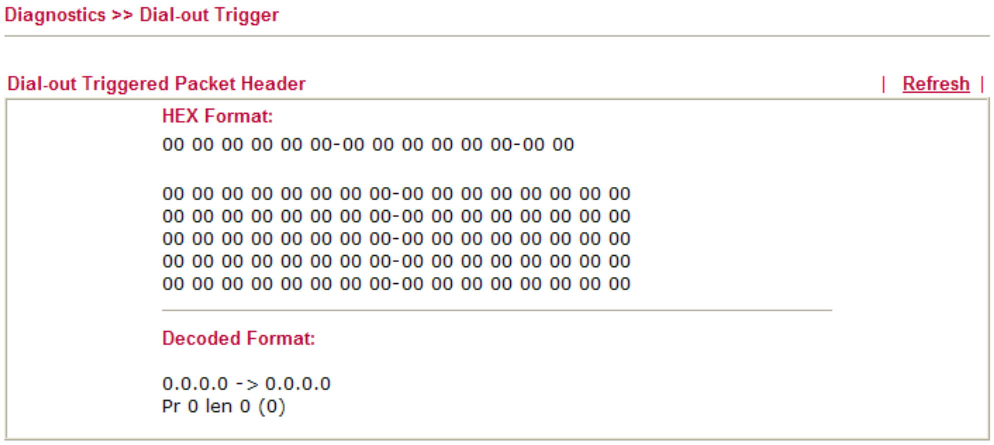
Diagnostic Tools provide a useful way to **view** or **diagnose** the status of your Vigor router.

Below shows the menu items for Diagnostics.



4.9.1 Dial-out Trigger

Click **Diagnostics** and click **Dial-out Trigger** to open the web page. The internet connection (e.g., PPPoE, PPPoA, etc) is triggered by a package sending from the source IP address.



Diagnostics >> Dial-out Trigger

Dial-out Triggered Packet Header | Refresh |

HEX Format:

```
00 00 00 00 00 00-00 00 00 00 00 00-00 00

00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
```

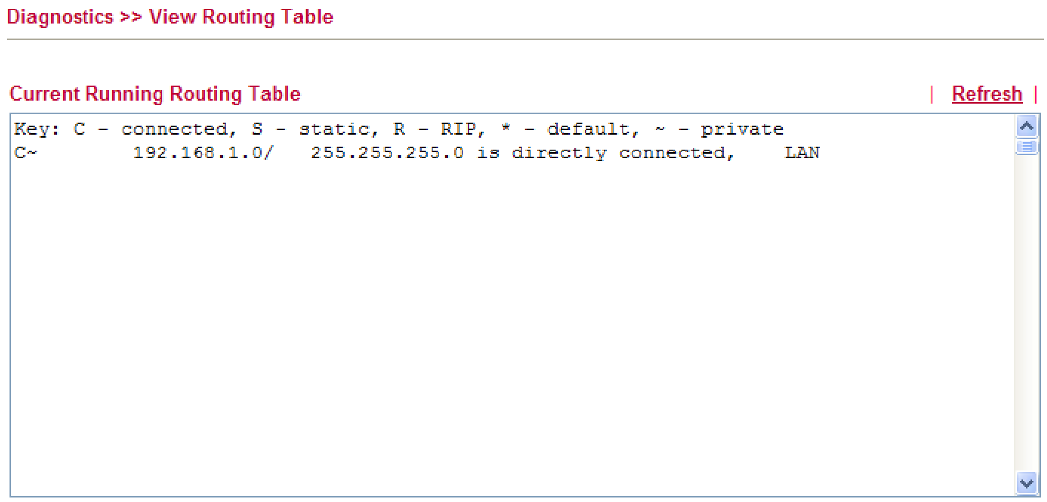
Decoded Format:

```
0.0.0.0 -> 0.0.0.0
Pr 0 len 0 (0)
```

Decoded Format	It shows the source IP address (local), destination IP (remote) address, the protocol and length of the package.
Refresh	Click it to reload the page.

4.9.2 Routing Table

Click **Diagnostics** and click **Routing Table** to open the web page.



Diagnostics >> View Routing Table

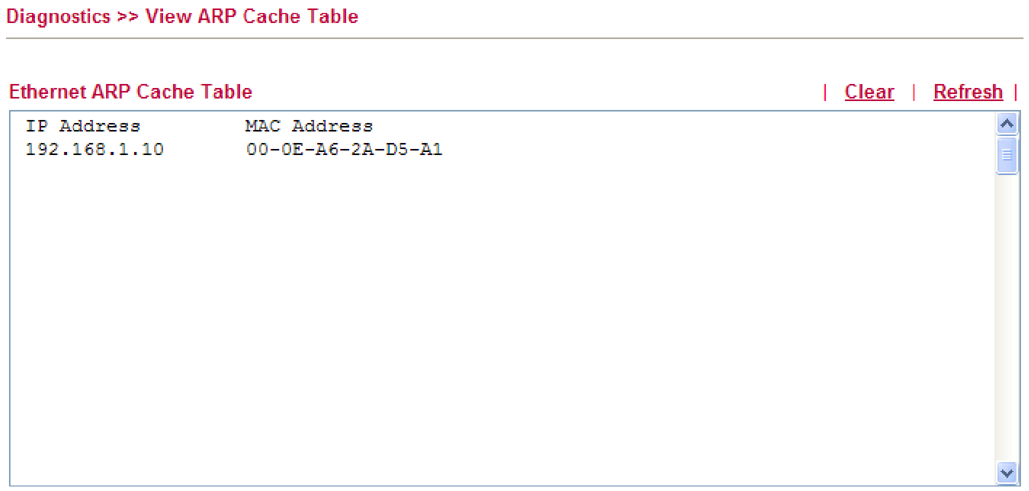
Current Running Routing Table | Refresh |

```
Key: C - connected, S - static, R - RIP, * - default, ~ - private
C~        192.168.1.0/   255.255.255.0 is directly connected,    LAN
```

Refresh Click it to reload the page.

4.9.3 ARP Cache Table

Click **Diagnostics** and click **ARP Cache Table** to view the content of the ARP (Address Resolution Protocol) cache held in the router. The table shows a mapping between an Ethernet hardware address (MAC Address) and an IP address.



Diagnostics >> View ARP Cache Table

Ethernet ARP Cache Table | Clear | Refresh |

```
 IP Address          MAC Address
 192.168.1.10        00-0E-A6-2A-D5-A1
```

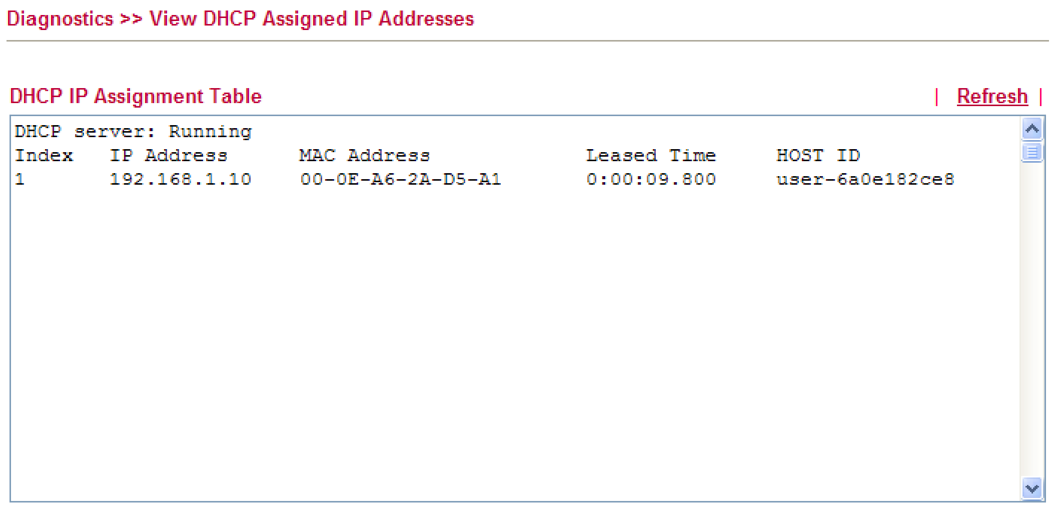
Refresh Click it to reload the page.

Clear Click it to clear the whole table.

4.9.4 DHCP Table

The facility provides information on IP address assignments. This information is helpful in diagnosing network problems, such as IP address conflicts, etc.

Click **Diagnostics** and click **DHCP Table** to open the web page.



Diagnostics >> View DHCP Assigned IP Addresses

DHCP IP Assignment Table | Refresh |

```
DHCP server: Running
Index   IP Address      MAC Address              Leased Time     HOST ID
1       192.168.1.10    00-0E-A6-2A-D5-A1        0:00:09.800     user-6a0e182ce8
```

Index It displays the connection item number.

IP Address It displays the IP address assigned by this router for specified PC.

MAC Address It displays the MAC address for the specified PC that DHCP assigned IP address for it.

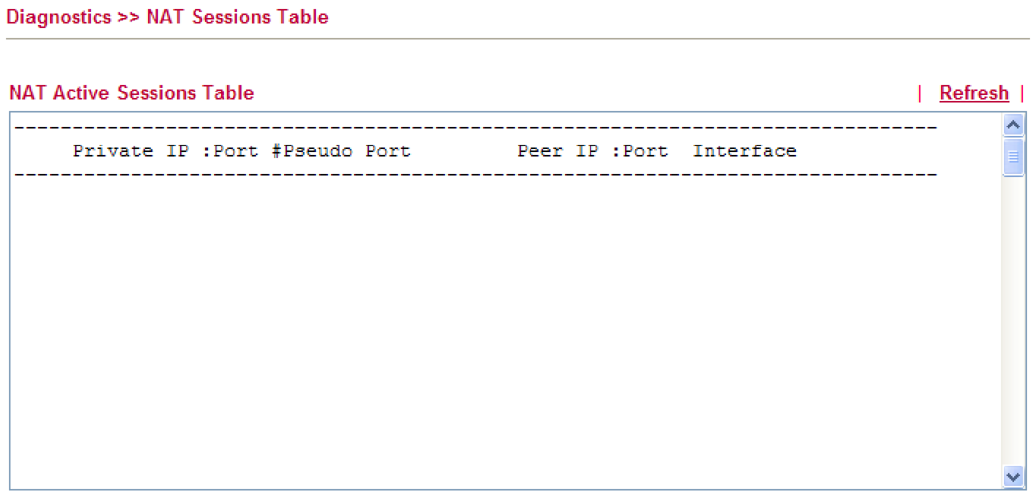
Leased Time It displays the leased time of the specified PC.

HOST ID It displays the host ID name of the specified PC.

Refresh Click it to reload the page.

4.9.5 NAT Sessions Table

Click **Diagnostics** and click **NAT Sessions Table** to open the list page.



Diagnostics >> NAT Sessions Table

NAT Active Sessions Table | Refresh |

```
------------------------------------------------------------------------------
     Private IP :Port #Pseudo Port         Peer IP :Port  Interface
------------------------------------------------------------------------------
```

Private IP:Port It indicates the source IP address and port of local PC.

#Pseudo Port It indicates the temporary port of the router used for NAT.

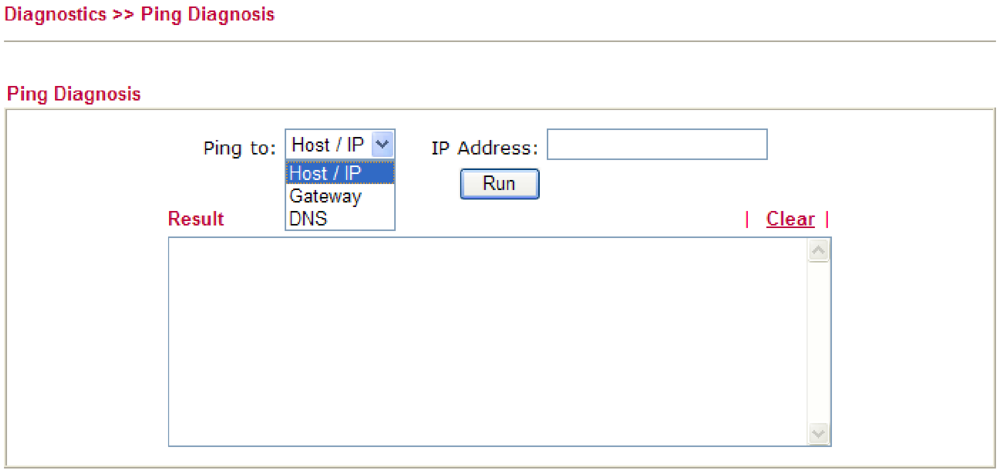
Peer IP:Port It indicates the destination IP address and port of remote host.

Interface It displays the representing number for different interface.

Refresh Click it to reload the page.

4.9.6 Ping Diagnosis

Click **Diagnostics** and click **Ping Diagnosis** to pen the web page.



Ping to Use the drop down list to choose the destination that you want to ping.

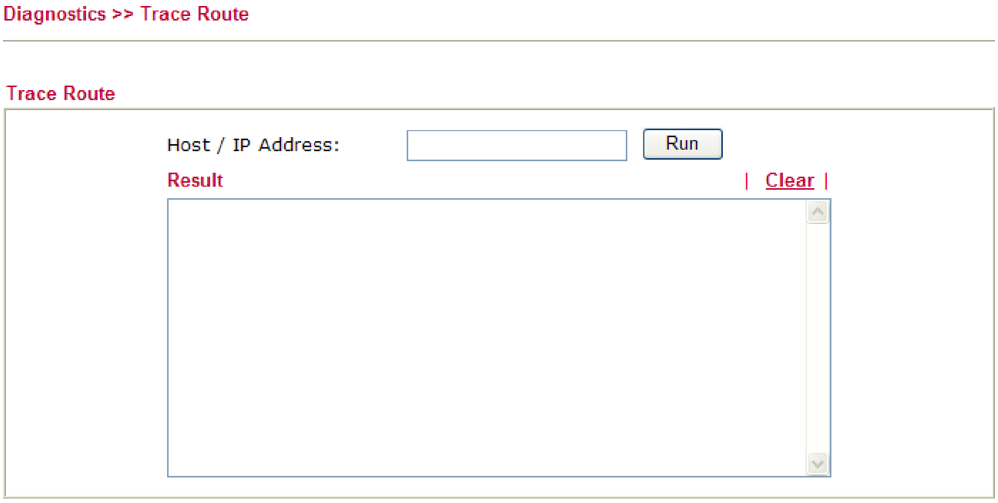
IP Address Type in the IP address of the Host/IP that you want to ping.

Run Click this button to start the ping work. The result will be displayed on the screen.

Clear Click this link to remove the result on the window.

4.9.7 Trace Route

Click **Diagnostics** and click **Trace Route** to open the web page. This page allows you to trace the routes from router to the host. Simply type the IP address of the host in the box and click **Run**. The result of route trace will be shown on the screen.



Protocol Use the drop down list to choose the interface that you want to ping through.

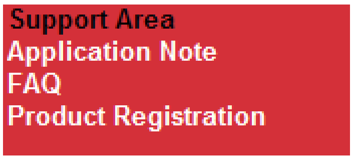
Host/IP Address It indicates the IP address of the host.

Run Click this button to start route tracing work.

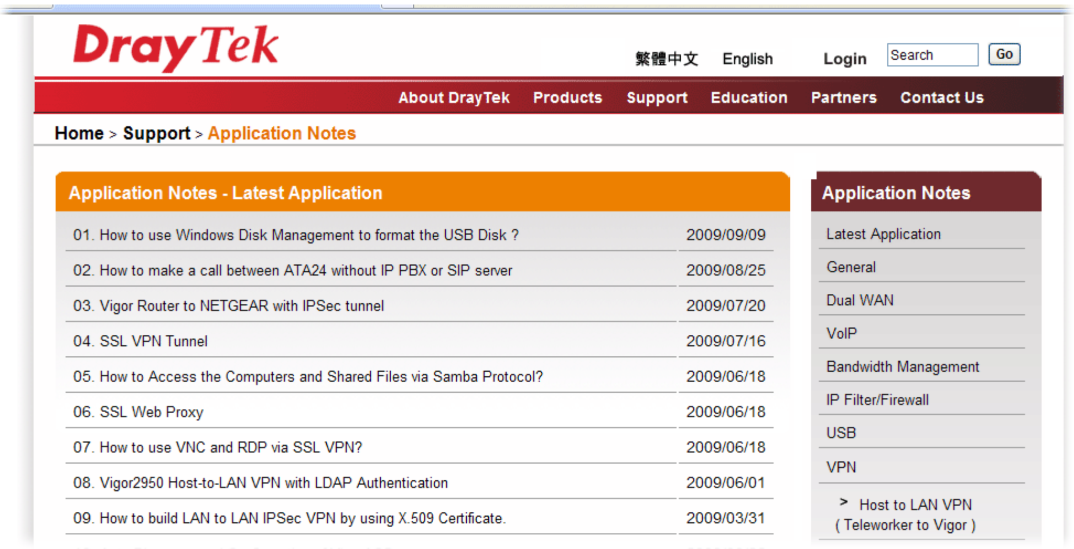
Clear Click this link to remove the result on the window.

4.10 Support Area

When you click the menu item under **Support Area**, you will be guided to visit www.draytek.com and open the corresponding pages directly.

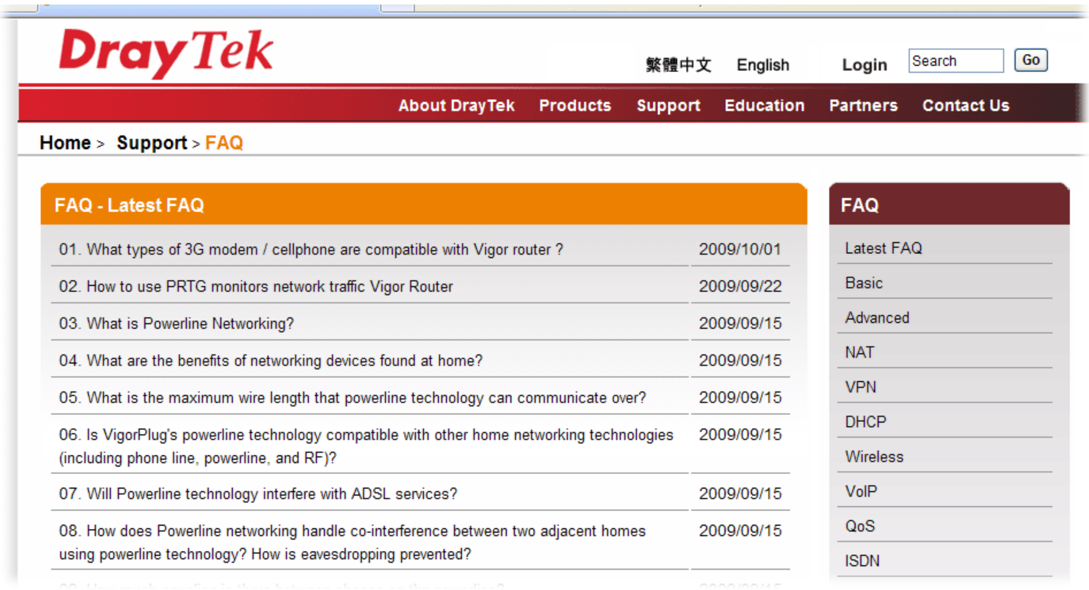


Click **Support Area>>Application Note**, the following web page will be displayed.



01. How to use Windows Disk Management to format the USB Disk ?	2009/09/09
02. How to make a call between ATA24 without IP PBX or SIP server	2009/08/25
03. Vigor Router to NETGEAR with IPSec tunnel	2009/07/20
04. SSL VPN Tunnel	2009/07/16
05. How to Access the Computers and Shared Files via Samba Protocol?	2009/06/18
06. SSL Web Proxy	2009/06/18
07. How to use VNC and RDP via SSL VPN?	2009/06/18
08. Vigor2950 Host-to-LAN VPN with LDAP Authentication	2009/06/01
09. How to build LAN to LAN IPSec VPN by using X.509 Certificate.	2009/03/31

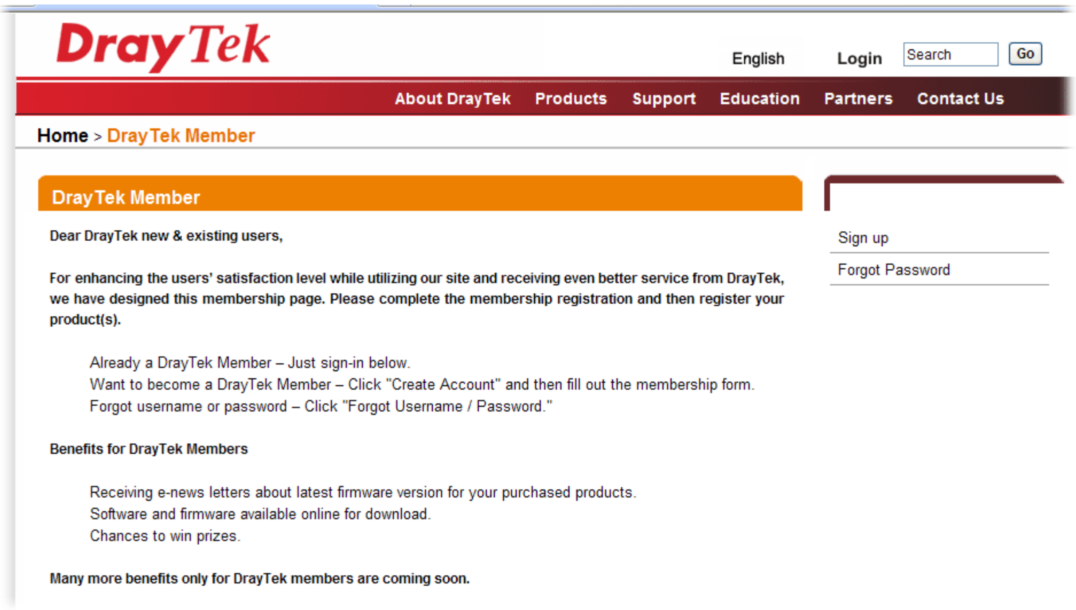
Click **Support Area>>FAQ**, the following web page will be displayed.



FAQ - Latest FAQ

01. What types of 3G modem / cellphone are compatible with Vigor router ?	2009/10/01
02. How to use PRTG monitors network traffic Vigor Router	2009/09/22
03. What is Powerline Networking?	2009/09/15
04. What are the benefits of networking devices found at home?	2009/09/15
05. What is the maximum wire length that powerline technology can communicate over?	2009/09/15
06. Is VigorPlug's powerline technology compatible with other home networking technologies (including phone line, powerline, and RF)?	2009/09/15
07. Will Powerline technology interfere with ADSL services?	2009/09/15
08. How does Powerline networking handle co-interference between two adjacent homes using powerline technology? How is eavesdropping prevented?	2009/09/15

Click **Support Area>>Product Registration**, the following web page will be displayed.



DrayTek Member

Dear DrayTek new & existing users,

For enhancing the users' satisfaction level while utilizing our site and receiving even better service from DrayTek, we have designed this membership page. Please complete the membership registration and then register your product(s).

Already a DrayTek Member – Just sign-in below.
Want to become a DrayTek Member – Click "Create Account" and then fill out the membership form.
Forgot username or password – Click "Forgot Username / Password."

Benefits for DrayTek Members

Receiving e-news letters about latest firmware version for your purchased products.
Software and firmware available online for download.
Chances to win prizes.

Many more benefits only for DrayTek members are coming soon.

5 Trouble Shooting

This section will guide you to solve abnormal situations if you cannot access into the Internet after installing the router and finishing the web configuration. Please follow sections below to check your basic installation status stage by stage.

- Checking if the hardware status is OK or not.
- Checking if the network connection settings on your computer are OK or not.
- Pinging the router from your computer.
- Checking if the ISP settings are OK or not.
- Backing to factory default setting if necessary.

If all above stages are done and the router still cannot run normally, it is the time for you to contact your dealer for advanced help.

5.1 Checking If the Hardware Status Is OK or Not

Follow the steps below to verify the hardware status.

1. Check the power line and WLAN/LAN cable connections.
   Refer to "**1.3 Hardware Installation**" for details.

2. Turn on the router. Make sure the **ACT LED** blink once per second and the correspondent **LAN LED** is bright.

ACT
ACT
DSL
LAN1
AN2
AN3
AN4
WLAN

3. If not, it means that there is something wrong with the hardware status. Simply back to **"1.3 Hardware Installation"** to execute the hardware installation again. And then, try again.

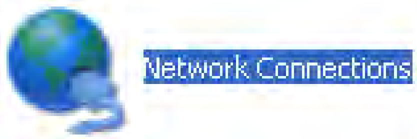
5.2 Checking If the Network Connection Settings on Your Computer Is OK or Not

Sometimes the link failure occurs due to the wrong network connection settings. After trying the above section, if the link is stilled failed, please do the steps listed below to make sure the network connection settings is OK.

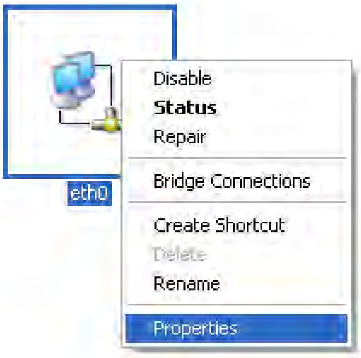
For Windows

> The example is based on Windows XP. As to the examples for other operation systems, please refer to the similar steps or find support notes in **www.draytek.com**.

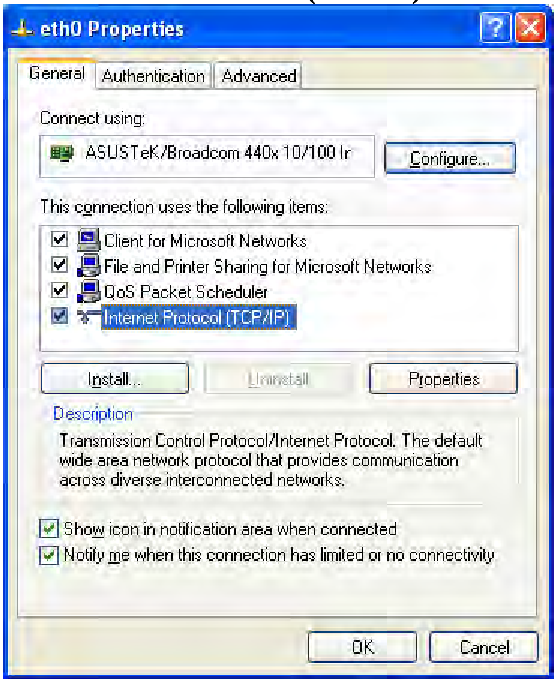
1. Go to **Control Panel** and then double-click on **Network Connections**.



2. Right-click on **Local Area Connection** and click on **Properties**.



3. Select **Internet Protocol (TCP/IP)** and then click **Properties**.



Connect using:

ASUSTeK/Broadcom 440x 10/100 Ir

This connection uses the following items:

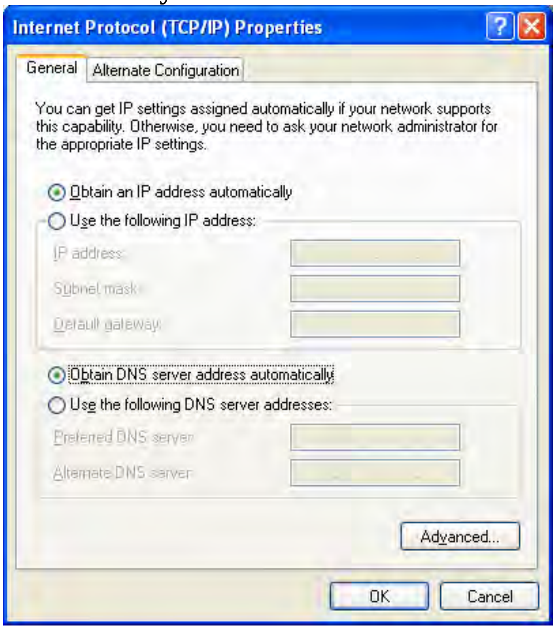
☑ Client for Microsoft Networks
☑ File and Printer Sharing for Microsoft Networks
☑ QoS Packet Scheduler
☑ Internet Protocol (TCP/IP)

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

☑ Show icon in notification area when connected
☑ Notify me when this connection has limited or no connectivity

4. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**.



Internet Protocol (TCP/IP) Properties

General | Alternate Configuration

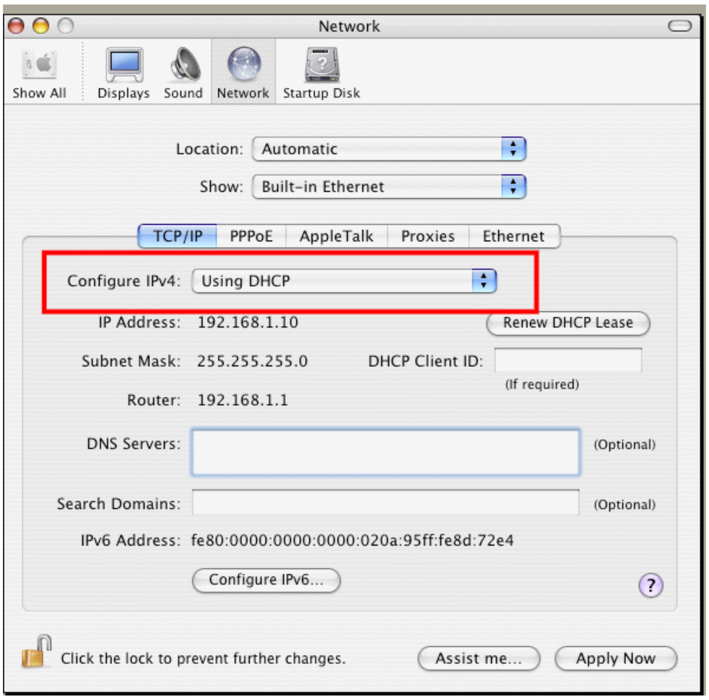
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically
○ Use the following IP address:
IP address:
Subnet mask:
Default gateway:

● Obtain DNS server address automatically
○ Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:

For MacOs

1. Double click on the current used MacOs on the desktop.
2. Open the **Application** folder and get into **Network**.
3. On the **Network** screen, select **Using DHCP** from the drop down list of Configure IPv4.



Location: Automatic
Show: Built-in Ethernet

Configure IPv4: Using DHCP
IP Address: 192.168.1.10
Subnet Mask: 255.255.255.0
DHCP Client ID: (If required)
Router: 192.168.1.1
DNS Servers: (Optional)
Search Domains: (Optional)
IPv6 Address: fe80:0000:0000:0000:020a:95ff:fe8d:72e4

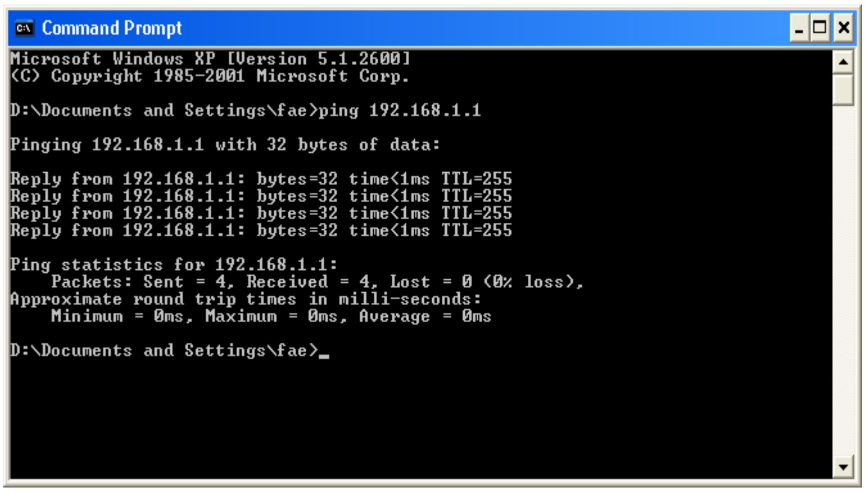
5.3 Pinging the Router from Your Computer

The default gateway IP address of the router is 192.168.1.1. For some reason, you might need to use "ping" command to check the link status of the router. **The most important thing is that the computer will receive a reply from 192.168.1.1.** If not, please check the IP address of your computer. We suggest you setting the network connection as **get IP automatically**. (Please refer to the section 5.2)

Please follow the steps below to ping the router correctly.

For Windows

1. Open the **Command** Prompt window (from **Start menu> Run**).
2. Type **command** (for Windows 95/98/ME) or **cmd** (for Windows NT/ 2000/XP/Vista). The DOS command dialog will appear.

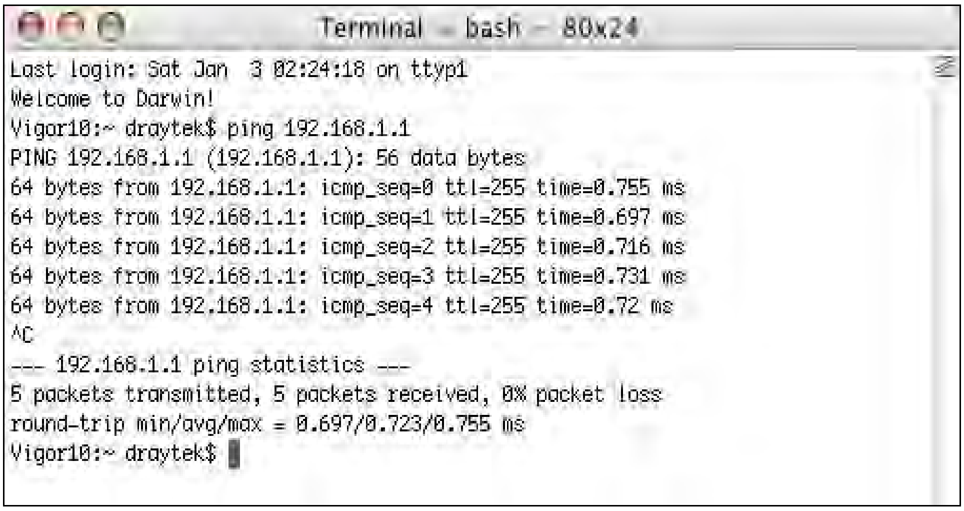


```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

D:\Documents and Settings\fae>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

D:\Documents and Settings\fae>_
```

3. Type ping 192.168.1.1 and press [Enter]. If the link is OK, the line of **"Reply from 192.168.1.1:bytes=32 time<1ms TTL=255"** will appear.
4. If the line does not appear, please check the IP address setting of your computer.

For MacOs (Terminal)

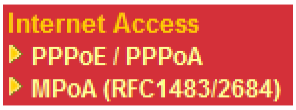
1. Double click on the current used MacOs on the desktop.
2. Open the **Application** folder and get into **Utilities**.
3. Double click **Terminal**. The Terminal window will appear.
4. Type **ping 192.168.1.1** and press [Enter]. If the link is OK, the line of **"64 bytes from 192.168.1.1: icmp_seq=0 ttl=255 time=xxxx ms**" will appear.



```
Last login: Sat Jan  3 02:24:18 on ttyp1
Welcome to Darwin!
Vigor10:~ draytek$ ping 192.168.1.1
PING 192.168.1.1 (192.168.1.1): 56 data bytes
64 bytes from 192.168.1.1: icmp_seq=0 ttl=255 time=0.755 ms
64 bytes from 192.168.1.1: icmp_seq=1 ttl=255 time=0.697 ms
64 bytes from 192.168.1.1: icmp_seq=2 ttl=255 time=0.716 ms
64 bytes from 192.168.1.1: icmp_seq=3 ttl=255 time=0.731 ms
64 bytes from 192.168.1.1: icmp_seq=4 ttl=255 time=0.72 ms
^C
--- 192.168.1.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0.697/0.723/0.755 ms
Vigor10:~ draytek$ 
```

5.4 Checking If the ISP Settings are OK or Not

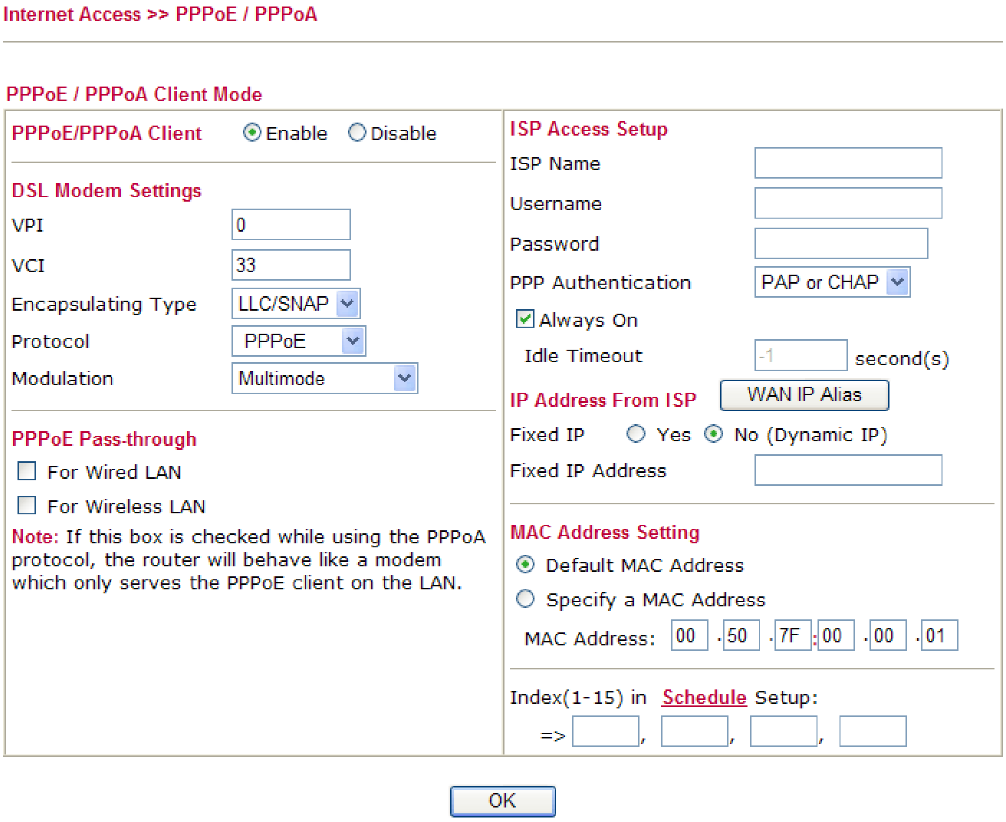
Click **Internet Access** group and then check whether the ISP settings are set correctly.



For PPPoE/PPPoA Users

1. Check if the **Enable** option is selected.

2. Check if **Username** and **Password** are entered with correct values that you **got from** your **ISP**.



Internet Access >> PPPoE / PPPoA

PPPoE / PPPoA Client Mode

PPPoE/PPPoA Client ● Enable ○ Disable

DSL Modem Settings

VPI	0
VCI	33
Encapsulating Type	LLC/SNAP
Protocol	PPPoE
Modulation	Multimode

PPPoE Pass-through

□ For Wired LAN

□ For Wireless LAN

Note: If this box is checked while using the PPPoA protocol, the router will behave like a modem which only serves the PPPoE client on the LAN.

ISP Access Setup

ISP Name	
Username	
Password	
PPP Authentication	PAP or CHAP

☑ Always On

Idle Timeout -1 second(s)

IP Address From ISP [WAN IP Alias]

Fixed IP ○ Yes ● No (Dynamic IP)

Fixed IP Address

MAC Address Setting

● Default MAC Address

○ Specify a MAC Address

MAC Address: 00 . 50 . 7F : 00 . 00 . 01

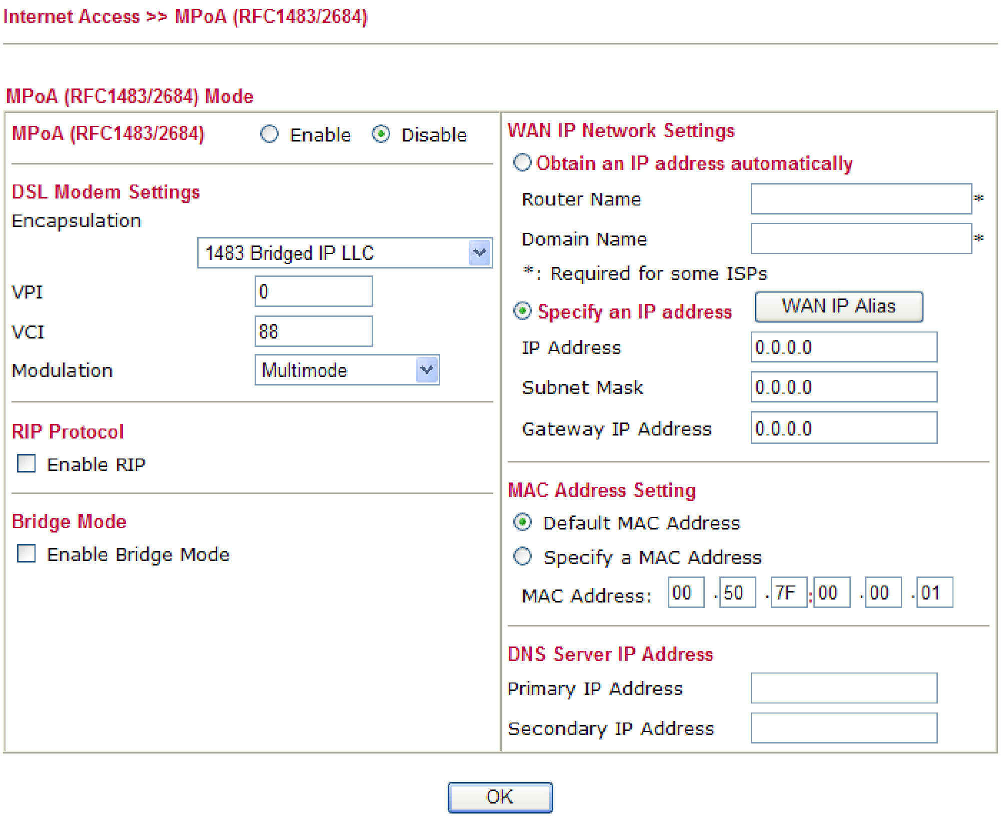
Index(1-15) in Schedule Setup:

=> , , ,

[OK]

For MPoA Users

1. Check if the **Enable** option is selected.
2. Check if all parameters of **DSL Modem Settings** are entered with correct value that provided by your ISP. Especially, check if the encapsulation is selected properly or not (it should be the same with the setting on **Quick Start Wizard**).
3. Check if **IP Address, Subnet Mask** and **Gateway** are set correctly (must identify with the values from your ISP) if you choose **Specify an IP address**.



Internet Access >> MPoA (RFC1483/2684)

MPoA (RFC1483/2684) Mode

MPoA (RFC1483/2684) ○ Enable ● Disable

DSL Modem Settings

Encapsulation: 1483 Bridged IP LLC

VPI: 0

VCI: 88

Modulation: Multimode

RIP Protocol

□ Enable RIP

Bridge Mode

□ Enable Bridge Mode

WAN IP Network Settings

○ Obtain an IP address automatically

Router Name: *

Domain Name: *

*: Required for some ISPs

● Specify an IP address

IP Address: 0.0.0.0

Subnet Mask: 0.0.0.0

Gateway IP Address: 0.0.0.0

MAC Address Setting

● Default MAC Address

○ Specify a MAC Address

MAC Address: 00 . 50 . 7F : 00 . 00 . 01

DNS Server IP Address

Primary IP Address

Secondary IP Address

5.5 Backing to Factory Default Setting If Necessary

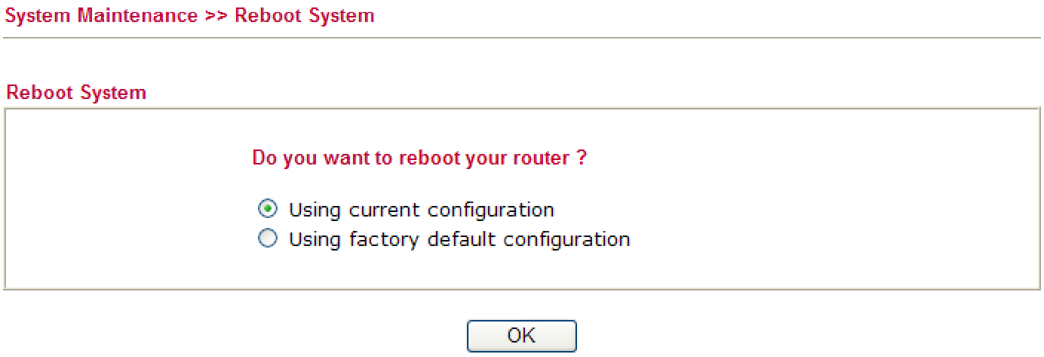
Sometimes, a wrong connection can be improved by returning to the default settings. Try to reset the router by software or hardware.

Warning: After pressing **factory default setting**, you will loose all settings you did before. Make sure you have recorded all useful settings before you pressing. The password of factory default is null.

Software Reset

You can reset the router to factory default via Web page.

Go to **System Maintenance** and choose **Reboot System** on the web page. The following screen will appear. Choose **Using factory default configuration** and click **OK**. After few seconds, the router will return all the settings to the factory settings.



System Maintenance >> Reboot System

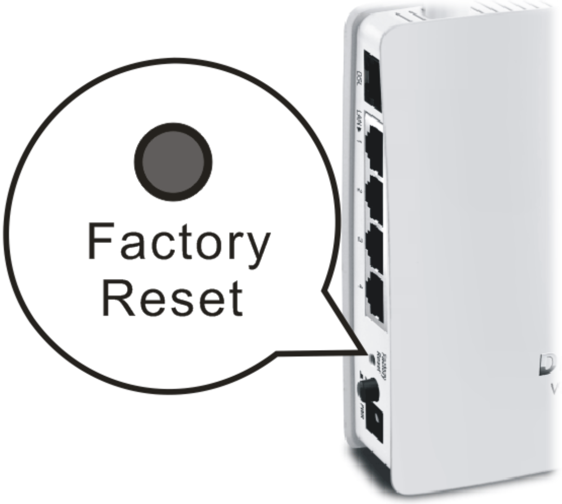
Reboot System

Do you want to reboot your router ?

● Using current configuration
○ Using factory default configuration

Hardware Reset

While the router is running (ACT LED blinking), press the **Factory Reset** button and hold for more than 5 seconds. When you see the **ACT** LED blinks rapidly, please release the button. Then, the router will restart with the default configuration.



After restore the factory default setting, you can configure the settings for the router again to fit your personal request.

5.6 Contacting Your Dealer

If the router still cannot work correctly after trying many efforts, please contact your dealer for further help right away. For any questions, please feel free to send e-mail to support@draytek.com.